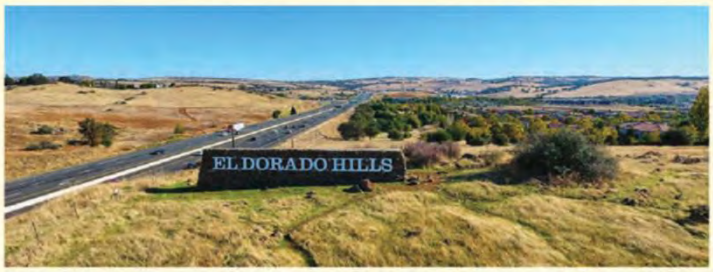
DRAFT ENVIRONMENTAL IMPACT REPORT

CREEKSIDE VILLAGE SPECIFIC PLAN

SCH# 2020110052
June 2025



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ES Executive Summary

This section provides a summary of the Draft Environmental Impact Report (EIR) for the proposed Creekside Village Specific Plan project (CVSP or proposed project). Included in this summary are areas of known controversy and issues to be resolved, a summary of project alternatives, a summary of all project impacts and associated mitigation measures, and a statement of the ultimate level of significance after mitigation is applied.

ES.1 Document Purpose

This EIR was prepared by County of El Dorado (County), as lead agency, to inform decision makers and the public of the potential significant environmental effects associated with the proposed project. This EIR has been prepared in accordance with the California Environmental Quality Act (CEQA) of 1970 (California Public Resources Code, Section 21000 et seq.) and the Guidelines for Implementation of the California Environmental Quality Act (CEQA Guidelines; 14 CCR 15000 et seq.) published by the Natural Resources Agency of the State of California.

The purpose of this EIR is to focus the discussion on those potential effects on the environment resulting from implementation of the proposed project which the lead agency has determined may be significant. Potentially feasible mitigation measures are recommended, when applicable, that could reduce or avoid significant environmental impacts.

Preparation of a Draft EIR requires the lead agency, in this case the County, to consult with local Native American Tribes (Tribes) that are traditionally and culturally affiliated with the project area regarding the presence of Tribal Cultural Resources (TCRs). Through the consultation process with local Tribes, it was revealed TCRs exist within the site and would be impacted by the project and could not be avoided. Based on this new information, the project applicant worked closely with the Tribes to develop an alternative that avoided these important resources. In addition, the Latrobe School District, a small school district that includes an elementary school and a middle school, indicated during preparation of the Draft EIR that its existing schools could not absorb the increase in students generated by the project and requested a reduction in the number of conventional housing units. To address potential significant impacts, an EIR is required to evaluate an alternative that would avoid or lessen environmental impacts while still meeting most of the objectives of the project. In collaboration with the Tribes and the Latrobe School District, a new land use plan, the Reduced Impact Alternative (RIA), was developed which avoids impacts to TCRs and reduces the total number of residential units from 918 to 763, including limiting the number of conventional housing units to a maximum of 150 with the remainder restricted to Active Adult (55+ in age). Given the ability to address significant impacts to TCRs and the concerns of the Latrobe School District, it was decided that the RIA should be analyzed at a project-specific level so that the County could ultimately approve the RIA instead of the proposed project. This Draft EIR therefore evaluates the land use plan that was originally submitted by the applicant as the proposed project and also analyzes the RIA at a project-specific level (see Chapter 5, Alternatives), either of which could be approved by the County. The land plan and project-level analysis of the (RIA) is provided in Chapter 5, Alternatives. Based on analysis completed at this time, County staff intends to recommend the RIA for approval because it avoids impacts to TCRs, reduces other environmental impacts, and is the land use plan preferred by the Tribes. While the proposed project provides a better economic return from a development perspective, the project applicant has committed to the Tribes, County staff, and members of the community that it will support approval of the RIA because it is environmentally superior and addresses the concerns of numerous stakeholders. The project applicant has also committed to the Latrobe School District that it will support a maximum

of 150 conventional units, which can be achieved through the Active Adult Option analyzed with the proposed project or the RIA.

ES.2 Project Location

The proposed project site (project site or plan area) is located within an unincorporated area of the County in the community of El Dorado Hills located in the western foothills, approximately 25 miles east of downtown Sacramento and 18 miles west of the City of Placerville. The project site is located on the west side of Latrobe Road, south of Investment Boulevard, directly adjacent to the southern boundary of the El Dorado Hills Business Park, as shown on Figure 2-1, Project Location. Access to U.S. Highway 50 is approximately 3 miles to the north. The project site consists of Assessor's Parcel Number (APN) 117-010-032 and a portion of APN 117-720-012. The project site was previously part of the private El Dorado Hills Business Park Association and in 2018 the site was approved to be de-annexed from the El Dorado Hills Business Park Owners Association.

ES.3 Project Description

The CVSP provides for the development of up to 918 dwelling units, including 668 dwelling units ranging from 4 to 8 dwelling units per acre (du/ac) on approximately 116 acres and 250 dwelling units on 21 acres with a density of 5-12 du/ac. There would be an option for converting the 1.8 acres of neighborhood commercial to park uses if the 1.8 acres of neighborhood commercial is not adopted as part of the Specific Plan, as well as an option (Active Adult Option) to develop 768 age-restricted units leaving a maximum of 150 units developed as conventional homes. The allowable densities or maximum number of units and park acreage would not change under this option, only the type of residential unit.

The proposed project would designate approximately 13.6 acres in three parks. If the 1.8 acres of neighborhood commercial is not adopted as part of the CVSP, the 1.8 acres would be added to the village park and the overall park acreage would increase to 15.4 acres. There would be no change in the amount of park acreage under the Active Adult Option.

The proposed project would designate a total of approximately 44.8 acres for Open Space Preserve and Open Space Buffer. Open Space Preserve is intended to preserve and protect intermittent drainages, seasonal wetlands, and vernal pools extending from the west to the northeast portion of the project site, encompassing 9.1 acres. Open Space Buffer encompasses 35.7 acres of natural open space areas and hillsides and has fewer use restrictions than the Open Space Preserve designation. In addition to preservation of natural features, it allows passive recreation uses including, but not limited to, walking, hiking, and cycling on paved and unpaved multi-use trails.

The proposed project would include a coordinated circulation system that provides for efficient vehicular travel, bikeways, pedestrian pathways, and sufficient space for emergency access and evacuation. Off-site infrastructure improvements would also be required to implement the CVSP including connection to dry utilities, off-site water connections, construction of a new force sewer main, and off-site roadway improvements.

ES.4 Project Objectives

The proposed project includes the following objectives:

1. Create a residential community with a variety of new homes designed for a range of buyers in a desirable location with access to community amenities, employment opportunities, schools, and entertainment.
2. Provide multi-modal connectivity and trails between the adjacent residential communities to the east and west and allow for development of land uses more compatible with the surrounding residential communities.
3. Provide a range of housing types that will allow current and future El Dorado Hills employers to attract and retain employees.
4. Provide housing near places of employment and near existing retail businesses that will generate new customers to support existing retailers while keeping tax revenues in El Dorado County.
5. Create a community with a linked system of complete streets, bike paths, sidewalks and trails that promotes walkability and neighbor interaction.
6. Create a pedestrian network that connects residents to employment and commercial centers, schools, and recreational facilities inside and outside the new community.
7. Create a community identity by preserving existing natural features (i.e., oak trees and drainage elements) and integrating those features into the development in a way that enhances the aesthetic and natural character of the community.
8. Provide parks, open space, and trails as a focal point for the proposed community with a full range of active and passive recreational uses.
9. Allow minor flexibility in the development and implementation of the Specific Plan to adjust to current and future conditions and market demands, including potential reductions in density to allow for a variety of housing types and potential inclusion of age-restricted housing to reduce student generation if the elementary and middle school district lacks capacity to accommodate students and reduce traffic generated by the project.

ES.5 Summary of Environmental Impacts and Mitigation Measures

Table ES-1, Summary of Environmental Impacts and Mitigation Measures, provides an overview of the impact analysis and a summary of environmental impacts (before and after mitigation) resulting from implementation of the project pursuant to CEQA Guidelines Section 15123(b)(1). For a more detailed discussion of project impacts, please see Chapter 3 of this EIR.

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.1 Aesthetics			
Impact 3.1-1. The proposed project would cause a substantial adverse effect on a scenic vista.	Potentially Significant	No feasible mitigation measures would reduce this impact.	Significant and Unavoidable
Impact 3.1-2. The proposed project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.	Potentially Significant	No feasible mitigation measures would reduce this impact.	Significant and Unavoidable
Impact 3.1-3. The proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	Less Than Significant	None required.	Less Than Significant
Impact 3.1-4. The proposed project would contribute to a significant cumulative impact related to scenic vistas.	Potentially Significant	No feasible mitigation measures would reduce this impact.	Significant and Unavoidable
Impact 3.1-5. The proposed project would contribute to a significant cumulative impact related to visual character and quality of public views.	Potentially Significant	No feasible mitigation measures would reduce this impact.	Significant and Unavoidable
Impact 3.1-6. The proposed project would not contribute to a significant cumulative impact related to light and glare.	No Impact	None required.	No Impact

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3.2 Air Quality			
Impact 3.2-1. The proposed project would conflict with or obstruct implementation of the applicable air quality plan.	Potentially Significant	**AQ-1:** Implement mitigation measure AQ-2.	Significant and Unavoidable
Impact 3.2-2. The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.	Potentially Significant	**AQ-2:** Prior to the issuance of building permits, the project applicant shall ensure that all initial and ongoing interior and exterior architectural coatings (i.e., paints) associated with the proposed project have no volatile organic compounds (VOCs). A note stating products containing VOCs shall not be allowed shall be provided on the project's Improvement Plans and on the Informational Sheet filed with Final Subdivision Map(s) for review and approval by the El Dorado County Planning Department. Verification of the ongoing use of no VOC architectural coatings shall be ensured in perpetuity by the project's proposed homeowner's association (HOA) and shall be included in the HOA's Conditions, Covenants and Restrictions (CC&Rs). In addition, a green cleaning product education program shall be made available to all residents and commercial tenants of the proposed project. The program shall include free educational materials such as brochures, pamphlets, checklists, etc., that provide information regarding the proper use of green cleaning products to be provided in information provided by the home buyer or commercial tenant.	Significant and Unavoidable
Impact 3.2-3. The proposed project would expose sensitive receptors to substantial pollutant concentrations.	Potentially Significant	**AQ-3:** Implement mitigation measure AQ-2.	Significant and Unavoidable
Impact 3.2-4. The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	Less Than Significant	None required.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

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Impact 3.2-5. The proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).	Potentially Significant	**AQ-4:** Implement mitigation measure AQ-2.	Significant and Unavoidable
3.3 Biological Resources			
Impact 3.3-1. The proposed project could have an adverse effect on candidate, sensitive, or special-status species.	Potentially Significant	**BIO-1: Rare Plant Survey.** If more than three years has elapsed since the last protocol-level rare plant survey in April 2022 (i.e., April 2025), a qualified botanist shall conduct plant surveys during the appropriate blooming period for potentially occurring special-status plant species prior to ground disturbance. The purpose of the survey shall be to delineate and flag populations of special-status plant species for avoidance. Special-status plant populations identified during the pre-construction survey shall be mapped using a hand-held submeter GPS unit and avoided where possible. Plant individuals or populations plus a 10-foot buffer shall be temporarily fenced during construction activities with high-visibility fencing or prominently flagged. If complete avoidance of populations is infeasible, further measures, as described below, shall be necessary. If avoidance of special-status plant species is not feasible, a Rare Plant Salvage and Translocation Plan shall be prepared by a qualified botanist prior to implementation. The Rare Plant Salvage and Translocation Plan shall include, at a minimum: identification of occupied habitat to be preserved and removed; identification of on-site or off-site preservation,	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		restoration, or enhancement locations; methods for preservation, restoration, enhancement, and/or translocation; goals and objectives; replacement ratio and success standard of 1:1 for impacted to established acreage; a monitoring program to ensure mitigation success; and adaptive management and remedial measures in the event that the performance standards are not achieved. If replanting and preservation occurs off-site, the replanting shall occur within existing rare plant preserves within the County that will be maintained in perpetuity. Timing/Implementation: The developer/applicant shall be responsible for ensuring implementation of Mitigation Measure BIO-1. If a pre-construction survey is required (per the circumstances described in Mitigation Measure BIO-1), County Planning Services shall verify the survey's completion within 7 days of any ground disturbing activities. If grading would occur for implementation of improvements and/or infrastructure through the County Department of Transportation (DOT), DOT shall verify the completion of survey prior any ground disturbing activities. This mitigation measure shall be included as a note on any Final Map, grading plans, and construction plans. **BIO-2: Environmental Awareness Training.** Before any work occurs in the project site, including site clearing, grading, and equipment staging, all construction personnel shall participate in an environmental awareness training provided by a qualified biologist regarding special-status species and sensitive habitats present in the project site. If new construction personnel are added to the project, they must receive the mandatory training before starting work. As part of the training, an environmental awareness handout shall be provided to all personnel that describes and illustrates sensitive resources to be avoided during project construction. The environmental awareness handout shall be included with any grading permit plans being reviewed/to be reviewed by the County. This mitigation measure shall be noted on any Final Map, grading plans, and construction plans.	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		BIO-3: Work Area Delineation and Fencing. Before any site clearing, grading or other ground-disturbing activity occurs within the project site, the project applicant shall ensure that temporary orange barrier fencing is installed around the project site adjacent to sensitive habitat areas to be avoided, as appropriate. Construction personnel and construction activities shall avoid areas outside the fencing. The exact location of the fencing shall be determined by the resident construction contractor coordinating with a qualified biologist, with the goal of protecting sensitive biological habitat and water quality. The fencing material shall consist of temporary plastic mesh-type construction fence (Tensor Polygrid or equivalent) installed between the work area and environmentally sensitive habitat areas (i.e., waters of the U.S., special-status wildlife habitat, active bird nests), as appropriate. To minimize potential ground disturbance, the base of the fencing shall not be buried or keyed-in. Installation of the barrier fence shall occur under the supervision of a qualified biologist. The temporary orange barrier fencing shall also be installed in a manner that is consistent with applicable water quality requirements contained within the project's Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Plan (WPCP). The fencing shall be shown on any grading permit plans, building permit plans, and any final construction documents. The fencing shall be checked regularly and maintained until all construction is complete. No construction activity shall be allowed until this condition is satisfied. This mitigation measure shall be noted on any grading plans and/or construction plans. **BIO-4: Northwestern Pond Turtle Avoidance.** To minimize adverse impacts on northwestern pond turtles and their habitat from project construction activities occurring within suitable habitat (intermittent stream and adjacent uplands), the project applicant and/or its contractor(s) shall implement the following measures during construction activities that require in-water work or ground disturbance within 300 feet of aquatic habitat in uninterrupted upland habitat (or	

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Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		within suitable upland habitat [e.g., annual grassland or valley foothill riparian]) or suitable aquatic habitat to minimize adverse impacts on northwestern pond turtles and their habitat: ▪ A qualified biologist shall be retained to conduct pre-construction visual encounter surveys of aquatic habitat for northwestern pond turtle occupancy. A minimum of two surveys shall be conducted at least 2 weeks apart during the morning (within 2 hours of 8:00 a.m.) or mid-afternoon (3:00 to 5:00 p.m.) when northwestern pond turtles are typically basking and the first inspection shall be completed no more than 4 weeks before construction activities commence. The purpose of the survey is to identify occupied aquatic habitat features around which further investigations of upland nesting would need to occur in subsequent measures. If no northwestern pond turtles are detected, implementation of the bullets listed below shall not be required. If northwestern pond turtle is detected during the surveys, the measures below shall be implemented. ▪ (If detected during the pre-construction survey above) Qualified biologists shall conduct visual detection/nesting surveys of upland areas for northwestern pond turtle within 160 feet of occupied aquatic habitat in May and June prior to project construction activities (including site clearing/grading) to mark/flag/protect as many nests as possible. An exclusion buffer of at least 50 feet around any found northwestern pond turtle nests shall be created by installing construction fencing or another obvious barrier that shall not be crossed by construction equipment. ▪ *(If detected during the pre-construction survey above)* To prevent entrapment within the active work area, the biologist shall monitor any potential dewatering and/or diversion work to rescue and with necessary handling permits and prior approval from U.S. Fish and Wildlife Service and California Department of Fish and Wildlife will	

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Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		relocate northwestern pond turtles and other native aquatic wildlife species from to suitable habitat outside the work area. ▪ *(If detected during the pre-construction survey above)* Eggs shall be covered slightly with dry soil by the biologist and the nest site protected from construction/ predation (flagging, cage over the spot, etc.). The biological monitor or other responsible on-site party shall call USFWS (if species is listed under the ESA) and CDFW for further direction and the eggs shall not be moved unless direction from USFWS (if applicable) and CDFW to do so is received. If live hatchlings are excavated between August 1 through October 31, a qualified biologist with an appropriate handling permit from USFWS and CDFW shall transfer the neonates to the source water body nearest the nest site. If live hatchlings are excavated between November 1 through February 29, the nestling turtles will not survive outside the nest and must be transferred by a qualified biologist with a handling permit from USFWS and CDFW to a licensed wildlife rehabilitator. ▪ All equipment (e.g., buckets, boots, waders) that has contact with water bodies shall be sterilized in accordance with the CDFW Aquatic Invasive Species Disinfection/Decontamination Protocols (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=92821) or current guidance. ▪ Timing/Implementation: The developer/ applicant shall be responsible for ensuring implementation of Mitigation Measure BIO-5. Per the circumstances described in Mitigation Measure BIO-5, the pre-construction survey shall be completed prior to any ground-disturbing activities. This mitigation measure shall be noted on any Final Map, grading plans, and construction plans. **BIO-5: Nesting Bird Avoidance.** If site clearing, grading and other construction activities begin during the nesting season (February 1 to August 31), a qualified biologist (as approved by California Department of Fish and Wildlife [CDFW]) shall conduct a preconstruction survey for	

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Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		active nests in suitable nesting habitat within 500 feet of the disturbance area for nesting raptors, including white-tailed kite, and 250 feet for other nesting birds, including tricolored blackbird and grasshopper sparrow. Areas adjacent to the project site that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. The survey shall be conducted by a qualified biologist no more than seven days prior to the onset of grading or construction activities. If no active nests are identified during the preconstruction survey, no further mitigation is necessary. Also, if construction is initiated outside of the nesting season no surveys are required for activities occurring in previously disturbed and continually active portions of the project. If any active nests are observed during the surveys, a qualified biologist shall establish a suitable avoidance buffer from the active nest, as approved by CDFW. The buffer distance, to be determined by the qualified biologist, shall typically range from 50 to 300 feet, and shall be determined based on factors such as the species of bird, topographic features, intensity and extent of the disturbance, timing relative to the nesting cycle, and anticipated ground disturbance schedule. Limits of construction to avoid active nests shall be established in the field with flagging, fencing, or other appropriate barriers and shall be maintained until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist. If at any time during the nesting season construction stops for a period of 7 days or longer, preconstruction surveys shall be conducted prior to construction resuming. Timing/Implementation: The developer/ applicant shall be responsible for ensuring implementation of Mitigation Measure BIO-5. If a pre-construction survey is required (per the circumstances described in Mitigation Measure BIO-5), the survey's completion shall be within 7	

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Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		days of any ground-disturbing activities. This mitigation measure shall be noted on any Final Map, grading plans, and construction plans. **BIO-6: Tricolored Blackbird Compensatory Mitigation.** The project applicant shall purchase at least 0.30 acres of tricolored blackbird preservation credits (3:1 ratio for 0.10 acres of direct impacts) plus additional preservation credits for permanent disturbance of a breeding colony location if determined appropriate by the California Department of Fish and Wildlife (CDFW) during consultation under CESA during the Incidental Take Permit process. Credits shall be purchased at a conservation bank approved by CDFW for tricolored blackbird with a service area including the project, or at a conservation bank with a service area not including the project upon further approval of CDFW. Proof of purchase shall be provided to CDFW and El Dorado County prior to the issuance of any grading or building permit within 250 feet of the tricolored blackbird colony location. **BIO-7: Burrowing Owl Avoidance.** Pre-construction surveys for burrowing owls shall be conducted by a qualified biologist prior to where clearing, grading or construction activities are planned within 500 feet of suitable habitat. Areas adjacent to the project site that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. Surveys shall be conducted no more than 30 days and no less than 14 days prior to the commencement of construction activities. If construction activities are delayed for more than 30 days after the initial preconstruction surveys, then a new preconstruction survey shall be required. All surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW, 2012). This mitigation shall be implemented by the project applicant or their contractor. ▪ If burrowing owls are discovered on the project site during construction, the California Department of Fish and Wildlife (CDFW) approved biologist shall be notified immediately. Occupied burrows	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		shall not be disturbed without prior approval from CDFW, and if necessary, possession of a CDFW Incidental Take Permit may be required for the species. ▪ If active burrows are observed within 500 feet of the project site, an impact assessment shall be prepared and submitted to the CDFW, in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW, 2012). If it is determined that project activities may result in impacts to nesting, occupied, and satellite burrows and/or burrowing owl habitat, the project applicant shall delay commencement of construction activities until the biologist determines that the burrowing owls have fledged and the burrow is no longer occupied. If this is infeasible, the project applicant shall consult with CDFW to obtain an Incidental Take Permit (if necessary based on species listing decision) and develop a detailed mitigation plan such that the habitat acreage, number of burrows, and burrowing owls impacted are replaced. The mitigation plan shall be based on the requirements set forth in Appendix F of the Staff Report on Burrowing Owl Mitigation (CDFW, 2012). No construction can commence until CDFW has approved the mitigation plan. The mitigation prescribed by the mitigation plan shall meet the following requirements: - Mitigation lands shall be selected based on comparison of the habitat lost to the compensatory habitat, including type and structure of habitat, disturbance levels, potential for conflicts with humans, pets, and other wildlife, density of burrowing owls, and relative importance of the habitat to the species range wide. - If feasible, mitigation lands shall be provided adjacent or proximate to the site so that displaced owls can relocate with reduced risk of take. Feasibility of providing mitigation adjacent or proximate to the proposed project area depends	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		on availability of sufficient suitable habitat to support displaced owls that may be preserved in perpetuity. - If suitable habitat is not available for conservation adjacent or proximate to the proposed project area, mitigation lands shall be focused on consolidating and enlarging conservation areas outside of urban and planned growth areas and within foraging distance of other conservation lands. Mitigation may be accomplished through purchase of mitigation credits at a CDFW-approved mitigation bank, if available. If mitigation credits are not available from an approved bank and mitigation lands are not available adjacent to other conservation lands, alternative mitigation sites and acreage shall be determined in consultation with CDFW. - If mitigation is not available through an approved mitigation bank and will be completed through permittee-responsible conservation lands, the mitigation plan shall include mitigation objectives, site selection factors, site management roles and responsibilities, vegetation management goals, financial assurances and funding mechanisms, performance standards and success criteria, monitoring and reporting protocols, and adaptive management measures. Success shall be based on the number of adult burrowing owls and pairs using the site and if the numbers are maintained over time. Measures of success, as suggested in the 2012 Staff Report, shall include site tenacity, number of adult owls present and reproducing, colonization by burrowing owls from elsewhere, changes in distribution, and trends in stressors. Timing/Implementation: The developer/applicant shall be responsible for ensuring implementation of Mitigation Measure BIO-7. Per the circumstances described in Mitigation Measure BIO-9, County Planning Services shall verify the pre-construction survey's completion per the timing described in the first paragraph of Mitigation Measure BIO-7. This	

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Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		mitigation measure shall be noted on any Final Map, grading plans, and construction plans.	
Impact 3.3-2. The proposed project could have an adverse effect on riparian habitat or other sensitive natural community.	Potentially Significant	**BIO-8:** Implement mitigation measures BIO-2, BIO-3, and BIO-9.	Less Than Significant
Impact 3.3-3. The proposed project could have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means.	Potentially Significant	**BIO-9: Wetland Compensatory Mitigation.** The project applicant shall demonstrate no net loss of wetlands and other waters of the United States or state. To ensure this, wetland mitigation shall be developed as a part of the permitting process. Mitigation shall be provided to El Dorado County prior to any construction-related impacts to the existing waters/wetlands. The exact mitigation ratio shall be determined in consultation with the applicable permitting agencies, which may include U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and/or the Regional Water Quality Control Board (RWQCB). The amount of mitigation shall be based on the type and value of the waters/wetlands affected by the project, and shall be determined in consultation with the USACE, RWQCB, and/or CDFW during the regulatory permitting process and shall, at a minimum, comply with the Habitat Mitigation Summary Table in Policy 7.4.2.8 of the General Plan. Compensation shall take the form of preservation or creation in accordance with USACE, RWQCB and/or CDFW mitigation requirements, as required under project permits. Preservation and creation may occur offsite through purchasing credits at a USACE, CDFW, and/or RWQCB-approved mitigation banks. **BIO-10: Stream Preservation with Park Design.** Final design of the park in Lot K shall preserve a minimum of 0.08 acre of the existing intermittent stream that is adjacent to Q Drive and provide a minimum 50-foot no-disturbance buffer (within which no ground disturbance shall occur) on both sides of the 0.08 acre of preserved intermittent stream. The park design shall retain the preservation area as a natural aesthetic feature within the park, but shall not include trails, benches, or other	Less Than Significant

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Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		park improvements within the preservation area. Final park design shall incorporate fencing, including but not limited to post and cable fencing, around the buffer area to prevent public entry into the channel and buffer. Periodic upland (outside of intermittent stream banks) vegetation and thatch management to protect the ecological integrity of the stream and comply with El Dorado County Code Chapter 8.09 (Vegetation Management and Defensible Space) shall be performed under the direction of a qualified biologist to ensure no impacts to the intermittent stream. The tentative map shall note the preservation area within Lot K as "stream preservation." **BIO-11:** Implement mitigation measures BIO-2 and Bio-3.	
Impact 3.3-4. The proposed project could interfere with established migratory wildlife corridors or impede the use of native wildlife nursery sites.	Potentially Significant	**BIO-12:** Implement mitigation measures BIO-2, BIO-3, BIO-5, BIO-6.	Less Than Significant
Impact 3.3-5. The proposed project would not conflict with a local policy or ordinance protecting biological resources, such as a tree preservation policy or ordinance.	Less Than Significant	None required.	Less Than Significant
Impact 3.3-6. The proposed project, combined other past and reasonably foreseeable future projects, could result in a cumulative impact to candidate, sensitive, or special- status plant and wildlife species.	Potentially Significant	**BIO-13:** Implement mitigation measures BIO-1 through BIO-7.	Less Than Significant
Impact 3.3-7. The proposed project, combined with other past	Less Than Significant	None required.	Less Than Significant

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Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
and reasonably foreseeable future projects, would not result in a cumulative impact to riparian habitat or other sensitive natural communities.			
Impact 3.3-8. The proposed project, combined other past and reasonably foreseeable future projects, could result in a cumulative impact to state or federally protected wetlands.	Potentially Significant	**BIO-14:** Implement mitigation measure BIO-9.	Less Than Significant
Impact 3.3-9. The project, combined other past and reasonably foreseeable future projects, would result in a cumulative impact to migratory wildlife corridors or native wildlife nursery sites.	Potentially Significant	**BIO-15:** Implement mitigation measures BIO-5 and BIO-6.	Less Than Significant
3.4 Cultural Resources			
Impact 3.4-1. The proposed project would not cause a substantial adverse change in the significance of a historical resource.	Less Than Significant	None required.	Less Than Significant
Impact 3.4-2. The proposed project could cause a substantial adverse change in the significance of an archaeological resource.	Potentially Significant	**CUL-1: Cultural Resource Awareness Training**. Mitigation Measure TCR-1 shall be implemented and as noted therein, include training on potential archaeological or cultural resources. **CUL-2: Unanticipated Discovery of a Cultural Resource**. If unanticipated cultural or archeological resources are exposed during construction activities, all construction work occurring within 100 feet of the find shall immediately stop to provide up to 48 hours for the archeologist to	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		evaluate the significance of the find and determine whether or not additional study is warranted. Temporary flagging or staking shall be required around the resource to avoid any disturbance from construction equipment if the archeologist determines that temporary flagging is necessary to protect the resource. The work exclusion buffer may be reduced based on the recommendation of the archeologist. If the unanticipated cultural resource appear to be human remains, Mitigation Measures CUL-3 and TCR-4 shall be implemented. If the cultural or archeological resource is not determined to be a Tribal Cultural Resource under Mitigation Measure TCR-3 and is within an Open Space area that was not approved for grading or other disturbance, preservation in place shall occur, if recommended by the archeologist. Alternatively, the archeologist may determine that one of the other treatment strategies identified below is preferred for the particular cultural or archeological resource, in which case that treatment strategy shall be implemented. If the cultural or archeological resource is not determined to be a Tribal Cultural Resource under Mitigation Measure TCR-3 and is within an area planned for residential lots, road and infrastructure improvements, grading, park improvements, or other development activity approved as part of the project, the archeologist shall direct whether the treatment of the cultural or archeological resource is one or more of the following: (1) recordation of the resource; (2) recovery and reburial in or relocation to an Open Space preserve area within the Specific Plan; (3) preservation in place through burial if feasible given the final elevation of the area and intended development; or (4) removal and preservation. Prior to the relocation, burial, or removal of a cultural or archeological resource, the project applicant shall document the cultural or archeological resource through pictures that are provided to the County. The photographs and management strategies recommended by the archaeologist shall remain confidential and be provided to the County in writing and approved by the El Dorado County Director of Planning and Building. The project	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		construction contractor shall adhere to the management strategies approved by the archaeologist and County. Ground-disturbing activities may resume once the management strategies have been implemented to the satisfaction of the archaeologist and County's Director of Planning and Building. **CUL-3: Onsite Archaeological Monitoring**. The project proponent or their construction contractor shall comply with the following measure to assist with identification of any unknown cultural resources at the earliest possible time during project-related earthmoving activities. These measures shall be included as notes on the project improvement plans prior to their approval by the County. An archaeological monitor shall monitor the vegetation grubbing, stripping, grading, trenching, and other ground disturbing activities within 200 feet of P-09-006004; P-09-006011; P-09-006012 (all within the Project APE); and P-09-000168. All ground-disturbing activities within such areas shall be subject to archaeological monitoring unless otherwise determined unnecessary by archaeological monitor.	
Impact 3.4-3. The project could potentially damage or disturb human remains during project construction activities.	Potentially Significant	**CUL-4: Discovery of Non-Native American Human Remains**. If human remains are discovered during ground-disturbing construction work, all construction within 100 feet of the remains shall be halted immediately, and the El Dorado County coroner shall be notified immediately. If the remains are found to be non-Native American or the result of a crime scene, then the procedures in state law and mitigation measure TCR-4 shall be followed. The County shall be responsible for confirming compliance with Section 5097.98 and CEQA Guidelines Section 15064.5(e) and the resumption of ground-disturbing activities within 100 feet of the boundaries of the sensitive area defined by the investigation where the remains were discovered shall not occur until compliance with those standards is demonstrated in writing.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
Impact 3.4-4. The proposed project, in combination with past, present and reasonably foreseeable future development, could result in a cumulative impact on archeological resources and human remains.	Potentially Significant	**CUL-5:** Implement mitigation measures CUL-1 through CUL-4.	Less Than Significant
3.5 Energy			
Impact 3.5-1. The proposed project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	Less Than Significant	None required.	Less Than Significant
Impact 3.5-2. The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	Less Than Significant	None required.	Less Than Significant
Impact 3.5-3. The proposed project would not result in a cumulatively considerable impact due to the consumption of electricity, natural gas and petroleum fuels during construction and operation.	Less Than Significant	None required.	Less Than Significant
3.6 Geology, Soils and Paleontology			
Impact 3.6-1. The proposed project would not be affected by	Less Than Significant	None required.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
strong seismic ground shaking and secondary seismic hazards, including seismic-related ground failure, liquefaction, lateral spreading, and seismically induced settlement.			
Impact 3.6-2. The proposed project would not be affected by or result in adverse effects involving landslides.	Less Than Significant	None required.	Less Than Significant
Impact 3.6-3. The proposed project would not result in significant soil erosion or loss of topsoil.	Less Than Significant	None required.	Less Than Significant
Impact 3.6-4. The proposed project would not be developed on unstable soils that could become unstable resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.	Less Than Significant	None required.	Less Than Significant
Impact 3.6-5. The proposed project would not be located on expansive soils.	Less Than Significant	None required.	Less Than Significant
Impact 3.6-6. The proposed project would not destroy a unique paleontological resource or unique geologic features.	Less Than Significant	None required.	Less Than Significant
Impact 3.6-7. The proposed project would not result in a	Less Than Significant	None required.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
cumulative impact related to loss of paleontological resources.			
3.7 Greenhouse Gas Emissions			
Impact 3.7-1. The proposed project could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	Potentially Significant	**GHG-1:** The following requirements shall be noted on project improvement plans, subject to review and approval by the El Dorado County Planning Services Department: ▪ The proposed project shall be designed such that the project is built all-electric, and natural gas infrastructure shall be prohibited onsite; and ▪ The project shall be constructed to include electric vehicle (EV) ready parking spaces at the ratio with which the current CalGreen Tier 2 standards require EV Capable spaces in effect at the time building permits are issued. If the use of all-electric for any project component(s) (e.g., an appliance) is not enforceable or commercially feasible at the time of issuance of building permit(s), the project applicant shall require future residential homebuilders to include pre-wiring in all residential units and the neighborhood commercial space (if approved as part of the Creekside Village Specific Plan) to allow for the future retrofit of all natural gas appliances with all-electric appliances and purchase off-site mitigation credits or forecasted mitigation units (“FMUs”) (collectively, “GHG credits”) for project-related greenhouse gas (GHG) emissions from the component(s) using natural gas instead of electric. The emissions from the use of natural gas shall be calculated by a qualified professional using El Dorado County Air Quality Management District (EDCAQMD), California Air Resource Board (CARB), or the EPA-approved emissions models and quantification methods available and submitted to the County for review and approval, which shall include third-party review by a qualified consultant of the County’s selection and be subject to applicant reimbursement of consultant costs.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		Any and all GHG credits to off-set for the use of natural gas must be created through a CARB-approved registry. These registries are currently the American Carbon Registry (ACR), Climate Action Reserve (CAR), and Verra, although CARB may accredit additional registries in the future. These registries use robust accounting protocols for all GHG credits created for their exchange, including the six currently approved CARB protocols. This mitigation measure specifically requires GHG credits created for the project originate from a CARB-approved protocol or a protocol that is equal to or more rigorous than CARB requirements under 17 CCR 95972. The selected protocol must demonstrate that the GHG emissions reductions are real, permanent, quantifiable, verifiable, enforceable, and additional. Definitions of these terms from 17 CCR 95802(a) are provided below. 1. Real: GHG reductions or enhancements result from a demonstrable action or set of actions and are quantified using appropriate, accurate, and conservative methodologies that account for all GHG emissions sources, GHG sinks, and GHG reservoirs within the [GHG credit] project boundary and account for uncertainty and the potential for activity-shifting and market-shifting leakage. 2. Additional: GHG reductions or removals that exceed any GHG reduction, or removals otherwise required by law, regulation, or legally binding mandate, and that exceed any GHG reductions or removals that would otherwise occur in a conservative Business as Usual scenario. 3. Permanent: GHG reductions and removal enhancements are not reversible or, when GHG reductions and GHG-removal enhancements may be reversible, mechanisms are in place to replace any reversed GHG-emission reductions and GHG-	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		removal enhancements to ensure that all credited reductions endure for at least 100 years. 4. Quantifiable: The ability to accurately measure and calculate GHG reductions or GHG-removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the [GHG credit] project boundary, while accounting for uncertainty. Activity-shifting, and market-shifting leakage. 5. Verifiable: A [GHG credit] project report assertion is well-documented and transparent such that it lends itself to an objective review by an accredited verification body. 6. Enforceable: The authority for CARB to hold a particular party liable and take appropriate action if any of the provisions of this article are violated. Note that this definition of enforceability is specific to the Cap and-Trade regulation, where CARB holds enforcement authority, but this measure shall employ GHG credits from the voluntary market, where CARB has no enforcement authority. Applying the definition to this mitigation measure means that GHG reductions must be owned by a single entity and backed by a legal instrument or contract that defines exclusive ownership. **Geographic Prioritization of GHG Credits** GHG credits from reduction projects in El Dorado County (County) shall be prioritized before projects in larger geographies (i.e., northern California, California, United States, and international). The project applicant shall inform brokers of the required geographic prioritization for the procurement of GHG credits. GHG credits from reduction projects identified in the County that are of equal or lesser cost compared to the settlement price of the latest Cap-and-Trade auction must be included in the transaction. GHG credits from reduction projects outside of the	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		County may be purchased if adequate credits cannot be found in the County or if they exceed the maximum price identified above. The economic and geographic analysis undertaken to inform the selection of GHG credits must be provided by the project applicant to the County as part of the required documentation discussed below under Plan Implementation and Reporting. **Types of GHG Credits** GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or FMUs for future committed GHG emissions meeting protocols. Because emissions reductions from GHG offsets have already occurred, their benefits are immediate and can be used to compensate for an equivalent quantity of project-generated emissions at any time. GHG credits from FMUs must be funded and implemented within 5 years of project GHG emissions to qualify as a GHG credit under this measure (i.e., there can only be a maximum of 5 years lag between project emissions and their real-world reductions through funding a FMU in advance and implementing the FMU on the ground). Any use of FMUs that result in a time lag between project emissions and their reduction by GHG credits from FMUs must be compensated through a prorated surcharge of additional FMUs proportional to the effect of the delay. Because emissions of CO_2 in the atmosphere reach their peak radiative forcing within 10 years, a surcharge of 10% for every year of lag between project emissions and their reduction through a FMU shall be added to the GHG credit requirement (i.e., 1.10 FMUs would be required to mitigate 1 metric ton of project GHG emissions generated in the year prior to funding and implementation of the FMU). **Verification and Independent Review of GHG Credits** All GHG credits shall be verified by an independent verifier accredited by the ANSI National Accreditation Board (ANAB) or CARB, or an expert with equivalent qualifications to the extent necessary to assist with the	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		verification. Following the standards and requirements established by the accreditation board (i.e., ANAB or CARB), the verifier shall certify the following: ▪ GHG credits conform to a CARB-approved protocol or a protocol that is equal to or more rigorous than CARB requirements under 17 CCR 95972. Verification of the latter requires certification that the credits meet or exceed the standards set in 17 CCR 95972. ▪ GHG credits are real, permanent, quantifiable, verifiable, enforceable, and additional, as defined in this measure. ▪ GHG credits are purchased according to the geographic prioritization standard defined in this measure under Geographic Prioritization of GHG Credits. Verification of GHG offsets must occur as part of the certification process for compliance with the accounting protocol. Because FMUs are GHG credits that result from future projects, additional verification must occur beyond initial certification is required. Verification for FMUs must include initial certification and independent verification every 5 years over the duration of the FMU generating the GHG credits. The verification shall examine both the GHG credit realization on the ground and its progress toward delivering future GHG credits. The project applicant shall retain an independent verifier meeting the qualifications described above to certify reductions achieved by FMUs are achieved following completion of the future reduction project.	
Impact 3.7-2. The proposed project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Potentially Significant	**GHG-2:** Implement mitigation measure GHG-1.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.8 Hydrology and Water Quality			
Impact 3.8-1. The proposed project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	Less Than Significant	None required.	Less Than Significant
Impact 3.8-2. The proposed project would not decrease groundwater supplies or interfere with groundwater recharge that could impede sustainable groundwater management of the basin.	Less Than Significant	None required.	Less Than Significant
Impact 3.8-3. The proposed project would not alter the existing drainage pattern of the site through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on or off site ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or	Less Than Significant	None required.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
provide substantial additional sources of polluted runoff iv) impede or redirect flood flows			
Impact 3.8-4. The proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	Less Than Significant	None required.	Less Than Significant
Impact 3.8-5. The proposed project combined with past, present, and reasonably foreseeable future projects would not violate any water quality standards or degrade surface or ground water quality.	Less Than Significant	None required.	Less Than Significant
Impact 3.8-6. The proposed project combined with past, present, and reasonably foreseeable future projects would not decrease groundwater supplies or interfere substantially with groundwater recharge.	Less Than Significant	None required.	Less Than Significant
Impact 3.8-7. The proposed project combined with past, present, and reasonably foreseeable future projects would not contribute to a cumulative impact relating to flooding, drainage capacity, and erosion.	Less Than Significant	None required.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
3.9 Land Use, Population and Housing			
Impact 3.9-1. The proposed project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	Less Than Significant	None required.	Less Than Significant
Impact 3.9-2. The proposed project would induce unplanned population growth but would not result in significant adverse effects on the environment.	No Impact	None required.	No Impact
3.10 Noise			
Impact 3.10-1. The proposed project could result in an increase in temporary (construction) ambient noise levels in excess of County standards.	Potentially Significant	**NOI-1: Construction Noise Control Measures.** To the maximum extent practical, the following construction-related measures shall be incorporated into on-site and off-site infrastructure improvement operations: ▪ Noise-generating infrastructure improvement construction activities shall only occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on weekends and on federal holidays. ▪ All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition. ▪ All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		agency shall comply with such regulations while in the course of project activity. ▪ Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible. ▪ Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses. ▪ Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.	
Impact 3.10-2. The proposed project could result in an increase in permanent (operation) ambient noise levels in excess of County standards.	Potentially Significant	**NOI-2: Park Activity Noise.** The tentative map submitted for building and/or grading shall include an acoustical analysis (noise study) that verifies and demonstrates applicable County noise standards shall be met. The analysis shall be provided to the County's Planning and Building Department for review. Solid noise barriers measuring a minimum of six feet in height (relative to backyard elevation) shall be constructed along residences proposed adjacent to the north and west sides of Village Park and the north, south, west and east sides of Neighborhood Park 2. The recommended noise barrier extension shall either be a solid masonry wall or wood fence. If a wood fence is selected as a barrier, the fence slats shall overlap by a minimum of two inches and screwed to the framing rather than nailed. The purpose of the overlapping slats and using screws rather than nails is to ensure that prolonged exposure to the elements does not result in visible gaps through the slats which would result in reduced noise barrier effectiveness. The final barrier design shall be reviewed by a qualified acoustical consultant prior to issuance of building permits. **NOI-3: Live or Amplified Music.** An acoustic analysis prepared by a qualified acoustic specialist shall be required prior to discretionary authorization or permit approval by El Dorado County for any commercial activity featuring live or amplified music, pursuant to County Code Section 130.37.050.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
Impact 3.10-3. The proposed project would not generate significant on-site or off-site construction vibration.	Less Than Significant	None required.	Less Than Significant
Impact 3.10-4. The proposed project would not increase cumulative traffic noise levels.	Less Than Significant	None required.	Less Than Significant
3.11 Public Services and Recreation			
Impact 3.11-1. The proposed project would not result in impacts associated with the construction of new or expanded fire or police facilities.	Less Than Significant	None required.	Less Than Significant
Impact 3.11-2. The proposed project would not result in impacts associated with construction of new or expanded schools.	Less Than Significant	None required.	Less Than Significant
Impact 3.11-3. The proposed project would not increase the use of existing neighborhood or regional parks, or other recreational facilities requiring the construction of new parks.	Less Than Significant	None required.	Less Than Significant
Impact 3.11-4. The proposed project would not result in a cumulatively considerable increase in demand for fire services, police services, schools, or other public facilities resulting	Less Than Significant	None required.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
in the need to construct new facilities.			
Impact 3.11-5. The proposed project would not result in a cumulatively considerable increase in the use of existing parks or recreational facilities such that substantial deterioration would occur or new/expanded facilities would be required.	Less Than Significant	None required.	Less Than Significant
3.12 Transportation			
Impact 3.12-1. The proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	Less Than Significant	None required.	Less Than Significant
Impact 3.12-2. The proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	Less Than Significant	None required.	Less Than Significant
Impact 3.12-3. The proposed project would not substantially increase hazards due to sharp curves or dangerous intersections or incompatible uses.	Less Than Significant	None required.	Less Than Significant
Impact 3.12-4. The proposed project would not result in inadequate emergency access.	Less Than Significant	None required.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
Impact 3.12-5. The proposed project would not conflict or be inconsistent with CEQA Guidelines section 15064.3(b) under cumulative conditions.	Less Than Significant	None required.	Less Than Significant
3.13 Tribal Cultural Resources			
Impact 3.13-1. The proposed project could cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources or is a resource determined by the County to be significant.	Significant	**TCR-1: Tribal Cultural Resource (TCR) Awareness Training.** The following language shall be noted on project Improvement Plans subject to review and approval by the El Dorado County Planning and Building Department: Prior to the initiation of construction, all construction crew members, consultants, and other personnel involved in project implementation shall receive project-specific Tribal Cultural Resource (TCR) Awareness Training. The training may be conducted in coordination with qualified cultural resource specialists and representatives from culturally affiliated Native American Tribes. The training shall emphasize the requirement for confidentiality and culturally appropriate, respectful treatment of any finds of significance to culturally affiliated Native American Tribes. All personnel required to receive the training shall also be required to sign a form that acknowledges receipt of the training, which shall be submitted to the El Dorado County Planning and Building Department. As a component of the training, a brochure shall be distributed to all personnel associated with the project implementation. At a minimum the brochure shall discuss the following topics in clear and straightforward language: ▪ Field indicators of potential archaeological or tribal cultural resources (i.e., what to look for, for example: archaeological artifacts, exotic or non-native rock, unusually large amounts of shell or bone, significant soil color variations, etc.). ▪ Regulations governing archeological resources and tribal cultural resources.	Significant and Unavoidable

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		▪ Consequences of disregarding or violating laws protecting archeological or tribal cultural resources. ▪ Steps to take if a worker encounters a possible resource. The training shall include project specific guidance for on-site personnel including protocols for resource avoidance, when to stop work, and who to contact if potential archeological or TCRs are identified. The training shall also address the stoppage of work if potentially significant cultural resources are discovered during ground disturbing activities, and in the case of possible human remains the proper course of action requiring immediate contact with the County Coroner and the Native American Heritage Commission. **TCR-2: Tribal Monitoring.** The project applicant or their construction contractor shall comply with the following measure to assist with identification of any unknown tribal cultural resources (TCRs) at the earliest possible time during project-related earthmoving activities. These measures shall be included as notes on the project improvements plans prior to their approval by the County. ▪ The project applicant shall contact the United Auburn Indian Community (UAIC) Tribal Historic Preservation Officer (THPO) (thpo@auburnrancheria.com) at least two weeks prior to project ground-disturbing activities within the areas identified for monitoring in the confidential Creekside Village Sites and Creek Monitoring Map prepared by UAIC and within 200 feet of P-09-000168 (collectively, "Monitoring Area") to retain the services of a UAIC Certified Tribal Monitor ("Tribal Monitor"). The duration of the construction schedule and Tribal Monitoring shall be determined at this time. ▪ A contracted Tribal Monitor shall monitor the vegetation grubbing, stripping, grading, trenching, and other ground disturbing activities within the Monitoring Area. All ground-disturbing activities within such areas shall be subject to Tribal Monitoring unless otherwise determined unnecessary by UAIC. A contracted UAIC certified Tribal	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		Monitor shall spot check up to 16 hours per month the ground-disturbing activities within all other areas of the project site. ▪ The Tribal Monitor or UAIC Tribal Representatives shall have the authority to direct that work be temporarily paused, diverted, or slowed within 100 feet of the immediate impact area if sites, cultural soils, or objects of potential significance are identified. The temporary pause/diversion shall provide up to 48 hours for UAIC Tribal Government Representatives to examine the resource. ▪ If unanticipated TCRs (i.e., sites, features, or artifacts) are exposed during construction activities, Mitigation Measure TCR-3 shall be implemented. ▪ To track the implementation of this measure, the Tribal Monitor shall document field-monitoring activities on a Tribal Monitor log. ▪ The Tribal Monitor shall wear the appropriate safety equipment while on the construction site. ▪ The Tribal Monitor, in consultation with the UAIC THPO and the project applicant, shall determine a mutual end or reduction to the on-site monitoring if/when construction activities have a low potential for impacting TCRs. ▪ In the event the Tribal Monitor does not report to the job site at the scheduled time after receiving 24-hour business day notice, construction activities may proceed without Tribal Monitoring. At no time, regardless or absence of a Tribal Monitor, shall suspected TCRs be mishandled or disrespected. **TCR-3: Unanticipated Discovery of a Tribal Cultural Resource (TCR).** If unanticipated TCRs (i.e., sites, features, or artifacts including but not limited to cultural features, midden/cultural soils, artifacts, exotic rock [non-native], shell, bone, shaped stones, or ash/charcoal) are exposed during construction activities, all construction work occurring within 100 feet of the find shall immediately stop to provide up to 48 hours for the Tribal Monitor and/or United Auburn Indian Community (UAIC) Tribal Government Representatives to evaluate the significance of the find and	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		determine whether or not additional study is warranted. Temporary flagging or staking shall be required around the resource to avoid any disturbance from construction equipment if the Tribal Monitor determines that temporary flagging is necessary to protect the resource. The work exclusion buffer may be reduced based on the recommendation of the Tribal Monitor. If the unanticipated TCRs appear to be human remains, Mitigation Measure TCR-4 shall be implemented. If the Tribal Monitor or UAIC Tribal Government Representatives determine that the potential resource appears to be a TCR (as defined by Public Resources Code Section 21074), treatment shall be consistent with the following: ▪ If the TCR is within an Open Space area that was not approved for grading or other disturbance, preservation in place shall occur, if recommended by the Tribal Representative. Alternatively, the Tribal Historic Preservation Officer (THPO) may determine that one of the other treatment strategies identified below is preferred for the particular TCR, in which case that treatment strategy shall be implemented. ▪ If the TCR is within an area planned for residential lots, road and infrastructure improvements, grading, park improvements, or other development activity approved as part of the project, the THPO and/or UAIC Tribal Government Representative shall direct whether the treatment of the TCR is one or more of the following: (1) recordation of the resource; (2) recovery and reburial in or relocation to an Open Space preserve area within the Specific Plan, in which case the UAIC Tribal Government Representatives shall identify the placement of the reburial or relocated area; (3) preservation in place through burial if feasible given the final elevation of the area and intended development; or (4) removal and provided to UAIC. Prior to the relocation, burial, or removal of a TCR, UAIC shall record the resources according to UAIC Preservation Department Recommendations for Respectful and Accurate Recordation of Tribal	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		Cultural Resources (TCR) and Cultural Significance/Integrity on Department of Recreation Form (DPR) 523 Forms. ▪ The applicant shall document the TCR through pictures that remain confidential and are provided to the Tribal Government Representatives. The photographs and management strategies recommended by the Tribal Government Representatives or THPO and carried out by the Tribal Monitor shall remain confidential and be provided to the County in writing and approved by the El Dorado County Director of Planning and Building. The project contractor shall adhere to the management strategies approved by the Tribal Government Representatives or THPO and County. Ground-disturbing activities may resume once the management strategies have been implemented to the satisfaction of the Tribal Monitor and County's Director of Planning and Building. ▪ The construction contractor(s) shall provide secure, on-site storage for culturally sensitive soils or objects that are components of TCRs that are found or recovered during construction. Only Tribal Government Representatives, THPO, and Tribal Monitors shall have access to the storage. Storage size shall be determined by the nature of the TCR and can range from a small lock box to a conex box (shipping container). A secure (locked), fenced area can also provide adequate on-site storage if larger amounts of material must be stored. **TCR-4: Discovery of Native American Human Remains.** If human remains are discovered during ground-disturbing construction work, all construction within 100 feet of the remains shall be halted immediately, and the El Dorado County coroner shall be notified immediately. If the remains are found to be non-Native American or the result of a crime scene, then the procedures in state law and Mitigation Measure CUL-1 shall be followed.	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		If the remains are determined by the County coroner to be Native American, the Native American Heritage Commission (NAHC), United Auburn Indian Community (UAIC), and Wilton Rancheria shall be notified within 24 hours, and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. Development activity within the buffer area shall not resume until the landowner has discussed and conferred, as prescribed in Section 5097.98 of the Public Resources Code, with the most likely descendants regarding their recommendations as provided for in Section 5097.98 to ensure that the remains are treated with appropriate dignity. As provided for in subsection 5097.98(a), the descendants shall complete their inspection and make their recommendation within 48 hours of being granted access to the site. If no likely descendants are located or recommendations are not made, the applicant shall comply with Section 5097.98, including but not limited to Section 5097.98(e). The County shall be responsible for confirming compliance with Section 5097.98 and CEQA Guidelines Section 15064.5(e) and the resumption of ground-disturbing activities within 100 feet of the boundaries of the sensitive area defined by the investigation where the remains were discovered shall not occur until compliance with those standards is demonstrated in writing. **TCR-5: Documentation and Relocation of TCRs.** All tribal cultural resources (TCRs) within an area of potential ground disturbance as determined by the grading plan for the proposed project shall be subject to appropriate archaeological and Tribal documentation prior to ground disturbing activity and relocated to a location with identified TCRs that shall not be impacted by grading or other site disturbing activities. The project applicant shall do the following: ▪ Obtain written United Auburn Indian Community (UAIC) Tribal Historic Preservation Officer (THPO) approval prior to flagging any TCRs for relocation. Approval shall include any restrictions or requirements	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		related to the relocation, such as type of equipment to use, orientation of the TCR, location for the TCR to be moved to, etc. ▪ Send a Tribal notification and confirm the details for relocation at least 48 hours prior to any relocation work. ▪ Update the Tribal Monitoring map to identify any TCRs that are scheduled for relocation. ▪ Provide financial and logistical support for the protection, intact transport, and relocation of bedrock features or other elements of the TCR. ▪ Update the California Historic Resources Information System Center (CHRIS) Department of Parks and Recreation (DPR) forms to reflect the relocation work. Updates shall be consistent with Tribal preference for documenting TCRs. Tribes shall have final review authority on the DPR form(s) and shall be copied on submission to the CHRIS. DPR forms shall be prepared for Tribal review within two weeks of relocation work being completed and shall be submitted to the CHRIS within two weeks of Tribal approval. **TCR-6: If the Reduced Impact Alternative (RIA) is not Selected the Following is Required.** Mitigation measures TCR-1 through TCR-5 are applicable to the proposed project and the project alternatives, including the RIA and Zoning Consistent Alternative. If the RIA is not selected, project approval shall be contingent upon revisions to the Mitigation Monitoring and Reporting Program (MMRP) to address impacts to TCRs associated with the proposed project through continued tribal consultation. The contingent project approval shall return to the Board of Supervisors for final approval in conjunction with adoption of the revised MMRP. Consideration of TCR avoidance, minimization, rectification, reduction, and compensation shall be based on Tribal consultation. Further measures may include redesign of the site plan to remove lots, capping (or covering) TCRs in place, or providing compensation for the loss of TCRs to avoid or minimize impacts.	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
Impact 3.13-2. The proposed project, in combination with past, present and reasonably foreseeable development, could make a cumulatively considerable contribution to a significant cumulative impact related to tribal cultural resources, including Native American human remains.	Significant	**TCR-7:** Implement mitigation measures TCR-1 through TCR-4.	Significant and Unavoidable
3.14 Utilities and Service Systems			
Impact 3.14-1. The proposed project would not result in environmental impacts from the construction of new water, wastewater treatment, electric power, natural gas, or telecommunications facilities.	Less Than Significant	None required.	Less Than Significant
Impact 3.14-2. The proposed project would be adequately served by available water supply during normal, dry, and multiple dry years.	Less Than Significant	None required.	Less Than Significant
Impact 3.14-3. The proposed project would not generate an increase in wastewater demand that exceeds the capacity of the treatment plant.	Less Than Significant	None required.	Less Than Significant
Impact 3.14-4. The proposed project would not generate solid waste in excess of standards, or capacity of local infrastructure, or	Less Than Significant	None required.	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
impair the attainment of solid waste reduction goals.			
Impact 3.14-5. The proposed project would not result in cumulatively considerable impacts related to construction of water, wastewater, or solid waste facilities or exceed water supply.	Less Than Significant	None required.	Less Than Significant
3.15 Wildfire			
Impact 3.15-1. The proposed project would not impair an adopted emergency response plan or emergency evacuation plan.	Less Than Significant	None required.	Less Than Significant
Impact 3.15-2. The proposed project could exacerbate wildfire risks exposing future residents to potential wildlife hazards.	Potentially Significant	**WF-1: Construction Fire Prevention Plan.** Prior to any ground-disturbing activities, including site clearing, grading or trenching, the project applicant(s) shall work with the El Dorado Hills Fire Department to prepare a Construction Fire Prevention Plan to be provided to all future developers. The plan shall address training of construction personnel and provide details of fire-suppression procedures and equipment to be used during construction. Information contained in the plan shall be included as part of project-related environmental awareness training to occur prior to any ground disturbance. At a minimum, the plan shall be consistent with the requirements in California Building Code Chapter 33 and California Fire Code Chapter 33 and shall include the following: ▪ Procedures for minimizing potential ignition, including, but not limited to, vegetation clearing, parking requirements/restrictions, idling restrictions, smoking restrictions, proper use of gas-powered equipment, use of spark arrestors, and hot work restrictions; ▪ Work restrictions during Red Flag Warnings and High to Extreme Fire Danger days;	Less Than Significant

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		▪ Specifications for adequate water supply to service construction activities; ▪ On-site fire awareness coordinator role and responsibility; ▪ Construction worker training for fire prevention, initial attack firefighting, and fire reporting; ▪ Emergency communication, response, and reporting procedures; ▪ Coordination with local fire agencies to facilitate access through the project site; ▪ Implement all construction-phase fuel modification components prior to combustible building materials being delivered to the site; ▪ Emergency contact information; and ▪ Demonstrate compliance with applicable plans and policies established by state and local agencies. **WF-2: Fire Safe Plan Recommendations.** The Fire Safe Plan (FSP) provides customized measures that address potential fire hazards on the site. The measures are independently established but shall work together to result in reduced fire threat and heightened fire protection. These measures shall be established and accepted by the El Dorado Hills Fire Department prior to the issuance of the first building construction permit issued by the County. The following measures identified in Section 7.3 of the FSP shall be implemented and shall be included as notes on any Final Map, grading plans, and construction plans: ▪ Fencing materials used within 5-feet of all buildings shall be constructed of non-combustible materials. ▪ Fencing materials adjacent to non-irrigated open space areas shall be constructed of non-combustible materials. ▪ Combustible sheds and other outbuildings shall be kept at least 30 feet from residential dwellings and other buildings on each parcel. ▪ The following specific alternative material and construction methods, exceeding the minimum criteria described in CBC Chapter	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		7A, shall be implemented within the project to meet the "Practical Effect" principles (described in CCR Title 14 – section 1276.01) when buildings are located within 30-feet of property lines to reduce the potential for building-to-building fire spread may include, but are not limited to the following provisions: - All spaces between roof decking and the Class A roof covering shall be blocked to prevent embers from catching and igniting the building; and Eaves shall be boxed in (soffit-eave design) and protected with ignition resistant or non-combustible materials; and - Ignition resistant building materials, such as stucco, fiber cement wall siding, fire retardant treated wood, or other approved materials shall be used when neighboring buildings are within 30-feet; and - WUI ember and flame-resistant vents, conforming with the requirements of ASTM E2886, shall be used to protect exterior wall openings when the wall is located within 30-feet of another building or faces the Wildland Fuel Reduction Zone areas; and - The size and number of windows to bedroom rescue window openings and other essential location shall be limited when the exterior wall is located within 30-feet of another building. Windows on all sides of buildings shall be constructed of multi-pane glazing with a minimum of one tempered pane on the exterior side; and - Exterior doors of buildings shall be constructed of non-combustible or ignition-resistant material, or shall be constructed of solid core wood compliant with California Residential Code Section R327.8.3 when located within 30-feet of another building; and - Combustible decks that are cantilevered over the natural slope shall be enclosed to reduce the accumulation of debris and combustible storage items that may be ignited by fire brands. The	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		construction of combustible decks shall comply with the building construction requirements found in CBC Section R337; and - A minimum non-combustible area of 6 vertical inches, measured from the ground up (at grade) and from any attached horizontal surface like a deck, shall be provided on the exterior walls of all buildings. Non-combustible materials include brick, stone, fiber-cement siding, or concrete; and - Address numbers on each residential building shall be either internally or externally illuminated. ▪ Wildfire fuel reduction management and defensible space practices for the project shall follow the requirements identified in Chapter 6 of the FSP. ▪ A Restrictive Covenant shall be filed with the final subdivision map which stipulates that a Fire Safe Plan has been prepared and wildfire mitigation measures shall be implemented. ▪ "No Smoking" signs shall be posted at all trail entrances. ▪ At all trail intersections with the roads that have vehicle access there shall be a knock down bollard or gate with a Knox® padlock, or other approved lock, to allow for the passage of emergency equipment onto the trail. ▪ A 5-foot defensible space ember-resistant zone (Zone 0) shall be maintained around all buildings (including fencing within 5 feet). ▪ A Homeowners Association (HOA), or other acceptable entity, shall be responsible for maintaining all private emergency vehicle access roads and wildfire fuel reduction zone provisions described in Chapter 6 of the FSP. ▪ A HOA, or other acceptable entity, shall be responsible for enforcing compliance with all applicable federal, state and County regulations related to defensible space and vegetation management.	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		▪ Reliable on-going sources of funding shall be established and acceptable to the El Dorado Hills Fire Department prior to the recording of the final map for the project. **WF-3: Emergency Preparedness and Evacuation Preparedness.** The following measures identified in Section 7.4 of the Fire Safe Plan (FSP) shall be implemented. The Homeowner's Association shall be responsible for providing the following information to project occupants in consultation with the El Dorado Hills Fire Department. ▪ CAL FIRE Ready-Set-Go education materials shall be made available to all new residents of the project for their use in preparing for an evacuation. Fire Department and CAL FIRE shall be encouraged to visit the neighborhood annually to discuss this material and answer questions by the homeowners. See Fire Safe Plan Chapter 8 – Appendix J for additional details. ▪ El Dorado County Office of Emergency Services education materials on the "RAVE" program shall be made available to all new residents of the project for use in receiving timely notification information regarding the need to evacuate. See Fire Safe Plan Chapter 8 – Appendix L for additional details. **WF-4: Prohibited Plants.** A landscape plan shall be submitted to the El Dorado Hills Fire Department for review and approval prior to the issuance of building permits. The landscape plan shall include a fire-resistant plant palette consistent with Appendix I of the Fire Safe Plan and shall not include tress and vegetation identified by the El Dorado Hills Fire Department on its current list of Highly Flammable Trees & Vegetation, which are plant communities and their associated plant species known to have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf size, branching patterns), and overall fuel loading, shall be prohibited in the CVSP proposed landscape plan. The proposed landscape plan shall be	

Table ES-1. Summary of Environmental Impacts and Mitigation Measures

Environmental Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
		consistent with the El Dorado Hills Fire Department Defensible Space guidelines, the El Dorado County Weed Abatement guidelines, and the El Dorado County Fire Safe Council. This mitigation measure shall be included as a note on any Final Map, grading plans, and construction plans.	
Impact 3.15-3. The proposed project could exacerbate fire risk associated with the installation and maintenance of project-related infrastructure.	Potentially Significant	**WF-5:** Implement mitigation measures WF-1 and WF-4.	Less Than Significant
Impact 3.15-4. The proposed project could expose future residents or structures to hazards associated with post-fire runoff.	Potentially Significant	**WF-6: Post Fire Activities.** Following any on-site wildfire during project build-out in areas where development may be affected by post-fire risks, a post-fire field assessment shall be conducted by an engineering geologist or civil engineer, in coordination with the El Dorado Hills Fire Department, to identify any areas that may be subject to increased risk of post-fire flooding, landslide or erosion. Any recommendations identified by the geologist to mitigate such risk shall be provided to the County, El Dorado Hills Fire Department, and the County Emergency Operations Center for consideration of the work necessary to allow safe re-entry and/or re-occupation of the affected area.	Less Than Significant
Impact 3.15-5. Implementation of the proposed project could contribute to cumulative impacts on emergency response and evacuation efforts or plans.	Less Than Significant	None required.	Less Than Significant
Impact 3.15-6. Implementation of the proposed project could exacerbate wildfire risk to onsite residents resulting in a cumulative contribution.	Potentially Significant	**WF-7**: Implement mitigation measures WF-1 through WF-4.	Less Than Significant

ES.6 Comments Received in Response to the Notice of Preparation

A Notice of Preparation (NOP) for this Draft EIR was released on November 6, 2020, and the public comment period closed on December 7, 2020. The County held a public scoping meeting on November 19, 2020, to receive verbal comment on the scope of the EIR. The County received 5 letters from public agencies and 17 letters from the public. In October 2021, the applicant requested the project application be placed on hold and, on July 19, 2023, the applicant requested El Dorado County to resume processing the application. Therefore, a second scoping meeting was held on September 26, 2023, to receive verbal comments regarding the project and scope of the EIR, and written comments were accepted until October 12, 2023. One letter from the Latrobe School District and one letter from a member of the public were received during this extended scoping period.

The purpose of the NOP process is to solicit input from public agencies and the public on the scope of the EIR analysis. Opinions on the merits of the project are noted, but are not considered relevant for the purposes of defining the scope of the analysis. The Introduction of each technical section in Chapter 3 provides a brief summary of comments relevant to that particular issue area. All of the NOP comment letters received are included in Appendix A.

A brief overview of the primary concerns raised in the NOP comment letters is included below.

- increase in traffic on local roadways and potential for accidents;
- increase in noise, nighttime lighting, and other nuisances to nearby communities;
- available school capacity of Latrobe School District; and
- adequacy of existing infrastructure to serve the project.

ES.7 Other Considerations

Due to certain aspects of the project, project characteristics, or existing regulatory requirements, the project is not anticipated to have significant impacts on the following resources: agriculture and forestry resources, mineral resources, and hazards/hazardous materials. The following analysis provides an overview that explains why the project would not adversely affect these resources and therefore these resources or topics are not further analyzed in this Draft EIR.

Agriculture and Forest Resources

The California Department of Conservation Important Farmland classifies the project site as Grazing Land with areas of Farmland of Local Importance near the existing drainage features and seasonal wetlands (DOC 2022). The site does not contain any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance which are considered important farmland areas under CEQA. The project site also does not contain any land under a Williamson Act Contract and would not conflict with existing zoning for agricultural use because the site is currently zoned for Research and Development. Lastly, the project site does not support forested areas and is not designated as Timberland Preserve Zone (TPZ) or other forest land according to the County's General Plan and Zoning Ordinance. Therefore, the proposed project would not result in the conversion of farmland to non-agricultural use, affect lands under a Williamson Act contract, or contribute to a loss of forestry resources resulting in no impact, thus this topic is not further addressed in the EIR.

Mineral Resources

The project site is not mapped by the State of California Division of Mines and Geology or the County's General Plan as located within a Mineral Resource Zone. The project site does not contain any mineral resources of known local or statewide economic value. Therefore, the proposed project would have no impact to mineral resources and this topic is not further addressed in the EIR.

Hazards and Hazardous Materials

A Phase I Environmental Site Assessment (Phase I ESA) was prepared for the project site in August 2016 (ENGEO 2016). Based on a review of environmental records, historical sources, and a reconnaissance of the site, it was determined that the project site did not contain any hazards or hazardous materials including any evidence of soil or groundwater impairments. During the scoping period, a concern was brought up regarding soils contaminated with aerially deposited lead (ADL). A Phase II ESA was prepared in July 2021 to investigate the potential presence of ADL as well as elemental mercury within the project site (Youngdahl 2021). Soil samples within areas of proposed development were either non-detect or below residential screening levels for ADL, and elemental mercury was non-detect in samples collected from mine tailings presented on the site.

Construction of the project would involve temporary use of hazardous materials, including fuel for construction equipment, paints, solvents and sealants. Storage, handling, and use of these materials would occur in accordance with standard construction best management practices to minimize the potential for spill or release and ensure that any such spill or release would be controlled on site. It is anticipated that hazardous materials used during long-term operation of the project could include building maintenance and cleaning chemicals, as well as landscaping fertilizers. These materials are commonly used across all types of land uses, and the project is not expected to present any significant risks associated with their use. Accordingly, the proposed project would have no impact regarding hazards or hazardous materials and this topic is not further addressed in the EIR.

ES.8 Areas of Controversy

Section 15123(b)(2) of the CEQA Guidelines requires that areas of controversy known to the lead agency must be stated in the summary prepared as part of the EIR and Section 15123(b)(3) requires that an EIR identify issues to be resolved. Known areas of controversy include concerns raised during the project scoping period, such as increase in traffic on local roadways, increase in students exceeding available capacity of schools, increase in noise, and increase in nighttime lighting.

ES.9 Summary of Alternatives

Pursuant to Section 15126.6, an analysis of alternatives to the proposed project is presented in this EIR to provide the public and decision makers with a range of possible alternatives to consider. The alternatives evaluated in this EIR include:

- **Alternative 1: No Project/No Development Alternative.** This alternative assumes no development would occur, and the site would remain and in its current undeveloped condition.
- **Alternative 2: Zoning Consistent Alternative.** This alternative assumes development would occur consistent with the Research and Development land use designation and zoning included in the County's General Plan for this site.

- **Alternative 3: Reduced Impact Alternative.** This alternative would develop fewer residential units and shift development to other areas within the project site leaving more areas in open space.

The Reduced Impact Alternative (RIA) is analyzed at the project-specific level so that staff and the Planning Commission could recommend, and the Board of Supervisors could approve, the Reduced Impact Alternative instead of the proposed project.

ES.10 Environmentally Superior Alternative

Table ES-2, Comparison of Impacts of the Alternatives, provides a summary of the alternatives impact analysis considered in the EIR and identifies the areas of potential environmental effects per CEQA, and ranks each alternative as better, the same, or worse than the proposed project with respect to each issue area.

Table ES-2. Comparison of Impacts of the Alternatives

Environmental Issue	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Zoning Consistent	Alternative 3: RIA
Aesthetics	SU	NI ▼	SU –	SU –
Air Quality	SU	NI ▼	SU ▲	LTS ▼
Biological Resources	LTS	NI ▼	LTS ▲	LTS –
Cultural and Tribal Cultural Resources	LTS	NI ▼	LTS –	LTS –
Energy	LTS	NI ▼	LTS ▲	LTS ▼
Geology and Soils	LTS	NI ▼	LTS ▲	LTS –
Greenhouse Gas Emissions	SU	NI ▼	LTS ▲	LTS ▼
Hydrology and Water Quality	LTS	NI ▼	LTS ▲	LTS –
Land Use, Population and Housing	LTS	NI ▼	LTS ▼	LTS ▼
Noise	LTS	NI ▼	LTS ▲	LTS ▼
Public Services and Recreation	LTS	NI ▼	LTS ▼	LTS ▼
Transportation	LTS	NI ▼	LTS ▼	LTS ▼
Tribal Cultural Resources	SU	NI ▼	SU –	LTS ▼
Utilities and Service Systems	LTS	NI ▼	LTS –	LTS ▼
Wildfire	LTS	NI ▼	LTS ▲	LTS –

Notes:
▲ Alternative is likely to result in greater impacts to issue when compared to proposed project.
– Alternative is likely to result in similar impacts to issue when compared to proposed project.
▼ Alternative is likely to result in reduced impacts to issue when compared to proposed project.
NI = No impact
LTS = Less-than-significant impact
SU = Significant and unavoidable impact

As indicated in Table ES-2, the No Project/No Development Alternative would result in the least environmental impacts because it would avoid all impacts associated with the proposed project for all resource areas. However,

Section 15126.6(e)(2) of the CEQA Guidelines states that if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Therefore, Alternative 3 is considered the environmentally superior alternative because it would result in reduced impacts to most of the resource areas evaluated including Energy, GHGs, Population and Housing, Noise, Public Services and Recreation, Transportation, and Utilities and Service Systems, and would avoid the significant and unavoidable impacts identified for the proposed project under Air Quality and Tribal Cultural Resources.

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AAQS	ambient air quality standards
AB	Assembly Bill
ACC	Advanced Clean Cars
ACHP	Advisory Council on Historic Preservation
ACOE	Army Corps of Engineers
ACR	American Carbon Registry
ADA	Americans with Disabilities Act
ADL	aerially deposited lead
ADT	average daily traffic
ADU	accessory dwelling unit
ADWF	average dry weather flow
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AMSL	above mean sea level
ANAB	ANSI National Accreditation Board
APE	area of potential effect
APN	Assessor's Parcel Number
ATP	Active Transportation Plan
BAGEPA	Bald and Golden Eagle Protection Act
BAT	Best Available Technology
BCT	Best Conventional Technology
BMP	best management practice
CA MUTCD	California Manual on Uniform Traffic Control Devices
CAAQS	California Ambient Air Quality Standards
CAFE	corporate average fuel
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CAR	Climate Action Reserve
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	chlorofluorocarbon

Acronym/Abbreviation	Definition
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CHRIS	California Historical Resource Information System
CIP	Capital Improvement Plan
CIWMP	Countywide Integrated Waste Management Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	El Dorado County
CPUC	California Public Utilities Commission
CRC	California Residential Code
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CSD	community service district
CUP	conditional use permit
CVRWQCB	Central Valley Regional Water Quality Control Board
CVSP	Creekside Village Specific Plan
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DBH	diameter at breast height
DPM	diesel particulate matter
DPR	Department of Parks and Recreation
DRA	Debris Recycling Acknowledgment
DSOD	Division of Safety of Dams
DU	dwelling unit
du/ac	dwelling units per acre
DWR	California Department of Water Resources
EDCAQMD	El Dorado County Air Quality Management District
EDCSD	El Dorado County Sheriff's Department
EDCTC	El Dorado County Transportation Commission
EDH	El Dorado Hills
EDU	equivalent dwelling unit
EDUHSD	El Dorado Union High School District
EIA	Energy Information Administration
EID	El Dorado Irrigation District
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act

Acronym/Abbreviation	Definition
EMFAC	Emission Factor
ENVA	Environmental Noise and Vibration Assessment
EO	Executive Order
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESA	Environmental Site Assessment
ESCP	Erosion and Sediment Control Plan
EV	electric vehicle
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FGC	Fish and Game Code
FHWA	Federal Highway Administration
FIL	Facility Improvement Letter
FIRM	Flood Insurance Rate Map
FMU	forecasted mitigation unit
FSP	Fire Safe Plan
FTA	Federal Transit Administration
GHG	greenhouse gas
GWP	global warming potential
HAP	hazardous air pollution
HARP 2	Hotspot Analysis Reporting Program Version 2
HCFC	hydrochlorofluorocarbon
HDV	heavy-duty vehicle
HFC	hydrofluorocarbon
HRA	Health Risk Assessment
HVAC	heating, ventilation, and air conditioning
IBC	Important Biological Corridor
IC	Information Center
IPaC	Information for Planning and Consultation
IPCC	Intergovernmental Panel on Climate Change
ISA	Integrated Science Assessment
ITE	Institute of Transportation Engineers
ITS	intelligent transportation system
JADU	junior accessory dwelling unit
JPA	Joint Powers Authority
kWh	kilowatt hour
L_{dn}	day–night sound level
LDV	light-duty vehicle
L_{eq}	equivalent sound level
LEV	low-emission vehicle
LID	Low Impact Development
LOS	level of service

Acronym/Abbreviation	Definition
LSD	Latrobe School District
MBTA	Migratory Bird Treaty Act
MCAB	Mountain Counties Air Basin
MDV	medium-duty vehicle
mgd	million gallons per day
MMRP	Mitigation Monitoring and Reporting Program
MMT	million metric tons
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MRF	Material Recovery Facilities
MT	metric ton
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NEHRP	National Earthquake Hazards Reduction Program
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOP	Notice of Preparation
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRF	National Response Framework
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWPR	Navigable Waters Protection Rule
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OPR	Office of Planning and Research
ORMP	Oak Resources Management Plan
OSHA	Occupational Safety and Health Administration
OWTS	on-site wastewater treatment system
PCA	Priority Conservation Area
PCAPCD	Placer County Air Pollution Control District
PCSWQ	Post Construction Storm Water Quality
PG&E	Pacific Gas & Electric Company
PM_{10}	coarse particulate matter

Acronym/Abbreviation	Definition
$PM_{2.5}$	fine particulate matter
PMT	person miles of travel
PPH	persons per household
PPV	peak particle velocity
PRC	Public Resources Code
PSAP	Public Safety Answering Point
PV	photovoltaic
QSP	qualified SWPPP practitioner
R&D	Research and Development
RACM	Reasonably Available Control Measure
RAST	Risk Assessment Standalone Tool
RFS	Renewable Fuel Standard
RHNA	Regional Housing Needs Assessment
RIA	Reduced Impact Alternative
RIRO	right-in/right-out
RMS	root mean square
ROG	reactive organic gas
RPS	Renewables Portfolio Standard
RPTA	Regional Transportation Planning Agency
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SACOG	Sacramento Area Council of Governments
SB	Senate Bill
SCS	Sustainable Communities Strategy
SEMS	Standardized Emergency Management System
SF	square feet
SF_6	sulfur hexafluoride
SFNA	Sacramento Federal Nonattainment Area
SFONA	Sacramento Federal Ozone Nonattainment Area
SHMA	Seismic Hazards Mapping Act
SLCP	short-lived climate pollutant
SLM	sound level meter
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SPL	Sound Pressure Level
SR	State Route
SSBMI	Shingle Springs Band of Miwok Indians
SSMP	sewer system management plan
SWITRS	Statewide Integrated Traffic Records System
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant

Acronym/Abbreviation	Definition
TAZ	traffic analysis zone
TCR	Tribal Cultural Resource
TDM	travel demand model
TEK	Traditional Ecological Knowledge
THPO	Tribal Historic Preservation Officer
THRIS	Tribal Historic Information System
TIF	Transportation Impact Fee
TIS	Transportation Impact Study
TMDL	total maximum daily load
TPZ	Timberland Preserve Zone
TRPA	Tahoe Regional Planning Agency
TSM	transportation system management
UAIC	United Auburn Indian Community
UFC	Uniform Fire Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VdB	vibration velocity decibel
VMT	vehicle miles traveled
VOC	volatile organic compound
WPCP	Water Pollution Control Plan
WSA	Water Supply Assessment
WTP	water treatment plant
WWTP	Wastewater, including Wastewater Treatment Plants
YSAQMD	Yolo-Solano Air Quality Management District
ZEV	zero-emissions vehicle

Draft Environmental Impact Report

Creekside Village Specific Plan

JUNE 2025

Prepared for:

COUNTY OF EL DORADO
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1 Introduction and Scope of the EIR

1.1 Purpose and Intended Use of this EIR

The County of El Dorado (County) as the lead agency has prepared this Draft Environmental Impact Report (Draft EIR) to inform the general public, the local community, responsible agencies, trustee agencies, and other interested public agencies, including local Native American tribes, and the County's decision-making bodies (County Planning Commission and/or Board of Supervisors) regarding the potential significant environmental effects resulting from implementation of the Creekside Village Specific Plan project (proposed project or CVSP), as well as feasible measures to mitigate those significant effects and alternatives to the proposed project. This Draft EIR was prepared in compliance with the California Environmental Quality Act (CEQA) (California Public Resources Code [PRC], Section 21000 et seq.), and the CEQA Guidelines (14 CCR 15000 et seq.).

As described in CEQA Guidelines Section 15121(a), an EIR is an informational document that assesses potential environmental impacts of a proposed project, as well as identifies feasible mitigation measures and alternatives to a proposed project that could reduce or avoid adverse environmental impacts. As the CEQA lead agency for this project, the County is required to consider the information in the EIR along with any other available information in deciding whether to approve the requested project entitlements. The basic requirements for an EIR include providing information that establishes the environmental setting (or project baseline), and identifying environmental impacts, mitigation measures, project alternatives, growth inducing impacts, and cumulative impacts. In a practical sense, an EIR functions as a method of fact-finding, allowing an applicant, the public, other public agencies, and agency staff an opportunity to collectively review and evaluate baseline conditions and project impacts through a process of full disclosure. Additionally, this EIR provides the primary source of environmental information for the lead agency to consider when exercising any permitting or approval authority directly related to implementation of this project. It is not the intent of an EIR to recommend either approval or denial of a project.

1.2 Project Background and Overview

The project site is located within an unincorporated area of the County in the community of El Dorado Hills, located in the western foothills. The project site is located on the west side of Latrobe Road, south of Investment Boulevard, directly adjacent to the southern boundary of the El Dorado Hills Business Park, with access to U.S. Highway 50 approximately 3 miles to the north. The project site consists of Assessor's Parcel Number (APN) 117-010-032 and a portion of APN 117-720-012. The project site was previously part of the El Dorado Hills Business Park Association and in 2018 the site was approved to be de-annexed from the El Dorado Hills Business Park Owners Association. The site is undeveloped and has historically been used for grazing. The parcel is currently zoned by the County for Research & Development with a Design Review overlay. The project site is also designated in the 2004 El Dorado County General Plan for Research & Development.

The project applicant proposes to develop approximately 208 acres of land with a mix of residential, parks, neighborhood commercial, and open space land uses. There would be an option for converting the neighborhood commercial component to park uses if not adopted as part of the CVSP and an option to develop a mix of age-restricted (55 years of age and older) residential units and conventional homes. The County is processing the

application for the CVSP and associated approvals including a General Plan amendment, rezone, development agreement, and tentative maps which must be approved before development can occur.

1.3 EIR Process

Notice of Preparation

In accordance with CEQA Guidelines Section 15082, a Notice of Preparation (NOP) was circulated for public and agency review from November 6, 2020, to December 7, 2020 (included as Appendix A). The purpose of the NOP is to provide notification that an EIR for the proposed project is being prepared and to solicit guidance on the scope and content of the document.

The County received a total of 22 written comment letters during the initial scoping period from the general public as well as comment letters from local, state, and federal agencies. Verbal comments were also received during a scoping meeting held on November 19, 2020. However, the project application was placed on hold from October 2021 through July 2023 and minor updates were made to the project description. Therefore, the County held a second scoping meeting on September 26, 2023, and additional comments on the revised project were accepted through October 12, 2023. Two additional comment letters were received as well as several verbal comments at the second scoping meeting held on September 26, 2023. A summary of the comments received on the NOP and at the scoping meetings is included in the Executive Summary, as well as in the introduction of each technical section in Chapter 3. The NOP and all letters and scoping comments received in response to the NOP and the two scoping meetings are included in Appendix A.

Draft EIR and Public Review

This Draft EIR is circulated for public review and comment for a period of 60 days. The beginning and end dates of the comment period are identified in the Notice of Availability for this Draft EIR. Written comments may be sent to:

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2850 Fairlane Court
Placerville, California 95667
Email: creeksidevillagesp@edcgov.us

The public can review the Draft EIR and supporting documents at 2850 Fairlane Court, Placerville, CA 95667 or on the County's website at: https://www.eldoradocounty.ca.gov/Land-Use/Planning-Services

Final EIR and EIR Certification

Upon completion of the Draft EIR public review period, a Final EIR will be prepared that will include written comments on the Draft EIR received during the public review period and the County's responses to those comments. The Final EIR will also include the Mitigation Monitoring and Reporting Program (MMRP) prepared in accordance with Section 21081.6 of the PRC. The Final EIR will address any revisions to the Draft EIR made in response to agency or public comments. The Draft EIR and Final EIR together will comprise the EIR for the proposed project. Before the County can approve the project, it must first certify that the EIR has been completed in compliance with CEQA, that the County Planning Commission and Board of Supervisors has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the County. The

Board of Supervisors is also required to adopt Findings of Fact and a Statement of Overriding Considerations (for any significant and unavoidable impacts) explaining the decision to balance the benefits of the project against unavoidable environmental impacts if it approves the proposed project (see also PRC Section 21081).

Type of EIR and EIR Adequacy

This EIR is a "Project EIR," pursuant to CEQA Guidelines Section 15161. A Project EIR examines the environmental impacts of a specific project. This type of EIR focuses on the changes in the environment that would result from implementation of the project, including construction and operation.

The level of detail contained throughout this EIR is consistent with Section 15151 of the CEQA Guidelines, which states the following:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of the environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

1.4 Scope of the Draft EIR

Based on the scope of the proposed project as described in the NOP and comments received from the public and public agencies (see Appendix A), the following issues were determined to be potentially significant and are therefore addressed in Chapter 3, Environmental Analysis, of this document:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology, Soils and Paleontology
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Land Use and Planning/Population and Housing
- Noise
- Public Services and Recreation
- Transportation
- Tribal Cultural Resources
- Public Utilities
- Wildfire

Other environmental issue areas: agricultural resources and forest land, mineral resources, and hazards/ hazardous materials are not evaluated in Chapter 3. As described in the Executive Summary, the proposed project would not adversely affect these issue areas.

This EIR will also address the cumulative environmental effects of the project in combination with other closely related past, present, and reasonably foreseeable probable future projects in the area. This will serve to satisfy CEQA's requirements that a project's potential cumulative impacts be analyzed in an EIR. It should be noted that the intent of CEQA is not to evaluate the impacts of the cumulative projects on the project, but instead to evaluate the potential for the project to have a considerable contribution to a cumulative impact when evaluated in conjunction with other cumulative projects.

In compliance with CEQA Guidelines Section 15126.6, this EIR also describes and evaluates the comparative merits of a reasonable range of alternatives to the proposed project, including the required No Project Alternative, and also identifies the environmentally superior alternative. This EIR also describes alternatives that were considered but rejected by the lead agency as infeasible and explains the reasons why.

1.5 Organization of the Draft EIR

Executive Summary— Summarizes the elements of the project and the environmental impacts that could result from implementation of the proposed project and provides a table which lists impacts, describes proposed mitigation measures, and indicates the level of significance of impacts both before and after mitigation.

Chapter 1, Introduction and Scope of the EIR— Provides an introduction and overview of the EIR process and describes the intended use of the EIR and the review process.

Chapter 2, Project Description— Provides a detailed description of the proposed project, including its location, background information, project history, project objectives, and technical characteristics.

Chapter 3, Environmental Analysis— Describes the baseline environmental setting and provides an assessment of potential project impacts for each technical issue area presented.

Chapter 4, Other CEQA Considerations— Provides information required by CEQA regarding impacts that would result from the proposed project, including a summary of cumulative impacts, secondary impacts including potential impacts resulting from growth inducement, and significant irreversible changes to the environment.

Chapter 5, Alternatives— Describes and compares the project alternatives to the proposed project.

Chapter 6, List of Preparers— Lists report authors who provided technical assistance in the preparation and review of the EIR.

Appendices— Includes various documents and data that support the analysis presented in the Draft EIR.

2 Project Description

2.0 Introduction

The Creekside Village Specific Plan (proposed project or CVSP) consists of a Specific Plan application with the County of El Dorado (County) to develop approximately 208 acres of land with a mix of residential, parks, neighborhood commercial, and open space land uses. There would be an option for converting the neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. In addition, there is a second option to develop up to 768 age-restricted (55 years of age and older – Active Adult option) residential units and 150 conventional homes. Details regarding both options are provided below. The County is processing the application for the CVSP and associated approvals including a General Plan amendment, rezone, and tentative maps which must be approved before development can occur.

2.1 Project Location

The proposed project site (project site or plan area) is located within an unincorporated area of the county in the community of El Dorado Hills located in the western foothills, approximately 25 miles east of downtown Sacramento and 18 miles west of the City of Placerville. The project site is located on the west side of Latrobe Road, south of Investment Boulevard, directly adjacent to the southern boundary of the El Dorado Hills Business Park, as shown on Figure 2-1, Project Location. Access to U.S. Highway 50 is approximately 3 miles to the north. The project site consists of Assessor's Parcel Number (APN) 117-010-032 and a portion of APN 117-720-012. The project site was previously part of the private El Dorado Hills Business Park Association and in 2018 the site was approved to be de-annexed from the El Dorado Hills Business Park Owners Association.

2.2 Existing Project Site Conditions

The project site consists of undeveloped rolling annual grasslands typical of the topography of the western foothill region. The site has historically been used for grazing. Due to the rolling topography, the elevation of the site ranges from 470 feet above mean sea level along the western boundary of the site to a high of 640 feet above mean sea level in the southeast corner. There are no trees on the site except for a small grove of seven blue oak trees located in the southeast corner situated on a small hilltop. There are three seasonal drainages that cross the project site and merge at the western boundary to form one intermittent drainage that drains offsite. Seasonal wetlands and a small vernal pool are also present on the site.

The site does not include any existing water, sewer, storm drain, natural gas, or electric utilities infrastructure.

Existing Zoning and General Plan Land Use Designations

The project site is designated in the 2004 El Dorado County General Plan for Research & Development. Current County zoning is also Research & Development including a Design Review overlay.

Adjacent Land Uses

Adjacent land uses include the existing El Dorado Hills Business Park and the John Adams Academy Charter school to the north; the Blackstone residential community within the Valley View Specific Plan to the east; undeveloped

land designated for rural residential, a vacant site owned by the El Dorado Union High School District, and industrial uses to the south; and undeveloped land designated for residential, open space and park uses within the Carson Creek Specific Plan to the west, as shown on Figure 2-2. In addition, overhead electrical transmission lines are present along the east side of Latrobe Road, adjacent to the project boundary.

Existing Roadways

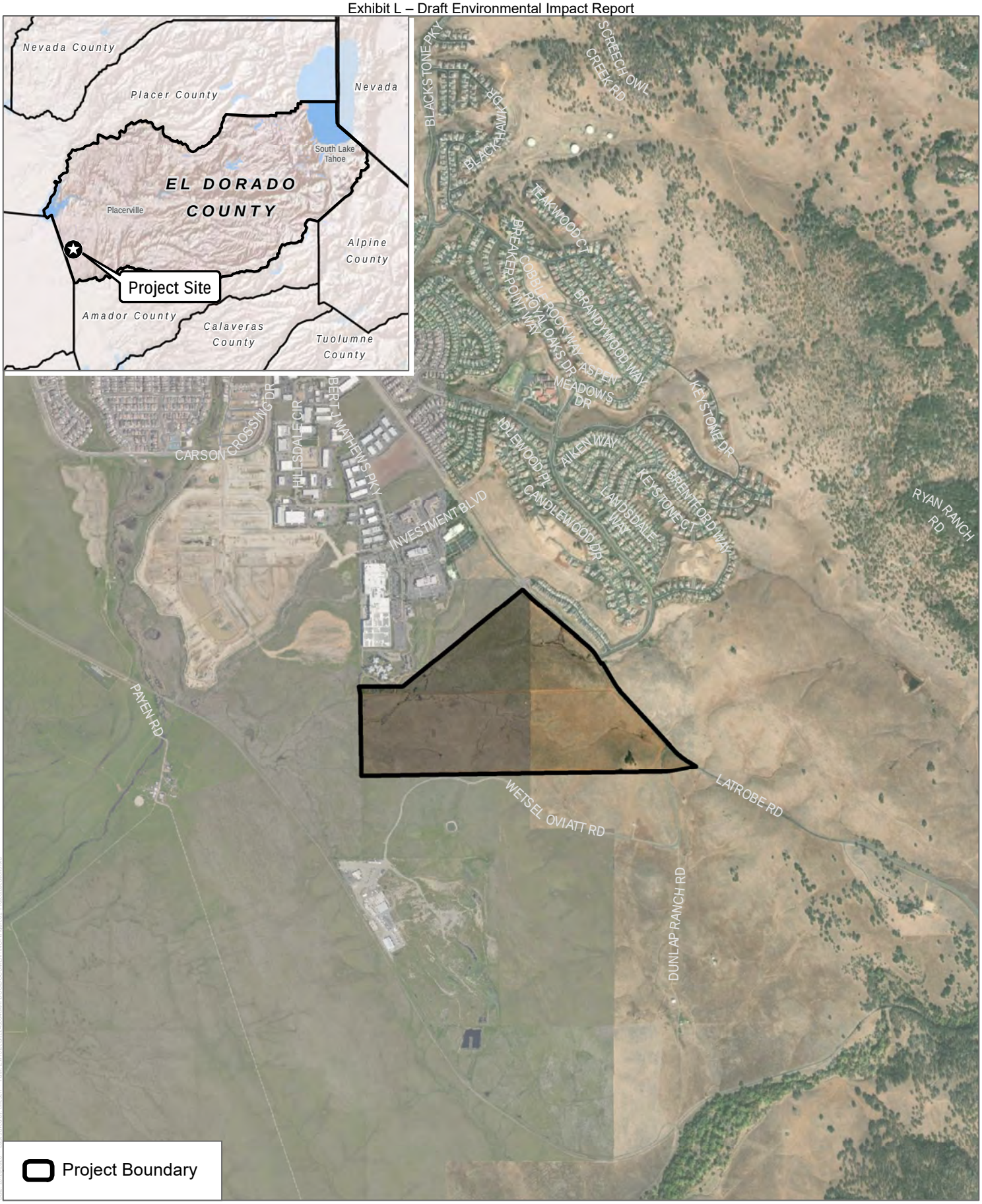
Public roadways nearest to the project site include Latrobe Road to the east and Wetsel-Oviatt Road to the south. There is an existing easement to the north that would allow a roadway connection to the El Dorado Hills Business Park via Robert J. Mathew Parkway as an option for emergency vehicle access and pedestrian or bicycle access. No roadways exist adjacent to the western border of the project site but a future road, part of the Carson Creek Specific Plan, is proposed along the western boundary of the project site that would connect to the Royal Oaks Drive extension that would bisect the project site. There are no existing public or paved roads within the project site.

Public Services and Utilities

The El Dorado County Sheriff's Office currently serves the project site. The El Dorado Hills Fire Department, Station 87 located in the El Dorado Hills Business Park, provides fire protection to the site. The project site would be served by the Latrobe School District and the El Dorado Union High School District. The project site is not within the boundary of the El Dorado Hills Community Services District but is within the sphere of influence of the El Dorado Hills Community Services District. Annexation to the El Dorado Hills Community Services District is analyzed in this document.

Water supply and wastewater conveyance and treatment would be provided by the El Dorado Irrigation District (EID). Natural gas and electricity would be provided by Pacific Gas & Electric (PG&E).

The closest school to the project site is John Adams Academy, a K-12 public charter school located just to the north and the nearest public or public-use airport is Cameron Airpark located approximately 5.6 miles northeast of the project site. Latrobe Elementary School is located approximately 6 miles south of the project site.



SOURCE: ESRI 2020

FIGURE 2-1

Project Location

Creekside Village Specific Plan EIR

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SOURCE: CVSP 2023

FIGURE 2-2
Surrounding Land Uses

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2.3 Proposed Project Description

Project Objectives

California Environmental Quality Act (CEQA) Guidelines Section 15124(b) requires that the Project Description include a statement of the objectives of the project. The objectives should describe the purpose of the project and are intended to assist the lead agency in developing a reasonable range of alternatives for consideration in the EIR.

The proposed project includes the following objectives:

1. Create a residential community with a variety of new single-family homes designed for a range of buyers of all ages in a desirable location with access to community amenities, employment opportunities, schools, and entertainment.
2. Provide multi-modal connectivity and trails between the adjacent residential communities to the east and west and allow for development of land uses more compatible with the surrounding residential communities.
3. Include a range of housing types that will allow current and future El Dorado Hills employers to attract and retain employees.
4. Provide housing near existing retail business and services within the El Dorado Hills Business Park that will generate new customers to support existing retailers and businesses while keeping tax revenues in El Dorado County.
5. Create a community with a linked system of complete streets, bike paths, sidewalks and trails that promotes walkability and neighbor interaction.
6. Create a pedestrian network that connects residents to employment and commercial centers, schools, and recreational facilities inside and outside the new community.
7. Create a community identity by preserving existing natural features (i.e., oak trees and drainage elements) and integrating those features into the development in a way that enhances the aesthetic and natural character of the community.
8. Provide parks, open space, and trails as a focal point for the proposed community with a full range of active and passive recreational uses.

Allow flexibility in the development and implementation of the Specific Plan to adjust to current and future conditions and market demands, including potential reductions in density to allow for a variety of housing types and potential inclusion of age-restricted housing to reduce student generation if the elementary and middle school district lacks capacity to accommodate students and reduce traffic generated by the project.

Proposed Land Uses

The CVSP provides for the development of up to 918 dwelling units, including 668 dwelling units ranging from 4 to 8 dwelling units per acre (du/ac) on approximately 116 acres and 250 dwelling units on 21 acres with a density of 5-12 du/ac. There would be an option for converting the 1.8 acres of neighborhood commercial to park uses if the 1.8 acres of neighborhood commercial is not adopted as part of the Specific Plan as well as an option to develop up to 768 age-restricted units leaving the remaining 150 units developed as conventional homes. The allowable densities or maximum number of units and park acreage would not change under this option, only the type of residential unit. The remainder of the project site is proposed to be parks, open space, and roadway infrastructure. Figure 2-3 illustrates proposed land uses within the project site and Table 2-1 shows a breakdown of each land use, along with the applicable zone. Each land use designation is described in more detail, below.

Table 2-1. Land Use Summary Table

Land Use	Land Use Designation	Acres	Approximate Density (du/acre)	Approximate Dwelling Units
Residential				
SF Low Density	CV-SFL	115.8	4-8	668
SF Medium Density Planned Development	CV-SFM-PD	20.8	5-12	250
Subtotal		*136.6*		*918*
Commercial				
Neighborhood Commercial	CV-NC	1.8		
Public Facilities - Parks				
Village Park	CV-P	7.0		
Neighborhood Park	CV-P	2.2		
Neighborhood Park	CV-P	4.4		
Subtotal		*13.6*		
No Commercial Option				
Neighborhood Commercial	NA	0		
Village Park	CV-P	8.8		
Subtotal (parks)		*15.4*		
Open Space				
Open Space Preserve	CV-OS-1	9.1		
Open Space Buffer	CV-OS-2	35.7		
Subtotal		*44.8*		
Roads				
Project Roadways (Right-of-Way)		11.1		
Total		**207.9**		**918**

Source: CVSP 2024.

Residential

The residential component of the proposed project would comprise approximately 137 acres. A maximum of 918 residences could be built.[1] The tentative map proposes 668 residences of single-family low density residential, and two parcels designated for development of 250 medium-density residential units would occur at a future date as part of a Planned Development. Based on the County's current average of 2.52 persons per household (PPH), the project would include a total of 2,314 new residents at buildout (United States Census Bureau).

[1] The project does not include the construction of accessory dwelling units (ADU) or junior accessory dwelling units (JADU) and is not designed to facilitate or encourage the addition of ADUs or JADUs. The County's Zoning Ordinance and state law allow the addition of an ADU and/or JADU on lots zoned for single-family residential provided that the proposed ADU or JADU complies with objective criteria established in County Code and state law. Whether a future homeowner may seek to add an ADU or JADU at some point in the future is uncertain and not required to be evaluated as part of this EIR.

SOURCE: CVSP 2023

FIGURE 2-3
Proposed Land Uses
Creekside Village Specific Plan EIR

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The residential land use designations are defined as:

Single Family Low Density Residential (CV-SFL)

The CV-SFL residential land use designation allows for a variety of compact detached housing types in addition to traditional single-family neighborhoods. A total of 668 single family units with a density of 4 to 8 du/ac is proposed. Single family dwellings are permitted in the CV-SFL, as well as neighborhood and community serving amenities, including parks, community clubhouses, and emergency services facilities.

Single Family Medium Density Residential (CV-SFM-PD)

The CV-SFM-PD residential land use designation allows, but is not limited to, detached or attached single family dwellings and two and three multi-family dwellings. The CV-SFM-PD density range is from 5 to 12 dwelling units per gross acre and includes a target dwelling unit count of 250. Neighborhood features, such as parks and public facilities may also be located within CV-SFM-PD designated areas. All CV-SFM-PD parcels include the Planned Development Combining District (PD) designation and are subject to the Planned Development policies described in the El Dorado County General Plan and Zoning Ordinance, except as modified in the CVSP (see CVSP Appendix A).

Active Adult Option

In light of concerns expressed by the Latrobe School District regarding the limited capacity for future expansion at its two elementary school campuses and community concerns about existing traffic congestion on Latrobe Road, the project includes the option (at the developer's discretion) to reduce the number of students generated and daily vehicle trip generation with the construction of age-restricted homes (55 years of age and older) consistent with California Civil Code Section 51.3. Based on current capacity projections from Latrobe School District, it is anticipated that students from up to approximately 150 conventional homes could be accommodated. Therefore, for purposes of environmental review, the Active Adult option assumes buildout with up to 150 conventional homes and the remainder of the homes (up to 768 units) as age-restricted consistent with state law. Assuming 2.52 residents per unit for 150 conventional units (the same as the proposed project) and a 40% reduction per unit for the remaining 768 units,[2] the Active Adult option would have a total of approximately 1,540 new residents.

If the Active Adult option is implemented, the land use plan would remain substantially the same; however, the number of persons per household would be reduced given the residency restrictions in an age-restricted community (1,540 new residents as compared to 2,314 new residents without the option). Additionally, age-restricted developments can require slightly larger lots to accommodate all single-story homes. The CVSP thus preserves flexibility and allows a final map to be approved in substantial conformance with the tentative map if minor lot adjustments are made provided that any increase or decrease in the number of lots within plan area phases is 15% or less, revisions do not substantially alter the roadway network within the plan area, and the total dwelling units for the project would not exceed 918 dwelling units under this option. The Active Adult option, if implemented, would have the ability to create gated residential villages and private roads and parks similar to other nearby developments (e.g., Heritage Park Community within the Carson Creek Specific Plan).

Under state law, an approved housing project may be constructed as an age-restricted development consistent with Civil Code Section 51.3. Government Code Section 65008 probits a local agency from denying a project or imposing "different requirements" than the requirements "imposed on developments generally" based on the age of the

[2] Based on information documenting that age-restricted units generate approximately 40% less demand for utilities and services due to fewer persons per household. See Sections 3.11, Public Services, 3.14, Utilities and Service Systems for more details.

occupants of a residential development. As protected under state law, age-restricted residential units are thus not uniquely analyzed or conditioned and future County approval is not required to restrict an approved residential unit to individuals 55 years and older. Nonetheless, the Active Adult option is analyzed in the Draft EIR to evaluate and disclose how certain impacts from age-restricted homes may differ than those from conventional homes, which primarily results from a reduction in future residents and daily vehicle trips made by those future residents.

The CVSP anticipates that the centrally located neighborhood park could include a private community center or private clubhouse, which could include a swimming pool, fitness center, courts, and other private recreation areas for residents. These private facilities would likely be similar to the private facilities within the nearby Heritage and Blackstone communities. The CVSP allows for the private community center or private clubhouse with the proposed project or Active Adult option.

Commercial

Neighborhood Commercial (CV-NC)

The CV-NC land use designation is included in the CVSP to provide convenient retail and service uses for future residents of the project and adjacent neighborhoods. A 1.8-acre neighborhood commercial site at the intersection of Latrobe Road and Royal Oaks Drive is proposed for potential uses such as convenience stores, professional offices, and coffee shops. The maximum floor area ratio (FAR) of 0.35 is allowed by the CVSP; however, the neighborhood commercial site is proposing a maximum of 5,400 square feet of building area.

Parks and Recreation

The proposed project includes the integration of active and passive recreational opportunities throughout the project site. The proposed project would designate approximately 13.6 acres in three parks, as shown on Figure 2-3 and in Table 2-1 and further described below. Parks would allow for private community centers or clubhouse uses that could include private pools, gyms, playgrounds, and courts as well as associated accessory structures. If the 1.8 acres of neighborhood commercial is not adopted as part of the CVSP, the 1.8 acres would be added to the village park and the overall park acreage would increase to 15.4 acres. There would be no change in the amount of park acreage under the Active Adult option.

Parks (CV-P)

The Parks land use designation provides for active and passive recreational opportunities in the plan area. Approximately one village and two neighborhood parks are located throughout the plan area for a total of 13.6-acres but could be up to 15.4 acres, as described above.

Village Park

The CVSP provides one village park of 7.0-acres that is centrally located adjacent to Latrobe Road on the northside of the main project access road. The size of this park could increase to 8.8 acres if the neighborhood commercial is not adopted as part of the CVSP. This park would provide both active and passive park amenities including tot lots, play equipment and picnic shelters.

Neighborhood Parks

The CVSP provides two neighborhood parks, a 2.2-acre park located in the southeast corner of the project site and 4.4-acre park located in the south-central portion of the project site. The neighborhood parks would provide both active and passive park amenities. The 4.4-acre neighborhood park could include a private clubhouse and/or fitness center.

Open Space

Sensitive species habitat including the on-site drainages and seasonal wetlands would be preserved in open space. The proposed project would designate approximately 44.8 acres for open space preserve and open space buffer, as shown on Figure 2-3 and in Table 2-1 and further described below.

Open Space Preserve (CV-OS-1)

The Open Space Preserve land use designation is the more restrictive of the two open space designations and includes 9.1 acres. This open space is intended to preserve and protect intermittent drainages, seasonal wetlands, and vernal pools extending from the west to the northeast portion of the project site.

Open Space Buffer (CV-OS-2)

The Open Space Buffer land use designation encompasses 35.7 acres of natural open space areas and hillsides located along the western, northern, and southern borders of the site, as well as along Royal Oaks Drive. The open space buffer designation has fewer use restrictions than the open space preserve designation and allows, in addition to preservation of natural features, passive recreation uses including, but not limited to, walking, hiking, and cycling on paved and unpaved multi-use trails. Paved trails would be a minimum of six feet wide. The project is proposing 6.1 acres of publicly accessible trails along with amenities including informational signs, overlooks, and benches. Areas of passive grass or meadow areas would also be provided. The existing oak trees would be preserved and protected within this open space area.

Circulation

The proposed project would include a coordinated circulation system that provides for efficient vehicular travel, bikeways, pedestrian pathways, and sufficient space for emergency access and evacuation, as shown in Figures 2-4 and 2-5.

Vehicular Circulation

Access to the project site is from Latrobe Road, a regional north/south arterial that provides connections to White Rock Road and U.S. Highway 50 to the north. The primary project access would be from Latrobe Road via an extension of Royal Oaks Drive. This roadway would ultimately connect to the Carson Creek Specific Plan area to the west and was previously analyzed in an addendum to the environmental impact report for the Carson Creek Specific Plan project. A secondary project access to Latrobe Road would be provided between Royal Oaks Drive and Avanti Drive to the north. The secondary access would be restricted to a right-in right-out only access. A third project access is proposed at the southeast corner of the project site along Latrobe Road at Wetsel-Oviatt Road. A fourth project access would connect to the El Dorado Hills Business Park located along the northwestern project boundary via a non-vehicular access used as a pedestrian/bicycle crossing. This fourth access could be used as emergency access, if needed.

The CVSP internal circulation system is based on a system of minor collectors and local residential streets that support low traffic volumes, provide direct access to adjacent properties, and limit through traffic. The project's circulation system promotes connectivity and facilitates pedestrian and bicycle travel throughout the project site.

Bicycle Routes

The CVSP proposes an internal street system that connects to various land uses within the plan area and provides Class I bicycle paths, Class II bicycle lanes, and Class III bicycle routes and connects to proposed trails within the plan area and adjacent regional trail systems.

Sidewalks, Trails and Street Lights

All public streets within the CVSP would include sidewalks of varying width on both sides of the street. Depending on location, sidewalks may be separated but all sidewalks would be a minimum of four feet in width and would be designed to comply with the provisions of the Americans with Disabilities Act (ADA). In addition, within the open space buffer area paved and unpaved multi-use trails, where feasible, would be provided (see above under Open Space buffer). Paved trails would be a minimum of six feet wide, with two feet of vegetation clearing on each side.

Streetlights would be provided at key roadway intersections within the project site.

Public Transit

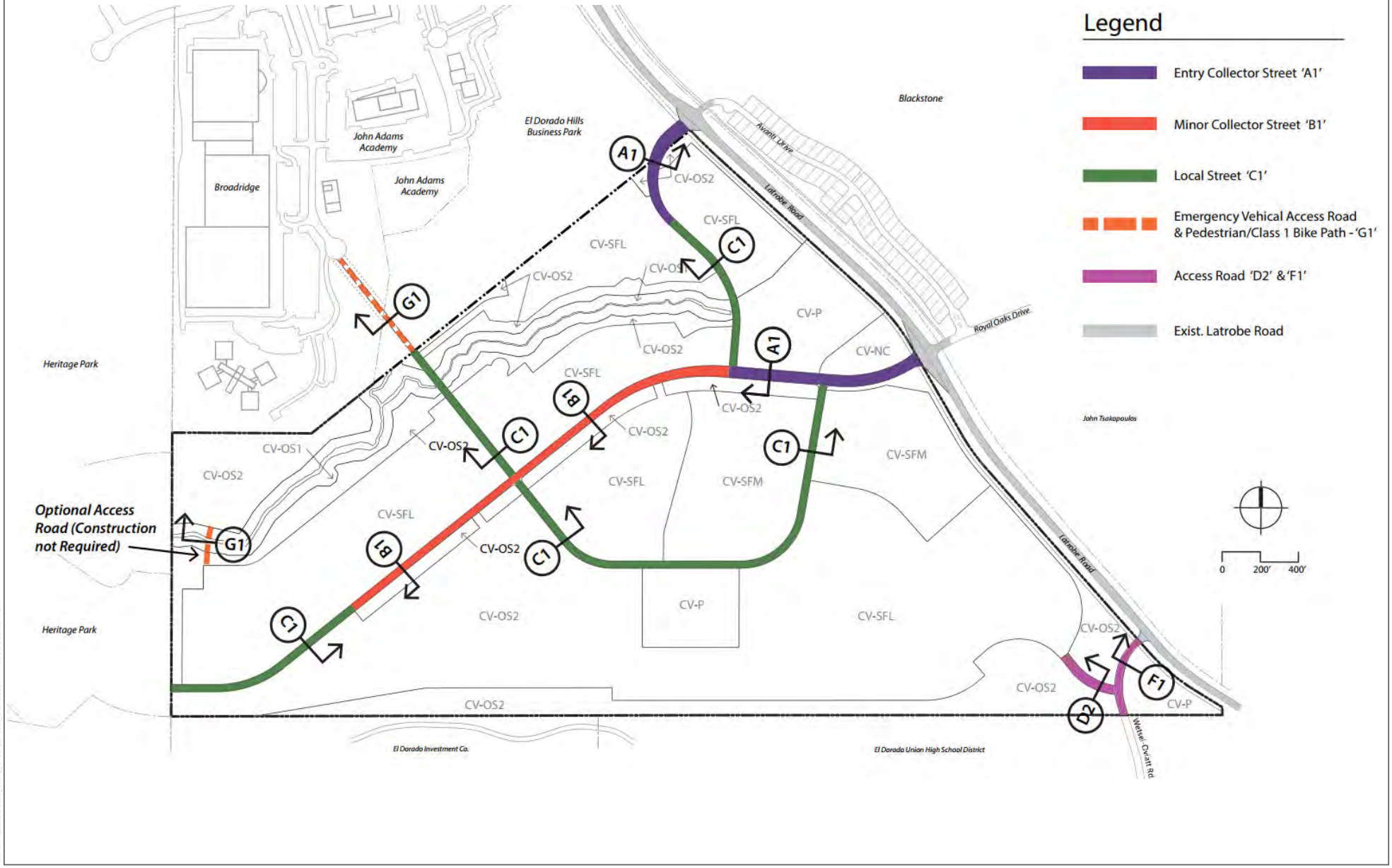
El Dorado Transit provides public transportation to the western portion of the County. Fixed route and dial-a-ride services currently provide access within and to the communities of Placerville, Diamond Springs, Cameron Park, Pollock Pines, El Dorado Hills. El Dorado Transit also provides commuter bus service connecting a park-and-ride lot, located at the intersection of Latrobe Road and White Rock Road to the cities of Sacramento and Folsom, the Iron Point Light Rail Station, and Folsom Lake College.

Public Services and Utilities

Various service providers would provide most of the public services and utilities needed for project development. Utilities necessary to serve the proposed project include water, wastewater and storm drainage, as well as dry utilities such as natural gas, electric, telephone and cable. If natural gas is provided there are existing distribution and transmission facilities north, east and west of the plan area that could be extended. Natural gas facilities would include a network of 8, 6, and 4-inch lines. Public services supporting residents would include park, school, fire protection, police, and solid waste disposal. Figures 2-6, 2-7, and 2-8 show the project's proposed water, wastewater, and storm drainage infrastructure, respectively.

Water

The property is located within the EID boundary and water infrastructure to serve the project would be provided by EID. The proposed water system includes a connection to existing off-site water transmission mains located in Latrobe Road and the construction of on-site distribution mains creating a looped system that provides water to the project site. Water infrastructure would be installed in phases. The initial phase of construction would include connection to the existing 16-inch water main located in Latrobe Road with a 12-inch water main in the on-site extension of Royal Oaks Drive. The on-site water infrastructure would include a series of 8-inch water lines.



SOURCE: CVSP 2023

FIGURE 2-4
Circulation System

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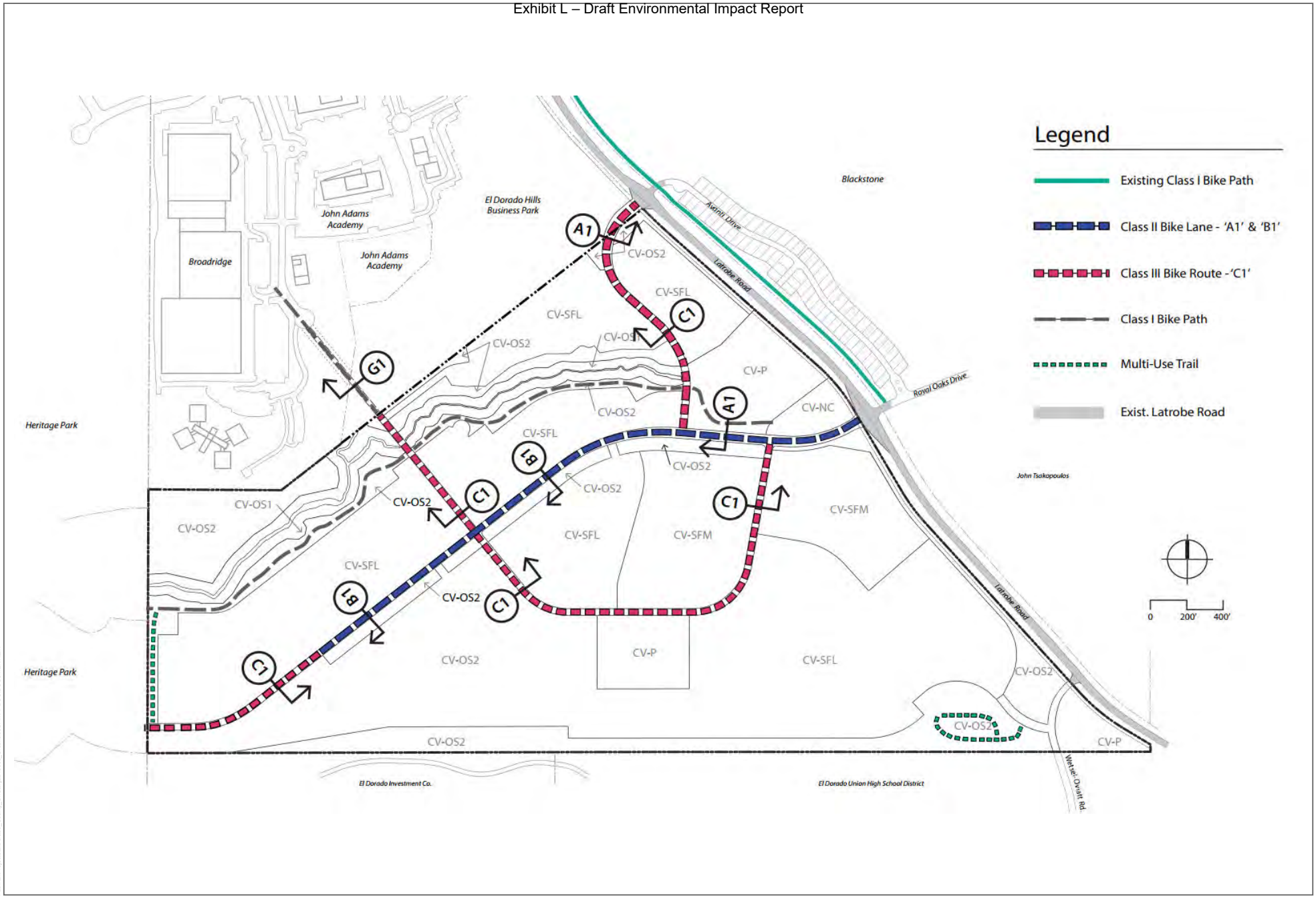

SOURCE: CVSP 2023

FIGURE 2-5
Trails and Bikeways

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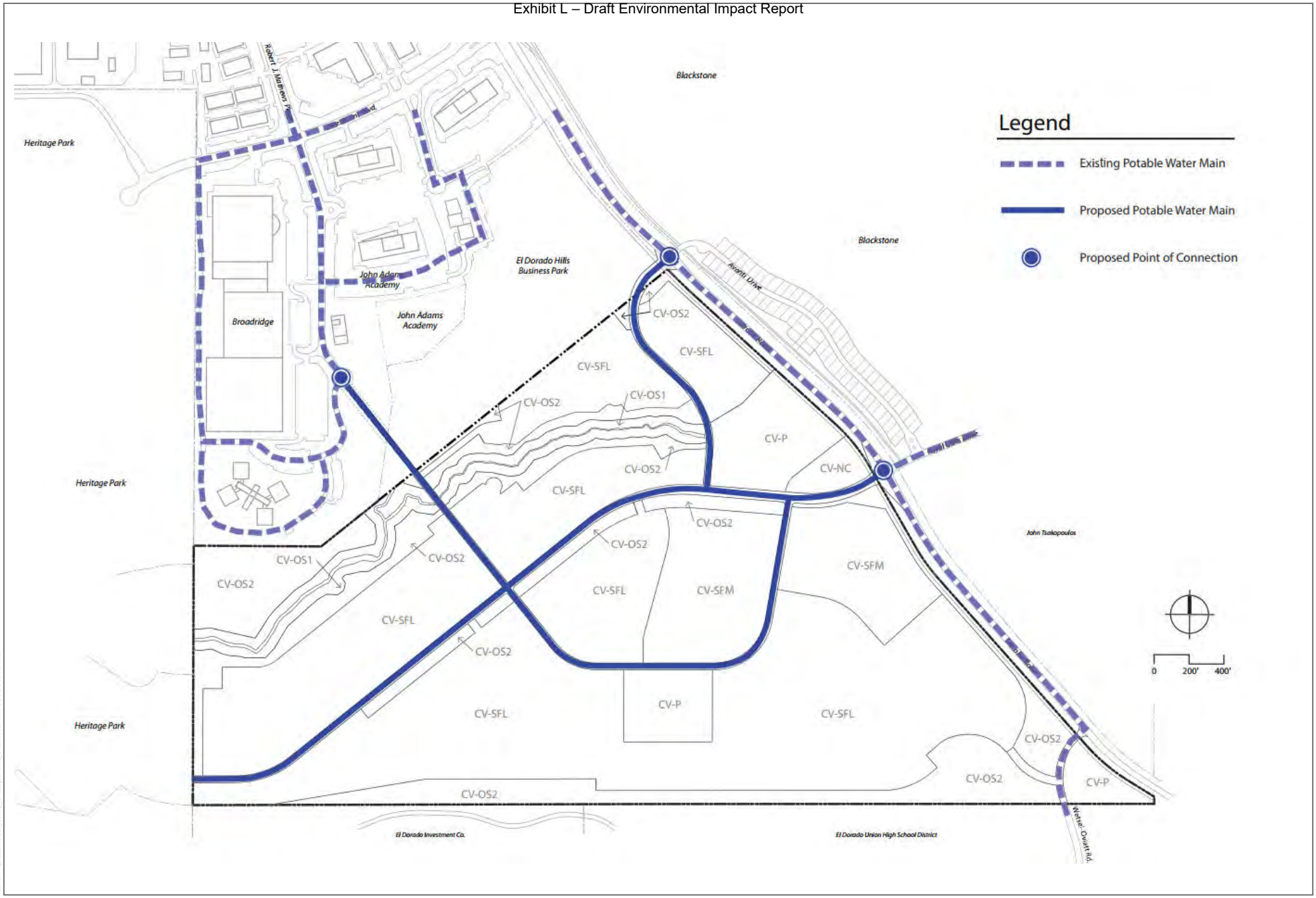

SOURCE: CVSP 2023

FIGURE 2-6
Water Infrastructure

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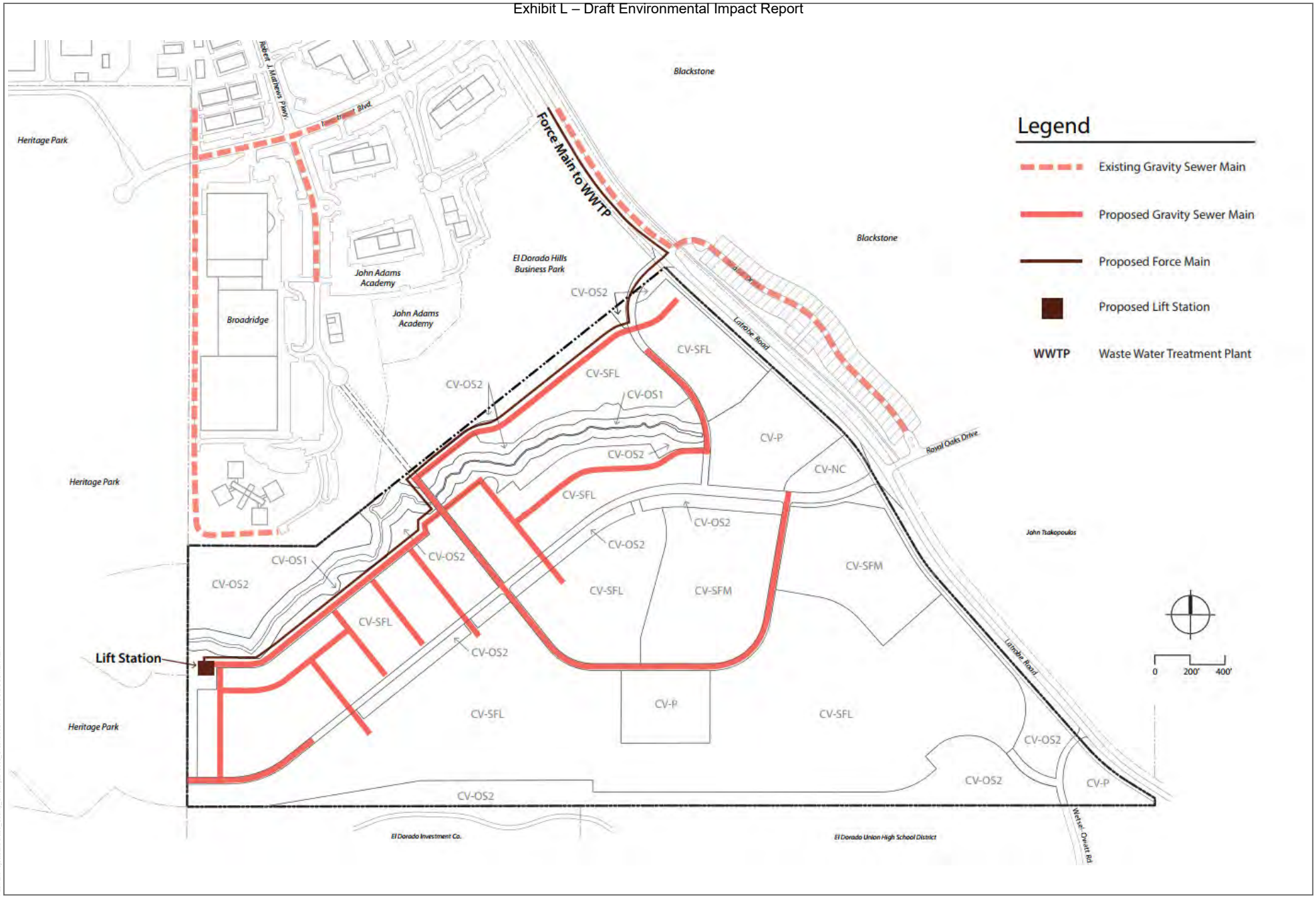

SOURCE: CVSP 2023

FIGURE 2-7
Wastewater Infrastructure
Creekside Village Specific Plan EIR

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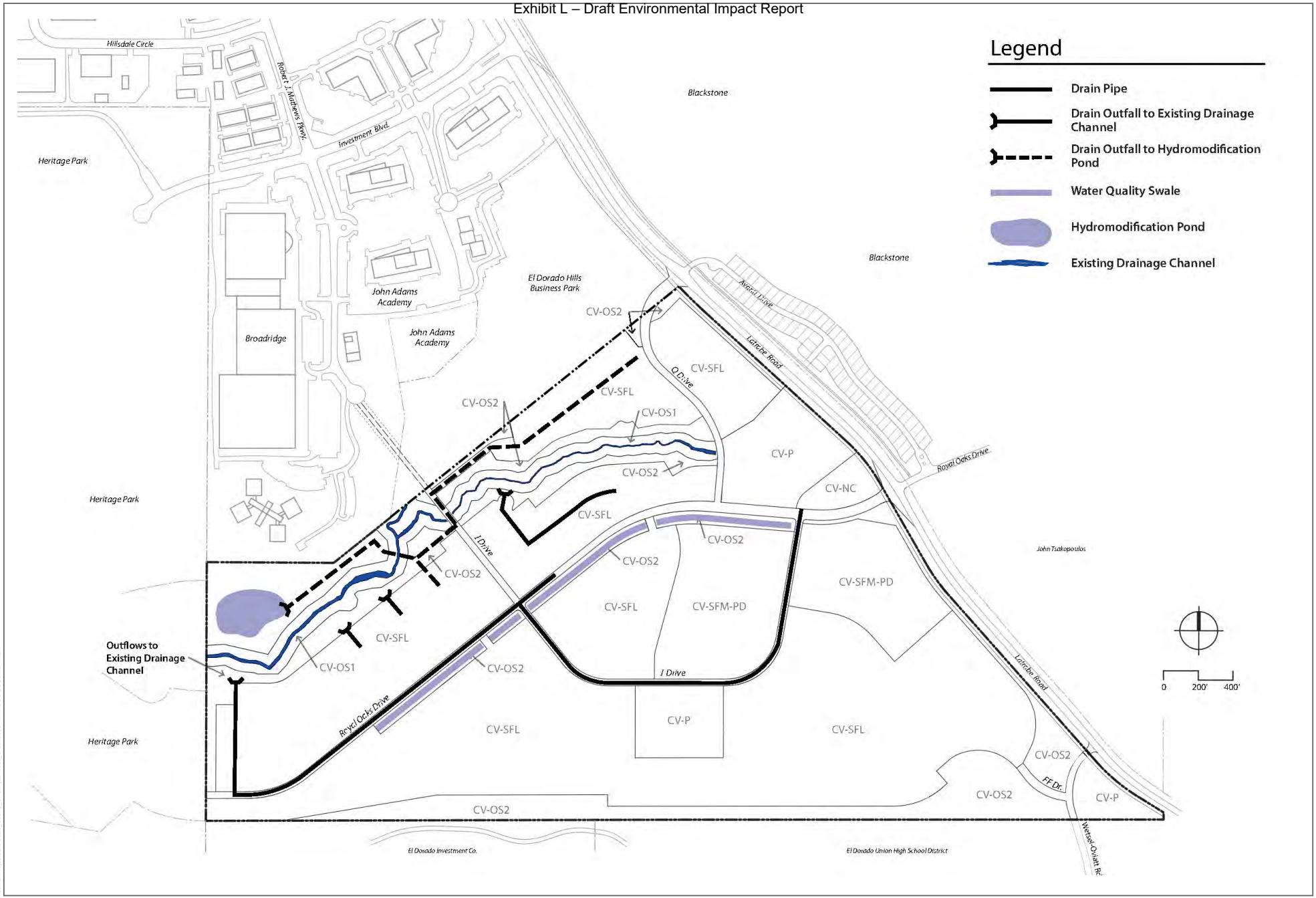

SOURCE: CVSP 2024

FIGURE 2-8
Drainage Infrastructure
Creekside Village Specific Plan EIR

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Wastewater

EID would also provide wastewater conveyance and treatment services to the project site. The proposed wastewater system would consist of gravity sewer mains, localized collector lines, and individual laterals. Due to the topography of the project site, wastewater would generally flow from east to west through gravity mains to a proposed lift station at the western end of the site. The proposed lift station would pump wastewater through a proposed new force main placed in or adjacent to Latrobe Road that would connect directly to the EID Wastewater Treatment Plant. Wastewater would flow to the El Dorado Hills Wastewater Treatment Plant for treatment and disposal.

Drainage

The CVSP's on-site storm drain system includes pipes, culverts, a flow duration control basin, in-stream approaches, and would implement low impact development (LID) practices. Stormwater runoff would be directed, via surface flow and drainage pipes, to the existing drainage channel and a new hydromodification pond. The hydromodification pond is designed to mitigate the flows of a 2-year, 24-hour storm where water is held and released at pre-development flows. To address Post Construction Storm Water Quality (PCSWQ) requirements, swales would be constructed adjacent to the primary roadway that bisects the plan area to treat storm water run-off from impervious surfaces prior to returning to the existing drainage channel via drain outfalls. The system is designed consistent with the County's hydromodification and PCSWQ standards in order to avoid adverse impacts to Carson Creek and its tributaries. Post development stormwater runoff would not exceed pre-development runoff rates to ensure flooding would not occur downstream of the project.

Public Schools

The CVSP would be served by the El Dorado Union High School District (EDUHSD) and the Latrobe School District (LSD). The EDUHSD consists of four high schools, a continuation high school, and an alternative education high school. The LSD includes one elementary school and one middle school.

In addition, John Adams Academy, a K-12 public charter school is located immediately north of the project site in the El Dorado Hills Business Park which could also accommodate students generated by the project.

Police and Fire Protection

The El Dorado County Sheriff's Department would provide law enforcement and protection for the CVSP. The Sheriff's Department has four divisions with a satellite substation located in the El Dorado Hills Town Center. The El Dorado Hills County Water District, also known as the El Dorado Hills Fire Department, would serve the CVSP and has five fire stations that provide fire suppression, emergency medical services, special and technical rescue, hazardous materials mitigation, fire prevention, public education, and disaster preparedness. Fire Station No. 87 located at 4680 Golden Foothill Parkway in the El Dorado Hills Business Park is the closest fire station to the project site. The El Dorado Hills Fire Department also has a shared service agreement with the Rescue Fire Protection District.

The project site is located within a State Responsibility Area, which is recognized by the Department of Forestry and Fire Protection (CAL FIRE) as areas where CAL FIRE is the primary emergency response agency responsible for fire suppression and prevention. The project site has been identified as a Moderate Fire Hazard Severity Zone, with a small area located in the southeast portion of the project site designated as a High Fire Hazard Severity Zone.

Off-site Improvements

Off-site infrastructure improvements would be required to implement the CVSP including connection to dry utilities, off-site water connections, construction of a new force sewer main, and off-site roadway improvements, as shown in Figure 2-9. The water and sewer improvements would be needed to serve the first phase of the project. The CVSP proposes connections to electric and natural gas as well as telephone and cable television within joint trenches (within existing roadway rights-of-way), three points of connection to EID for potable water, and connection to EID for wastewater services via a new force main within the Latrobe Road right-of-way. An approximately 650-foot-long emergency access road would connect the project site to the adjacent business park, located northwest of the site. This access road would be closed to through-traffic with emergency vehicle access gates (approved by EDH Fire) that would be opened to traffic only during an emergency. The road would primarily function as a Class 1 bike path.

The off-site roadway intersection improvements include the following: intersection improvements at Latrobe Road and Town Center Boulevard (extending turn lanes/signal modifications within the existing right-of-way [first phase]); intersection improvements at Latrobe Road and Royal Oaks Drive (these improvements include the signalization of the intersection and re-striping of the roadway to allow for new turning movements with potential minor widening at the intersection within the existing right-of-way/along project frontage [first phase]); intersection improvements at Latrobe Road and Avanti Drive (re-striping of the intersection to allow turning movements in and out of the project site with potential minor widening at the intersection within the existing right-of-way/along the project frontage [when access is provided]). As detailed in the traffic study (Appendix H), these intersection improvements are primarily included to ensure the intersections operate at acceptable levels of service (LOS) consistent with the LOS thresholds established in the County's General Plan. As explained in more detail in Section 3.12, Transportation, LOS is no longer the metric by which traffic impacts are analyzed by CEQA and is discussed in this document only for informational purposes. The County's Capital Improvement Program (CIP) is also designed to ensure acceptable LOS is achieved associated with traffic from new, existing, and anticipated future development. To comply with the County's General Plan policies addressing LOS for additional road segments and intersections discussed in the traffic study and referenced here for informational purposes only, the project applicant would be responsible for payment of required Traffic Impact Fees, which would ensure the project contributes its fair share to maintain adequate LOS on local roadways and intersections as required under the General Plan.

Other Specific Plan Components

The proposed project includes adoption of the CVSP and its appendices. The CVSP addresses a range of issues pertinent to the development of the project site. In addition to the land use designations, allowable uses, circulation system, utilities and services described above, the CVSP includes an Open Space Management Plan and a Wildland Fire Safe Plan. The Wildland Fire Safe Plan would address wildfire risks including adequate emergency access, building materials, vegetation management, and responsibilities of individual homeowners and the Homeowners Association to minimize wildfire risks.

Development Standards

The layout and design of project development would be guided by the development standards included within the CVSP (CVSP Appendix A). The CVSP development standards supersede County standards outlined in the County Code, County Hillside Standards, County Design and Improvement Standards Manual, and the County Grading Design Manual. Where conflicts exist between the CVSP and the County Code, for example, the CVSP standards shall govern. Where the CVSP is silent, the County Code and Design Standards shall take precedence.

Development would be subject to the Planned Development policies described in the El Dorado County General Plan and Zoning Ordinance.

Project Construction/Phasing

The plan area would be developed in five phases with full build-out expected in 2030 or later. Based on preliminary grading plans the project site is expected to be balanced and not require any import or export of soils. The proposed phasing of the CVSP is based on the logical placement of infrastructure, utilities, roads, and land uses and would generally proceed from west to east. A development phasing plan has been proposed within the Specific Plan and final phasing would be determined prior to final map approval. Shifts in market demand and financing mechanisms may play a role in the way the CVSP develops over time. Regardless of the ultimate configuration of the development, all backbone infrastructure must be constructed prior to or concurrent with the development of individual parcels to meet service levels identified by the County. During construction all construction equipment would be staged on site.

2.4 Required Approvals

This Draft EIR serves as the primary environmental document for all future discretionary actions associated with development of the CVSP. The County would review subsequent discretionary proposals for consistency with this EIR and determine if the request is consistent. In general, if it is determined that a subsequent project is consistent with the CVSP and is within the scope of the EIR, further environmental review would not be necessary. Section 65457(a) of the California Government Code and Section 15182(a) of the CEQA Guidelines provide that no additional environmental review is required for any residential project undertaken in conformity with an adopted Specific Plan for which an EIR has been certified. If it is determined that a development application is inconsistent with the CVSP and/or substantial evidence exists that supports the occurrence of any of the events set forth in Section 21166 of the Public Resources Code and Section 15183 of the CEQA Guidelines, a determination would be made as to the appropriate subsequent environmental document.

El Dorado County

The following actions would be taken by the County if the CVSP is approved:

- General Plan Amendment
- Rezone
- Approval of a Small Lot Tentative Map for 668 units
- Approval of a Large Lot Tentative Map (on the same tentative map as Small Lot)
- Certification of the Creekside Village Specific Plan EIR
- Approval of the Mitigation Monitoring and Reporting Program
- Creekside Village Specific Plan Adoption
- Approval of a Development Agreement

Subsequent Approvals

Subsequent projects within the CVSP may require one or more of the following additional approvals from the County:

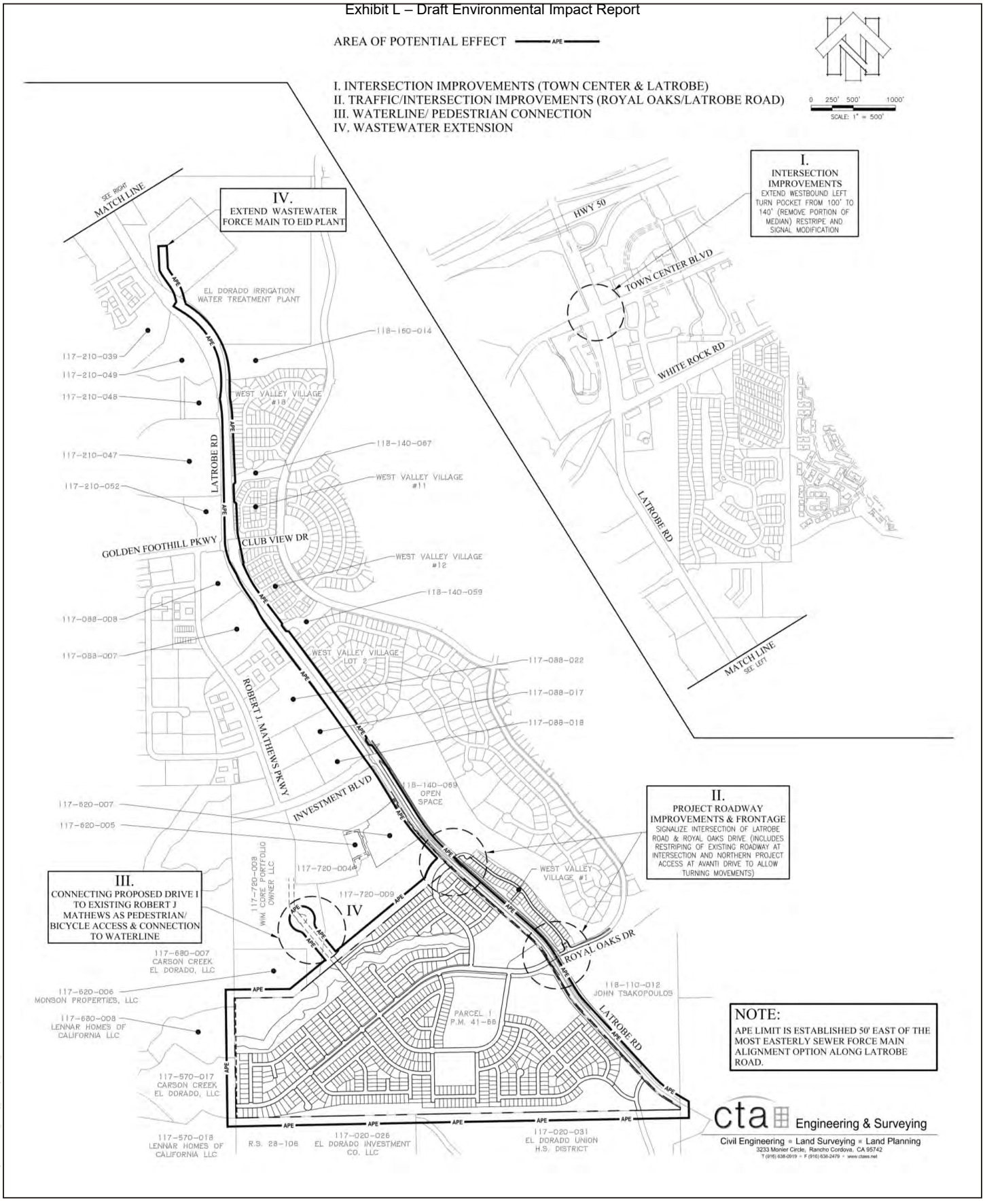
- Tentative and Final Subdivision Maps
- Community Service/Facilities Districts formations or annexation

- Conditional Use Permits
- Design Review Permits
- Development Plan Permits
- Grading Permits
- Building Permits

Other Agencies

The federal, state, regional and local agencies that may have jurisdiction over aspects of the proposed project may require certain permits and approvals. Subsequent development within the CVSP may be required to obtain approvals from other agencies, depending on the location and nature of each project phase. Responsible and trustee agencies are federal, state and local public agencies that have some discretion over the proposed project or have jurisdiction over resources held in the public trust that could be affected by the proposed project. Responsible agencies and trustee agencies must rely upon this EIR when considering discretionary project approvals. The potential responsible and trustee agencies, as well as federal agencies with potential jurisdiction, and their discretionary permits or actions include, but are not necessarily limited to:

- El Dorado County Local Agency Formation Commission
- U.S. Army Corps of Engineers, Clean Water Act Section 404 Permit
- Central Valley Regional Water Quality Control Board, Clean Water Act Section 401 Water Quality Certification and Section 402 National Pollutant Discharge Elimination System Permit
- California Department of Fish and Wildlife, Section 1602 Lake or Streambed Alteration Agreement and Section 2081 Incidental Take Permit
- U.S. Fish and Wildlife Service, Endangered Species Act Section 7 Biological Opinion and Incidental Take Permit
- CALFIRE, Fire Protection Development Standards
- State Historic Preservation Office – Section 106 Consultation



SOURCE: CTA Engineering & Surveying

FIGURE 2-9

Off-Site Improvements

Creekside Village Specific Plan EIR

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3 Environmental Analysis

This chapter of the Environmental Impact Report (EIR) describes the environmental setting (baseline) and the cumulative setting and other information to assist readers in understanding the manner in which the impact analyses have been conducted in this EIR.

Environmental Baseline/Existing Conditions

An EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the "baseline physical conditions" against which project-related changes can be compared. The existing conditions are described in each of the technical sections. Normally, the baseline condition is the physical conditions that exist when the Notice of Preparation (NOP) is published (CEQA Guidelines Section 15125(a)). Therefore, the baseline conditions for this EIR, unless noted otherwise, are based on conditions that existed in November 2020, when the NOP was published. The CEQA Guidelines recognize that the data for establishing an environmental baseline cannot be rigid. Because physical environmental conditions may vary over a range of time, the use of environmental baselines that differ from the date of the NOP is reasonable and appropriate in certain circumstances when doing so results in a more accurate or conservative environmental analysis and is supported by substantial evidence.

Technical studies previously prepared for the Creekside Village Specific Plan (proposed project or CVSP) before the project went on hold in 2021 have been updated to reflect the updated project description and new laws and requirements and are included in the appendices to this EIR.

Impact Analysis

The proposed project includes two development options, as described in more detail in Chapter 2, Project Description. The first option would be to convert the 1.8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the CVSP. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. The impact analysis included in the technical sections listed below identifies if either of the options would result in the same impacts as the proposed project or if there would be a potential new impact. The area of disturbance or "project footprint" would not change if neighborhood commercial uses or age-restricted units were developed because the areas designated for new residential and park uses would be graded. Generally, the primary difference between the proposed project and the Active Adult option would be in the number of new residents, number of vehicle trips, and demand for utilities and public services.

Impacts are evaluated in terms of changes due to the project as compared to existing conditions. For each environmental topic or resource area, the conditions anticipated as the result of project implementation are compared to baseline (conditions as of November 2020 or thereabouts) conditions, to characterize the anticipated change. It should be noted that existing conditions do not constitute a significant impact for the purposes of CEQA. "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project" (*Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 473 *and California Building Industry Association v. Bay area Air Quality Management District* (2015) Cal.App 4th.).

This chapter addresses the environmental setting, environmental impacts, and mitigation measures associated with the project with respect to the following technical sections:

- Section 3.1, Aesthetics
- Section 3.2, Air Quality
- Section 3.3, Biological Resources
- Section 3.4, Cultural Resources
- Section 3.5, Energy
- Section 3.6, Geology, Soils and Paleontology
- Section 3.7, Greenhouse Gas Emissions
- Section 3.8, Hydrology and Water Quality
- Section 3.9, Land Use/Population and Housing
- Section 3.10, Noise
- Section 3.11, Public Services and Recreation
- Section 3.12 Transportation
- Section 3.13, Tribal Cultural Resources
- Section 3.14, Public Utilities
- Section 3.15, Wildfire

Sections 3.1 through 3.15 of this Draft EIR, which present a technical analysis for each of the 15 environmental topics evaluated in detail, include the following components.

Environmental Setting: This subsection describes existing environmental conditions on the project site, and in the surrounding areas as appropriate. Generally, this is when the NOP is released for public review, which was November 2020, in accordance with CEQA Guidelines Section 15125. The discussions of the environmental setting focus on information relevant to the issue under evaluation. The extent of the geographic area considered may differ between environmental topics, depending on the locations of potentially affected resources.

Regulatory Setting: This subsection presents information on the current federal, state and local, laws, regulations, plans, and policies that govern or pertain to the environmental topic being discussed.

Thresholds of Significance: El Dorado County (County) uses checklist questions from Appendix G of the CEQA Guidelines as the thresholds of significance, which are identified in the technical section. In some instances, the thresholds are from agencies that have developed specific numeric thresholds to assess a project's impact (e.g., El Dorado County Air Quality Management District). Note that thresholds may be quantitative or qualitative, as appropriate for the environmental topic.

Impact Analysis: Each technical section includes an overview of the analytical methodology (methods of analysis) used to evaluate project impacts, including technical studies upon which the analyses rely, followed by a detailed discussion of the potentially significant effects or impacts of the proposed project on the existing environment, in accordance with CEQA Guidelines Section 15126.2. Project impacts and mitigation measures are numbered sequentially in each subsection (Impact 3.2-1, Impact 3.2-2, Impact 3.2-3, etc.). An impact statement precedes a detailed impact analysis for each significance threshold. The impact analysis includes the substantial evidence upon which significance determinations are based.

Where an existing law, regulation, or permit requires mandatory and prescriptive actions that provide environmental protections, with little or no discretion required for their implementation and with the effect of avoiding an impact or maintaining an impact at a less-than-significant level, the environmental protections afforded by the regulations are considered prior to determining impact significance and will not be identified as mitigation. In contrast, where existing laws or regulations specify a mandatory permit process for future projects, performance standards without prescriptive actions to accomplish them, or other requirements that afford substantial discretion in their implementation, the impact significance is determined prior to consideration of the environmental protections

afforded by the regulatory requirements. In such circumstances, impacts may be potentially significant or significant, and those regulatory requirements may then be included as mitigation measures.

In accordance with CEQA, specifically Public Resources Code (PRC) Section 21068, a "significant effect on the environment" means a substantial or potentially substantial adverse change in the environment. Impacts of the environment on a project or plan (as opposed to impacts of a project or plan on the environment) are beyond the scope of required CEQA review, as noted above.

For each impact determination, a less-than-significant impact indicates that the proposed project would not result in a substantial adverse change in the physical environment. A potentially significant or significant impact indicates a substantial adverse change in the physical environment and requires the identification of feasible mitigation measures that would avoid, minimize, or reduce those impacts, in accordance with CEQA Guidelines Section 15126.4.

This subsection also describes whether mitigation measures would reduce project impacts to less-than-significant levels. Significant and unavoidable impacts are identified where applicable, if there are no feasible mitigation measures available to reduce the significance of the impact, in accordance with CEQA Guidelines Section 15126.2(b).

An example of an impact statement is shown below.

Impact 3.1-1. The proposed project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings.

A discussion of potential impacts of the proposed project is presented in paragraph form. The direct and indirect project-specific impacts associated with construction and operation of the project are evaluated and compared to the threshold of significance for the particular impact. The analysis discusses the applicable local, state, and federal laws and regulations that would reduce impacts, and assumes that the project would comply with applicable laws, ordinances, and regulations, and that the project applicant would obtain all necessary permits and comply with all required conditions of those permits. In many instances, the actions that are necessary to reduce a project impact are already required by existing laws or requirements. As noted above, the impact analysis would also identify if either of the options would result in the same impacts as the proposed project or if there would be a potential new impact.

The impact analysis concludes with a determination of the impact's significance (prior to implementation of mitigation) in **bold type** (e.g., **significant impact/ potentially significant impact/less-than-significant impact/results in no impact)**.

Mitigation Measures

Following the impact analysis is a discussion of applicable mitigation measures identified to reduce the significance of an impact, if required. This section includes a statement indicating whether the mitigation measure would reduce the impact to a less-than-significant level. A discussion of how the mitigation would reduce the significance of the impact is also provided. If the mitigation measure cannot reduce the significance of the impact, the impact would be identified as significant and unavoidable.

Mitigation measures, if applicable, are numbered and presented in the following format.

AES-1: Statement of feasible mitigation measure.

Note that CEQA Guidelines, Section 15370, defines mitigation as:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree of magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

References: This section lists the sources cited during preparation of the EIR.

Cumulative Impacts

CEQA requires that in addition to project-specific impacts, an EIR must discuss cumulative impacts. As defined in CEQA Guidelines Section 15355, cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines Section 15355). An introductory statement that defines the cumulative analysis methodology and the cumulative context being analyzed for the respective issue area or topic (e.g., buildout of the County's General Plan, development within the Mountain Counties Air Basin) is included under the "Cumulative Analysis" discussion.

The CEQA Guidelines clarify a number of issues with respect to cumulative impacts, as follows.

- An EIR should not discuss cumulative impacts to which the project would not contribute.
- If the combined cumulative impact (impacts from other projects combined with the impact from the proposed project) is not significant, then the EIR should briefly indicate why the impact is not significant, and no further evaluation is necessary.
- If the combined cumulative impact is significant, the EIR discussion must reflect the severity of the project's contribution to the underlying cumulative impact and the likelihood of its occurrence.
- If the combined cumulative impact is significant, the EIR also must indicate whether the project's contribution to that significant cumulative impact will or will not be cumulatively considerable.
- An EIR may determine that the project's contribution is rendered less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact (CEQA Guidelines Section 15130[a]).

The CEQA Guidelines provide additional guidance with respect to how an adequate cumulative impact analysis might be completed and note that this may be based on:

- A list of past, present, and probable future projects producing related or cumulative impacts, or

- A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact (CEQA Guidelines Section 15130[b]).

In addition, provided there is a "reasonable plan for mitigation" and contributions are "sufficiently tied to the actual mitigation" of the project's impacts, a commitment to contribute a fair share to such a program discharges an agency's mitigation duty under CEQA (*Save Our Peninsula Com. v. Monterey County Bd. of Supervisors,* (2001) 87 Cal.App.4th 99, 141); see also CEQA Guidelines, Section 15130, subd. (a)(3) ([recognizing that a project's contribution to a cumulative impact may be less than cumulatively considerable where "the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact"]). See also *Anderson First Coalition v. City of Anderson,* (2005) 130 Cal.App.4th 1173).

This EIR uses a "hybrid" approach in which potential cumulative impacts of the project are assessed in combination with buildout projections included in the County's 2004 General Plan, as modified by a list of projects that have been approved for development since the adoption of the General Plan or have submitted a formal application with environmental review underway. With pending projects currently under environmental review, enough information is available about the project through the application processing already completed and draft environmental documents to be considered for purposes of a cumulative analysis, but the project would still need to go through the County's review process and may or may not be approved.

El Dorado County General Plan Updated Planning Horizon

The County's General Plan, adopted in 2004, presents the County's comprehensive, long-term vision for physical development and resource conservation within the County. The General Plan analyzed two scenarios, a 20-year planning horizon (estimated to be 2025 at the time of preparation of the 2004 County's General Plan) and a maximum theoretical density buildout. The maximum theoretical density permitted under buildout of the County's General Plan would result in the development of up to 78,692 new housing units beyond the 44,708 units existing in 1999, for a total of 123,400 dwelling units resulting in an estimated 317,692 people within the unincorporated western portion of the county (El Dorado County 2003). Practical constraints, such as terrain, waterways, biological resources, and availability of roadways and infrastructure, make it unlikely that the maximum theoretical density buildout could be achieved and certainly not within the 2025 planning horizon of the County's General Plan. The County's forecasts for growth through 2025 under the 2004 General Plan assumes that an additional 32,491 new housing units would be constructed beyond the 44,708 units that existed in 1999, for a total of 77,199 units. Approximately 15,000 new housing units have been built since 1999, leaving approximately 17,500 remaining housing units to be built in the planning horizon.

In 2013, the County updated the housing and employment growth projections to assist in the preparation of the updated County Travel Demand Model, which was used to model the project's traffic analysis. These updated projections cover the western portion of the county (excluding Placerville) and examine growth from 2010 to a planning horizon through 2035.[1] Growth allocations based on the distribution of new development in the County between 2000 and 2011 and development applications from 2006 through 2023 were used to extrapolate future growth. In 2010, there were 59,668 existing housing units. For 2035, it was projected that there would be 77,077 housing units. The 2013 study projected that by 2015, 62,803 housing units would exist, leaving approximately 14,300 housing units to be built under the 2035 planning horizon. The 2035 planning horizon forecast differs only

[1] Details on the methodology for the forecasts is presented in the memorandum prepared by Bay Area Economics (BAE) is available on the County's website at https://www.edcgov.us/government/planning/documents/BAE%20Report.pdf.

slightly from the 2025 planning horizon largely as a result of the economic recession in the late 2000s, and the resulting drastic reduction in the rate of growth in the county.

Among the specific projects included in the 2025 planning horizon for the County's General Plan are those considered to be existing commitments—projects for which a tentative map or development agreement existed before approval of the 2004 County's General Plan but were not built out at the time the General Plan was adopted in 2004. As shown in Table 3-1, these projects have the potential to contribute approximately 4,000 new dwelling units within the county. These projects include the Bass Lake Hills Specific Plan, Carson Creek Specific Plan, El Dorado Hills Specific Plan, Promontory Specific Plan, and Valley View Specific Plan. The Marble Valley Master Plan was approved but never developed and the tentative map expired so it has been removed as an Approved Project.[2]

Table 3-2 includes those projects that have been approved, or complete project applications have been substantially processed and environmental review is underway since adoption of the General Plan.

Table 3-1. El Dorado County Approved Projects – 2004 County General Plan

Project	Approved Units	Constructed	Remaining	Commercial/ Industrial (acres)	Parks/OS (acres)
Bass Lake Hills Specific Plan	1,458	162	1,296	0	182
Carson Creek Specific Plan	1,925	1,544	381	101	237
El Dorado Hills Specific Plan	6,192	4,929	1,263	301	868
Promontory Specific Plan	1,100	752	348	7	136
Valley View Specific Plan	2,840	2,139	701	40	703
Total	**13,515**	**9,526**	**3,989**	**449**	**2,126**

Source: El Dorado County 2024.

Table 3-2. El Dorado County – Projects since Adoption of the 2004 General Plan

Project	Approved Units	Constructed (approved)	Remaining	Acres (approximate)	Commercial/ Industrial (acres)	Parks/OS (acres)
El Dorado Hills Town Center Apartments	214	214	0	5	0	0
Lime Rock Valley Specific Plan[1]	800	0	800	358	0	341
Saratoga Estates	317	186	131	71	0	42
Village of Marble Valley Specific Plan[1]	3,236	0	3,236	797	57	1,371
Montano de El Dorado	—	0	0	—	3	—
Generations at Green Valley[1]	379	0	379	281	0	58

[2] The Marble Valley Master Plan was superseded by the Village of Marble Valley Specific Plan included in Table 3-2.

Table 3-2. El Dorado County – Projects since Adoption of the 2004 General Plan

Project	Approved Units	Constructed (approved)	Remaining	Acres (approximate)	Commercial/ Industrial (acres)	Parks/OS (acres)
Cameron Meadows[1]	161	0	161	104	0	63
Total	**5,107**	**—**	**4,707**	**1,616**	**60**	**1,875**

Note:
[1] These projects have not yet been approved by the County.
Source: El Dorado County 2024.

El Dorado Hills Town Center Apartments Project

The Town Center Apartments project is a 214-unit apartment complex located at the northwest corner of Town Center Boulevard and Vine Street within the Town Center East Planned Development in the El Dorado Hills Specific Plan and was originally planned as a hotel, and as such is included in the County General Plan planning horizon. The County approved the project in 2018. It is now fully built and occupied.

Lime Rock Valley Specific Plan

The proposed Lime Rock Valley Specific Plan would allow development of up to 800 residential units on approximately 740 acres, as well as an 8-acre neighborhood park with recreational amenities, and about 333 acres of public and private open space. The project site is south of U.S. 50, southwest of the Cambridge Road interchange, along Flying C Road. A portion of the site adjoins the proposed Village of Marble Valley Specific Plan. It is adjacent to the existing Cameron Estates subdivision on the north and the Royal Equestrian subdivision on the south. The project has not yet been approved by the County, but a draft EIR has been prepared.

Saratoga Estates (Rancho Dorado) Residential Development

The approved Saratoga Estates (formerly Rancho Dorado) residential project, currently under construction, would include development of 317 residential units, 5.42 acres of public parkland, 37.04 acres of open space, and 8.4 acres of public roads in the El Dorado Hills area. The site is north of U.S. 50 and 0.5 mile west of the intersection of U.S. 50 and El Dorado Hills Boulevard.

Village of Marble Valley Specific Plan

The proposed Village of Marble Valley Specific Plan would replace the existing development agreement for the Marble Valley site and would allow development of up to 3,236 residential units, 475,000 square feet of nonresidential uses, 55 acres of agricultural use, 87 acres of public facilities/recreational use (including 47 acres of public parkland), 1,284 acres of open space, and 61 acres of roads and future right-of-way. The project has not yet been approved by the County, but a draft EIR has been prepared.

Montano De El Dorado Phase I and II Master Plan

The proposed Montano De El Dorado Phase I and II Master Plan (project), approximately 16.8 acres, would expand the existing Montano de El Dorado retail center (Phase I) to include additional retail space, an office building, hotel,

and a small amphitheater. Phase II would consist of a total of 10 buildings for a total floor area of approximately 75,400 square feet and 143,900 square feet of commercial and office uses.

Generations at Green Valley

The proposed Generations at Green Valley project would allow up to 379 residential lots, and a clubhouse lot, a park site, 13 landscape lots, and nine (9) open space lots totaling approximately 58 acres. Of the proposed lots, 214 would be age-restricted for residents 55 years or older. The project has not yet been approved by the County, but a draft EIR has been prepared.

Cameron Meadows

The proposed Cameron Meadows project would allow up to 161 residential lots and 16 affordable deed-restricted attached accessory residential dwelling units. In addition, project features of landscaped areas, open space, and public trails would total 62.9 acres. The project has not yet been approved by the County, nor has a draft environmental impact report been prepared.

Folsom Plan Area Specific Plan

The Folsom Area Specific Plan although not within the county is located just to the west, south of U.S. 50 and is within the geographic area of some resources; therefore, it is also considered as a cumulative project.

The City of Folsom approved a 3,520-acre specific plan bounded by Highway 50, White Rock Road, Prairie City Road and the El Dorado County line. At buildout the specific plan includes 11,000 residences, 1,130 acres in parks and open space, and new schools. As of March 2023, approximately 3,201 (including 300+ apartments) have been constructed.

Terminology Used in the EIR

This Draft EIR uses the following terminology to describe environmental effects of the proposed project:

- **Standards of Significance:** A set of criteria used by the lead agency to determine at what level or "threshold" an impact would be considered significant. Standards of significance used in this EIR include those set forth in CEQA Guidelines Section 15065 (Mandatory Findings of Significance) and those derived from questions set forth in Appendix G to the CEQA Guidelines; criteria based on regulatory standards of local, state, and federal agencies; and criteria based on goals and policies identified in the County General Plan. In fashioning criteria based on these sources, County staff have also relied on their own professional judgment and experience in some instances. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, state, and local regulations and ordinances.
- **Less-than-Significant Impact:** A project impact is considered less than significant when it does not reach the standard of significance, indicating that there would be no substantial change in the environment. No mitigation is required for less-than-significant impacts.
- **Potentially Significant Impact:** A potentially significant impact is an environmental effect that could cause a substantial adverse change in the environment; however, additional information is needed regarding the extent of the impact to make the determination of significance. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact.

- **Significant Impact:** A project impact is considered significant if it results in a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects in the context of specified significance criteria. When available, potentially feasible mitigation measures and/or project alternatives are identified to reduce these effects to the environment.
- **Significant and Unavoidable Impact:** A project impact is considered significant and unavoidable if it results in a substantial adverse change in the physical conditions of the environment and there are no potentially feasible mitigation measures and/or project alternatives available to reduce these effects to less than significant.
- **Cumulative Impacts:** According to CEQA, "cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). CEQA requires that cumulative impacts be discussed when the "project's incremental effect is cumulatively considerable" (CEQA Guidelines Section 15130 (a)).

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3.1 Aesthetics

The following analysis identifies potential impacts related to a change in aesthetics due to implementation of the proposed Creekside Village Specific Plan (proposed project or CVSP). This section describes the aesthetic conditions on and around the CVSP project site; discusses the relevant state and local regulatory considerations; and evaluates how implementation of the CVSP may affect the aesthetics of the project site and public views.

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) include concerns related to the visual impacts of potential noise barriers and the overall visual character of the development compared to the existing undeveloped nature of the project site. No additional comments were received at the second scoping meeting held on September 26, 2023. A copy of the NOP and comments received is included in Appendix A.

Main sources referenced to prepare this section include a review of Google Earth aerial and street imagery (Google Earth 2019), the El Dorado County General Plan Land Use Element and Conservation and Open Space Element (El Dorado County 2019; 2017) and its Environmental Impact Report (EIR) (El Dorado County 2003), Caltrans list of Eligible and Officially Designated State Scenic Highways (Caltrans 2017), and a site visit.

3.1.1 Environmental Setting

Regional Setting

The proposed project site is located within an unincorporated area of El Dorado County (County) in the community of El Dorado Hills located in the western foothills, approximately 25 miles east of downtown Sacramento and 18 miles west of the City of Placerville (see Figure 2-1 in Chapter 2, Project Description). West of the county, the Sacramento region is traversed by two major rivers and is characterized by flat urbanized areas including the cities of Folsom, Rancho Cordova, and Sacramento with areas of undeveloped grasslands and pockets of oak woodlands along with agricultural areas in Sacramento County. The eastern portion of the county contains mountainous terrain, with high desert farther east in Nevada. Urbanized areas such as Placerville, Cameron Park, and El Dorado Hills are located in the western portion of the county along with large areas of agricultural and forest lands. The County has a broad range of landscapes that change with the gradual increase in elevation. Rolling hills dotted with mature oaks and oak woodlands, agricultural land, apple orchards and vineyards, evergreen forests and snow-capped mountains, scenic rivers, alpine lakes, and historic structures all contribute to the visual character found in the County. Elevations range from 200 feet above mean sea level (AMSL) in the western rolling foothills, adjacent to Sacramento County, to more than 10,000 feet AMSL along the Sierra Nevada crest on the edge of the Lake Tahoe Basin. U.S. Highway 50 (Highway 50) extends east from the Sacramento Valley through the Sierra Nevada foothills and beyond to Lake Tahoe. Bordering the west shore of Lake Tahoe, State Route (SR) 89 continues south to the Alpine/El Dorado County line. SR 49 runs north-south from the Placer/El Dorado County line to the Amador/El Dorado County line (El Dorado County 2019).

Project Site

The project site is located on the west side of Latrobe Road, south of Investment Boulevard, and directly adjacent to the southern boundary of the El Dorado Hills Business Park, as shown on Figure 2-1, Project Location in Chapter 2, Project Description. The site is designated Research and Development (R&D) per the El Dorado County General Plan and is zoned Research & Development with a Design Review overlay (R&D-DC combining zone). The County's

Zoning Code includes various combining zones with the general purpose of combining zones to implement provisions of the General Plan, to regulate certain uses, provide for innovative design solutions, and to protect the public health and safety from natural and man-made hazards. The -DC combining zone ensures compatibility with community design criteria. Under current zoning, the Research and Development Zone Design Standards would apply, which were adopted per Resolution 201-2015 and address architectural design, landscaping, and screening of loading, trash collection area, rooftop equipment, and storage areas. Access to Highway 50 is approximately 3 miles to the northwest from Latrobe Road.

Visual Character and Quality

The project site consists of undeveloped rolling annual grasslands typical of the topography of the western foothills. The site has historically been used for grazing. According to a review of historical aerial imagery conducted as part of a Phase I Environmental Site Assessment (ENGEO 2016), historical grazing on the project site likely ceased in the mid to late 1950s. Due to the rolling topography, the elevation of the site ranges from 470 feet AMSL along the western boundary to a high of 640 feet AMSL in the southeast corner. There are no trees on the site except for a small grove of seven blue oak trees located in the southeast corner situated on a small hilltop. There are three seasonal drainages that cross the project site and merge at the western boundary to form one intermittent drainage that drains offsite. Seasonal wetlands and a small vernal pool are also present on the site.

Latrobe Road runs adjacent to the project site for approximately 0.75 miles along the entire northeast to southeast boundary of the site. Wetsel-Oviatt Road cuts through the southeastern corner of the project site to Latrobe Road until there is a secured entrance to the El Dorado Hills Storage and West Coast Water and Trucking sites. To the northeast of the project site is the existing El Dorado Hills Business Park.

The El Dorado Hills Business Park contains about 692 acres of land west of Latrobe Road, beginning from the intersection with White Rock Road and ending at the project site's northernmost point. The project site was previously part of the El Dorado Hills Business Park, and in 2018 the site was approved to be de-annexed from the business park. There are dirt firebreaks that mostly run along the project site's parcel boundaries as well as an east-west dirt firebreak that runs through the middle of the project site from Latrobe Road to the western site boundary.

Seasonal drainages and wetlands are scattered across the site. In addition, there are four small vernal pools located in the central and western portion of the project site. Numerous outcrops of shallow bedrock protruding from the ground are visible on the northeastern side of the project site, as shown on Figure 3.1-1. The northwest area of the site contains rolling hillsides that visually separate the project site from the El Dorado Hills Business Park to the north, as shown on Figure 3.1-2. The project site is covered by grasslands that appear bright green in the late spring turning to shades of brown through the summer, fall and winter months. The grasslands cover gently rolling hills interspersed with broad valleys. The three seasonal drainages that cross the project site merge at the western boundary to form one intermittent drainage that drains offsite. Topography of the project site generally slopes to the west, with an approximate 175 feet difference in elevation between the highest location in the southeast corner of the site and the lowest elevation along the western boundary of the site. Overhead electrical utility poles are located on the eastern boundary of the project site, along both shoulders of Latrobe Road. Existing single-family residences are visible in the distance across Latrobe Road looking east, and a small grove of blue oak trees are visible in the southeast corner of the site. Figures 3.1-3 and 3.1-4 include site photos showing these general visual characteristics of the site, including its rolling hills, grasslands, trees, and waterways.

FIGURE 3.1-1

Scattered Rocks and Water Bodies

Creekside Village Specific Plan EIR

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FIGURE 3.1-2

Topography Around El Dorado Hills Business Park

Creekside Village Specific Plan EIR

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FIGURE 3.1-3

General Landscape (1)

Creekside Village Specific Plan EIR

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FIGURE 3.1-4

General Landscape (2)

Creekside Village Specific Plan EIR

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Scenic Resources, Views and Vistas

Visual resources can include scenic views/vistas and scenic resources. Scenic resources are described in Appendix G of the CEQA Guidelines in the Environmental Checklist as specific features of a viewing area (or viewshed) such as trees, rock outcroppings, and historic buildings. These are specific features that act as the focal point of a viewshed and are usually foreground elements. Scenic views or vistas include elements of the broader viewshed such as mountain ranges, valleys, and ridgelines. Scenic vistas can provide views of natural features or significant structures and buildings. Figure 3.1-5 shows the scenic viewpoints and highways within the county, as described in the County's General Plan EIR (El Dorado County 2003). Many of these viewpoints are areas along highways where viewers can see large water bodies (e.g., Lake Tahoe and Folsom Reservoir), river canyons, rolling hills, forests or distant views of the Sierra Nevada mountains. Other viewpoints are the locations of historic structures or districts that are reminiscent of the County's heritage. As shown on Figure 3.5-1, Point 18 is listed as a scenic viewpoint along Latrobe Road with a viewing area that spans from White Rock Road to the southern county line. The project site is located adjacent to this viewing area, which provides views in all directions towards rolling hills with occasional vistas of the Sacramento Valley (El Dorado County 2003). There is another listed scenic viewpoint (Point 1a) along Highway 50 looking south towards Marble Valley approximately 2.83 miles northeast of the project site; however, the project site is not visible from this viewpoint due to intervening topography.

Sensitive Receptors

Sensitive receptors are those public viewers who would be most sensitive to changes in the character of a project site. Individuals may have high sensitivity to visual changes if they have frequent or lengthy exposure to the view from a public viewpoint, are familiar with the existing condition of the site from a public viewpoint or have a unique view of the site from a public viewpoint. Sensitive receptors can include people viewing the site from public roads or from public lands. While residents of adjacent parcels often have views of a project site, these private views are not considered when evaluating the aesthetic impacts of a project for the purposes of CEQA.

The project site is visible from Latrobe Road, Wetsel-Oviatt Road, and the El Dorado Hills Business Park from viewers traveling on these public roads and/or visiting other commercial businesses near the project site. While the site is also visible for people residing in the existing neighborhood located across the northern portion of the project site along Latrobe Road, these are private views. The general public, including viewers traveling on nearby public roads, would likely be less sensitive to these changes than residents living near the project site or those employed at the business park because views of the site would be more short-term, limited to driving by. There is also a public pedestrian and bicycle path along Latrobe Road that begins at Royals Oaks Drive and continues southeast towards White Rock Road at substantially the same elevation as Latrobe Road. A publicly accessible sidewalk is present along Royal Oaks Drive that would provide views of the project site for approximately 1,000 feet; however, as Royal Oaks Drive and the associated sidewalk continues in the northwest direction, any view of the project site or surrounding area is completely obstructed by existing homes that are at a higher elevation than the sidewalk. A 0.75-mile pedestrian trail known as the Fox Trail also begins at Royal Oaks Drive and continues northwest towards White Rock Road and provides views of the rolling hills and Sacramento Valley; given the elevation of the trail, these views would not be obstructed by the project.

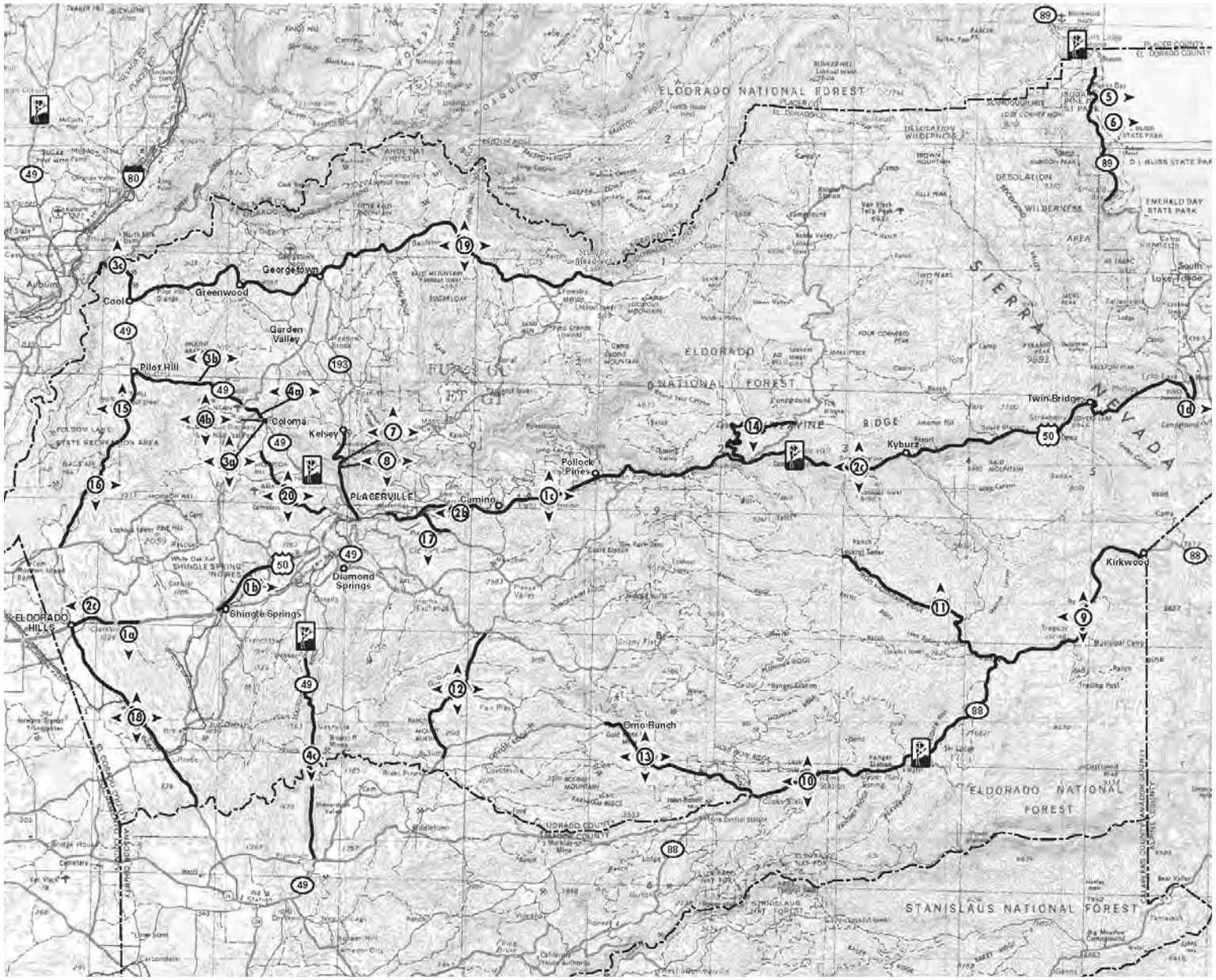
Views from the Project Site

Long-range views from the project site are possible where topography does not interfere. Looking eastward from some areas within the project site, this can include outlines on the horizon of the tree-covered foothills. Short- to mid-range views from the project site include homes facing Latrobe Road, east of the project site. These homes are

set back approximately 200 feet from Latrobe Road. From the project site, views of these homes are partially blocked by immature trees located along Latrobe Road, farthest from the project site. A paved walking path followed by a small rock retaining wall and a grass-covered slope can be seen directly behind the trees, in front of the houses facing Latrobe Road. Past the northwestern edge of the project site are existing buildings and businesses that are part of the El Dorado Hills Business Park. However, due to the hills surrounding the project site, a partial natural visual barrier is created blocking views of these buildings. Views of the El Dorado Hills Business Park from the project site consist of large, low-profile buildings, surrounded by tall trees. Views to the south and southwest include a large hill that is approximately 690 AMSL at its highest point and the West Coast Water and Trucking and El Dorado Storage sites along Wetsel-Oviatt Road. Industrial buildings and facilities owned by West Coast Water and Trucking and El Dorado Storage sites are visible from the southwest corner of the project site. Views of West Coast Trucking and El Dorado Storage from the project site include grey industrial buildings, surrounded by what appears to be a gravel and dirt parking where several recreational vehicles and passenger vehicles are stored. Views to the southeast consist primarily of undeveloped grassland with rolling hills with bands of blue oak woodlands, similar to the visual character of the existing project site.

Views of the Project Site

Given the natural topography of the project site and surrounding land uses, public views of the surrounding foothills and the project site are primarily from Latrobe Road, which runs along the eastern boundary of the site. Houses within the Blackstone neighborhood, located east of Latrobe Road, and particularly those along Candlewood Court and Loganberry Court, are located at a higher elevation which allows for private views that span southwest across the project site and beyond. To the south is Wetsel-Oviatt road, which is not often accessed by the general public because it only provides access to a storage facility and a trucking company behind a secured gate. Additionally, there are public views of the site from the El Dorado Hills Business Park, but these views are primarily available to workers in buildings or parking lots closest to the project site.



SOURCE: EDAW

FIGURE 3.1-5
El Dorado County Scenic Viewpoints

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Public viewpoints of the project site are shown in Figure 3.1-6, Key Public Viewpoints, which contains a map of the areas in proximity to the project site that would allow for public views. Looking south along Latrobe Road near the northernmost point of the project site, there is a broad view of the project site which consists of undeveloped grassland dotted with rock outcrops and patches of green vegetation made up of small shrubs and grasses, with more distant views of the grove of blue oak trees atop a hill in the southeastern portion of the site, as shown in Figure 3.1-7. As shown on Figures 3.1-8 and 3.1-9, traveling southeast along Latrobe Road and looking west and southwest, viewers pass by various drainages and shrubs on the project site and generally have a similar view of the site until they approach the southeastern part of the project site where there is a clearer view of the hill and blue oak trees (see Figure 3.1-10). One of the more noticeable drainages is located approximately a quarter of the way down the eastern side of the project boundary, directly off Latrobe Road. This drainage contributes to a corridor of green and yellow vegetation that appears to wind across the northern portion of the project site. All views along Latrobe Road are framed by the large hill to the south of the site that blocks views of the storage and trucking businesses. Near the intersection of Latrobe Road and Wetsel-Oviatt road looking northwest, there is a view of a flatter portion of the project site to the west of Latrobe Road. As shown on Figure 3.1-11, the view farther east is blocked by a sloping hill that follows Wetsel-Oviatt Road. Motorists are able to travel west on Wetsel-Oviatt Road along the southern boundary of the project site until the road reaches a secured private entrance to the storage and trucking businesses. At this point, viewers are at a higher elevation slightly above the project site and have a broad view of the entire site. Looking northeast, there are views of the grass-covered rolling hills within the southeastern portion of the project site, a wide dirt road that runs along the southern boundary of the site, along with views of a generally flat valley covered in grasses within the center of the project site that is framed by existing homes along the east side of Latrobe Road, as shown on Figure 3.1-12. Looking northwest from Wetsel-Oviatt Road, there is a view of the project site and the hills that visually separate the site from the El Dorado Hills Business Park, as shown on Figure 3.1-13. At the southeast area of the business park facing farther southeast, there is a clear view of the rolling grassy hills that characterize the project site as well as stockpiles from development of the El Dorado Hills Business Park, as shown on Figure 3.1-14.

Light and Glare

Nighttime lighting is necessary to provide and maintain a safe and secure environment. Light that falls beyond the intended area of illumination is referred to as “light trespass.” Types of light trespass include spillover light and glare. Spillover light, which is light that illuminates surfaces beyond the intended area, is typically caused by artificial lighting sources, such as from building security lighting, signs, parking lot lights, roadway lights, and stadium lights on playing fields. Spillover light can adversely affect light-sensitive uses (i.e., adjacent residences), by creating unwanted illumination.

Glare can result from sunlight or from artificial light reflecting off building exteriors, such as glass windows, metal roofs or other highly reflective surface materials. Squinting or turning away from a light source is an indication of glare. As the project site is undeveloped, it does not contain existing light or glare sources.

Nighttime light illumination and associated glare can be divided into stationery and mobile sources. Stationary sources of nighttime light include building lights, decorative landscape lighting, and streetlights.

The developed areas in the county have typical urban light conditions contributed by overhead roadway lighting, commercial and residential building lights, and headlights from motor vehicles along adjacent roadways. These conditions contrast with the very low ambient nighttime illumination associated with undeveloped grasslands and hills surrounding and within the County, including the proposed project site and some of its surrounding area. While the project site has been anticipated to develop since approval of the El Dorado Hills Business Park in the 1980s,

it is currently undeveloped and has no source of light. In the immediate vicinity the primary source of nighttime light is headlights of motor vehicles traveling along Latrobe Road, streetlights, and lights from the existing single-family residences located along Avanti Road and in the Blackstone Community to the north and east. Light sources are also present in the El Dorado Business Park which may include ambient lighting associated with typical business uses and with building and parking security. During nighttime hours, ambient light can be accentuated during periods of low cloudiness or fog, which reflects and intensifies the amount of light. However, the El Dorado Business Park is visually separated from the project site by existing hills that reduce the spread of ambient light onto the site.

3.1.2 Regulatory Setting

Federal Regulations

Federal Regulation Title

There are no federal regulations regarding aesthetics applicable to the proposed project.

State Regulations

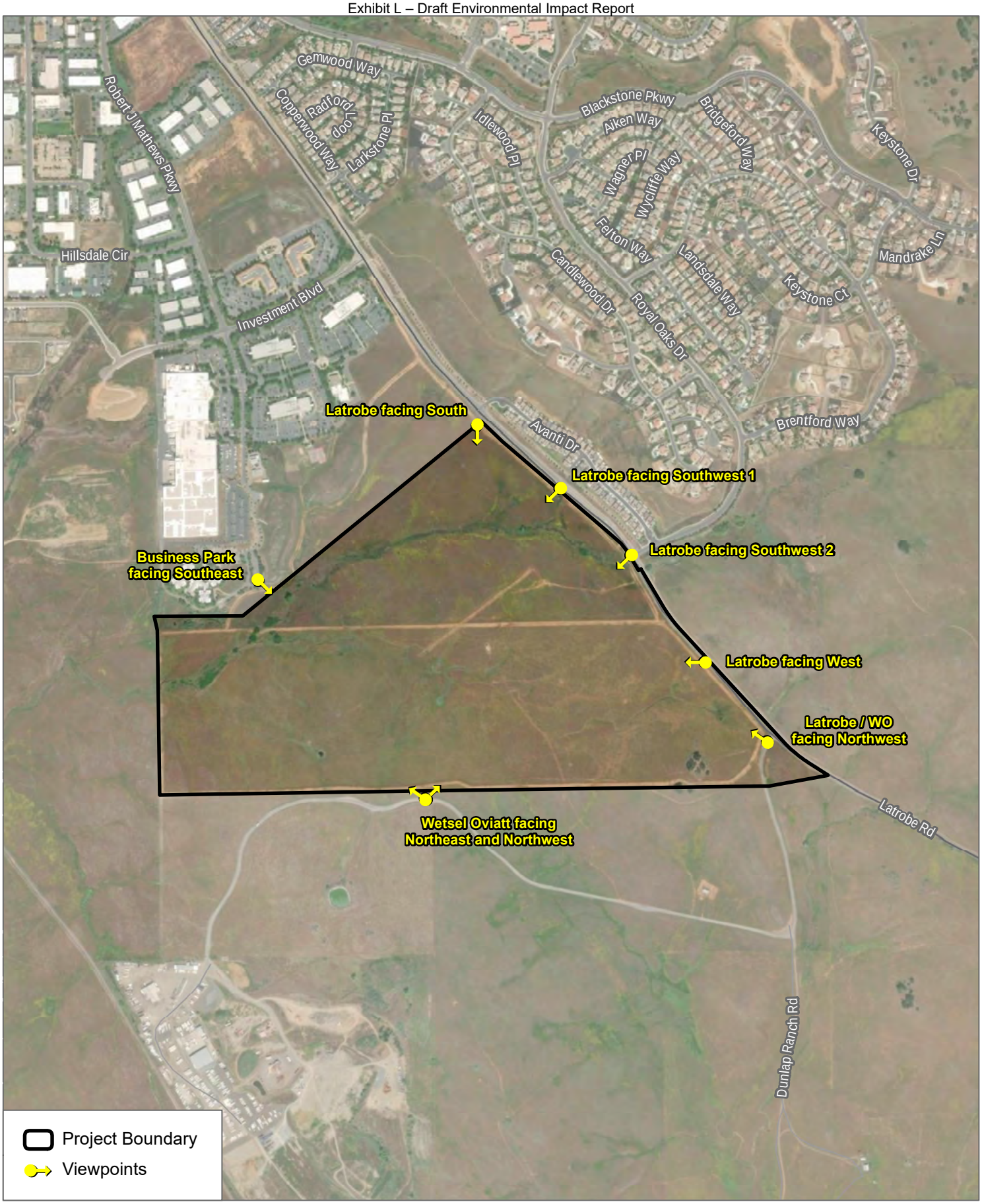
California Scenic Highway Program

California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change which would diminish the aesthetic value of lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. County roads can also become part of the Scenic Highway System. To receive official designation, the County must follow the same process required for official designation of State Scenic Highways. Several highways in El Dorado County have been designated by the California Department of Transportation (Caltrans) as scenic highways or are eligible for such designation. These include Highway 50 from the eastern limits of the Government Center interchange (Placerville Drive/Forni Road) in Placerville to South Lake Tahoe, all of SR 89 within the County, and those portions of SR 88 along the southern border of the county.

There are no state-eligible or state or local-designated scenic highways within the viewshed of the proposed project. The project site is located approximately 3 miles south of Highway 50, which has not been designated or found eligible for Scenic Highway status. The closest designated scenic highway is a segment of Highway 50 beginning near the City of Placerville, more than 15 miles east.

Nighttime Sky – Title 24 Outdoor Lighting Standards

The California legislature passed a bill in 2001 requiring the California Energy Commission (CEC) to adopt energy efficiency standards for outdoor lighting for both the public and private sector. The most recent 2022 update to Title 24, Parts 1 and 6, includes requirements for outdoor lighting for residential and nonresidential development to help to reduce the impacts of light pollution, light trespass, and glare. The standards regulate lighting characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off (CEC 2022).



SOURCE: ESRI Imagery 2024; Open Street Map 2019

DUDEK

0 500 1,000 Feet

FIGURE 3.1-6

Key Public Viewpoints

Creekside Village Specific Plan EIR

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FIGURE 3.1-7
View Looking South from Latrobe Road

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FIGURE 3.1-8
View Looking Southwest from Latrobe Road (1)

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FIGURE 3.1-9
View Looking Southwest from Latrobe Road (2)

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FIGURE 3.1-10
View Looking West from Latrobe Road

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FIGURE 3.1-11
View Looking Northwest from Latrobe and Wetsel-Oviatt Road

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FIGURE 3.1-12
View Looking Northeast from Wetsel-Oviatt Road

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FIGURE 3.1-13
View Looking Northwest from Wetsel-Oviatt Road

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FIGURE 3.1-14

View Looking Southeast from El Dorado Hills Business Park

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Local Regulations

El Dorado County Ordinance Code

The County has several standards and ordinances that address issues relating to visual resources. Many of these can be found in the County Zoning Ordinance (Title 130 of the County Code). The Zoning Ordinance consists of descriptions of the zoning districts, including identification of uses allowed by right or requiring a special use permit and specific development standards that apply in particular districts based on parcel size and land use density. These development standards often involve limits on the allowable size of structures, required setbacks, and design guidelines. Included are requirements for building setbacks and allowable exceptions, the location of public utility distribution and transmission lines, height limitations on structures and fences, and wireless communication facilities. For example, under the current R&D zoning, Section 130.23.030 requires a 20-foot setback from the front property line and a maximum building height of 50 feet. The Zoning Ordinance also has development standards that apply in all zones. For instance, Section 130.34.020 of the Zoning Ordinance establishes outdoor lighting standards, and requires that all outdoor lighting shall be located, adequately shielded, and directed such that no direct light falls outside the property line, or into the public right-of-way. However, it should be noted that development standards under an approved specific or development plan could supersede standards outlined in the County Code.

Community Design Standards

The County Board of Supervisors adopted new and/or updated community design standards in 2015 to augment those found in the Zoning Ordinance. Applicable to the project are the Outdoor Lighting Standards (El Dorado County 2015a) and the Landscaping and Irrigation Standards (El Dorado County 2015b). The Outdoor Lighting Standards include maximum height limits for light fixtures (20 feet for pole-mounted fixtures, 25 feet for top-mounted luminaires to illuminate parapet signs), requirements for outdoor luminaires to be full-cutoff if rated greater than 1,000 initial lumens, among other outdoor lighting guidelines. The Landscaping and Irrigation Standards include standards such as a minimum of six trees and 24 shrubs provided per each 100 linear feet of required landscape buffer along property boundaries, all shrubbery and at least 50% of required trees to be evergreen, and a minimum of 50% drought-tolerant plant species to be used in all landscape plans. The Outdoor Lighting Standards were adopted as part of the Targeted General Plan Amendment and Zoning Ordinance Update Final Program EIR to help decrease the overall impacts of light and glare coming from development projects by aiding in reducing ambient light glow, light spillover, and light pollution when seen in vista views, from scenic highways, and from regular vantage points.

El Dorado County Design and Improvement Standards Manual

The El Dorado County Design and Improvement Standards Manual (1990) provides guidelines and regulations for development, construction, and infrastructure within the County. It covers various aspects related to land use, roadways, and community planning and ensures that development projects adhere to consistent and high-quality standards. The Manual outlines standards for design, construction, and improvement of public infrastructure, including roads, drainage, utilities, and landscaping. Also presented within the Design and Improvement Standards Manual are specifications for grading requirements and hillside land use development standards. However, development standards under an approved specific or development plan could supersede the County Design and Improvement Standards Manual.

El Dorado County General Plan

The County General Plan was adopted in July 2004; the last amendment to the General Plan was December 10, 2019 (El Dorado County 2019). The General Plan Land Use Element and Conservation and Open Space Element contains several goals and policies related to aesthetics. The following goals, objectives and policies are applicable to the proposed project:

Land Use Element

Goal 2.5: Community Identity. Carefully planned communities incorporating visual elements which enhance and maintain the rural character and promote a sense of community.

Objective 2.5.1: Physical and Visual Separation. Provision for the visual and physical separation of communities from new development.

Policy 2.5.1.1: Low intensity land uses shall be incorporated into new development projects to provide for the physical and visual separation of communities. Low intensity land uses may include any one or a combination of the following: parks and natural open space areas, special setbacks, parkways, landscaped roadway buffers, natural landscape features, and transitional development densities.

Goal 2.6: Corridor Viewsheds. Protection and improvement of scenic values along designated scenic road corridors.

Objective 2.6.1: Scenic Corridor Identification. Identification of scenic and historical roads and corridors.

Policy 2.6.1.3: Discretionary projects reviewed prior to the adoption of the Scenic Corridor Ordinance that would be visible from any of the important public scenic viewpoints identified in Table 5.3-1 and Exhibit 5.3-1 of the El Dorado County General Plan Draft Environmental Impact Report, shall be subject to design review, and Policies 2.6.1.4, 2.6.1.5, and 2.6.1.6 shall be applicable to such projects until scenic corridors have been established.[1]

Policy 2.6.1.5: All development on ridgelines shall be reviewed by the County for potential impacts on visual resources. Visual impacts will be assessed and may require methods such as setbacks, screening, low-glare or directed lighting, automatic light shutoffs, and external color schemes that blend with the surroundings in order to avoid visual breaks to the skyline.

Goal 2.8: Lighting. Elimination of high intensity lighting and glare consistent with prudent safety practices.

Objective 2.8.1: Lighting Standards. Provide standards, consistent with prudent safety practices, for the elimination of high intensity lighting and glare.

[1] Policy 2.6.1.4 addresses commercial designations on U.S. Highway 50 interchanges and is therefore not applicable to the project. Policy 2.6.1.6 is "intentionally blank." In the General Plan.

Policy 2.8.1.1: Development shall limit excess nighttime light and glare from parking area lighting, signage, and buildings. Consideration will be given to design features, namely directional shielding for street lighting, parking lot lighting, sport field lighting, and other significant light sources, that could reduce effects from nighttime lighting. In addition, consideration will be given to the use of automatic shutoffs or motion sensors for lighting features in rural areas to further reduce excess nighttime light.

Conservation and Open Space Element

Goal 7.3: Water Quality and Quantity. Conserve, enhance, and manage water resources and protect their quality from degradation.

Objective 7.3.4: Drainage. Protection and utilization of natural drainage patterns.

Policy 7.3.4.1: Natural watercourses shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site without disturbance.

Creekside Village Specific Plan

Should the CVSP be adopted, the layout and design of project development would be guided by the development standards included within Appendix A of the CVSP. The CVSP development standards supersede County standards outlined in the County Code and the County Design and Improvement Standards Manual. Where conflicts exist between the CVSP and the County Code, for example, the CVSP standards shall govern. Where the CVSP is silent, the County Code and Design Standards Manual shall take precedence.

Appendix A of the CVSP specifies development standards that would be adopted upon approval of the CVSP. Tables A.4 and A.5 in the CVSP specify the minimum lot area, maximum building coverage, minimum yard setbacks, maximum building heights, and parking requirements for each proposed housing type. These standards may differ from those included in the County Code and Design Standards Manual; for example, the maximum building height specified for a Single-unit Residential zone is 40 feet in the County Code, while the height limit for a detached single-unit residential lot type is 35 feet in the CVSP. The CVSP includes development standards for commercial uses that are generally consistent with the Community Commercial development standards in the County Zoning Code.

The CVSP also requires the formation of a Homeowners Association (HOA) for the project and adoption of recorded Covenants, Conditions, & Restrictions (CC&Rs) that will include architectural standards and building materials requirements and restrictions within the CVSP to integrate the CVSP within the existing communities and scenic corridor. Therefore, in addition to the County's site plan review for conformity with development standards, including landscaping and lighting, residential development within the CVSP will be subject to non-governmental review of design, including architectural standards and building materials. The CVSP requires that the CC&Rs are consistent with the County's Community Design Guide adopted April 24, 2018, by Resolution 071-2018 (El Dorado County 2018) as may be amended from time to time, and the CC&Rs architectural and building materials design standards will apply to all residential development within the CVSP. Additionally, the CVSP includes a Planning Development (-PD) overlay on the Single-Family Medium Density, which would provide for Planned Development review and approval by the County for all single-family detached with alternative lot types (cluster front loaded and small lot alley loaded) and all attached single family and multi-unit (tri-plex, condominium). Because the commercial component would not be subject to the HOA CC&Rs, a Design Review permit will be required to ensure consistency with the County's Community Design Guide (adopted April 24, 2018, by Resolution 071-2018), as may be amended

from time to time. Under County Code Section 130.52.030, a Design Review permit is a ministerial staff-level review if design standards are adopted, which would be the adopted Community Design Guide.

3.1.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Cause a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. In urbanized areas, conflict with applicable zoning and other regulations governing scenic quality.
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Significance Threshold Criteria Not Applicable to the Proposed Project

State Scenic Highways

The proposed project does not include and is not located adjacent to any locally designated scenic highways or scenic roadways identified in the County General Plan. The project site is located approximately 3 miles south of Highway 50, which has not been designated or found eligible for Scenic Highway status. The closest designated scenic highway is a segment of Highway 50 beginning near the City of Placerville, more than 15 miles to the east. The proposed project would not affect or damage any scenic resources with a state scenic highway such as trees, rock outcropping, or historic buildings. Thus, there would be no impact to any scenic resources within a state scenic highway.

3.1.4 Impacts and Mitigation Measures

Methodology

The value attached to changes in visual character is largely subjective. The overall visual sensitivity is first established based on existing visual quality, viewer exposure, and viewer concern. These factors are then considered together with the level of expected visual change or contrast and significance. Visual change is an overall measure of the alteration or change in basic visual attributes such as form, line, color, and texture as a result of project implementation. Thus, a substantial adverse effect can occur when a project results in a high level of visual change or quality of public views from publicly accessible areas.

Following professionally accepted practice in analyzing visual changes, visual impacts that cross a threshold of "substantial adverse effect" are defined as a consequence of three primary factors: (1) the existing scenic quality and character of an area (landscape attributes), (2) the level of viewer exposure and concern with visual change (viewer sensitivity), and (3) the level of actual change to existing visual character and quality caused by the project

as seen by a given viewer group (FHWA 2015). The overall visual sensitivity of each key viewpoint, reflecting the anticipated level of viewer concern and visual exposure, is first established. This rating is then considered with the level of expected visual change experienced by key (existing) viewer groups and caused by the project to arrive at an assessment of potential impacts and their significance.

Views of a project by a limited number of individuals do not constitute public views and are typically not evaluated under CEQA (See *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal.App.4th 477), holding that if agency policy does not protect private views, then impacts to such private views are not significant impacts under CEQA. The most recent update to the CEQA Guidelines also clarifies that public views "are those that are experienced from a publicly accessible vantage point." (CEQA Guidelines Appendix G).

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1,8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the CVSP. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. The impact analysis below includes both options unless a difference is identified, which would be further analyzed.

Sources referenced to prepare this section include photographs of the project site, aerial imagery, the County General Plan, the CVSP, and information from the County. This analysis assumes that the proposed project would be developed consistent with the County's General Plan goals and policies, as well as all applicable design guidelines and development standards in the County Code discussed in the regulatory setting above; therefore, such policies and standards would not specifically be identified as mitigation but are discussed in the impact analysis.

Project Impacts

Impact 3.1-1. The proposed project would cause a substantial adverse effect on a scenic vista.

A scenic vista is generally defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. Scenic views are typically middle ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor. Figure 3.1-5 shows the scenic viewpoints and highways within the County, as described in the County's General Plan EIR (El Dorado County 2003). The project site is located adjacent to the viewing area of Point 18, which spans Latrobe Road from White Rock Road south to the county line and provides views in all directions of rolling hills in the middle ground and occasional vistas of the Sacramento Valley in the background. Travelers along this viewing area witness a transition from suburban development to expansive, undeveloped grassland and rolling hills at the base of the Sierra Nevada mountains. Because the project site is visible from this scenic viewpoint, there is the potential that development of the site would adversely affect a scenic vista.

The proposed project would develop approximately 208 acres of land with a mix of residential, parks and open space land uses. Figure 2-3 in Chapter 2, Project Description, illustrates the project's land use plan. The project would support standard detached single-family homes within the Single-Family Low Density (CV-SFL) designation and a mix of detached zero-lot-line lots, small lots, cluster lots, townhouses, and multi-unit residential structures (e.g., duplexes and triplexes) within the Single-Family Medium Density (CV-SFM) density. Also proposed is 1.8 acres of neighborhood commercial, although there is an option to convert this land to park uses if not adopted as part of the CVSP. As part of the mitigation measures required to address noise impacts, the project would also require 6- and 9-foot-tall solid noise barriers at the backyards of the CV-SFL lots adjacent to Latrobe Road and at lots adjacent to the proposed parks (see Figures 3.10-3, 3.10-5, and 3.10-6 in Section 3.10, Noise).

The CVSP intends to minimize changes to site topography and to blend new development into natural landforms to the extent feasible by maintaining the property profile that generally slopes away from Latrobe Road. The site reduces elevation more than 100 feet to the west away from the Latrobe Road viewing area proposed to slope 590 feet to 480 feet. The development minimizes visual intrusion on the natural landforms through site sensitive design. The project includes the preservation of the highpoint of the site, a hillside at 650 feet in the southeast corner of the site. The preservation of the highpoint of the site would also incorporate a public trail and access and thereby provide access to a public viewpoint of the surrounding area that is not available today. The CVSP would preserve and protect some valuable natural features of the site including oak trees, hillsides, and ephemeral drainages, which would provide a level of visual continuity for viewers traveling along Latrobe Road. As shown in Figure 2-3 (see Chapter 2, Project Description), the CVSP proposes open space buffers (separating CV-SFL and SV-SFM lots from the road), a 2-acre neighborhood park, and a 7-acre village park (which could be expanded to 8.8 acres if the 1.8-acre neighborhood commercial component is not adopted) along the area immediately adjacent to Latrobe Road.

Throughout the entire site, the project would include 35.7 acres of open space buffer, particularly along the proposed road that traverses east to west across the project site as well as along the project site's boundaries. Open space buffer would be visible from Latrobe Road. The project also includes 9.1 acres of open space preserve in order to protect the site's intermittent drainages, seasonal wetlands, vernal pools, and ponds, which add to the natural visual character of the site. The open space preserve would surround these natural water features generally located along the northern and northwestern boundary of the site. The open space preserve may be visible from the portion of Latrobe Road that borders the project's proposed 7-acre village park, which opens up to the beginning of the open space preserve. The CVSP also notes that open-view fencing would be incorporated along the open space boundaries that require fencing in order to maintain the visual open character of these areas. The inclusion of these open space land uses, buffers, and parks would be consistent with General Plan Policy 2.5.1.1 which promotes inclusion of low-intensity land uses into new development projects to maintain the rural character of the community. The project would also be subject to site plan review by the County to ensure conformance with development standards, including setbacks, landscaping, and lighting standards, and enforcement of the County Community Design Guidelines through the CC&Rs for residential uses and a Design Review permit for commercial uses consistent with Policy 2.6.1.3.

Although the CVSP incorporates the project components described above, buildout of the proposed project would nonetheless replace existing views of the broad foothills along Latrobe Road with foreground views of new housing, potential commercial buildings, and other structures such as solid noise barriers. Given the topography of the site, however, many of these features would be at a lower elevation than Latrobe Road and building rooflines generally would not affect views of the hill on-site. Depending on the vantage point, some buildings and structures could act as a barrier to views of the hillsides available both on-site and farther in the distance. While this would replace views of the unique natural landscape with foreground views typical of a modern-day suburban residential development, the project site has been anticipated to develop since the early 1980s and the project site could be developed with taller and larger buildings. The General Plan EIR identified the scenic views and vistas at the project site along Latrobe Road and found that the aesthetic impacts to those scenic views and vistas would be significant with anticipated buildout under the General Plan. (GP EIR pp. 5.3-23 to 5.3-25.) When compared to the existing undeveloped property, the project would permanently impact the aesthetic value of a portion of the existing scenic vista as seen from this segment of Latrobe Road. Therefore, development of the proposed project would result in a **potentially significant impact** to scenic vistas.

Active Adult Option

The Active Adult option would allow substantially the same residential type of development and have the same project footprint as the proposed project, but most homes would likely have a reduced building height because age-restricted homes would be limited to single story. Given the topography of the site: however, even two-story homes included under the proposed project would be located at a lower elevation than Latrobe Road, as discussed under Impact 3.1-2 below. Reducing the height of the rooflines with single story homes is unlikely to significantly affect project impacts of the existing scenic views and vistas. The maximum height for the private community center or private clubhouse facilities in the Specific Plan under the active adult option is the same (2 stories and 35 feet) as under the proposed project.

Therefore, while the reduced home heights could slightly reduce impacts to scenic views and vistas for travelers along Latrobe Road, it would not be expected to reduce impacts to less than significant. Impacts to scenic vistas would remain the same as the proposed project, potentially significant.

Mitigation Measures

There are no feasible mitigation measures that would reduce this impact to less-than-significant levels because any development of buildings and structures within this site would interfere with the view of an existing scenic vista as seen from Latrobe Road. Therefore, this impact is **significant and unavoidable.**

Impact 3.1-2. The proposed project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings.

Public Resources Code Section 21071 defines an “urbanized area” as “an incorporated city that meets either of the following criteria: (1) Has a population of at least 100,000 persons, or (2) Has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons.” The project site is located in unincorporated El Dorado County, not in an incorporated city. According to this definition, the project site would not be considered an urbanized area.

CEQA Guidelines Section 15387 also defines “urbanized area” as "a central city or a group of contiguous cities with a population of 50,000 or more, together with adjacent densely populated areas having a population density of at least 1,000 persons per square mile”. The nearest incorporated city in the County is the City of Placerville, located approximately 15 miles northeast of the project site. The City of Folsom, in neighboring Sacramento County is located approximately 6 miles to the west. Additionally, the project site is located in Census Tract 307.11 which had a population of 6,724 people based on the most recent Census data from the 2022 American Community Survey 5-year estimates, and a land area of 8.9 square miles, which is a population density of approximately 757 people per square mile (Census Reporter 2024). According to this definition the project site would not be considered an urbanized area.

The project site is located in the lower foothills of a Community Region of the unincorporated County, and the visual character of the site is primarily defined by expansive grassland and gently rolling hills. Implementation of the proposed project would allow for different land uses than the uses that would have been allowed when the area was first designated for development in the 1980s. Under current zoning the land uses have shifted from industrial (R&D) to residential uses. The change in allowable development would result in the development of land uses that are similar to other residential development projects in the area, including the Valley View Specific Plan (Blackstone) and Carson Creek Specific Plan (Heritage Park). The Valley View Specific Plan is located immediately east of the

project site across Latrobe Road and the Carson Creek Specific Plan borders the proposed project site to the west. The proposed project would result in the development of approximately 208 acres of land with a mix of residential, parks, and open space land uses, with a small neighborhood commercial component that could be converted to use to park uses if not adopted as part of the CVSP. Residential development would make up 136.6 acres of the project site (which would be the same as under the Active Adult option) and would include 668 CV-SFL lots throughout the site and 250 CV-SFM lots in the western-central portion of the site. The potential neighborhood commercial use would be 1.8 acres in size, adjacent to Latrobe Road and the 7-acre village park. One 2.2-acre neighborhood park would be located in the southwestern corner of the site and the other 4.4-acre neighborhood park would be located in the south-central portion of the site, surrounded by residential development. Approximately 44 acres would be dedicated to open space preserves and buffers while approximately 11 acres would be dedicated to the project's internal roadway system.

As shown in Figures 3.1-7 through 3.1-14, public views of the site show undeveloped grassland dotted with rock outcrops, shrubs, seasonal drainages, and a small grove of blue oak trees atop a hill. Upon buildout of the proposed project (or Active Adult option), these existing public views would change dramatically. New views from Latrobe Road facing south (Figure 3.1-7) would consist of a 9-foot-tall solid noise barrier at the backyard of new CV-SFL homes, however; given the topography of the site, the noise barrier would be at an elevation 10 feet below the existing roadway based on the preliminary grading plan. As specified in mitigation measure NOI-4 (see Section 3.10, Noise) this noise barrier may be a masonry wall, earthen berm, or a combination of the two, although other materials (e.g. wood or wood composite fence with overlapping slat construction) may be acceptable if approved by a qualified acoustical consultant. Rooflines and/or second stores of the CV-SFL homes would be visible above the proposed solid noise barrier. Homes under the Active Adult option would be single-story and not visible above the barrier if developed adjacent to Latrobe Road; however, changes to the visual character of the site under this option would essentially be the same as the proposed project. From Latrobe Road facing southwest (Figure 3.1-8) there would be views of the new 7-acre village park. Beyond these components of the village park, there would be views of the CV-SFM homes which could consist of a mix of detached zero-lot-line lots, small lots, cluster lots, townhouses, and multi-unit residential structures (e.g., duplexes and triplexes). Near the intersection of Latrobe Road and Royal Oaks Drive (Figure 3.1-9) views of the site would consist of a small neighborhood commercial center. Potential development could include convenience stores, professional offices, and coffee shops (see CVSP Appendix A). However, if the 1.8-acre neighborhood commercial use is not adopted, this land would become part of the village park and views would be similar to those described above. Continuing southwest on Latrobe Road (Figure 3.1-10) views would consist of a 6-foot-tall solid noise barrier at the backyard of new CV-SFL homes. This noise barrier would be slightly lower than the one proposed northwest along Latrobe Road; therefore, rooflines or second stories of new homes would be more visible above the barrier. Near the intersection of Latrobe Road and Wetsel-Oviatt Road looking northwest, views would consist of CV-SFL homes with open space buffer at the forefront. This view would be partially obscured by the existing hill with blue oak trees at the southwestern corner of the site. From Wetsel-Oviatt Road facing northeast (Figure 3.1-12) and northwest (3.1-13) there would be a broad view of new development throughout the entire site, because these viewpoints are at a higher elevation relative to the project site. Lastly, from the El Dorado Hills Business Park looking southwest (Figure 3.1-14), existing foreground views would be similar to current conditions because the proposed open space buffer and open space preserve would retain the natural features within this portion of the site. However, new CV-SFL homes would be visible in the background beyond the open space, although the extent of visibility would be reduced with the existing topography.

As proposed, the project would be in compliance with County General Plan Policy 2.5.1.1, which requires low intensity land uses to be incorporated into new development projects to provide for the physical and visual separation of communities. This can include any one or the combination of parks and natural open spaces, special

setbacks, parkways, landscaped roadway buffers, natural landscape features, and transitional development intensities. The proposed project as well as the Active Adult option would alter the existing visual character of the site, but the inclusion of open space features would slightly reduce the overall visual effect of new development. Likewise, in accordance with General Plan Policy 7.3.3.5, the project integrates the natural drainages into the development plan as open space areas that would enhance the aesthetic and natural character of the site while also minimizing disturbance to the resource. The project would also be subject to site plan review by the County to ensure conformance with development standards, including setbacks, landscaping, and lighting standards. The Specific Plan also requires that to ensure consistency with Policy 2.6.1.3, the County Community Design Guidelines will be enforced through CC&Rs for residential uses and a Design Review permit for commercial uses. The project has also preserved the aesthetic qualities of the natural creek and drainage patterns consistent with General Plan Policies 5.4.1.2 and 7.3.4.1 and preserved existing trees consistent with Policies 7.4.4.2 and 7.4.4.3.

Although the project would adhere to all relevant plans and policies regarding visual resources and site design, including the General Plan policies mentioned above, the proposed project would nonetheless alter the existing undisturbed and undeveloped visual character and quality of public views of the project site. The magnitude of this change would be partially ameliorated through the design measures described above, but changes to the project site would be permanent, and views of the project site would no longer be of undeveloped land. As currently zoned, however, the project site is part of the Community Region and was not anticipated or intended to remain open space. As discussed above, it has been presumed to develop with more intense uses since the 1980s with approval of the El Dorado Hills Business Park. However, this change would constitute a substantial degradation to the current visual character and quality of public views of the site. This is a **potentially significant impact**.

Mitigation Measures

There are no feasible mitigation measures that would reduce this impact to a less-than-significant level because any development of buildings and structures within this site would change the nature of the site from undeveloped grassland to a suburban residential development. Therefore, this impact is **significant and unavoidable**.

Impact 3.1-3. The proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

The project site is undeveloped so there is no existing source of light or glare. Daytime sources of light and glare adjacent to the site are sparse and concentrated at the northern, eastern, and western borders, consisting of limited reflections from building windows or surfaces of cars traveling along Latrobe Road and windows on residences to the east and commercial or industrial buildings to the northwest. Nighttime light sources in the vicinity of the site generally include streetlights within the El Dorado Hills Business Park to the north, Heritage Park to the west, and the Blackstone residential neighborhood across Latrobe Road to the northeast.

The proposed project would introduce new sources of light and glare to the site, including interior and exterior building lights, vehicle headlights, and reflective surfaces such as windows or metal surfaces. According to the CVSP, streetlights would be provided at key local public street intersections within the project site. Residences may have exterior lighting, which is typically low-level or recessed, of low intensity. Security lighting may be placed along pathways and other pedestrian use areas, as well as in building and site design to enhance public safety and deter criminal activity. These lights could potentially produce spillover light and glare which would adversely affect nighttime views in the area, but spillover beyond the property line would not be allowed under existing County standards.

The project would be required to comply with Chapter 130.34 of the County's Zoning Ordinance which includes criteria for lighting practices and systems and standards for the elimination of excess nighttime light and glare. This includes requirements for shielding light to avoid impacts on adjoining areas. Also applicable are the Outdoor Lighting Standards (El Dorado County 2015a) adopted in 2015 to augment the standards found in the Zoning Ordinance. These standards include maximum height limits for light fixtures, and requirements for outdoor luminaires to be full cutoff if rated greater than 1,000 initial lumens, among other outdoor lighting guidelines. In addition, General Plan Policy 2.8.1.1 requires that consideration be given to design features, namely directional shielding for street lighting, parking lot lighting, and other significant light sources, that could reduce effects from nighttime lighting. The Policy also states that automatic shutoffs or motion sensors for lighting features in rural areas to further reduce excess nighttime light should be considered. The California Green Building Code further establishes limits for the quantities of lighting that can be emitted based upon building components. Project development would be required to comply with all applicable County requirements and the state's California Green Building Code.

Increased daytime glare resulting from the addition of residential windows, car windows, and building materials into the project area could result from project development. However, these elements of glare would be typical of those normally found in residential developments and are not expected to significantly impact day or nighttime views of the area. The project does not propose the use of building materials that are highly reflective. For these reasons, the project would not significantly increase glare in or around the project site. The Active Adult option would also adhere to the same Specific Plan objective of limiting lighting to locations where required for safety and would comply with the County's lighting standards, the same as the project.

In summary, all proposed lighting would be installed in accordance with the standards and specifications set forth by the County. All exterior lighting associated with development would be reviewed for compliance with the County Code by County planning staff. Compliance with General Plan policies, the County's Zoning Ordinance, the Outdoor Lighting Standards, and the California Green Building Code would ensure that outdoor lighting would be located, adequately shielded, and directed such that no direct light falls outside the property line, or into the public right-of-way. The project also does not include any components that would cause a substantial new source of glare. Therefore, project impacts related to the creation of a new source of substantial light or glare which would adversely affect day or nighttime views in the area would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

The geographic context for the evaluation of cumulative impacts to visual resources is confined to the area that comprises the public viewshed in which the project site is visible. The cumulative context consists of any buildout associated with the General Plan or additional cumulative projects since adoption of the General Plan that would be in the public viewshed with the proposed project (see Chapter 3). The General Plan has presumed buildout of the project site with R&D uses since the 1980s. Of the projects described in the cumulative setting in Chapter 3, Environmental Analysis, only two projects are visible from the same public viewpoints: the Carson Creek Specific Plan (Heritage Park), which borders the proposed project site to the west and the Valley View Specific Plan (Blackstone), located east of the project site across Latrobe Road. Both of these projects were included in the 2025 planning horizon for the County's General Plan and are considered to be existing commitments—projects for which a tentative map or development agreement existed before approval of the 2004 County's General Plan but that were not built out at the time the General Plan was adopted in 2004. The Valley View Specific Plan includes 2,840

approved residential units and is partially built out with 701 remaining units to be built. The Carson Creek Specific Plan includes 1,925 approved residential units with 381 remaining units to be built. Both projects also include commercial and parks/open space components which have not yet been fully built out.

The cumulative context for light would be other development in the surrounding area that could affect the same area as that affected by project-generated light at the same time the proposed project is in operation.

Impact 3.1-4. The proposed project would contribute to a significant cumulative impact related to scenic vistas.

As stated above, the cumulative context for aesthetics includes the area that comprises the viewshed in which the project site is visible. For impacts to scenic vistas specifically, this includes projects visible along Latrobe Road between White Rock Road south to the County line, as this portion of Latrobe Road is identified as an important scenic viewpoint in the General Plan EIR. As described in the County General Plan EIR, the county is anticipated to experience growth in association with new and infill development, which may degrade the quality of scenic vistas. The EIR determined that implementation of mitigation measures 5.3-1(a) through 5.3-1(d), which restate General Plan policies related to scenic corridors, would reduce impacts to scenic vistas to a less-than-significant level. These policies include Policy 2.6.1.1 which states that a Scenic Corridor Ordinance shall be prepared and adopted for the purpose of establishing standards for the protection of scenic local roads and state highways, Policy 2.6.1.6 which states that a Scenic Corridor Combining Zone District shall be applied to all lands within an identified scenic corridor, and Policy 2.6.1.3 which states that prior to adoption of the Scenic Corridor Ordinance, discretionary projects visible from any scenic viewpoints identified in the General Plan EIR shall be subject to design review.

A Scenic Corridor Ordinance (Policy 2.6.1.1) and Scenic Corridor Combining Zone District (2.6.1.6) have not yet been adopted by the County. Given that the General Plan EIR partially relies on these policies to reduce impacts, it is conservatively presumed that there is an existing significant cumulative impact caused by future development within this scenic viewpoint visible along Latrobe Road (including the Valley View Specific Plan and Carson Creek Specific Plan) that the proposed project would contribute to.

As discussed in Impact 3.1-1, the proposed project (including the Active Adult option) would replace existing views of the rolling terrain and broad foothills along Latrobe Road with foreground views of new housing, potential commercial buildings, and other structures such as solid noise barriers. Although the project would be subject to site plan review by the County to ensure consistency with development standards and design standards consistent with the County Community Design Guidelines, the development and design standards, at a minimum, would be enforced through the CVSP HOA for residential uses and through the County of El Dorado via a Design Review permit for commercial uses consistent with Policy 2.6.1.3, as any development of buildings and structures within this area along Latrobe Road would interfere with the view of an existing scenic vista. The General Plan EIR also recognized that buildout under the General Plan, including anticipated building of the project site with R&D uses, would impact the existing visual character or quality of the area. Considering the size and location of the project within the viewing area of an important scenic viewpoint, it is presumed that the proposed project would result in a **significant contribution** to the cumulative impact.

Mitigation Measures

There are no feasible mitigation measures that would reduce the project's contribution to less than cumulatively considerable levels because any development of buildings and structures within this site would significantly interfere with the existing view of a scenic vista from Latrobe Road. Therefore, this impact is **significant and unavoidable**.

Impact 3.1-5. The proposed project would contribute to a significant cumulative impact related to visual character and quality of public views.

As undeveloped areas transition from a rural to an urban character, existing viewsheds within the county would be affected, existing views of rural uses and undeveloped land would be changed to urban uses, and long-range views of the foothills may be altered or obstructed. Important visual resources such as mature trees, rock outcroppings, and open grasslands would be lost to new development. The General Plan EIR determined that there would be a significant and unavoidable impact related to the loss of rural character which could not be eliminated or mitigated to a less-than-significant level and the project site could be developed with R&D uses. Thus, even without the proposed project, there would be an existing significant cumulative impact related to visual character and quality of public views.

New development as part of the proposed project would alter the visual character of the area by developing approximately 208 acres of currently undeveloped land. This would constitute a substantial degradation to the existing visual character of the site as views of this undeveloped landscape would no longer be available. This would also combine with the impacts from development of the Valley View and Carson Creek Specific Plans and El Dorado Hills Business Park, which are visible from many of the same public viewpoints as the proposed project. Although the proposed project would be subject to site plan review by the County to ensure consistency with development standards and design standards consistent with the County Community Design Guidelines, the development and design standards, at a minimum, would be enforced through the HOA for residential uses and through the County of El Dorado via a Design Review permit for commercial uses consistent with Policy 2.6.1.3, development of the project would nonetheless contribute to the permanent cumulative loss of views of bucolic, undeveloped landscapes and there is no feasible mitigation to reduce the project's contribution to less than considerable. It is presumed that the proposed project's contribution would be cumulatively considerable resulting in a **significant contribution** to the cumulative impact associated with visual character and quality of public views.

Mitigation Measures

There are no feasible mitigation measures that would reduce the project's contribution to less than cumulatively considerable levels. However, development of buildings and structures within this site has been anticipated since the 1980s and presumed under the General Plan. Still, any development would reduce the undeveloped land and associated rural character within the viewshed. Therefore, this impact is **significant and unavoidable**.

Impact 3.1-6. The proposed project would not contribute to a significant cumulative impact related to light and glare.

As undeveloped areas transition from rural to urban character, the amount of light and glare would increase due to new buildings, structures, streetlights, and vehicle lights. The cumulative context for light and glare would be other development in the surrounding area that could contribute to an increase in light and glare. The County's General Plan EIR concluded that implementation of mitigation measures 5.3-3(a) and 5.3-3(b), which restate General Plan policies (including Policy 2.8.1.1 related to design features to reduce effects of nighttime lighting), would reduce light and glare impacts to a less-than-significant level. Therefore, because it presumed that all new projects (including the proposed project in addition to the Active Adult option) would be required to comply with General Plan policies related to light and glare, there is **no existing cumulative impact** to which the project could contribute.

Mitigation Measures

No mitigation measures are required.

3.1.5 References

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3.2 Air Quality

The following analysis identifies potential impacts related to air quality due to implementation of the proposed Creekside Village Specific Plan (proposed project or CVSP). This section describes the existing air quality conditions within the air basin that includes El Dorado County (County), identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project.

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) included concerns related to potential adverse effect on the existing air quality conditions including increasing carbon monoxide (CO) levels along local roadways affecting sensitive receptors, exceedance of federal and state air quality standards, and the potential to be inconsistent with the goals identified in the County's regional air quality plan. No additional comments were received at the second scoping meeting held on September 26, 2023. All of these concerns are addressed in this section. A copy of the NOP and comments received are included in Appendix A.

The primary sources referenced to prepare this section include the Air Quality and Greenhouse Gas Impact Analysis prepared by Raney Planning & Management (Appendix B); the El Dorado County Air Quality Management District's (EDCAQMD) Determining Significance of Air Quality Impacts Under the California Environmental Quality Act (Guide to Air Quality Assessment) (EDCAQMD 2002), and the Office of Environmental Health Hazards Assessment's (OEHHA) 2015 Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2015).

3.2.1 Environmental Setting

The project is located within the Mountain Counties Air Basin (MCAB or basin) portion of El Dorado County (County). As summarized in the EDAQMD Guide to Air Quality Assessment (EDCAQMD 2002), the MCAB comprises the mountainous area of the central and northern Sierra Nevada Mountains, from Plumas County to Mariposa County. Elevations within the basin range from several hundred feet above mean sea level (AMSL) in the foothills to over 10,000 feet AMSL along the Sierra Crest. The general climate of the basin varies considerably with elevation and proximity to the Sierra ridge. The pattern of mountains and hills causes a wide variation in rainfall, temperature, and localized winds throughout the MCAB. Temperature variations have an important influence on basin wind flow, dispersion along mountain ridges, vertical mixing, and photochemistry. The Sierra Nevada Mountains receive large amounts of precipitation from storms moving in from the Pacific in the winter, with lighter amounts from intermittent "Monsoonal" moisture flows from the south and cumulus buildup in the summer. Precipitation levels are high in the highest mountain elevations but decline rapidly toward the western portion of the basin. Winter temperatures in the mountains can be below freezing for weeks at a time, and substantial depths of snow can accumulate, but in the western foothills, winter temperatures usually dip below freezing only at night and precipitation is mixed as rain or light snow. In the summer, temperatures in the mountains are mild, with daytime peaks in the 70s to low 80s degrees Fahrenheit, but the western end of the county can routinely exceed 100 degrees Fahrenheit (EDCAQMD 2002).

From an air quality perspective, the topography and meteorology of the MCAB combine such that local conditions predominate in determining the effect of emissions in the basin. Regional airflows are affected by the mountains and foothills, which direct surface air flows, cause shallow vertical mixing, and create areas of high pollutant concentrations by hindering dispersion. Inversion layers, where warm air overlays cooler air, frequently occur and trap pollutants close to the ground. In the winter, these conditions can lead to carbon monoxide (CO) "hotspots" along heavily traveled roads and at busy intersections. During summer's longer daylight hours, stagnant air, high

temperatures, and plentiful sunshine provide the conditions and energy for the photochemical reaction between reactive organic gases (ROG) and oxides of nitrogen (NO_x) that results in the formation of ozone (O_3). Because of its long formation time, O_3 is a regional pollutant rather than a local hotspot problem. In the summer, the strong upwind valley air flowing into the basin from the Central Valley to the west is an effective transport medium for O_3 precursors and ozone generated in the Bay Area and the Sacramento and San Joaquin valleys. These transported pollutants predominate as the cause of O_3 in the basin and are largely responsible for the exceedances of the state and federal O_3 ambient air quality standards (AAQS). The California Air Resources Board (CARB) has officially designated the MCAB as O_3 impacted by transport from those areas (EDCAQMD 2002).

Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The national and California standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following paragraphs.[1]

Ozone

O_3 is a strong-smelling, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly NO_x and ROG. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The O_3 that the U.S. Environmental Protection Agency (EPA) and CARB regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric, or "good," O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

Inhalation of O_3 causes inflammation and irritation of the tissues lining human airways, causing, and worsening a variety of symptoms. Exposure to O_3 can reduce the volume of air that the lungs breathe in and cause shortness of breath. Research shows adults and children who spend more time outdoors participating in vigorous physical activities are at greater risk from the harmful health effects of O_3 exposure. While there are relatively few studies of O_3's effects on children, the available studies show that children are no more or less likely to suffer harmful effects than adults. However, there are a number of reasons why children may be more susceptible to O_3 and other pollutants. Children and teens spend nearly twice as much time outdoors and engaged in vigorous activities as adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults. Also, children are less likely than adults to notice their own symptoms and avoid harmful exposures (CARB 2019b).

[1] The descriptions of the criteria air pollutants and associated health effects are based on the EPA's Criteria Air Pollutants (EPA 2022), CARB's Glossary of Air Pollutant Terms (CARB 2019a), and CARB's "Fact Sheet: Air Pollution Sources, Effects and Control" (CARB 2009).

Nitrogen Dioxide and Oxides of Nitrogen

NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_x, which includes NO_2 and nitric oxide, plays a major role, together with ROG, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. The two major emissions sources of NO_x are transportation and stationary fuel combustion sources (such as electric utility and industrial boilers).

A large body of health science literature indicates that exposure to NO_2 can induce adverse health effects. Infants and children are particularly at risk because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term NO_2 exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher levels of exposure compared to children with lower exposure levels. In addition, children with asthma have a greater degree of airway responsiveness compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease (CARB 2019c).

Carbon Monoxide

CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. In urban areas, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent. Notably, because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots is steadily decreasing.

The most common effects of CO exposure are fatigue, headaches, confusion and reduced mental alertness, light-headedness, and dizziness due to inadequate oxygen delivery to the brain. Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO (CARB 2019d).

Sulfur Dioxide

SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. Due to the project location, it is unlikely that residents, guests, and employees would be exposed to substantial SO_2 concentrations.

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides, NO_x, and ROG.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM_{10} tends to collect in the upper portion of the respiratory system, whereas $PM_{2.5}$ is small enough to penetrate deeper into the lungs and damage lung tissue.

A number of adverse health effects have been associated with exposure to both $PM_{2.5}$ and PM_{10}. For $PM_{2.5}$, short-term exposures (up to 24-hour duration) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days.[2] These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. In addition, of all the common air pollutants, $PM_{2.5}$ is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and worldwide. Short-term exposures to PM_{10} have been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits (CARB 2017). The effects of long-term exposure to PM_{10} are less clear, although several studies suggest a link between long-term PM_{10} exposure and respiratory mortality.

Lead

Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern. Due to the project location, it is unlikely that residents, guests, and employees would be exposed to substantial lead concentrations.

Sulfates

Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere and can result in respiratory impairment, as well as reduced visibility.

[2] "Restricted activity days" are days that an individual adjusts behavior based on health reasons, such as a work-loss or school-loss day.

Vinyl Chloride

Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer. Due to the project location, it is unlikely that residents, guests, and employees would be exposed to substantial vinyl chloride concentrations.

Hydrogen Sulfide

Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations. Due to the project location, it is unlikely that residents, guests, and employees would be exposed to substantial hydrogen sulfide concentrations.

Visibility-Reducing Particles

Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for $PM_{2.5}$ described above.

Reactive Organic Gases

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as ROGs [also referred to as volatile organic compounds (VOCs)]. Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of ROGs result from the formation of O_3 and its related health effects. High levels of ROGs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for ROGs as a group.

Non-Criteria Air Pollutants

Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic non-cancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics “Hot Spots” Information and Assessment Act, Assembly Bill (AB) 2588, was enacted in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that

will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples of TACs include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced with either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter

Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of $PM_{2.5}$ (CARB 2019f). DPM is typically composed of carbon particles (“soot,” also called black carbon) and numerous organic compounds, including over 40 known carcinogenic organic substances. CARB classified “particulate emissions from diesel-fueled engines” (i.e., DPM) (17 CCR Section 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars; and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Those most vulnerable to non-cancer health effects are children, whose lungs are still developing, and the elderly, who often have chronic health problems.

Naturally Occurring Asbestos

In the county, naturally occurring asbestos is another TAC of concern. Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong and durable fibers, with principal forms including chrysotile, crocidolite, amosite, tremolite, actinolite, and anthophyllite (OEHHA 2000). Naturally occurring asbestos is found most commonly where ultramafic rock or serpentinite rock is present. The project site is not within an Asbestos Review Area within the county and is not expected to contain naturally occurring asbestos.

Odorous Compounds

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person’s reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly,

athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and places where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005).

The closest off-site sensitive receptors to the proposed project consist of residential uses to the east and northeast of the project site across Latrobe Road, a public charter school located northwest (John Adams Academy), and a church located approximately 2,000 feet northwest of the project site (Live 58 Church). An active adult (55 and older) residential development is also under construction to the west of the project site and would be a continuation of the active adult Heritage community located to the northwest of the project site.

3.2.2 Regulatory Setting

Please see Appendix B for a more detailed description of plans, requirements, regulations and ordinances that are applicable to the project. The following provides a summary of regulations applicable to the proposed project.

Federal

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including the setting of National Ambient Air Quality Standards (NAAQS) for major air pollutants, hazardous air pollution (HAP) standards, approval of state attainment plans, motor vehicle emission standards, stationary source emissions standards and permits, acid rain control measures, stratospheric O_3 protection, and enforcement provisions. Federal standards are established for criteria pollutants under the Clean Air Act, which are O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the federal standards to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels.

Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify National Emission Standards for HAPs to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

State

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with

subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established CAAQS, which are generally more restrictive than the NAAQS. As stated previously, an ambient air quality standard defines the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without harm to the public's health. For each pollutant, concentrations must be below these relevant CAAQS before a basin can attain the corresponding CAAQS. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

California air districts have based their thresholds of significance for California Environmental Quality Act (CEQA) purposes on the levels that scientific and factual data demonstrate that the air basin can accommodate without affecting the attainment date for the NAAQS or CAAQS.

The NAAQS and CAAQS are presented in Table 3.2-1, Ambient Air Quality Standards.

Table 3.2-1. Ambient Air Quality Standards

Pollutant	Average Time	California Standards[a]	Federal Standards[b]	
		Concentration[c]	Primary[c,d]	Secondary[c,e]
O_3	1 hour	0.09 ppm (180 µg/m³)	—	Same as primary standard
	8 hours	0.070 ppm (137 µg/m³)	0.070ppm (137 µg/m³)[f]	
NO_2[g]	1 hour	0.18 ppm (339 µg/m³)	0.100 ppm (188 µg/m³)	Same as primary standard
	Annual arithmetic mean	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[h]	1 hour	0.25 ppm (655 µg/m³)	0.075 ppm (196 µg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 µg/m³)
	24 hours	0.04 ppm (105 µg/m³)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 µg/m³	150 µg/m³	Same as primary standard
	Annual arithmetic mean	20 µg/m³	—	
$PM_{2.5}$[i]	24 hours	No separate state standard	35 µg/m³	Same as primary standard
	Annual arithmetic mean	12 µg/m³	12.0 µg/m³	15.0 µg/m³
Pb[j,k]	30-day average	1.5 µg/m³	—	—
	Calendar quarter	—	1.5 µg/m³ (for certain areas)[j]	Same as primary standard
	Rolling 3-month average	—	0.15 µg/m³	

Table 3.2-1. Ambient Air Quality Standards

Pollutant	Average Time	California Standards[a]	Federal Standards[b]	
		Concentration[c]	Primary[c,d]	Secondary[c,e]
H_2S	1-hour	0.03 ppm (42 µg/m³)	—	—
Vinyl chloride[i]	24-hour	0.01 ppm (26 µg/m³)	—	—
SO_4	24-hour	25 µg/m³	—	—
Visibility-reducing particles	8-hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%	—	—

Source: CARB 2016.
Notes: O_3 = ozone; ppm= parts per million by volume; µg/m³ = micrograms per cubic meter; NO_2 = nitrogen dioxide; CO = carbon monoxide; mg/m³ = milligrams per cubic meter; SO_2 = sulfur dioxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; Pb = lead; H_2S = hydrogen sulfide; SO_4 = sulfates; PST = Pacific standard time.

a State standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, and suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility-reducing particles—are values that are not to be exceeded. All others are not to be equaled or exceeded. The CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

c Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25° Celsius (C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

d National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

e National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

f On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

g To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb, whereas California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

h In 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

i On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

j CARB has identified Pb and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

j The national standard for Pb was revised on October 15, 2008, to a rolling 3-month average. The 1978 Pb standard (1.5 µg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

k The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions.

In 2000, the CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment Program.

California Code of Regulations

The California Code of Regulations (CCR) is the official compilation and publication of regulations adopted, amended or repealed by state agencies pursuant to the Administrative Procedure Act. The CCR includes regulations that pertain to air quality emissions. Specifically, Section 2485 in Title 13 of the CCR states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to five minutes at any location. In addition, Section 93115 in Title 17 of the CCR states that operations of any stationary, diesel-fueled, compression-ignition engines shall meet specified fuel and fuel additive requirements and emissions standards.

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

Local

El Dorado County Air Quality Management District

The EDCAQMD is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the MCAB, where the project is located. The MCAB portion of the county lies within the area designated by the EPA as the Sacramento Federal Ozone Nonattainment Area (SFONA), comprised of Sacramento and Yolo counties, and parts of El Dorado, Solano, Placer, and Sutter counties.

The clean air strategy of the EDCAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the federal and state Clean Air Act.

The Sacramento region is classified as a severe nonattainment area for the 2008 NAAQS. The EDCAQMD along with the other air districts which comprise the SFONA, developed the *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Ozone Attainment Plan) to demonstrate attainment of the 2008 8-hour NAAQS by an attainment year of 2024 (EDCAQMD *et al.* 2017). This plan was approved by EDCAQMD and the other air districts that comprise the SFONA on August 24, 2017. The Ozone Attainment Plan was adopted by CARB on November 16, 2017, which was then forwarded to EPA.

Air districts within the Sacramento Federal Nonattainment Area for $PM_{2.5}$ (SFNA-$PM_{2.5}$) prepared the *$PM_{2.5}$ Implementation/Maintenance Plan and Redesignation Request for Sacramento $PM_{2.5}$ Nonattainment Area* ($PM_{2.5}$ Maintenance Plan) to address how the region attained and would continue to attain the 24-hour $PM_{2.5}$ standard (EDCAQMD *et al.* 2013). Further, on May 10, 2017, EPA found that the SFNA-$PM_{2.5}$ attained the 2006 24-hour $PM_{2.5}$ NAAQS by the attainment date of December 31, 2015. The $PM_{2.5}$ Maintenance Plan will be updated and submitted in the future based on the clean data finding made by the EPA.

The EDCAQMD has adopted rules and regulations as a means of implementing the air quality plans for the County and has also prepared the Guide to Air Quality Assessment, which provides quantitative emission thresholds and established protocols for the analysis of air quality impacts from projects and plans. The Guide to Air Quality Assessment outlines quantitative and qualitative significance criteria, methodologies for the estimation of construction and operational emissions and mitigation measures to reduce significant impacts (EDCAQMD 2002).

The EDCAQMD rules applicable to the project include the following:

- **Rule 205 – Nuisance.** This rule prohibits the discharge from any source such as quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or to the public, or which endanger the comfort, repose, health or safety of any such persons, or the public, or which cause to have a natural tendency to cause injury or damage to business or property.
- **Rule 215 – Architectural Coatings.** This rule requires manufacturers, distributors, and users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of use of these coatings by placing limits on the VOC content of various coating categories.
- **Rule 223 – Fugitive Dust.** This rule governs the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. It applies to any construction or construction related activities including but not limited to, land clearing, grubbing, scraping, travel on site, and travel on access roads.
- **Rule 223-1 – Fugitive Dust – Construction.** This rule requires a Fugitive Dust Control Plan be submitted to the Air Pollution Control Officer prior to the start of any construction activity for which a grading permit was issued by El Dorado County.
- **Rule 223-2 – Fugitive Dust – Asbestos Hazard Mitigation.** This rule reduces the amount of asbestos particulate matter that may be released as a result from construction related activities through the use of required actions or mitigation.
- **Rule 224 – Cutback and Emulsified Asphalt Paving Materials.** This rule governs the use of asphalt and limits the VOC content in asphalt.

El Dorado County Attainment Designation

Pursuant to the 1990 federal Clean Air Act amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved.

Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as attainment for that pollutant. If an area exceeds the standard, the area is classified as nonattainment for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards. Similar to the federal Clean Air Act, the California Clean Air Act designated areas as attainment or nonattainment but based on California Ambient Air Quality Standards (CAAQS) rather than the NAAQS.

Table 3.2-2 identifies the current attainment status of the MCAB, including the project area, with respect to the NAAQS and CAAQS, and the attainment classifications for the criteria pollutants. In summary, the western El Dorado County portion of the MCAB is designated as a nonattainment area for both federal and state O_3 standards, the state PM_{10} standard, and the federal $PM_{2.5}$ standard. The County is designated "unclassified" or "attainment" for all other criteria air pollutants (EPA 2023; CARB 2022).

Table 3.2-2. Mountain Counties Air Basin Attainment Status (Western El Dorado County)

Pollutant	Averaging Time	Designation/Classification
National Standards		
O_3	8 hours	Nonattainment/Serious (2015 NAAQS) Nonattainment/Severe (2008 NAAQS)
NO_2	1 hour, annual arithmetic mean	Unclassifiable/Attainment
CO	1 hour; 8 hours	Unclassifiable/Attainment
SO_2	24 hours; annual arithmetic mean	Unclassifiable/Attainment
PM_{10}	24 hours	Unclassifiable/Attainment
$PM_{2.5}$	24 hours; annual arithmetic mean	Nonattainment/Moderate
Lead	Quarter; 3-month average	Unclassifiable/Attainment
California Standards		
O_3	1 hour; 8 hours	Nonattainment
NO_2	1 hour; annual arithmetic mean	Attainment
CO	1 hour; 8 hours	Unclassified
SO_2	1 hour; 24 hours	Attainment
PM_{10}	24 hours; annual arithmetic mean	Nonattainment
$PM_{2.5}$	Annual arithmetic mean	Unclassified
Lead	30-day average	Attainment
SO_4	24 hours	Attainment
H_2S	1 hour	Unclassified
Vinyl chloride	24 hours	No designation
Visibility-reducing particles	8 hours (10:00 a.m.–6:00 p.m.)	Unclassified

Sources: CARB 2022 (California); EPA 2023 (national).
Notes: O_3 = ozone; NO_2 = nitrogen dioxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SO_4 = sulfates; H_2S = hydrogen sulfide.

Local Ambient Air Quality

The County's local ambient air quality is monitored by CARB. CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The Placerville monitoring station, located at 3111 Gold Nugget Way, Placerville, California, is the nearest air quality monitoring station to the project site. Data for this site was only available for 8-hour O_3 and 1-hour O_3 concentrations. The nearest station that monitors PM_{10} is located at 151 N Sunrise Avenue, Roseville, California and the nearest station that monitors $PM_{2.5}$ is located at 50 Natoma Street, Folsom, California. The data collected at these stations are considered representative of the air quality experienced in the project vicinity. Air quality data from 2019 through 2021 are provided in Table 3.2-3. The number of days exceeding the ambient air quality standards is also shown in Table 3.2-3.

Table 3.2-3. Local Ambient Air Quality Data

Averaging Time	Ambient Air Quality Standard	Measured Concentration and Exceedances by Year		
		2019	2020	2021
Ozone (O_3) – Placerville Monitoring Station				
Maximum 1-hour concentration (ppm)	0.09 ppm (state)	0.081	0.127	0.090
Number of days exceeding state standard (days)		*0*	*4*	*0*
Maximum 8-hour concentration (ppm)	0.070 ppm (state)	0.076	0.101	0.080
	0.070 ppm (federal)	0.075	0.101	0.080
Number of days exceeding state standard (days)		*4*	*20*	*10*
Number of days exceeding federal standard (days)		*4*	*20*	*10*
Coarse Particulate Matter (PM_{10}) – Roseville Monitoring Station				
Maximum 24-hour concentration (µg/m³)	50 µg/m³ (state)	63.1	244.3	150.7
	150 µg/m³ (federal)	61.3	251.8	155.7
Number of days exceeding state standard[a]		*2.0 (2)*	*38.0 (36)*	*11.0 (10)*
Number of days exceeding federal standard[a]		*0.0 (0)*	*5.3 (5)*	*1.1 (1)*
Annual concentration (state method) (µg/m³)	20 µg/m³ (state)	15.4	27.7	21.1
Fine Particulate Matter ($PM_{2.5}$) – Folsom Monitoring Station				
Maximum 24-hour concentration (µg/m³)	35 µg/m³ (federal)	25.4	19.6	265.7
Number of days exceeding federal standard[a]		*ND (0)*	*ND (0)*	*10.0 (10)*
Annual concentration (µg/m³)	12 µg/m³ (state)	ND	ND	9.3
	12.0 µg/m³ (federal)	ND	ND	10.3

Sources: CARB 2023.
Notes: ppm = parts per million; µg/m³ = micrograms per cubic meter; ND = insufficient data available to determine the value.
Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.

Exceedances of national and California standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed national or California standards during the years shown. There is no national standard for 1-hour ozone, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
Placerville Monitoring Station is located at 561 Canal Street, Placerville CA 95667.
Roseville Monitoring Station is located at 151 N Sunrise Ave, Roseville CA 95661.
Folsom Monitoring Station is located at 50 Natoma St, Folsom CA 95630.

[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard. Notably, the California $PM_{2.5}$ standard is based on annual concentrations and does not have daily exceedance information.

El Dorado County General Plan

The following goals, objectives, and policies related to air quality from the County General Plan (last amended 2019) are included in the Transportation and Circulation, and the Public Health, Safety, and Noise Elements of the General Plan (El Dorado County 2019) and are applicable to the project.

Transportation and Circulation Element

Goal TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.

Policy TC-4c: The County shall give priority to bikeways that will serve population centers and destinations of greatest demand and to bikeways that close gaps in the existing bikeway system.

Policy TC-4e: The County shall require that rights-of-way or easements be provided for bikeways or trails designated in adopted master plans, as a condition of land development when necessary to mitigate project impacts.

Policy TC-4g: The County shall support development of facilities that help link bicycling with other modes of transportation.

Policy TC-4i: Within Community Regions and Rural Centers, all development shall include pedestrian/bike paths connecting to adjacent development and to schools, parks, commercial areas and other facilities where feasible. In Rural Regions, pedestrian/bike paths shall be considered as appropriate.

Goal TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

Policy TC-5a: Sidewalks and curbs shall be required throughout residential subdivisions, including land divisions created through the parcel map process, where any residential lot or parcel size is 10,000 square feet or less.

Public Health, Safety, and Noise Element

Goal 6.7: Strive to achieve and maintain ambient air quality standards established by the EPA and CARB and minimize exposure to TACs or HAPs and air pollutants that create unpleasant odors.

Objective 6.7.1: Adopt and enforce Air Quality standards to reduce the health impacts caused by harmful emissions.

Policy 6.7.1.1: Improve air quality through land use planning decisions.

Policy 6.7.1.2: Support local and regional air quality improvement efforts.

Objective 6.7.2: Reduce motor vehicle air pollution by developing programs aimed at minimizing congestion and reducing the number of vehicle trips made in the County and encouraging the use of clean fuels.

Policy 6.7.2.2: Encourage, both through County policy and discretionary project review, the use of staggered work schedules, flexible work hours, compressed work weeks, teleconferencing, telecommuting, and car pool/van pool matching as ways to reduce peak-hour vehicle trips.

Policy 6.7.2.5: Upon reviewing projects, the County shall support and encourage the use of, and facilities for, alternative-fuel vehicles to the extent feasible. The County shall develop language to be included in County contract procedures to give preference to contractors that utilize low-emission heavy-duty vehicles.

Objective 6.7.4: Encourage project design that protects air quality and minimizes direct and indirect emissions of air contaminants.

Policy 6.7.4.1: Promote the development of new residential uses within walking or bicycling distance to the County's larger employment centers.

Policy 6.7.4.4: All discretionary development applications shall be reviewed to determine the need for pedestrian/bike paths connecting to adjacent development and to common service facilities (e.g., clustered mailboxes, bus stops, etc.).

Policy 6.7.4.5: Specific plans submitted to the County shall provide for the implementation of all policies contained under Objective 6.7.4 herein.

Policy 6.7.4.6: The County shall regulate wood-burning fireplaces and stoves in all new development. EPA approved stoves and fireplaces burning natural gas or propane are allowed. The County shall discourage the use of non-certified wood heaters and fireplaces during periods of unhealthy air quality.

Objective 6.7.6: Separate air pollution sensitive land uses from significant sources of air pollution.

Policy 6.7.6.2: New facilities in which sensitive receptors are located (e.g. residential subdivisions, schools, childcare centers, playgrounds, retirement homes, and hospitals) shall be sited away from significant sources of air pollution.

Objective 6.7.7: Reduce construction related, short-term emissions by adopting regulations which minimize their adverse effects.

Policy 6.7.7.1: The County shall consider air quality when planning the land uses and transportation systems to accommodate expected growth, and shall use the recommendations in the most recent version of the EDCAQMD Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the CEQA, to analyze potential air quality impacts (e.g., short-term construction, long-term operations, toxic and odor-related emissions) and to require feasible mitigation requirements for such impacts. The County shall also consider any new information or technology that becomes available prior to periodic updates of the Guide. The County shall encourage actions (e.g., use of light-colored roofs and retention of trees) to help mitigate heat island effects on air quality.

3.2.3 Thresholds of Significance

Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

3.2.4 Impacts and Mitigation Measures

Methodology

Appendix G of the CEQA Guidelines indicates that, where available, the significance criteria established by the applicable air quality management district or pollution control district may be relied upon to determine whether a proposed project would have a significant impact on air quality. The EDCAQMD Guide to Air Quality Assessment (EDCAQMD 2002) provides quantitative emission thresholds and established protocols for the analysis of air quality impacts from projects and plans. Project related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 3.2-4 are exceeded.

A project would result in a substantial contribution to an existing air quality violation of the NAAQS or CAAQS for O_3 (see Table 3.2-1), which is a nonattainment pollutant, if the project's construction or operational emissions would exceed the EDCAQMD ROG or NO_x thresholds shown in Table 3.2-4. These emission-based thresholds for O_3 precursors are intended to serve as a surrogate for an "O_3 significance threshold" (i.e., the potential for adverse O_3 impacts to occur) because O_3 itself is not emitted directly (see the previous discussion of O_3 and its sources), and the effects of an individual project's emissions of O_3 precursors (ROG and NO_x) on O_3 levels in ambient air cannot be reliably and meaningfully determined through air quality models or other quantitative methods. According to the EDCAQMD CEQA Guide, if ROG and NO_x are less than significant during construction, then exhaust CO and PM_{10}

would also be less than significant. During operation, if ROG and NO_x are less than significant, then exhaust CO, NO_2, SO_2, and PM_{10} would also be less than significant.

Table 3.2-4. EDCAQMD Air Quality Significance Thresholds

Pollutant	Construction	Operation
Criteria Pollutants Mass Daily Thresholds		
ROG	82 lbs/day	82 lbs/day
NO_x	82 lbs/day	82 lbs/day

Source: EDCAQMD 2002.
Notes: EDCAQMD = El Dorado County Air Quality Management District; lb/day = pounds per day; ROG = Reactive Organic Gases; NO_x = nitrogen oxides

Regarding dust particulates, the EDCAQMD Guide to Air Quality Assessment includes a screening method to determine it fugitive dust PM_{10} is less than significant based on implementation of mitigation measures "that will prevent visible dust beyond the project property lines, in compliance with Rule 403 of the South Coast AQMD" (EDCAQMD 2002). As $PM_{2.5}$ is a subset of PM_{10} emissions, if PM_{10} emissions are controlled to a less-than-significant level, then $PM_{2.5}$ levels would also be anticipated to be less than significant.

For TACs, the following two alternative significance criteria from the EDCAQMD are used. Exceeding either of these criteria will lead to a conclusion that a project has a significant impact with respect to TACs:

1. Cancer Risk: The lifetime probability of contracting cancer of greater than 10 in 1 million; or
2. Non-Cancer Risk: Hazard Index of 1 or more for acute (short-term) and chronic (long-term) effects.[3]

For context, the National Cancer Institute estimates that approximately 39.5% of people will be diagnosed with cancer during their lifetimes (National Cancer Institute 2020). A cancer risk of 10 in a million indicates that a person has an additional risk of 10 chances in a million (0.001%) of developing cancer during their lifetime as a result of the air pollution scenario being evaluated, which is minimal and defined as the "No Significant Risk Level" for carcinogens in Proposition 65.

Construction

The impact analysis is based on the Air Quality and Greenhouse Gas Impact Analysis report prepared by Raney Planning and Management, Inc. in April 2024 and an updated memorandum prepared in December 2024 to evaluate the Active Adult option (Appendix B). Emissions from the construction phase of the project were estimated using the most current version of the California Emissions Estimator Model (CalEEMod) 2022.1.1.21. Construction scenario assumptions, including phasing, equipment mix, and vehicle trips, were based on information provided by the project applicant and CalEEMod default values when project specifics were not known.

[3] Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various noncarcinogens from the Project to published reference exposure levels that can cause adverse health effects.

For purposes of estimating project emissions and based on information provided by the project applicant, it was assumed that construction would commence in June 2025[4] and would last until August 2028.

In addition, California has recently amended the In-Use Off-Road Diesel-Fueled Fleets Regulation, which requires the use of renewable diesel fuel in all off-road equipment greater than 25 horsepower. CalEEMod does not include renewable diesel as a fuel type for off-road equipment. As such, off-model calculations were conducted to determine the emissions reduction associated with renewable diesel-powered off-road equipment anticipated to be used during project construction.

The construction equipment mix and vehicle trips used for estimating the project-generated construction emissions are shown in Table 3.2-5.

Table 3.2-5. Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Grading	20	0	0	Graders	1	8
				Excavators	2	8
				Tractors/Loaders/ a/Backhoes	2	8
				Scrapers	2	8
				Rubber Tired Dozers	1	8
Building Construction	333	99	0	Forklifts	2	8
				Generator Sets	1	8
				Cranes	1	7
				Welders	1	8
				Tractors/Loaders/ a/Backhoes	3	7
Paving	15	0	0	Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8
Architectural Coating	67	0	0	Air Compressors	1	6

Notes: See Appendix B for details.

Construction of project components would be subject to EDCAQMD Rule 223-1 – Fugitive Dust Control. This rule requires that project construction follows steps to restrict visible emissions of fugitive dust beyond the property line. Compliance with Rule 223-1 would limit fugitive dust (PM_{10} and $PM_{2.5}$) that may be generated during grading and

[4] The analysis assumes a construction start date of June 2025, which represents the earliest date construction would initiate. Assuming the earliest start date for construction represents the worst-case scenario for criteria air pollutant and GHG emissions because equipment and vehicle emission factors for later years would be slightly less due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years.

construction activities. To reflect compliance with Rule 223-1, it was assumed exposed areas on the project site would be watered two times per day (55% reduction in PM_{10} and $PM_{2.5}$).

Operation

Emissions from the operational phase of the proposed project were estimated using CalEEMod Version 2022.1.1.21. Operational year 2028 was assumed consistent with completion of project construction.

Area Sources

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating and water heating are calculated in the building energy use module of CalEEMod, as described in the following text.

CalEEMod estimates direct emissions from hearths (fireplaces) and woodstoves and includes default values for residential land uses and estimates natural gas fireplace emissions based on emission factors from AP-42. Notably, the project is not permitted to provide wood burning devices, therefore it was assumed that all hearths would be natural gas.

Consumer products are chemically formulated products used by household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2022). Consumer product VOC emissions are estimated in CalEEMod based on the floor area of nonresidential buildings and on the default factor of pounds of VOC per building square foot per day. For parking lot land uses, CalEEMod estimates VOC emissions associated with use of parking surface degreasers based on a square footage of parking surface area and pounds of VOC per square foot per day.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers used during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of nonresidential surface coatings based on the VOC emission factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings, and EDCAQMD Rule 215 (Architectural Coatings) governs the VOC (or ROG) content for interior and exterior coatings. The model default reapplication rate of 10% of area per year is assumed. Consistent with CalEEMod defaults, it is assumed that the nonresidential surface area for painting equals 2.0 times the floor square footage, with 75% assumed for interior coating and 25% assumed for exterior surface coating (CAPCOA 2022). For the parking lot, the architectural coating area is assumed to be 6% of the total square footage, consistent with the supporting CalEEMod studies provided as an appendix to the CalEEMod User's Guide (CAPCOA 2022).

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers. The emissions associated from landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per square foot of nonresidential building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days. For the County, the average annual "summer" days are estimated to be 180 (CAPCOA 2022).

Energy Sources

As represented in CalEEMod, energy sources include emissions associated with building electricity and natural gas usage (non-hearth). Electricity use would contribute indirectly to criteria air pollutant emissions; however, the emissions from electricity use are only quantified for greenhouse gases in CalEEMod, because criteria pollutant emissions occur at the site of the power plant, which is typically off-site. Therefore, for the purposes of the air quality analysis, the energy source parameters focus on criteria air pollutants generated as a result of natural gas consumption within the built environment. Natural gas consumption is attributed to systems like heating, ventilation, air conditioning (HVAC), and water heating. As discussed in Section 3.7, Greenhouse Gas Emissions, the project is subject to Mitigation Measure GHG-1 which would require the project to be an all-electric development unless the requirement is not enforceable or commercially infeasible at the time of issuance of building permit(s). If infeasible, the project applicant shall require future residential homebuilders to include pre-wiring in all residential units and neighborhood commercial space (if approved as part of the CVSP) to allow future retrofit of all natural gas appliances with all-electric appliances and purchase off-site mitigation credits or forecasted mitigation units ("FMUs") (collectively, "GHG credits") for project-related greenhouse gas (GHG) emissions from the component(s) using natural gas instead of electric.

Mobile Sources

Mobile sources for the project would be motor vehicles (e.g., automobiles) traveling to and from the project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. Default vehicle trip generation rates included in CalEEMod for all land uses were adjusted to match the trip generation rates and vehicle miles traveled (VMT) presented in the transportation assessment prepared for the project (Appendix H). CalEEMod default data, including trip lengths and emissions factors were used for the model inputs to estimate daily emissions from proposed mobile sources. Emission factors representing the vehicle mix and emissions for 2028 were used to estimate emissions associated with operation of the project.

Construction Health Risk Assessment

A construction HRA was performed to evaluate potential health risk associated with construction of the project. The following discussion summarizes the dispersion modeling and HRA methodology; supporting construction HRA documentation, including detailed assumptions, is presented in Appendix B.

To analyze potential health risks to nearby sensitive receptors that could result from DPM emissions from off-road equipment at the project site, total DPM emissions from project construction were estimated. DPM is considered a subset of $PM_{2.5}$, thus, the CalEEMod estimated $PM_{2.5}$ emissions from exhaust during construction was assumed to conservatively represent all DPM emitted on-site.

The CalEEMod estimated $PM_{2.5}$ exhaust emissions were used to calculate the concentration of DPM at the maximally exposed sensitive receptor near the project site and the off-site improvement areas. DPM concentrations resulting from project implementation were estimated using the American Meteorological Society/Environmental Protection Agency (AMS/EPA) Regulatory Model (AERMOD). In addition, the following information was input into the AMS/EPA AERMOD Model:

- The latest 5-year meteorological data was sourced from the Sacramento Executive Airport;
- Surrounding area receptors were placed in polygon grid pattern with the closest receptors (i.e., within 0.25-mile radius) placed five meters apart, and farther receptors placed 10 or 15 meters apart as distance increases;

- Volume sources were placed over the entire disturbance area, including the project site and the off-site improvement disturbance areas in a grid of approximately four sources per acre;
- Volume sources were assumed to have a release height of five meters, the initial lateral dimension was assumed to be 29.59 meters, and the initial vertical dimension was assumed to be one meter; and
- Construction was assumed to occur seven days per week for 12 hours per day, based on Section 130.37.020 of the County Code.

The associated cancer risk and non-cancer hazard index were calculated using the CARB's Hotspot Analysis Reporting Program Version 2 (HARP 2) Risk Assessment Standalone Tool (RAST), which calculates the cancer and non-cancer health impacts using the risk assessment guidelines of the 2015 OEHHA Guidance Manual for Preparation of Health Risk Assessments.[5] The modeling was performed in accordance with the USEPA's User's Guide for the AERMOD[6] and the 2015 OEHHA Guidance Manual. The results of the dispersion modeling are included as Figure 6 of the Air Quality and Greenhouse Gas Impact Analysis report (Appendix B).

Project Development Options

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1.8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. This would result in a slight reduction in construction and operation emissions but would not change any impact conclusions. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes ("Active Adult" option). Air quality impacts associated with the Active Adult option were analyzed in the December 5, 2024, *Creekside Village Specific Plan Project – Active Adult Option Technical Memorandum* (Active Adult Technical Memorandum) included in Appendix B. Construction emissions would essentially be the same as the proposed project under the Active Adult option; therefore, the impact analysis below indicates whether the Active Adult option would result in a change in impact significance or require new mitigation.

Project Impacts

Impact 3.2-1. The proposed project would conflict with or obstruct implementation of the applicable air quality plan.

As mentioned previously in Section 3.2.2, the MCAB is currently non-attainment for the O_3 CAAQS and NAAQS, as well as the CAAQS for PM_{10} and the $PM_{2.5}$ NAAQS. While an air quality plan exists for O_3, none currently exists for PM_{10} and the $PM_{2.5}$ Maintenance Plan is in the process of being resubmitted based on meeting the NAAQS standards. The Ozone Attainment Plan was developed for application within the Sacramento region, including the MCAB portion of the County (EDCAQMD *et al*. 2017). If a project can demonstrate consistency with the Ozone Attainment Plan for ROG and NO_x emissions, it would be determined that it would not have a significant cumulative impact with respect to O_3.

[5] Office of Environmental Health Hazard Assessment. Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments [pg. 8-18]. February 2015.

[6] U.S. Environmental Protection Agency. User's Guide for the AMS/EPA Regulatory Model (AERMOD). December 2016.

Projects within the MCAB portion of the County must demonstrate Ozone Attainment Plan consistency with the following four indicators:

- The project does not require a change in the existing land use designation (e.g., a general plan amendment or rezone), or projected emissions of ROG and NO_x from a project are equal to or less than the emissions anticipated for the site if development under the existing land use designation;
- The project does not exceed the "project alone" significance criteria;
- The lead agency for the project requires the project to implement any applicable emission reduction measures contained in and/or derived from the Ozone Attainment Plan; and
- The project complies with all applicable district rules and regulations.

The first way to assess project compliance with the Ozone Attainment Plan is to ensure that the population density and land uses are consistent with the growth assumptions used in the plans for the MCAB. The project is proposing development of up to 918 dwelling units and based on the County's current average of 2.52 persons per household (PPH), the project would generate a total of 2,314 new residents at buildout. The proposed project was not included as a specific plan area in the County's General Plan, although development of the project site with research and development uses has been assumed in the County's General Plan since approval of the El Dorado Hills Business Park in the 1980s. The project site is included in an Established Communities type of the SACOG MTP/SCS, which estimates that approximately 3,300 homes are projected to occur in the Established Communities areas within the county and, of the anticipated growth in Established Communities, approximately 70% is anticipated in the El Dorado Hills community (2,330 new homes in the Established Communities area of El Dorado County by 2040). Relative to only the unincorporated county (e.g., not including Placerville or South Lake Tahoe) population of 159,108 in 2020, this would be an approximate 1.5% increase in the unincorporated county population. Considering that the proposed project would not be fully built out until 2030 or later, population growth from the project would occur gradually over the years as new homes are built on the site. Furthermore, based on the results of the VMT Analysis included in Section 3.12, Transportation, the residential component of the project is anticipated to generate 13.6 VMT per capita for the Baseline (2018) Condition, and 13.1 VMT per capita for the Cumulative (2040) Condition, which is below the 17.3 VMT per capita threshold. Under the Active Adult option this would likely be further reduced given that age-restricted housing generates fewer trips compared to traditional housing. Trip generation and VMT associated with the project are consistent with other projects of similar scale and configuration elsewhere in the county.

The second criterion assesses a project's contribution to existing air quality violations. As discussed in Impact 3.2-2 below, it was determined that construction of the project would not exceed the EDCAQMD significance thresholds for ROG and NO_x emissions. However, the project would contribute to an air quality violation because operational emissions would exceed the EDCAQMD thresholds of significance for ROG emissions even with implementation of mitigation measure AQ-2. As such, the project would exceed the "project alone" significance criteria established by the EDCAQMD.

The final criterion is compliance with the EDCAQMD rules and regulations. The EDCAQMD has adopted rules designed specifically to address a variety of air quality impacts through measures that construction and operational related air quality emissions. The project would be required by law to comply with all applicable rules and regulations.

Based on these considerations, since the project exceeds the EDCAQMD significance threshold for ROG emissions during operations, the project could conflict with or obstruct implementation of an applicable air quality plan and the impact would be **potentially significant**.

Active Adult Option

Under the Active Adult option, reductions in operational emissions would occur due to the reduction in vehicle trips from future residents (see Section 3.12, Transportation). However, as discussed in Impact 3.2-2 below, this reduction in operational emissions would not bring ROG emissions below the EDCAQMD threshold; therefore, under this option the project would still exceed the "project alone" significance criteria established by the EDCAQMD and the impact is **potentially significant**.

Mitigation Measures

See mitigation measure AQ-2. Compliance with this mitigation would reduce emissions of ROG during project operations, including under the Active Adult option. However, as presented in Table 3.2-9, ROG emissions would still be above the applicable EDCAQMD threshold of significance, including under the Active Adult option. Mitigation measure AQ-2 represents all feasible mitigation to reduce project-generated ROG emissions. Therefore, even with implementation of mitigation measure AQ-2, the impact would remain **significant and unavoidable**.

AQ-1: Implement mitigation measure AQ-2.

Impact 3.2-2. The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

According to the CEQA Guidelines, an air quality impact may be considered significant if project implementation would result in, or potentially result in, conditions, which violate any existing local, state or federal air quality regulations. In order to evaluate ozone and other criteria air pollutant emissions and support attainment goals for those pollutants designated as nonattainment in the area, the EDCAQMD has established significance thresholds associated with development projects for emissions of ROG and NO_x emissions. If a project would result in mass emissions in excess of the thresholds of significance, the project could affect the EDCAQMD's commitment to attainment of the federal AAQS for ozone and, thus, could result in a significant adverse impact on air quality in the region.

Thresholds for PM_{10} or other pollutants, including CO, PM, SO_2, NO_2, sulfates, lead, and H_2S, have not yet been established by the EDCAQMD. However, a project could be considered to have a significant impact on air quality if it would cause or contribute significantly to a violation of the applicable AAQS. According to the EDCAQMD CEQA Guide, if construction-related ROG and NO_X mass emissions are determined to be less than significant, the assumption could be made that construction-related exhaust emissions of other air pollutants from the operation of equipment and worker commute vehicles would also be less than significant. Similarly, according to EDCAQMD's operational screening levels for CO and PM_{10}, if a project is anticipated to be below significance for ROG and NO_X, the project's CO and PM_{10} emissions are expected to be insignificant as well.

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing from architectural coatings and asphalt pavement application) and off-site sources (i.e., on-road haul trucks, delivery trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions. Therefore, such emissions levels can only be estimated, with a corresponding uncertainty in precise ambient air quality impacts.

The EDCAQMD screening approach for fugitive dust (PM_{10}) emissions is based on dust suppression measures that would prevent visible emissions beyond the boundaries of the project site. If such measures are incorporated into the design of the project, then further calculation to determine PM_{10} emissions is not necessary. All construction activities that would result in the disturbance of soil occurring within the County are subject to EDCAQMD Rule 223 related to fugitive dust. Rule 223 includes requirements related to visible emissions, vehicle speed limits on unpaved roads, and cessation of certain construction activities during times of sustained, wind caused dust emissions. Compliance with the requirements of Rule 223 would ensure that measures sufficient to prevent visible emissions beyond the boundaries of the project site would be implemented. Accordingly, fugitive dust emissions are not anticipated to result in visible emissions beyond the boundaries of the project site and further calculation to determine PM_{10} emissions is not necessary.

The application of architectural coatings, such as exterior application/interior paint and other finishes, and application of asphalt pavement would also produce ROG emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of EDCAQMD Rules 215 (Architectural Coatings) and 224 (Cutback and Emulsified Asphalt Paving Materials).

Estimated unmitigated construction-related emissions are presented in Table 3.2-6. Details of the emission calculations are provided in Appendix B.

Table 3.2-6. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions - Unmitigated

	ROG	NO_x
	Pounds per Day	
Project Emissions	50.51	33.29
Emission threshold	*82*	*82*
Threshold Exceeded?	**No**	**No**

Source: Appendix B.
Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen.

As shown in Table 3.2-6, maximum daily construction emissions would not exceed the significance thresholds for ROG and NO_x during construction emissions (and thus exhaust CO, SO_x, PM_{10}, and $PM_{2.5}$ would also be less than significant for construction). Because the proposed project's estimated unmitigated construction emissions would be below the applicable EDCAQMD thresholds of significance, construction activities associated with development of the proposed project would not substantially contribute to the EDCAQMD's nonattainment status for ozone. The Active Adult Technical Memorandum (Appendix B) concluded that construction emissions under this option would remain the same as the proposed project. Accordingly, construction of the proposed project or the Active Adult option would not violate any AAQS or contribute substantially to an existing or projected air quality violation, and the impact is **less than significant**.

Operation

Operation of the project would generate criteria pollutant emissions from mobile sources (vehicular traffic), area sources (consumer products, architectural coatings, and landscaping equipment). CalEEMod was used to estimate daily emissions from project-related operational sources. Table 3.2-7 summarizes the operational emissions criteria pollutants that would be generated from the project. Operational emissions were then compared to the EDCAQMD operational thresholds.

Table 3.2-7. Estimated Maximum Daily Operational Criteria Air Pollutant Emissions - Unmitigated

	ROG	NO_x
	Pounds per Day	
Project Emissions	100.00	51.20
Emission threshold	*82*	*82*
Threshold Exceeded?	**Yes**	**No**

Source: See Appendix B for complete results.
Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen.

As shown in Table 3.2-7, unmitigated operational emissions would fall below the EDCAQMD's thresholds of significance for NO_X and would exceed the threshold of significance for ROG. Considering the modeled operational emissions of ROG would exceed the adopted EDCAQMD thresholds of significance operations of the proposed project could violate an AAQS or contribute substantially to an existing or projected air quality violation, and a **potentially significant impact** could occur.

Active Adult Option

Under the Active Adult option, reductions in emissions would occur due to the reduction in vehicle trips from future residents. Based on the reduced trip generation rates, the Active Adult Technical Memorandum estimated operational emissions associated using CalEEMod version 2022.1.1.29. As demonstrated in Table 3.2-8 below, the Active Adult option would have a 15.1 lb/day reduction in ROG, which would not bring the ROG emissions below the EDCAQMD threshold. The Active Adult option would reduce NO_x by 3.8 lbs/day and, similar to the proposed project, would remain under the EDCAQMD threshold. ROG emissions would exceed the EDCAQMD threshold and result in a **potentially significant impact**.

Table 3.2-8. Active Adult Option Estimated Maximum Daily Operational Criteria Air Pollutant Emissions - Unmitigated

	ROG	NO_x
Year	Pounds per Day	
Proposed Project Emissions	100	51.20
Active Adult Option Emissions	84.9	47.4
Reduction	*-15.1*	*-3.8*
Emission threshold	*82*	*82*
Threshold Exceeded?	**Yes**	**No**

Source: Appendix B.
Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen.

Mitigation Measures

Implementation of mitigation measure AQ-2, which requires that only paints with no volatile organic compounds (VOCs) be used on-site, would reduce emissions of ROG. However, the majority of ROG emissions would be generated by mobile sources and consumer products (e.g., deodorants, cleaning products, spray paint, etc.). As shown in Table 3.2-9, ROG emissions would still be above the applicable EDCAQMD threshold of significance. Feasible mitigation does not exist to reduce ROG emissions related to mobile sources and consumer products for

the project, including the Active Adult option. Mitigation measure AQ-2 represents all feasible mitigation available to reduce project-generated ROG emissions. Therefore, even with implementation of mitigation measure AQ-2, the impact would remain **significant and unavoidable**.

Table 3.2-9. Estimated Maximum Daily Operational Criteria Air Pollutant Emissions - Mitigated

	ROG	NO_x
Year	Pounds per Day	
Project Emissions	90.90	51.20
Emission threshold	*82*	*82*
Threshold Exceeded?	**Yes**	**No**

Source: See Appendix B for complete results.
Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen.

AQ-2: Prior to the issuance of building permits, the project applicant shall ensure that all initial and ongoing interior and exterior architectural coatings (i.e., paints) associated with the proposed project have no volatile organic compounds (VOCs). A note stating products containing VOCs shall not be allowed shall be provided on the project's Improvement Plans and on the Informational Sheet filed with Final Subdivision Map(s) for review and approval by the El Dorado County Planning Department. Verification of the ongoing use of no VOC architectural coatings shall be ensured in perpetuity by the project's proposed homeowner's association (HOA) and shall be included in the HOA's Conditions, Covenants and Restrictions (CC&Rs).

In addition, a green cleaning product education program shall be made available to all residents and commercial tenants of the proposed project. The program shall include free educational materials such as brochures, pamphlets, checklists, etc., that provide information regarding the proper use of green cleaning products to be provided in information provided by the home buyer or commercial tenant.

Impact 3.2-3. The proposed project would expose sensitive receptors to substantial pollutant concentrations.

Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Sensitive receptors are typically defined as facilities where sensitive receptor population groups (i.e., children, the elderly, the acutely ill, and the chronically ill) are likely to be located. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. The nearest sensitive receptors to the project site are the single-family residences across Latrobe Road, approximately 100 feet east of the project site, as well as single-family residences along the east side of Latrobe Road, near where proposed offsite improvements would be constructed. John Adams Academy is also located approximately 1,000 feet north of the project site. It should also be noted that an active adult (55 and older)

residential development is under construction to the west of the project site and would be a continuation of the active adult Heritage community located to the northwest of the project site.

The major pollutant concentrations of concern are localized CO emissions and TAC emissions, which are addressed in further detail below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Traffic congestion near a roadway's intersection with vehicles moving slowly or idling could result in localized CO emissions at that intersection due to a vehicle engine's inefficient combustion. High levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high. Accordingly, a land use project could result in impacts associated with localized CO concentrations at roadway intersections if the project generates substantial traffic.

The MCAB has been in attainment for CO for multiple years. Due to the continued attainment of CAAQS and NAAQS, and advances in vehicle emissions technologies, the likelihood that any single project would create a CO hotspot is minimal. In addition, the proposed project would include several offsite intersection improvements at Latrobe Road/Town Center Boulevard, Royal Oaks Drive/Latrobe Road, and Avanti Drive/Latrobe Road. As discussed in the Transportation Impact Study prepared for the proposed project (Appendix H), with implementation of the intersection improvements, the proposed project is not anticipated to cause new, or worsen existing, traffic deficiencies on project area roadways. Furthermore, enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease CO emissions. Therefore, given that high levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high, the proposed project would not be anticipated to generate localized CO emissions that would contribute to an exceedance of AAQS and/or expose sensitive receptors to substantial concentrations of localized CO.

Construction Health Risk

Another category of environmental concern is TACs. The CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB 2005) provides recommended setback distances for sensitive land uses from major sources of TACs, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified DPM from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. DPM is the solid material in diesel exhaust, more than 90% of such material is less than one micrometer in diameter, and, thus, DPM is a subset of the $PM_{2.5}$ category of pollutants. Health risks associated with TACs are a function of both the concentration of emissions and the duration of exposure, where the higher the concentration and/or the longer the period of time that a sensitive receptor is exposed to pollutant concentrations would correlate to a higher health risk.

The proposed project would not involve any land uses or operations that would be considered major sources of TACs, including DPM. As such, the proposed project would not generate any substantial pollutant concentrations during operations.

However, short-term, construction-related activities could result in the generation of TACs, primarily DPM, from on-road haul trucks and off-road equipment exhaust emissions. Although DPM emissions from on-road haul trucks

would be reduced with the use of renewable diesel and would be widely dispersed throughout the project site and surrounding vicinity as haul trucks move goods and material to and from the site, exhaust from off-road equipment would primarily occur within the project site. As noted previously, the nearest sensitive receptors are located approximately 100 feet east of the project site, as well as along the east side of Latrobe Road, near where offsite improvements are proposed. In addition, an active adult (55 and older) residential development is under construction to the west of the project site that would be a continuation of the active adult Heritage community to the northwest of the project site. Consequently, the operation of off-road equipment within the project site during project construction could result in exposure of nearby residents to DPM.

EDCAQMD has established significance criteria for local community risk and hazard impacts as a result of new sources of TACs. The EDCAQMD's thresholds for analyzing health risks from new sources of emissions are presented below:

1. The lifetime probability of contracting cancer is greater than one in one million (ten in one million if best available control technology for toxics [T-BACT] is applied); or
2. The ground-level concentration of non-carcinogenic toxic air contaminants would result in a Hazard Index of greater than 1.

As stated above, the foregoing thresholds are generally intended for use when analyzing the operation of new proposed sources of TACs. Although the proposed project would not involve the siting or operation of any permanent sources of TACs, in the absence of specific thresholds to analyze health risks from short-term projects, the EDCAQMD thresholds are applied to the project, for construction specifically.

Based on the methodology discussed in Section 3.2.3, the cancer risk and non-cancer hazard indices were estimated for the maximally exposed individual receptor and are presented in Table 3.2-10. As shown in Table 3.2-10, construction of the proposed project would not result in any health impacts in excess of the EDCAQMD's standards.

Table 3.2-10. Construction Health Risk Assessment Results – Unmitigated

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Cancer Risk – MEIR	Per Million	2.06	10.0	Less than Significant
Acute Hazard Index - MEIR	Not Applicable	0.00	1.0	Less than Significant
Chronic Hazard Index – MEIR	Not Applicable	0.001	1.0	Less than Significant

Source: See Appendix B.
Notes: CEQA = California Environmental Quality Act; MEIR = Maximally Exposed Individual Receptor.

Naturally Occurring Asbestos

When rock containing naturally occurring asbestos (NOA) is broken or crushed, asbestos may become released and become airborne, causing a potential health hazard. Asbestos is a known carcinogen and, thus, NOA is considered a TAC.

According to the El Dorado County Naturally Occurring Asbestos Review Map (EDCAQMD 2018), the project site is not within an Asbestos Review Area. Thus, the site is not expected to contain NOA and impacts associated with potential exposure to NOA would not occur.

Health Impacts of Other Criteria Air Pollutants

Project construction and operation would not exceed significance thresholds for ROG, NOx, CO, SO_x, PM_{10}, or $PM_{2.5}$. ROG and NO_x are precursors to O_3, for which the MCAB is designated as nonattainment with respect to the NAAQS and CAAQS. The health effects associated with O_3 are generally associated with reduced lung function. The contribution of ROGs and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the MCAB due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the VOC emissions would occur because exceedances of the O_3 CAAQS/NAAQS tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of quantitative methods to assess this impact. That being said, because the project would exceed the EDCAQMD ROG threshold during project operations, the project could still contribute to health effects associated with O_3.

Operation of the proposed project would not contribute to exceedances of the NAAQS and CAAQS for NO_2. Health effects that result from NO_2 and NO_x include respiratory irritation, which could be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. However, project construction would be relatively short term, and off-road construction equipment would be operating at various portions of the site and would not be concentrated in one portion of the site at any one time. In addition, existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Because project generated NO_x emissions would not exceed the significance threshold, the proposed project would not result in potential health effects associated with NO_2 and NO_x.

CO tends to be a localized impact associated with congested intersections. The associated potential for CO hotspots was discussed previously and determined to be a less-than-significant impact. Furthermore, the existing CO concentrations in the area are well below the NAAQS and CAAQS standards. Thus, the proposed project's CO emissions would not contribute to significant health effects associated with this pollutant.

Construction and operation of the project were also determined to not result in significant emissions of PM_{10} or $PM_{2.5}$ and would not contribute to exceedances of the NAAQS and CAAQS for particulate matter or would obstruct the MCAB from coming into attainment for these pollutants. The proposed project would also not result in substantial DPM emissions during construction and operation, and therefore, would not result in significant health effects related to DPM exposure. Additionally, the proposed project would implement dust control strategies and be required to comply with EDCAQMD Rule 223-1, Fugitive Dust, which limits the amount of fugitive dust generated during construction. Due to the minimal contribution of particulate matter during construction and operation, the proposed project is not anticipated to result in health effects associated with PM_{10} or $PM_{2.5}$.

Based on the preceding considerations, construction of the project would not exceed the EDCAQMD significance thresholds for ROG and NO_x. However, because operation of the project would result in the emissions of criteria air pollutants that would exceed the applicable EDCAQMD significance thresholds for ROG emissions, and because the EDCAQMD thresholds are based on levels that the MCAB can accommodate without affecting the attainment date for the NAAQS and CAAQS, and the NAAQS and CAAQS are established to protect public health and welfare, it is anticipated that the project could result in health effects associated with criteria air pollutants and the impact would be **potentially significant**.

Active Adult Option

As discussed under Impact 3.2-2, the Active Adult option would have a 15.1 lb/day reduction in ROG, which would not bring ROG emissions below the EDCAQMD threshold. Therefore, the Active Adult option would result in the same health effects associated with criteria air pollutants as the proposed project and the impact would be **potentially significant**.

Mitigation Measures

As discussed above, implementation of mitigation measure AQ-2 would reduce emissions of ROG during project operations which is a precursor for O_3. However, ROG emissions would still be above the applicable EDCAQMD threshold of significance, including under the Active Adult option. Mitigation measure AQ-2 represents all feasible mitigation to reduce project-generated ROG emissions. Therefore, even with implementation of mitigation measure AQ-2, the impact would remain **significant and unavoidable**.

AQ-3: Implement mitigation measure AQ-2.

Impact 3.2-4. The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Emissions of pollutants have the potential to adversely affect sensitive receptors within the project area. Pollutants of principal concern include emissions leading to odors, emissions of dust, or emissions considered to constitute air pollutants. Air pollutants have been discussed under Impacts 3.2-1 through 3.2-3. Therefore, the following discussion focuses on emissions of odors and dust during construction and operation of the project which would not change under the Active Adult option.

Odors and Dust

Odors are generally regarded as an annoyance rather than a health hazard. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative methodologies to determine the presence of a significant odor impact do not exist. Certain land uses such as wastewater treatment facilities, landfills, confined animal facilities, composting operations, food manufacturing plants, refineries, and chemical plants have the potential to generate considerable odors. The proposed project would not introduce any such land uses and is not located in the vicinity of any such existing or planned land uses.

Diesel fumes from construction equipment and heavy-duty trucks could be found to be objectionable; however, as addressed above, operation of construction equipment would be regulated by EDCAPCD rules and regulations, restricted to daylight hours per the County Code, Section 130.37.020 (I), and would occur intermittently throughout the course of a day. All construction equipment and operation thereof would be regulated per the statewide In-Use Off-Road Diesel Vehicle Regulation. In addition, construction is temporary and construction equipment would operate intermittently and would likely only occur over portions of the site at one time. As noted under Impact 3.2-3, the modeling performed for the HRA indicated that nearby receptors would not be subjected to substantial pollutant concentration. It follows that nearby receptors would also not be subjected to substantial odor concentrations. For the aforementioned reasons and due to the distance between the project site and the nearest sensitive receptors, the project would not result in any noticeable objectionable odors associated with construction.

As noted previously, project construction within the County is required to comply with all applicable EDCAQMD rules and regulations. EDCAMDD Rule 223 includes requirements to reduce fugitive dust emissions associated with construction activities, such as limiting vehicle speed limits on construction sites and unpaved roads, reducing dust track-out, and use of water for soil stabilization when warranted. Compliance with Rule 223 would ensure that measures sufficient to prevent emissions of fugitive dust beyond the boundaries of the project site would be implemented. Following project construction, vehicles operating within the project site would be limited to paved areas of the site, which would not have the potential to create substantial dust emissions. Thus, project operations would not include sources of dust that could adversely affect a substantial number of people.

EDCAQMD Rule 205, Nuisance, addresses the exposure of "nuisance or annoyance" air contaminant discharges, including odors, and provides enforcement of odor control. Rule 205 is complaint-based, where if public complaints are sufficient to cause the odor source to be considered a public nuisance, then the EDCAQMD is required to investigate the identified source, as well as determine and ensure a solution for the source of the complaint, which could include operational modifications to correct the nuisance condition. The project is not proposing any uses that would generate sources of odors. However, if odor or air quality complaints are made during project operation, the EDCAQMD would be required (per EDCAQMD Rule 205) to ensure that such complaints are addressed and mitigated, as necessary.

Therefore, construction and operation of the proposed project (including the Active Adult option) would not create objectionable odors (or dust) affecting a substantial number of people, and impacts would be **less than significant.**

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

The cumulative context of an air pollutant is dependent on the specific pollutant being considered. O_3 precursors are a regional pollutant; therefore, the cumulative context would be existing and future development within the entire MCAB. This means that O_3 precursors generated in one location do not necessarily have O_3 impacts in that area. Instead, precursors from across the region can combine in the upper atmosphere and be transported by winds to various portions of the MCAB. Consequently, all O_3 precursors generated throughout the MCAB are part of the cumulative context.

The geographic scope of the area for the project's cumulative analysis includes the County and surrounding areas within the SFNA for O_3. The SFNA includes the counties of Sacramento, Yolo, Solano (partial), Sutter (partial), Placer (except Lake Tahoe Air Basin), and El Dorado (except Lake Tahoe Air Basin). The Yolo-Solano Air Quality Management District (YSAQMD) establishes emissions thresholds for regional emissions for projects within its jurisdiction.

Impact 3.2-5. The proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).

Criteria Air Pollutants

As described in the EDCAQMD Guide to Air Quality Assessment, EDCAQMD's primary criterion for determining whether a project has significant cumulative impacts is whether the project is consistent with an approved plan or mitigation program of District-wide or regional application in place for the pollutants emitted by the project. This criterion is applicable to both the construction and operation phases of the project.

With respect to O_3, the Ozone Attainment Plan was developed to bring the region (including MCAB portion of El Dorado County) into attainment as required by the federal and California Clean Air Acts. The Ozone Attainment Plan shows the region is meeting the requirements under the Clean Air Act in demonstrating reasonable further progress and attainment of the standards. The Ozone Attainment Plan includes an updated emissions inventory, analyzes air quality trends, evaluates photochemical modeling results, and establishes new motor vehicle emission budgets for transportation conformity purposes. In addition, the Ozone Attainment Plan also documents the region's reasonably available control measure (RACM) analysis and vehicle miles traveled offset demonstration.

If a project can demonstrate consistency with the Ozone Attainment Plan for ROG and NO_x emissions, it can be categorized as not having a significant cumulative air quality impact with respect to O_3. As described under Impact 3.2-1, the project would not conflict with the growth assumptions for the region, would be consistent with all control measures of the Ozone Attainment Plan, and would comply with applicable EDCAQMD rules, however, the project would exceed the EDCAQMD significance thresholds after mitigation. Therefore, the cumulative impact of the project combined with other development in the SFNA related to O_3 would be significant and unavoidable.

For other pollutants such as CO, PM_{10} (including $PM_{2.5}$), SO_2, and NO_2, there is no applicable air quality plan containing growth elements. Accordingly, the EDCAQMD applies the following pollutant-specific criteria for determining the significance of cumulative impacts:

- **CO:** CO is an attainment pollutant in El Dorado County, and local CO concentrations are expected to decline even further in the future as more stringent CO standards for motor vehicles take effect. The EDCAQMD does not consider CO to be an area-wide or regional pollutant that is likely to have cumulative effects. Accordingly, CO emissions for a project will ordinarily be considered not cumulatively significant as long as "project alone" emissions are not significant. As identified in Impact 3.2-3, the project would result in less-than-significant project emissions of CO during construction and operations. CO emissions of the project would not be great enough to result in a significant contribution.
- **PM_{10}, SO_2, and NO_2:** The MCAB is nonattainment for the state 24-hour PM_{10} standard, which dictates the use of a relatively sensitive criterion for identifying cumulative effects on PM_{10} ambient concentrations. The County is in attainment for the SO_2 and NO_2 ambient air quality standards, but SO_2 and NO_2 can also contribute to area wide PM_{10} impacts through their transformation into sulfate and nitrate particulate aerosols. There is no readily available model for predicting the combined ambient effects of directly emitted PM_{10}, SO_2 and NO_2 emissions from individual impacts. The EDCAQMD has determined that a project will be considered not significant for cumulative impacts of PM_{10}, SO_2 and NO_2 if the following conditions are met:
  - The project is not significant for "project alone" emissions of these pollutants;
  - The project complies with all applicable rules and regulations of the EDCAQMD; and
  - The project is not cumulatively significant for ROG, NO_x, and CO based on the criteria set forth above.

As shown under Impact 3.2-2, the project would not exceed the EDCAQMD significance thresholds during construction, however, operational ROG emissions would exceed the EDCAQMD significance threshold after

implementation of mitigation measure AQ-2. The Active Adult option would also exceed the threshold for ROG so under this option the contribution would be essentially the same as the proposed project. Additionally, the project complies with all applicable rules and regulations of the EDCAQMD. As such, the project would have a **potentially significant cumulative contribution** for other criteria air pollutants.

Toxic Air Contaminants

According to the EDCAQMD, emissions of TACs are typically localized and not region wide. Except in cases where there is information indicating the possible comingling of TACs from projects that are contiguous or nearby, EDCAQMD considers implementation of the "project alone" mitigation requirements, and compliance with all applicable emission limits and mitigation measures required by EPA, CARB, EDCAQMD rules and regulations, and local ordinances, sufficient for a finding of not significant for cumulative impacts of TACs. The project would result in less than significant impacts with respect to exposure of sensitive receptors to TACs during both construction (after mitigation) and operation. In addition, the maximally exposed individual receptor upon which the localized impact determination is based would be different for the project and for other cumulative projects based on dispersion of TACs over distance from the source. As such, the maximum localized emissions from each project would not be additive at the same receptors. Further, related projects would be subject to CEQA (or have already been reviewed under CEQA) and would require air quality analysis and, where necessary, would implement all feasible mitigation if the project would exceed EDCAQMD thresholds. Overall, TACs emitted during project construction and operations (including the Active Adult option) would be **less than significant** and not cumulatively considerable.

Odors

Odors are a localized impact. As indicated in Impact 3.2-4, the project (including the Active Adult option) impact related to odor would be less than significant. Since the EDCAQMD does not have a specific regulation or rule that addresses objectionable odors, any actions related to odors would be based on public complaints made to the EDCAQMD. Additionally, all future projects, would be subject to EDCAQMD Rule 402 (Nuisances), which prohibits the discharge of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause, or have a natural tendency to cause, injury or damage to business or property. Therefore, cumulative impacts related to odor would be **less than significant.**

Mitigation Measures

As discussed above, implementation of mitigation measure AQ-2 would reduce emissions of ROG during project operations. However, as presented in Table 3.2-9, ROG emissions would still be above the applicable EDCAQMD threshold of significance. Mitigation measure AQ-2 represents all feasible mitigation to reduce project-generated ROG emissions. Therefore, even with implementation of mitigation measure AQ-2, the project's cumulative contribution would remain **significant and unavoidable***.*

AQ-4: Implement mitigation measure mitigation measure AQ-2.

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3.3 Biological Resources

This section describes the existing biological resources conditions present on the Creekside Village Specific Plan (proposed project or CVSP) project site and vicinity (plan area or project site), identifies associated regulatory requirements, evaluates project specific and cumulative impacts, and identifies mitigation measures for any significant impacts to biological resources related to implementation of the proposed project.

Comments received in response to the November 6, 2020, Notice of Preparation (NOP) and the follow up second scoping meeting held on September 26, 2023, included standard comments from the Central Valley Regional Water Quality Control Board. No concerns regarding biological resources were received, however, prior to the second scoping meeting the applicant had met with community members and committed to evaluate the Project's impacts on the Carson Creek Preserve and to ensure that the project would not cause significant negative impacts to biological resources at the Carson Creek Preserve and those same commitments were discussed at the second scoping meeting. A copy of the NOP and comments received is included in Appendix A.

The biological resources analysis is based on data and review of information contained in the Creekside Village Project Biological Resources Constraints Report (November 2023), the updated Biological Resources Constraints Memorandum Report (January 2025), and the Creekside Village Project Aquatic Resources Delineation Report (November 2023) prepared by Environmental Science Associates. In addition to the Oak Resources Technical Report prepared by Foothill Associates (January 2019), and the updated Oak Resources Technical Report also prepared by Foothill Associates (December 2024). All reports are provided in Appendix C. In addition, the El Dorado County General Plan (El Dorado County 2019) and associated environmental impact report (El Dorado County 2003) were also referenced to prepare this section.

3.3.1 Environmental Setting

Watershed and Hydrology

The project site is located on the boundary of two watersheds: the Carson Creek watershed which comprises the largest area in the northern and western vicinities of the project site, and the Upper Deer Creek watershed which comprises a small area in the southeast portion of the project site. A complete assessment of hydrology and water quality for the project site including a figure showing the boundaries of the watersheds is provided in Section 3.8, Hydrology and Water Quality. The discussion presented here is focused on wetlands and waters as regulated by state and federal agencies as well as the habitat value that these resources provide for plant and animal species.

Aquatic Resource Features

Aquatic resources within the project site were mapped on August 20, 2019, and January 13, 2021 (Appendix C). Aquatic features are ecologically complex systems and habitats for wildlife and plant species. Table 3.3-1 summarizes the aquatic resources identified within the project site and offsite areas. Aquatic resource features and associated habitat are described in further detail in the Vegetation Communities and Land Cover Types Section below. Note that all aquatic resources and their extent within the project site are preliminary until verified by the U.S. Army Corps of Engineers (USACE) and/or the Regional Water Quality Control Board (RWQCB).

Table 3.3-1. Aquatic Resources Identified within the Project Site and Offsite Area

Aquatic Resources Type	Project Site (acres)	Offsite Area (acres)	Total (acres)
Wetlands			
Seasonal Wetland[1]	1.65	0.03	1.68
Riparian Wetland	0.48	0.47	0.95
Vernal Pool	0.07	—	0.07
Waters			
Perennial Drainage (Carson Creek)	—	0.30	0.30
Intermittent Drainage (Riverine)	1.76	0.04	1.80
Ephemeral Drainage (Riverine)	2.05	0.08	2.13
Culvert	0.01	0.07	0.08
Ditch	0.01	—	0.01
Total	**6.02**	**0.99**	**7.00**

Source: Appendix C, Biological Resources Constraints Report (2025).
Note: [1] Includes seep, seasonal wetland, riverine seasonal wetland, and wetland swale.
Totals may not sum due to rounding.

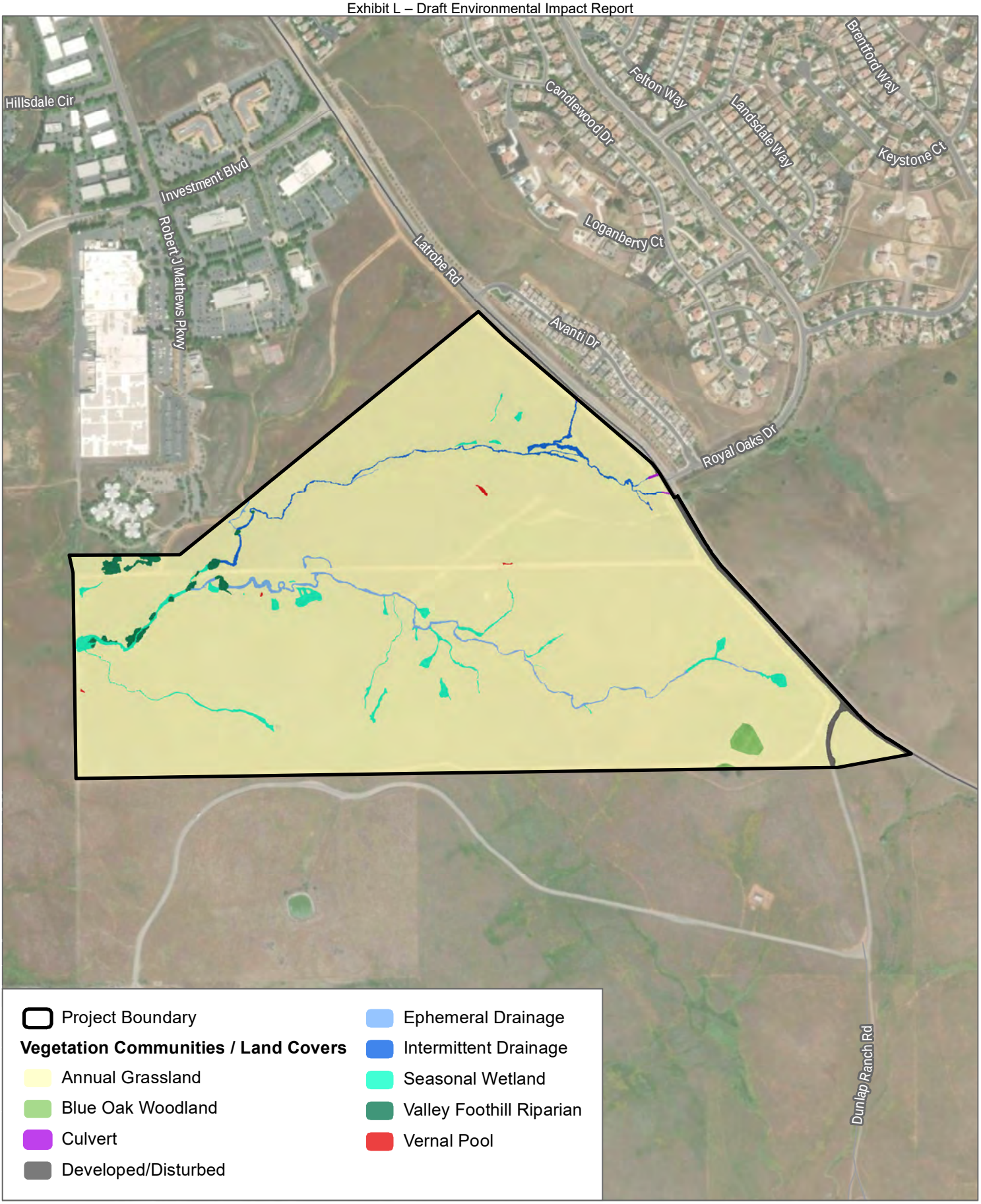
Vegetation Communities and Land Cover Types

Vegetation communities and land cover types within the project site are a combination of natural terrestrial vegetation communities, aquatic habitats, and developed land covers. The vegetation communities and land cover types were mapped within the project site and offsite area using aerial photo interpretation and field reconnaissance survey data (Appendix C). The location of these vegetation communities and land cover types is shown on Figure 3.3-1, Project Vegetation Communities and Land Cover Types and in Table 3-2.

Table 3.3-2. Summary of Vegetation Communities, Aquatic Habitats, and Land Covers within the Project Site and Offsite Area

Vegetation Community / Land Cover Type	Project Site (acres)	Offsite Area (acres)	Total (acres)
California Annual Grassland	202.88	6.18	209.05
Blue Oak Woodland	0.45	0	0.45
Valley Foothill Riparian	0.75	0.47	1.22
Aquatic Habitats[a]	6.02	0.99	7.00
Developed/Disturbed	0.43	20.72	21.15
Total	**210.05**	**27.88**	**237.93**

Source: Appendix C, Biological Resources Constraints Report (2025).
Note:
[a] Aquatic Habitats: acreage for all aquatic resource features compiled as shown in Table 3.3-1.
Totals may not sum due to rounding.



SOURCE: ESIR Imagery 2024; Open Street Map 2019; ESA 2023

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0 400 800 Feet

FIGURE 3.3-1

Vegetation Communities and Land Covers

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Provided below is a complete description of each vegetation community and land cover type within the project site.

Vegetation Communities

California Annual Grasslands

The California annual grassland vegetation community is the most abundant habitat type throughout the project study area, comprising a total of 202.88 acres in the project site and 6.18 acres in the offsite areas. California annual grasslands are an annual herbaceous plant community characterized mostly by naturalized annual grasses. In the project site, annual grassland is dominated by naturalized herbaceous annual grasses and forbs, with smaller patches containing relatively high proportions of native grasses and forbs. The most abundant species in this community include non-native grasses such as wild oats (*Avena barbata, A. fatua, A. sativa*), bromes (*Bromus diandrus, B hordeaceus*), barley grasses (*Hordeum marinum* ssp. *gussoneanum, H. murinum*), and fescues (*Festuca myuros, F. perennis*); non-native weedy herbaceous species include yellow star-thistle (*Centaurea solstitialis*), tall sock-destroyer (*Torilis arvensis*), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), vetch (*Vicia villosa, V. sativa* ssp. *sativa*), California burclover (*Medicago polymorpha*), broad-leaf filaree (*Erodium botrys*), black mustard (*Brassica nigra*), and shortpod mustard (*Hirschfeldia incana*); and native herbaceous species such as narrow tarplant (*Holocarpha virgata* ssp. *virgata*), yarrow (*Achillea millefolium*), and spikeweed (*Centromadia fitchii*). The native perennial purple needle grass (*Stipa pulchra*) was observed in the project site but was not present in sufficient density to be considered as an individual alliance.

California annual grassland provides cover, foraging, and breeding habitat for many common wildlife species including western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), California ground squirrel (*Spermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus californicus*), western meadowlark (*Sturnella neglecta*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), and a variety of raptors such as northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*) (Appendix C).

Blue Oak Woodland

A small grove of 7 Heritage blue oak trees (*Quercus douglasii*) with annual grassland understory comprises approximately 0.45 acres is located on the top of a steep rise in the southeast corner of the project site, approximately 100 feet above the rest of the site. The updated Oak Resources Technical Report (2024) states that one additional blue oak tree not included in the 2019 report was added in the updated report. This oak tree is rooted on a parcel to the south but overhangs the project site. Of the 7 trees surveyed in the 2019 report one is now dead and has fallen over. Of the remaining trees surveyed, 2 are in poor health while the remaining trees are in fair to fair-poor health. Four of the trees surveyed have a diameter at breast height (DBH) of 36 inches or greater and qualify as heritage trees under the County's Oak Resources Management Plan (Appendix C). Oak trees provide nesting and foraging habitat for many species, including acorn woodpecker (*Melanerpes formicivorus*), yellow-billed magpie (*Pica nuttalli*), and gray squirrel (*Sciurus griseus*).

Valley Foothill Riparian

The Valley foothill riparian vegetation community within the project site totals approximately 0.75 acre in the western corner of the project site north of Carson Creek, and 0.47 acre is located in the offsite area adjacent to the water treatment plant on Latrobe Road. The portion within the project site appears to be isolated from the creek channel and may be supported by runoff from the adjacent office development to the north. Characteristic

species documented in the project site include Goodding's black willow (*Salix gooddingii*), Fremont cottonwood (*Populus fremontii*), and red willow (Salix laevigata) trees in the overstory. Understory species observed include sandbar willow (*Salix exigua*) and Himalayan blackberry (*Rubus armeniacus*), and a variety of grasses and forbs, including miner's lettuce (*Claytonia perfoliata*) and rye grass (Appendix C). As with any riparian habitat, this vegetation community provides high value for many amphibian, reptile, bird and mammal species.

Aquatic Resource Features and Associated Habitats

Riverine - Culvert, Ephemeral Drainage, Intermittent Drainage. Perennial Drainage

Riverine features including culverts, ephemeral drainages, and intermittent drainages throughout the project site comprise a total of 3.82 acres. An intermittent drainage has flowing water during certain times of the year, when precipitation or groundwater provides water for flow. During dry periods, intermittent drainages may not have flowing water. Specifically, intermittent drainages in the project site generally flow throughout the winter season and into the late spring or early summer. Two intermittent drainage segments, totaling approximately 1.76 acres, were identified as part of the Carson Creek drainage in the northern portion of the project site. Carson Creek supports sporadic patches of freshwater emergent wetland species within the drainage and riparian species along its lower and upper banks. An ephemeral drainage has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral drainage beds are located above the water table year-round. The project site contains nine ephemeral drainage segments, totaling approximately 2.05 acres generally traversing the northern most and central portions of the project site. Groundwater is not a source of water for the ephemeral drainages, as runoff from rainfall is the primary source of input. (Appendix C). No vegetation alliances are associated with the riverine features on the project site. Riverine features can provide seasonal and dispersal habitat for various invertebrate and amphibian species and provide upland habitat for many species when dry. The offsite area includes 0.49 acres of riverine features, including 0.30 acres of perennial drainage (Carson Creek).

Riparian Wetland

Three riparian wetlands occur along Carson Creek, an intermittent channel, and ten other riparian wetlands occur in a depression on the northwestern border of the project site. The riparian wetland community within the project site comprises a total of 0.48 acres. The offsite area includes 0.47 acres of riparian features. Characteristic species in the riparian wetlands include Fremont cottonwood (*Populus fremontii*) and red willow (*Salix laevigata*) trees in the overstory. The understory consists of sandbar willow (*Salix exigua*), red willow (*Salix laevigata*), and Himalayan blackberry (*Rubus armeniacus*), and a variety of grasses and forbs, including miner's lettuce (*Claytonia perfoliata*) and rye grass (Appendix C).

Riparian wetlands have an exceptionally high value for many wildlife species. These habitats offer water, shelter from heat, migration routes, and diverse nesting and feeding possibilities. A range of amphibians, reptiles, birds, and mammals may rely on riparian habitat in the project site for food, cover, and reproduction (Appendix C).

Seasonal Wetland / Seep / Wetland Swale

The seasonal wetland/seep/wetland swale communities within the project site comprise a total of 1.65 acres (Appendix C). The offsite area includes 0.03 acres of riverine seasonal wetland and seasonal wetland features (no seeps). These community types are discussed collectively due to the similarities in their vegetation composition,

substrate, and hydrologic conditions. These communities exhibit variable hydrologic conditions but annually pond surface water or maintain saturated soils at the ground surface for long enough each year to support facultative[1] or obligate[2] wetland plant species (i.e., hydrophytic ["water loving"] vegetation). These features support ponded or saturated soil conditions during winter and spring and are typically dry through the summer and fall. Vegetation is characterized by both annual and perennial species including native and non-native grasses and forbs. Plant species found within these wetlands are adapted to withstand intermittent periods of inundation and typically initiate growth as aquatic or semi-aquatic plants and transition to a dry-land environment as the wetlands dries. Upland grasses and forbs often establish after wetland species desiccate and features become dry. Within the project site, these wetlands occur in depressions or low areas within the California annual grassland vegetation community and are dominated by Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum*), rye grass, rabbitsfoot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), and common toad rush (*Juncus bufonius*) (Appendix C).

Wildlife species use seasonal wetland, seep, and wetland swale habitats for temporary water sources and cover. Species expected to occur in this habitat type are like those expected to occur in the California annual grassland habitat, as discussed above. Seasonal wetland, seep, and wetland swale habitats may also support invertebrate communities that thrive in inundated conditions, as discussed under vernal pool community below (Appendix C).

Vernal Pool

Vernal pools are seasonal wetlands that occur in grasslands and are typically found in slight depressions that form over bedrock or hardpan soils that allow water to pool during winter and spring rains. Within the project site, the vernal pool community consists of five pools scattered in the central area of the project site totaling 0.07 acres (Appendix C). No vernal pools are present in offsite areas. Vernal pools are considered unique communities and often support species that are endemic to vernal pools or other shallow pools in that geographic region, especially plant and invertebrate species. Invertebrate species that may occur in vernal pools within the project site include common and special-status species such as clam shrimp (*Cyzicus californicus*), seed shrimp (*Cypria* sp.), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), and several aquatic insects. Dominant plant species observed were coyote-thistle (*Eryngium vaseyi*), toad rush, and popcornflower (*Plagiobothrys* sp.) (Appendix C).

Land Cover Types

Developed

Developed portions of the project study area primarily occur in the offsite areas, located in the northern portion of the project site and along Latrobe Road, and include paved roads, sidewalks, parking lots, buildings, and associated infrastructure. These areas are paved or otherwise developed and generally lack natural vegetation. Plant species adapted to frequent disturbance observed in the disturbed areas include: stinkwort (*Dittrichia graveolens*), Russian thistle (*Salsola tragus*), short-pod mustard, and yellow starthistle. Plant cover is extremely sparse; few individuals are established within the disturbed area. As such, no vegetation alliances correlate with the disturbed type. Developed/ornamental vegetation provides marginal habitat for wildlife species. Wildlife species that may occur in these areas include Brewer's blackbird (*Euphagus cyanocephalus*), European starling

1 Plants that can be found in both wetland and non-wetland habitat.
2 Plants that are only found in wetlands.

(*Sturnus vulgaris*), house sparrow (*Passer domesticus*), rock dove (*Columba livia*), and white crowned sparrow (*Zonotrichia leucophrys*) (Appendix C).

Sensitive Natural Communities

Sensitive natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of a project. These communities may or may not contain special-status species. Sensitive Natural Communities are those that are listed by the California Department of Fish and Wildlife (CDFW) or California Natural Diversity Database (CNDDB) due to the rarity of the community in the state or throughout its entire range (i.e., globally). For rarity, the ranking involves the knowledge of range and distribution of a given type of vegetation, and the proportion of occurrences that are of good ecological integrity. The conservation of sensitive natural communities is integral to maintaining biological diversity (CDFW 2021c).

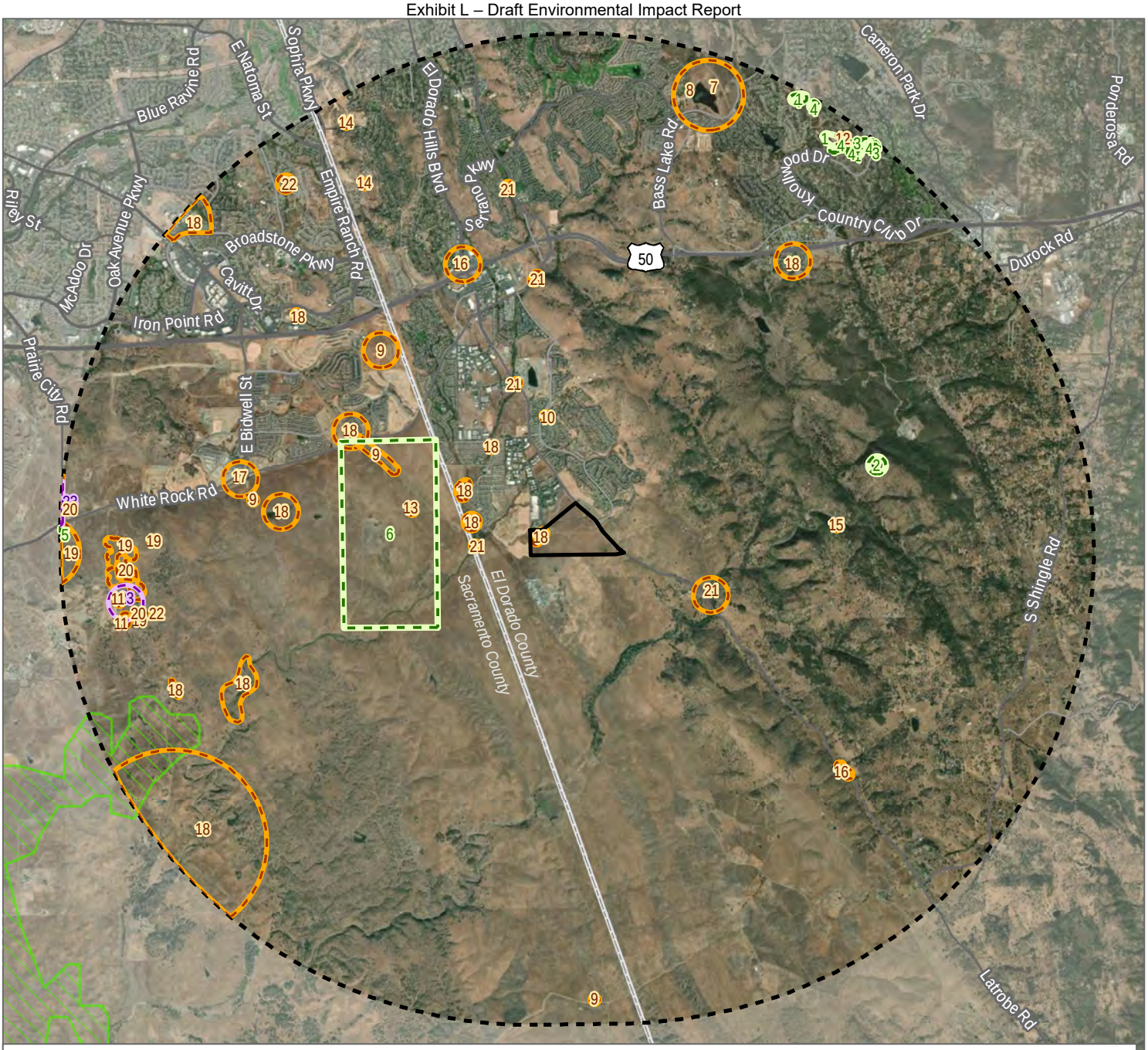
Northern Hardpan Vernal Pools/Coyote Thistle Vernal Pools

Northern Hardpan Vernal Pool has been identified within five miles of the project site, with the closest known occurrence located approximately 4.1 miles to the west of the project site along Scott Road, see Figure 3.3-2, Known Special-Status Species Occurrences and Sensitive Natural Communities (CDFW 2021c). Northern hardpan vernal pools are seasonally flooded or saturated with fresh water. Many species of plants and wildlife depend on these unique communities and are often classified special-status, including California tiger salamanders (*Ambystoma californiense*; CTS) and special-status vernal pool invertebrates, which have a potential to occur within the project site. Vegetative species composition varies from pool to pool and from year to year. Herbs and grasses typically grow less than a foot high with intermediate to open cover. These pools form over areas with hardpan soils and generally have more topographic relief associated with them. Although the vernal pools within the project site are not included as an occurrence for this community within the CNDDB, the results of field surveys indicate that they have the potential to be considered as part of the Northern Hardpan Vernal Pool complex. Specifically, they may be considered *Eryngium castrense* (42.007.06) Coyote-thistle vernal pools, with a CDFW Natural Community sensitivity rank of S2.[3]

Riparian Habitat

A stream or other watercourse is a body of water that flows year-round or intermittently and has surface and subsurface flow that supports or has supported a riparian vegetation community/habitat. Riparian habitat acts as a buffer between aquatic resources and uplands. Healthy riparian habitat is essential in supporting both plant and wildlife species, as well as supporting watercourse integrity. As such, riparian habitat is considered a sensitive habitat within California. The goal of conserving riparian habitat as a sensitive natural community is to preserve these systems to maintain species and watercourse health and function. Within the project site, riparian vegetation community/habitat is present within the western corner. It was mapped in the Biological Resource Constraints Report as being part of the *Salix gooddingii* (61.211.01) Goodding's willow thickets alliance, with a sensitivity rank of S3 (Appendix C).

[3] Natural Communities with ranks of S1-S3 are considered Sensitive Natural Communities to be addressed in the environmental review processes of CEQA and its equivalents.



Project Boundary

Buffer - 5 miles

Mather Core Recovery Area (USFWS)

CNDDB Plant Occurrences

1, Bisbee Peak rush-rose *(Crocanthemum suffrutescens)*

2, Brandegee's clarkia *(Clarkia biloba ssp. brandegeeae)*

3, El Dorado County mule ears *(Wyethia reticulata)*

4, Layne's ragwort *(Packera layneae)*

5, legenere *(Legenere limosa)*

6, Sanford's arrowhead *(Sagittaria sanfordii)*

CNDDB Wildlife Occurrences

7, bald eagle *(Haliaeetus leucocephalus)*

8, Blennosperma vernal pool andrenid bee *(Andrena blennospermatis)*

9, burrowing owl *(Athene cunicularia)*

10, California black rail *(Laterallus jamaicensis coturniculus)*

11, California linderiella *(Linderiella occidentalis)*

12, coast horned lizard *(Phrynosoma blainvillii)*

13, ferruginous hawk *(Buteo regalis)*

14, golden eagle *(Aquila chrysaetos)*

15, great blue heron *(Ardea herodias)*

16, North American porcupine *(Erethizon dorsatum)*

17, Swainson's hawk *(Buteo swainsoni)*

18, tricolored blackbird *(Agelaius tricolor)*

19, vernal pool fairy shrimp *(Branchinecta lynchi)*

20, vernal pool tadpole shrimp *(Lepidurus packardi)*

21, western pond turtle *(Emys marmorata)*

22, white-tailed kite *(Elanus leucurus)*

CNDDB Sensitive Communities

23, Northern Hardpan Vernal Pool

SOURCE: ESRI Imagery 2024; Open Street Map 2019; CDFW CNDDB 2024

DUDEK

0 0.75 1.5 Miles

FIGURE 3.3-2

Special-Status Species and Sensitive Communities

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Designated Critical Habitat / Essential Fish Habitat

Critical habitat is designated by the U.S. Fish and Wildlife Service (USFWS) and is specifically defined as a geographic area that contains features essential to the conservation of species listed as threatened or endangered under the federal ESA. The purpose of Designated Critical Habitat is to identify areas that are essential to the species' conservation and recovery and what management requirements may be necessary to conserve the species. Essential Fish Habitat is designated by the National Marine Fisheries Service within the National Oceanic and Atmospheric Administration and is specific to aquatic habitat where federally managed fish species and invertebrates live and reproduce. There is no Designated Critical Habitat or Essential Fish Habitat within or adjacent to the project site (Appendix C; USFWS 2020a).

Habitat Connectivity and Wildlife Movements

Wildlife movement corridors have been recognized by federal and state agencies as important habitats worthy of conservation. Wildlife corridors provide migration channels seasonally (i.e., between winter and summer habitats), and provide non-migrant wildlife the opportunity to move within their home range for food, cover, reproduction, and refuge. They may also function as dispersal corridors allowing animals to move between various locations within their range. Human development can act together with topography and other natural factors to fragment large open space areas and impede wildlife movement between areas of suitable habitat. By isolating habitat, this fragmentation can also isolate populations and reduce genetic and species diversity. Movement corridors may allow animals to move between otherwise isolated habitats and maintain genetic exchange between separate populations.

The project site and open space in the vicinity are likely used by wildlife species for dispersal and seasonal movements. However, El Dorado County's (County) Important Biological Corridor overlay (El Dorado County 2004) does not designate the project site as a wildlife movement corridor, and it is not recognized by the County as an important habitat for migratory deer herds (El Dorado County 2010). The project site is in an area of "connections with implementation flexibility" according to the CDFW's Essential Habitat Connectivity natural landscape blocks (CDFW 2020b). This category includes areas that have been identified as having connectivity importance, but have not been identified as channelized areas, species corridors, or habitat linkages at this time (Appendix C).

Special-Status Species

Special-status plant and wildlife species determined to potentially occur in or near project site, based on the preliminary review discussed above, on the suitability of habitat to support the species, and on the results of the reconnaissance-level biological surveys conducted by Environmental Science Associates in August 2019, December 2020, January 2021, April 2022, and during protocol brachiopod surveys conducted between January to June 2024 are shown on Figure 3.3-2, Known Special-Status Species Occurrences and Sensitive Natural Communities. The location of previous documented occurrences of special-status species from the CNDDB and Sensitive Natural communities are depicted on Figure 3.3-2. Tables summarizing the potential occurrence of special-status plant and wildlife species are included in the updated Biological Resources Constraints Report (Appendix C pp. 5-12).

Special-Status Plants

Based on the updated results of the CNDDB, California Native Plant Society (CNPS) and IPaC database searches, a total of 31 special-status plant species occur within up to five miles of the project site and/or within nine USGS

7.5–minute quads (i.e., Buffalo Creek, Carbondale, Clarksville, Folsom SE, Irish Hill Latrobe, Shingle Springs, Sloughhouse). Of these, 25 were eliminated from consideration due to the lack of appropriate habitats, absence of suitable soils, extent of habitat degradation, or location of the project site outside of the species known range. The remaining six special-status plant species have at least a moderate potential to occur within the project site including the following: dwarf downingia (*Downingia pusilla*), Tuolumne button-celery (*Eryngium pinnatisectum*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*), Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii* ssp. *myersii*). One species, Sanford's arrowhead (*Sagittaria sanfordii)* has a low potential to be present on the site with only one recorded observation of this species within five miles.

This species considered to have at least a moderate potential to occur within the project site are described in more detail below.

Ahart's dwarf rush (Juncus leiospermus var. *ahartii)*

Ahart's dwarf rush is a California Rare Plant Ranks (CRPR) 1B.2 species (i.e., moderately threatened in California) with a moderate potential to occur in the project site. Ahart's dwarf rush is an annual herb that is native to California. The common blooming period for this species is March through May. This species can commonly be found in mesic valley and foothill grassland habitat from approximately 98 to 750 feet above mean seal level (AMSL). California annual grasslands and mesic environments (e.g., seasonal wetlands, swales, and seeps) within the project site provide suitable habitat. However, there are no known occurrences within five miles of the project site and this species was not identified during a focused botanical survey conducted in April 2022 (CDFW 2021a, CNPS 2021a, Appendix C).

Boggs Lake Hedge-Hyssop (Gratiola heterosepala)

Boggs Lake hedge-hyssop is a state endangered and CRPR 1B.2 species (i.e., moderately threatened in California) with a moderate potential to occur in the project site. Boggs Lake hedge-hyssop is an annual herb that is native to California. The common blooming period for this species is April through August. This species can commonly be found in clay soils in marshes, swamps, lake margins, and vernal pools from approximately 33 to 7,790 feet AMSL. Vernal pools within the project site provide suitable habitat. However, there are no known occurrences within five miles of the project site and this species was not identified during a focused botanical survey conducted in April 2022 (CDFW 2021a, CNPS 2021a, Appendix C).

Dwarf downingia (Downingia pusilla)

Dwarf downingia is a CRPR 2B.2 species (i.e., moderately threatened in California) with a moderate potential to occur in the project site. Dwarf downingia is an annual herb that is native to California. The common blooming period for this species is March through May. This species can commonly be found in mesic valley and foothill grassland and vernal pool habitat from approximately 3 to 1,455 feet AMSL. There is suitable habitat for this species within the project site, Vernal pools and valley and foothill grasslands within the project site provide suitable habitat. However, there are no known occurrences within five miles of the project site and this species was not identified during a focused botanical survey conducted in April 2022 (CDFW 2021a, CNPS 2021a, (Appendix C).

Legenere (Legenere limosa)

Legenere is a CRPR 1B.1 species (i.e., seriously threatened in California) with a moderate potential to occur in the project site. Legenere is an annual herb that is native to California. The common blooming period for this species is April through June. This species can commonly be found in vernal pools from approximately 2 to 2,885 feet AMSL. Suitable habitat is present in the vernal pools and seasonal wetlands within the project site. There is one recorded observation of this species in the CNDDB approximately five miles west of the project site north of the Prairie City State Vehicular Recreation Area, on the south side of White Rock Road (CDFW 2021a, CNPS 2021a,). This species was not identified during a focused botanical survey conducted in April 2022 (Appendix C).

Pincushion Navarretia (Navarretia myersii ssp*. myersii)*

Pincushion navarretia is a CRPR 1B.1 species (i.e., seriously threatened in California) with a moderate potential to occur in the project site. Pincushion navarretia is an annual herb that is native to California. The common blooming period for this species is April through May. This species can commonly be found in acidic vernal pools from approximately 66 to 1,080 feet AMSL. Suitable habitat is present within the vernal pools and seasonal wetlands present in the project site. However, there are no known occurrences within five miles of the project site and this species was not identified during a focused botanical survey conducted in April 2022 (CDFW 2021a, CNPS 2021a, Appendix C).

Tuolumne button-celery (Eryngium pinnatisectum)

Tuolumne button-celery is a CRPR 1B.2 species (i.e., moderately threatened in California) with a moderate potential to occur in the project site. Tuolumne button-celery is an annual or perennial herb that is native to California. The common blooming period for this species is May through August. This species can commonly be found in mesic cismontane woodland, lower montane coniferous forest, and vernal pools from approximately 230 to 3,000 feet AMSL. Suitable habitat is present in the vernal pools and seasonal wetlands present in the project site. However, there are no known occurrences within five miles of the project site and this species was not identified during a focused botanical survey conducted in April 2022 (Appendix C).

Special-Status Wildlife

Based on the results of the CNDDB and IPaC database searches, a total of 26 special-status wildlife species occur within up to five miles of the project site and/or within nine USGS 7.5-minute quads (i.e., Buffalo Creek, Carbondale, Clarksville, Folsom, Folsom SE, Irish Hill Latrobe, Shingle Springs, Sloughhouse). Of these, 17 were eliminated from consideration due to the lack of appropriate habitats, absence of suitable soils, extent of habitat degradation, or location of the project site outside of the species known range. The remaining 9 special-status wildlife species have at least a low, moderate, or known potential to occur within the project site and include: pallid bat (*Antrozous pallidus*), northwestern pond turtle (*Actinemys marmorata*), monarch butterfly (*Danaus plexippus)*, tricolored blackbird (*Agelaius tricolor*), grasshopper sparrow (*Ammodramus savannarum*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), and other migratory and nesting bird species. These species are described in more detail below.

Amphibians and Reptiles

Northwestern Pond Turtle (*Actinemys marmorata*)

Northwestern pond turtle is a state SSC, was proposed for listing as threatened under the ESA on October 3, 2023 (88 FR 68370-68399) and has a low potential to occur in the project site. Northwestern pond turtle was recognized as a separate species from the southwestern pond turtle (*Actinemys pallida*) in 2014 based on an analysis of range-wide genetic data, splitting the former "western pond turtle" into two separate species (Spinks et al. 2014). Northwestern pond turtle are aquatic habitat generalists but require some standing or slowly moving water including large rivers, lakes, permanent and intermittent streams and pools, wetlands, and artificial waters such as stock ponds and settling ponds (Bury and Germano 2008; Thomson et al. 2016). This species also requires basking sites for thermoregulation such as rocks, logs, emergent aquatic vegetation, and others (Bury and Germano 2008). Nesting occurs in grassy or forb-dominated areas, typically 200 meters or less from aquatic habitat (Jennings and Hayes 1994), Suitable aquatic habitat for the northwestern pond turtle is provided on the project site by the intermittent drainage when flooded, and annual grasslands adjacent to the intermittent drainage also provide suitable upland nesting habitat. However, it is unlikely that northwestern pond turtles would occur in intermittent drainage feature and adjacent uplands within 0.25-mile (1,320 feet) because of insufficient water in the drainage feature year-round. Four occurrences of northwestern pond turtle have been recorded within a five-mile radius of the site, with the closest two (#1316 and 468) resulting from observations in Carson Creek, 0.5 mile west of the project site in 2016, and Deer Creek where it intersects Latrobe Road, 0.9 miles southeast of the project site in 1988. Development between the project site and the Carson Creek occurrence makes it unlikely that any individuals would move toward the project site.

Birds

Tricolored Blackbird (*Agelaius tricolor*)

Tricolored blackbird is a state threatened species with known occurrences within the project site. This species typically nests in freshwater marshes with dense growths of emergent vegetation dominated by cattails or bulrushes, but has also established colonies in willows, blackberries (*Rubus* spp.), and a variety of other types of dense, herbaceous vegetation, such as thistles (*Cirsium* spp.) and nettles (*Urtica* sp.). Tricolored blackbirds forage in a variety of habitats, such as grasslands and croplands, where high densities of suitable insect prey are found. The riparian wetland features within the project site provide suitable nesting habitat for this species. There is a CNDDB recorded observation of this species within the project site. The observation is of a colony within riparian wetland blackberry patches associated with an intermittent channel in the western portion of the project site. This colony was active as of 2023, the last recorded survey date (UC Davis 2024, CDFW 2021a, Appendix C, USFWS 2021a). The nesting colony was observed again incidentally during surveys conducted in 2024.

Grasshopper Sparrow *(Ammodramus* savannarum*)*

Grasshopper sparrow is a state SSC that has a moderate potential to occur in the grasslands of the project site. This species requires tall and dense grasslands to conceal their ground-based nests, and typically occupy grasslands with scattered shrubs to provide perches. There are no recorded observations of this species in the CNDDB within five miles of the project site (Appendix C, USFWS 2021a).

Golden Eagle (*Aquila chrysaetos*)

Golden eagle is a state fully protected species and federally protected under the Bald and Golden Eagle Protection Act, with a low potential to use the project site for foraging. Golden eagle is a year-round species that is both a permanent resident and migrant throughout California where it tends to occupy mountain, foothill, and desert areas. Foraging habitat for this species includes open habitats with scrub, grasslands, desert communities, and agricultural areas. This species typically nests on cliffs within canyons and escarpments and in large trees (generally in open habitats) primarily within rugged, hilly, or mountainous terrain (Garrett and Dunn 1981b; Johnsgard 1990). But this species is also known to use electrical transmission towers and similarly sized structures as nest sites (Garrett and Dunn 1981b; Johnsgard 1990; Kochert et al. 2002; Scott 1985). Golden eagles commonly build, maintain, and use multiple alternative nest sites in their breeding territories, routinely refurbishing and reusing individual nests over many years. There is no nesting habitat present, and limited foraging habitat is present within the project site. There are recorded observations of this species in the CNDDB within five miles of the project site, with the nearest occurrence approximately 4.0 miles northwest of the project site between Empire Road and El Dorado Hills Boulevard (CDFW 2021a, Appendix C, USFWS 2021a).

Burrowing Owl (*Athene cunicularia*)

Burrowing owl is a state SSC and a candidate species under CESA that has a moderate potential to occur in the project site. In California, burrowing owls are yearlong residents of open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats. Preferred habitat is typified by short, sparse vegetation with few shrubs, level to gentle topography, and well-drained soils. The presence of burrows is the most essential component of burrowing owl habitat, as they are required for nesting, roosting, cover, and caching prey (Poulin et al. 2011). In California, burrowing owls most commonly live in burrows created by California ground squirrels. Burrowing owls may also occur in human-altered landscapes such as agricultural areas, ruderal grassy fields, vacant lots, and pastures if the vegetation structure is suitable (i.e., open and sparse), useable burrows are available, and foraging habitat occurs in close proximity (Gervais et al. 2008). Debris piles, riprap, culverts, and pipes can also be used for nesting, shelter, and roosting. There is suitable nesting and foraging habitat in the California annual grasslands that dominant the project site. Although this species was not observed during general reconnaissance-level surveys in August 2019, December 2020, January 2021, and April 2022, there are recorded observations of this species in the CNDDB within five miles of the project site, with the nearest occurrence approximately 2.0 miles west of the project site at the tributaries to Carson Creek, south of White Rock Road and east of Malby Crossing (CDFW 2021a, Appendix C, USFWS 2021a).

Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawk is a state threatened species with a low potential to occur in the project site. In California, this species nests in the Central Valley and smaller adjacent valleys, the Klamath Basin, the Northeastern Plateau, Lassen County, and the Mojave Desert. It breeds in riparian areas, stands of trees in agricultural environments, oak savannah, Joshua trees (*Yucca brevifolia*) in the Mojave Desert, and juniper-sage flats. In the San Joaquin Valley, it nests in riparian areas and in isolated tree clusters, often near rural residences or other areas with some human disturbance. Alfalfa fields are the favored foraging areas of Swainson's hawk in the Sacramento and San Joaquin valleys, but the species also forages in undisturbed grasslands, fallow agricultural fields, and some row crops. No suitable nesting habitat is present within the site; however suitable foraging habitat is present within the California annual grasslands. There are recorded observations of this species in the CNDDB within five miles of the project site, with the nearest occurrence approximately 2.9 miles west of the project site at the intersection of White Rock Road and Scott Road (CDFW 2021a, Appendix C, USFWS 2021a).

White-Tailed Kite (*Elanus leucurus*)

White-tailed kite is a state fully protected species with a moderate potential to occur in the project site. White-tailed kites occur in grasslands, marshes, and lowland scrub habitats, and nest in dense foliage in taller- to medium-size trees near foraging habitat. This species may also forage in meadows, agricultural fields, other types of emergent wetlands, and disturbed lands. White-tailed kites feed principally on rodents, especially voles. Suitable nest trees are present within the grove of blue oak trees within the project site. California annual grassland within the project site provides foraging habitat for this species. There are recorded observations of this species in the CNDDB within five miles of the project site, with the nearest occurrence approximately 4.0 miles west of the project site on the north side of Scott Road (CDFW 2021a, Appendix C, USFWS 2021a).

Migratory Birds and Nesting Raptors

In addition to the special-status birds discussed above, the project site provides nesting habitat for several other local and migratory bird species including Cooper's hawk and ferruginous hawk. Native birds of prey are protected by California Fish and Game Code (FGC) Section 3503.5 and migratory bird species are protected by the federal Migratory Bird Treaty Act (MBTA).

Mammals

Pallid Bat (*Antrozous pallidus*)

Pallid bat is a state SSC that has low potential to occur in the project site. Pallid bat as well as other native bat species are protected by California FGC Section 4150. Pallid bats commonly roost in small colonies of about 12 to 100 bats within rock crevices, caves, mine shafts, buildings, tree hollows, and under bridges (NorCal Bats 2017). There is no suitable roosting habitat present within the project site, however suitable foraging habitat is present in the annual grasslands. There are no recorded observations of this species in the CNDDB within five miles of the project site, and no roosting bats or signs of presence identified during the multiple reconnaissance surveys conducted in August 2019, December 2020, January 2021, and April 2022. However, neither a focused survey for roosting bats nor a formal bat habitat assessment was conducted (CDFW 2021a, Appendix C).

American Badger (*Taxidea taxus*)

American badger is a state SSC that has low potential to occur in the project site. This species is most abundant in drier open stages of most shrub, forest and herbaceous habitats with loose soils for burrowing and hunting prey. Prey species are primarily ground squirrels (*Otospermophilus beecheyi*) and pocket gophers (*Thomomys* spp.), but also include insects, birds, and carrion. American badgers are elusive, nocturnal mammals with expansive home ranges (CDFW 2021a). Suitable burrowing and foraging habitat is present in annual grasslands in the project site; however, no burrows that could be utilized by this species were present. There are no recorded observations of this species in the CNDDB within five miles of the project site (CDFW 2021a, Appendix C).

Invertebrates

Monarch butterfly (*Danaus Plexippus*)

Monarch butterfly is a candidate for federal listing with a low potential to occur in the project site. This species is known to overwinter in eucalyptus and cypress trees occur near the coast. Larvae feed on milkweed plants and adults are itinerant throughout much of the state and are generalist nectar-feeders. Narrow leaf milkweed plants

were observed on the project site, but in low abundance. The project site provides limited habitat but is outside of known winter aggregation sites. Adults are likely to occur occasionally within the project site, as they do throughout much of the state.

3.3.2 Regulatory Setting

Federal

Federal Endangered Species Act

The federal Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), as amended, is administered by the USFWS for most plant and animal species and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. The ESA defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under the ESA, it is unlawful to take any listed species; the ESA defines "take" as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

The ESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of habitat conservation plans on private property without any other federal agency involvement. Upon development of a habitat conservation plan, USFWS can issue incidental take permits for listed species.

Migratory Bird Treaty Act

The MBTA was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. Each of the treaties protects selected species of birds and provides for closed and open seasons for hunting game birds. The MBTA protects over 800 species of birds and prohibits the take of any migratory bird or any part, nest, or eggs of any such bird. Under the MBTA, "take" is defined as pursuing, hunting, shooting, capturing, collecting, or killing, or attempting to do so (16 USC 703 et seq.). Additionally, Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The Executive Order requires federal agencies to work with USFWS to develop a memorandum of understanding. USFWS reviews actions that might affect these species.

Bald and Gold Eagle Protection Act

The Bald and Golden Eagle Protection Act (BAGEPA) (16 USC 668 et seq.) provides for the protection of both bald and golden eagles. Specifically, BAGEPA prohibits "take" of eagles, which is defined as any action that would "pursue, destroy, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" bald and golden eagles, including parts, nests, or eggs. The term "disturb" is further defined by regulation as "to agitate or bother a bald or

golden eagle to a degree that causes, or is likely to cause, injury to an eagle, a decrease in productivity, or nest abandonment" (50 CFR 22.3). Under BAGEPA, it is also illegal to "sell, purchase, barter, trade, import, or export, or offer for sale, purchase, barter, or trade, at any time or in any manner, any bald eagle or any golden eagle, or the parts, nests, or eggs" of these birds. Pursuant to 50 CFR 22.26, and as of the latest amendment to BAGEPA in December 2016, a permit may be obtained that authorizes "take" of bald eagles and golden eagles where the "take" is "compatible with the preservation of the bald eagle and the golden eagle; is necessary to protect an interest in a particular locality; is associated with, but not the purpose of, the activity; and cannot practicably be avoided" (USFWS 2021b).

Clean Water Act

The Clean Water Act (CWA) is the major federal legislation governing water quality, providing guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 of the CWA requires an applicant for a federal license or permit that may result in a discharge of pollutants into waters of the United States to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The State Water Resources Control Board and Regional Water Quality Control Boards (RWQCBs) administer the Section 401 certification program in California. Section 402 of the CWA establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the United States. Section 404 establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. USACE implementing regulations are found in 33 Code of Federal Regulations (CFR) Parts 320 to 332. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the U.S. Environmental Protection Agency (EPA) in conjunction with USACE (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic ecosystem only if there is no practicable alternative that would have less adverse impacts.

Wetlands and Other Waters of the United States

The definition of waters of the United States establishes the geographic scope for authority under Section 404 of the CWA; however, the CWA does not specifically define waters of the United States, leaving the definition open to statutory interpretation and agency rulemaking. The definition of what constitutes "waters of the United States" (provided in 33 CFR Section 328.3(a)) has changed multiple times over the past few decades starting with the *United States v. Riverside Bayview Homes, Inc*. court ruling in 1985. Subsequent court proceedings, rule makings, and congressional acts in 2001 (*Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers*), 2006 (*Rapanos v. United States*), 2015 (Clean Water Rule), 2018 (suspension of the Clean Water Rule), 2019 (formal repeal of the Clean Water Rule), 2020 (Navigable Waters Protection Rule, NWPR), and 2021 (*Pasqua Tribe et al v. United States Environmental Protection Agency* resulting in remand and vacatur of the NWPR and a return to "the pre-2015 regulatory regime") have attempted to provide greater clarity to the term and its regulatory implementation.

The term "wetlands" (a subset of waters of the United States) is defined in 33 CFR, Section 328.3(c)(16), as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." In the absence of wetlands, the limits of USACE jurisdiction in non-tidal waters, such as intermittent streams, extend to the "ordinary high water mark," which is defined in 33 CFR 328.3(c)(7) as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the

character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

On May 25, 2023, the Supreme Court issued its long-anticipated decision in *Sackett v. EPA*, in which it rejected the EPA's claim that "waters of the United States," as defined in the CWA, includes wetlands with an ecologically significant nexus to traditional navigable waters. The Supreme Court held that only those wetlands with a continuous surface water connection to traditional navigable waterways would be afforded federal protection under the CWA. Specifically, to assert jurisdiction over an adjacent wetland under the CWA, a party must establish that (1) the adjacent body of water constitutes water[s] of the United States' (i.e., a relatively permanent body of water connected to traditional interstate navigable waters) and (2) the wetland has a continuous surface connection with that water, making it difficult to determine where the water ends and the wetland begins. A Final Rule was published by the EPA in August 2023 that established consistency with the *Sackett v. EPA* decision.

State

California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA), which prohibits the "take" of plant and animal species designated by the California Fish and Game Commission as endangered or threatened in the state of California. Under CESA Section 86, take is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA Section 2053 stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy."

CESA defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." CESA defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the [California Fish and Game] Commission as rare on or before January 1, 1985, is a threatened species." A candidate species is defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the Commission has published a notice of proposed regulation to add the species to either list." CESA does not list invertebrate species.

CESA authorizes the taking of threatened, endangered, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. These provisions also require CDFW to coordinate consultations with USFWS for actions involving federally listed species that are also state-listed species. In certain circumstances, CESA allows CDFW to adopt a CESA incidental take authorization as satisfactory for CEQA purposes based on finding that the federal permit adequately protects the species and is consistent with state law. A CESA permit may not authorize the take of "fully protected" species that are protected in other provisions of the California Fish and Game Code, discussed further below.

California Fish and Game Code

Under the California FGC, CDFW provides protection from "take" for a variety of species, including Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code provide that designated fully protected species may not be taken or possessed without a permit. Incidental take of these species is not authorized by law. Pursuant to Section 3503.5 of the California Fish and Game Code, it is unlawful to take, possess, or destroy any birds of prey; or to take, possess, or destroy any nest or eggs of such birds. Birds of prey refer to species in the orders Falconiformes and Strigiformes. Nests of all other birds (except English sparrow and European starling) are protected under Sections 3503 and 3513 of the California FGC.

Under Sections 1600–1616 of the California FGC, the CDFW regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. Diversion, obstruction, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife requires authorization from CDFW by means of entering into an agreement pursuant to Section 1602 of the California FGC. The limits of CDFW's jurisdiction are defined in the code as the "bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit" (Section 1601). In practice, CDFW usually delineates its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider. Tributaries to Carson Creek within the project site would be subject to CDFW jurisdiction under these Sections.

Section 1940 of the California FGC requires CDFW to develop and maintain a vegetation mapping standard for the state. More than half of the vegetation communities in the state have been mapped through the Vegetation Classification and Mapping Program. Natural vegetation communities are evaluated by CDFW and are assigned global (G) and state (S) ranks based on rarity of and threats to these vegetation communities in California. Sensitive natural communities are defined by CDFW as vegetation alliances with state ranks of S1–S3 (S1: critically imperiled; S2: imperiled; S3: vulnerable), as identified in the 2010 List of Vegetation Alliances and Associations and subsequent updates. Natural communities with ranks of S1–S3 are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents. Additionally, all vegetation associations within the alliances with ranks of S1–S3 are considered sensitive habitats. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible. There are two sensitive natural communities on the project site (see Section 3.3.1).

The Native Plant Protection Act was enacted in 1977 and is administered by CDFW FGC Section 1900 et seq. The Native Plant Protection Act prohibits "take" of endangered, threatened, or rare plant species native to California, apart from special criteria identified in the California FGC. There are 64 species, subspecies, and varieties of plants that are protected as rare under the NPPA. If potential impacts to a "rare" plant are identified for a project activity, then consultation with CDFW, permitting, and/or other mitigation may be required (CLI 2021).

Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act (Porter–Cologne Act) protects water quality and the beneficial uses of water. It applies to surface water and groundwater. Under this law, the State Water Resources Control Board develops statewide water quality plans, and the RWQCBs develop regional basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of statewide plans and basin plans. Waters regulated under the Porter–Cologne Act include isolated waters that are not regulated by USACE. RWQCBs regulate discharging waste, or proposing to discharge waste, within any region that could affect a "water of the state" (California Water Code,

Section 13260[a]). Waters of the state are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code, Section 13050[e]). Developments with impacts on jurisdictional waters must demonstrate compliance with the goals of the Porter–Cologne Act by developing stormwater pollution prevention plans, standard urban stormwater mitigation plans, and other measures to obtain a Clean Water Act (CWA) Section 401 certification. If a CWA Section 404 permit is not required for the project, the RWQCB may still require a permit (i.e., Waste Discharge Requirement) for impacts to waters of the state under the Porter–Cologne Act.

California Environmental Quality Act

CEQA (California Public Resources Code [PRC], Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.) require identification of a project's potentially significant impacts on biological resources and feasible mitigation measures and alternatives that could avoid or reduce significant impacts. CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in CEQA Guidelines Section 15380(b)(2) as a species that, although not currently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or…[t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

In Title 14 of the California Code of Regulations (CCR), Section 1.72, CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation."

In 14 CCR 1.56, CDFW's definition of "lake" includes "natural lakes or man-made reservoirs." Diversion, obstruction, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife requires authorization from CDFW by means of entering into an agreement pursuant to Section 1602 of the California FGC.

CDFW recognizes that all plants with CRPR 1A, 1B, and 2 and some with CRPR 3 of the California Native Plant Society Inventory of Rare and Endangered Plants in California may meet the criteria for listing as threatened or endangered and should be considered under CEQA (CNPS 2023a). Some of the CRPR 3 and 4 plants meet the criteria for determination as "rare" or "endangered" as defined in Section 1901, Chapter 10 (Native Plant Protection Act), Division 2, of the California FGC, as well as Section 2062 and Section 2067, Chapter 1.5 (CESA), Division 3. Therefore, consideration under CEQA for these CRPR 3 and 4 species is strongly recommended by the California Native Plant Society (CNPS 2023a).

For purposes of this report, animals considered "rare" under CEQA include endangered or threatened species, California Species of Special Concern (CDFW 2023a), and fully protected species.

Section IV, Appendix G (Environmental Checklist Form) of the CEQA Guidelines (14 CCR 15000 et seq.) requires an evaluation of impacts to "any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game [now CDFW] or the U.S. Fish and Wildlife Service."

Local

El Dorado County General Plan

The El Dorado County General Plan (last amended 2019) addresses policies to help preserve and restore vegetation, wildlife, biological habitat, and aquatic resources throughout the County, including ways to ensure that these important natural resources are given adequate attention in development projects and master planning efforts. Additionally, the Conservation and Open Space Element of the General Plan describes protection measures and provides a management/acquisition for continued preservation and protection of the County's natural resource habitats Applicable policies from the Conservation and Open Space Element of the General Plan is listed below (El Dorado County 2019a).

Conservation and Open Space Element

Goal 7.3: Water Quality and Quantity. Conserve, enhance, and manage water resources and protect their quality from degradation.

Objective 7.3.3: Wetlands. Protection of natural and man-made wetlands, vernal pools, wet meadows, and riparian areas from impacts related to development for their importance to wildlife habitat, water purification, scenic values, and unique and sensitive plant life.

Policy 7.3.3.1: For projects that would result in the discharge of material to or that may affect the function and value of river, stream, lake, pond, or wetland features, the application shall include a delineation of all such features. For wetlands, the delineation shall be conducted using the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual.

Policy 7.3.3.5: Rivers, streams, lakes and ponds, and wetlands shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site while disturbance to the resource is avoided or minimized and fragmentation is limited.

Objective 7.3.4: Drainage. Protection and utilization of natural drainage patterns.

Policy 7.3.4.1: Natural watercourses shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site without disturbance.

Policy 7.3.4.2: Modification of natural stream beds and flow shall be regulated to ensure that adequate mitigation measures are utilized.

Goal 7.4: Wildlife and Vegetation Resources. Identify, conserve, and manage wildlife, wildlife habitat, fisheries, and vegetation resources of significant biological, ecological, and recreational value.

Objective 7.4.2: Identify and protect resources. Identification and protection, where feasible, of critical fish and wildlife habitat including deer winter, summer, and fawning ranges; deer migration

routes; stream and river riparian habitat; lake shore habitat; fish spawning areas; wetlands; wildlife corridors; and diverse wildlife habitat.

Policy 7.4.2.1: The County will coordinate wildlife and vegetation protection programs with appropriate Federal and State agencies.

Policy 7.4.2.2: The County shall continue to support the Noxious Weed Management Group in its efforts to reduce and eliminate noxious weed infestations to protect native habitats and to reduce fire hazards.

Policy 7.4.2.4: Protect and preserve wildlife habitat corridors within public parks and natural resource protection areas to allow for wildlife use. Recreational uses within these areas shall be limited to those activities that do not require grading or vegetation removal.

Policy 7.4.2.5: Setbacks from all rivers, streams, and lakes shall be included in the Zoning Ordinance for all ministerial and discretionary development projects.

Policy 7.4.2.8: Conserve contiguous blocks of important habitat to offset the effects of increased habitat loss and fragmentation elsewhere in the County through a Biological Resource Mitigation Program.

Objective 7.4.4: Forest, oak woodland, and tree resources. Protect and conserve forest, oak woodland, and tree resources for their wildlife habitat, recreation, water production, domestic livestock grazing, production of a sustainable flow of wood products, and aesthetic values.

Policy 7.4.4.2: Through the review of discretionary projects, the County, consistent with any limitations imposed by State law, shall encourage the protection, planting, restoration, and regeneration of native trees in new developments and within existing communities.

Policy 7.4.4.4: For all new development projects or actions that result in impacts to oak woodlands and/or individual native oak trees, including Heritage Trees, the County shall require mitigation as outlined in the El Dorado County Oak Resources Management Plan (ORMP). The ORMP functions as the oak resource's component of the County's biological resources mitigation program.

El Dorado County Oak Resources Management Plan (ORMP)

The County's ORMP, as last revised in September 2017, defines mitigation requirements for impacts to oak resources (oak woodlands, individual native oak trees, and Heritage Trees) and outlines the County's strategy for oak woodland conservation. The ORMP functions as the oak resources component of the County's biological resources mitigation program, identified in General Plan Policy 7.4.4.4. The ORMP identifies standards for oak woodland and native oak tree impact determination, mechanisms to mitigate oak woodland and native oak tree impacts, technical report submittal requirements, minimum qualifications for technical report preparation, mitigation monitoring and reporting requirements, and projects or actions that are exempt from mitigation requirements. The ORMP also establishes an in-lieu fee payment option for impacts to oak resources, identifies Priority Conservation Areas (PCAs) where oak woodland conservation efforts may be focused, and outlines minimum standards for identification of oak woodland conservation areas outside the PCAs. Requirements for

maintenance and monitoring of conserved oak woodland areas and identification of allowable uses within conserved oak woodland areas are also included in the ORMP. Lastly, the ORMP establishes a plan for voluntary conservation that landowners, the County, and others may use to seek grants and cost sharing from state programs for oak woodland conservation in the county.

El Dorado County Zoning Ordinance

Chapter 130.30, General Development Standards, of the El Dorado County Zoning Ordinance establishes the County's general development standards for development within all zone districts. These include requirements for minimum size and width of lots, setbacks, height limits, fences, walls (including retaining walls), hillside development, and gates. Chapter 130.30.030.G identifies setbacks required for the protection of wetlands and sensitive riparian habitat. For ministerial project permits, the minimum required setbacks are 25 feet from any intermittent stream, wetland, or sensitive riparian habitat and 50 feet from any perennial lake, river, or stream. For projects subject to discretionary development approvals, setbacks must be sufficient to reduce impacts to wetlands and sensitive riparian habitat to a less than significant level, as determined by a biological resource evaluation. In addition, Table 130.30.030.G.1 establishes specific riparian setbacks from major lakes, reservoirs, rivers, streams, and creeks (El Dorado County 2019b).

El Dorado County Oak Conservation Ordinance

The Oak Conservation Ordinance (Ordinance No. 5061, Chapter 130.39- Oak Resources Conservation, Title 130), adopts General Plan Policy 7.4.4.4 to implement the ORMP. The Oak Conservation Ordinance encourages on-site retention and discourages any unnecessary removal of oak trees by charging an in-lieu mitigation fee for the removal of oak trees and oak woodlands (El Dorado County 2017).

3.3.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Significance Threshold Criteria Not Applicable to the Proposed Project

The proposed project is not located within an adopted Habitat Conservation Plan, Natural Community Conservation Plan, Oak Woodland Priority Conservation Area (El Dorado County 2017), or Ecological Preserves Overlay (El Dorado County 2004). Therefore, there would be no impact, and this threshold is not further discussed.

3.3.4 Impacts and Mitigation Measures

Methodology

This section addresses the potential direct and indirect impacts on biological resources that would result from implementation of the proposed project, including off-site areas, and provides an analysis of significance for each impact. The analysis of project impacts to biological resources draws from the baseline information summarized in the following reports: Updated Biological Resources Constraints Report (January 2025), Biological Resources Constraints Report (November 2023), Creekside Village Project Aquatic Resources Delineation Report (November 2023), updated Oak Resources Technical Report (December 2024), and the Oak Resources Technical Report (January 2019) (Appendix C). For those impacts considered to be potentially significant under CEQA, measures are proposed to avoid, minimize, and/or mitigate the impacts. Land cover impacts are presented in Table 3.3-3.

Field reconnaissance surveys were conducted on August 20, 2019, December 10, 2020, January 13, 2021, and April 19, 2022. In addition, from January to June 2024, wet and dry season surveys were conducted to evaluate the potential presence of special-status vernal pool species. The protocol-level branchiopod survey was conducted using two methodologies: dipnet surveys were conducted in the wet season (January to April 2024), and dry season soil samples were taken in June 2024 and analyzed for the presence of cysts from large, listed branchiopods.

The technical reports (updated Biological Resources Constraints Report, Creekside Village Project Aquatic Resources Delineation Report, updated Oak Resources Technical Report) prepared for the project included the proposed emergency vehicle access road within the project study area for the purposes of determining impacts to habitats, so impacts related to disturbance and development of the emergency access road are included in Table 3.3-3 and the discussion of project site impacts throughout this section. Impact acreages to the offsite areas along Latrobe Road and for transportation intersection and sewer improvements are not included in this table but would be limited to developed/disturbed land covers within the existing roadways and the roadway rights-of-way.

Table 3.3-3. Summary of Impacts to Vegetation Communities, Aquatic Habitats, and Land Covers within the Project Site and Emergency Access Road

Vegetation Community / Land Cover Type	Total Acreage
California Annual Grassland	180.78
Blue Oak Woodland	0.20
Developed/Disturbed	0.54
Riverine [a]	2.58
Seasonal Wetland [a]	1.33

Table 3.3-3. Summary of Impacts to Vegetation Communities, Aquatic Habitats, and Land Covers within the Project Site and Emergency Access Road

Vegetation Community / Land Cover Type	Total Acreage
Valley Foothill Riparian	0.10
Vernal Pool	0.07
Total	185.59

Source: Appendix C.
Notes:
[a] Riverine includes acreages for intermittent and ephemeral drainage features; Seasonal Wetland includes seeps, riverine seasonal wetland, seasonal wetland, and wetland swale features.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1.8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. The potential impacts to biological resources are not expected to be different with implementation of the neighborhood commercial nor the adult option because the development footprint, intensity, and disturbed area would remain the same as under the proposed project. Therefore, the impact analysis below does not evaluate these options in detail.

Project Impacts

Impact 3.3-1. The proposed project could have an adverse effect on candidate, sensitive, or special-status plant and wildlife species.

Special-Status Plants

Six special-status plant species have a moderate potential to occur within the project site: dwarf downingia, Tuolumne button-celery, Boggs Lake hedge-hyssop, Ahart's dwarf rush, legenere, and pincushion navarretia. There is one plant species, Sanford's arrowhead that has a low potential to occur. These species typically grow in seasonal wetlands or vernal pools with similar water regimes. None of these species were observed on the project site during the protocol-level botanical survey conducted in April 2022 (Appendix C), or during reconnaissance-level surveys conducted at the project site between 2019 to 2021. Suitable habitat occurs within the project site for these special-status plants; therefore, a potential exists for individuals or populations of these species to become established in future growing seasons prior to project development. Protocol (CDFW 2018) recommends that surveys for special-status plants be carried out annually in grassland areas where conditions are highly variable and annual plants may not be detectable (e.g., in low rain years like 2022).

Impacts could include the destruction of individual plants or populations of plants that may become established prior to ground disturbance. This is a **potentially significant impact**.

Off-site Infrastructure

The discussion of project site impacts includes the emergency access road, which is within an undeveloped area. All of what are considered offsite impacts in this analysis would be in Latrobe Road or adjacent developed/disturbed areas. Therefore, special-status plants would not be present due to lack of suitable habitat. in those areas and would not be affected. **No impact** would occur to special-status plants from offsite infrastructure development.

Special-Status Wildlife

Ten special-status wildlife species (includes birds, mammals, invertebrates, reptiles) have potential to occur within the project site: pallid bat, American badger, monarch butterfly, burrowing owl, tricolored blackbird, white-tailed kite, golden eagle, Swainson's hawk, grasshopper sparrow, and northwestern pond turtle. Of these species only 4 have a high to moderate potential to occur within the project site; tricolored blackbird, grasshopper sparrow, burrowing owl, and white-tailed kite. The remaining species all have a low potential to occur. Although the northwestern pond turtle has a low potential to be present, potential impacts to this species is discussed below because of nearby records of the species.

Northwestern Pond Turtle. Four occurrences of northwestern pond turtle have been recorded within a five-mile radius of the site, with the closest two (#1316 and 468) resulting from observations in Carson Creek, 0.5 miles west of the project site in 2016, and Deer Creek where it intersects Latrobe Road, 0.9 miles southeast of the project site in 1988. This species was only recently proposed as threatened under the federal Endangered Species Act; therefore, surveys were not consistently conducted for this species and detections may not have been uploaded into databases, as the USFWS does not yet have a standard protocol survey established. The project site does contain potentially suitable aquatic habitat for the northwestern pond turtle, particularly within the intermittent drainage when flooded. Annual grasslands adjacent to the intermittent drainage also provide suitable upland nesting habitat. However, it is unlikely that northwestern pond turtles would occur in intermittent drainage feature and adjacent uplands within 0.25-mile (1,320 feet) because of insufficient water in the drainage feature year-round. To date, this species has not been observed within this marginally suitable habitat during numerous survey efforts, including aquatic resource delineation and protocol-level branchiopod surveys. The drainage feature only has sufficient water during the winter and spring months, and it is typically dry by late spring. Also, the intermittent drainage is narrow (3-5 feet wide at the most), is densely vegetated throughout most of it, and has incised steep banks. Since the aquatic feature is mostly unsuitable habitat for northwestern pond turtle, it is unlikely any individuals would move upstream from the larger creek to the west into the project site. Also, there is no substantial open water upstream from where they may originate. Further, unrelated development has occurred between the project site and the nearest record along Carson Creek, greatly reducing the chance that a northwestern pond turtle from that aquatic habitat would nest within or otherwise use the project site.

Given the marginally suitable aquatic habitat present, the project would have low potential to directly impact northwestern pond turtle. However, if present, construction activities such as filling and grading could lead to harm to turtles or their nests. The project could also lead to a decrease in the quantity and quality of habitat due to changes in hydrology related to the installation of culverts or bridges, grading, or the construction of impervious surfaces, which could prevent adult turtles from using the affected habitats for nesting. Water quality could also be reduced by increasing the extent of bare soil. Once construction is complete and the project is occupied, human presence and disturbance may continue to result in impacts to this species if present and would permanently reduce habitat suitability. The project could also result in indirect effects to northwestern pond turtles that may be present in the Carson Creek Preserve area downstream of the project site. Therefore, impacts to northwestern pond turtles are considered **potentially significant**.

Tricolored Blackbird. The project site provides potential nesting habitat for tricolored blackbird. There is a CNDDB record of a tricolored blackbird nesting colony at the project site in 2022 (CNDDB Occurrence #1012). This occurrence is associated with an intermittent channel and supports dense thickets of Himalayan blackberry and a few willows, which provide suitable habitat to support this colony (CDFW 2023a). The nesting colony reported in CNDDB was observed in clusters of Himalayan blackberry in riparian wetlands on and adjacent to the project site associated with the intermittent channel during a survey conducted in 2022. The tricolored blackbird nesting

colony was observed again incidentally during surveys conducted in 2024. This nesting colony likely returns to these blackberry thickets most years because it continues to have successful nests. The colony is one of twelve colony locations in the county tracked in the Tricolored Blackbird Portal (UC Davis 2024) and was an active breeding colony during surveys in 2022 (an estimated 1,300 tricolored blackbirds present at peak) and 2023 (an estimated 250 tricolored blackbirds present at peak). The Tricolored Blackbird Portal also records colony locations just south and just west of the project site.

Project grading would result in the removal of approximately 0.10-acres of Valley Foothill riparian (e.g., blackberry thicket associated with riparian wetland) that is suitable for tricolored blackbird nesting habitat. Indirect human disturbances and noise from construction activities have the potential to cause colony abandonment and death of young or loss of reproductive success during nesting season. Human occupation of the portion of the project site nearest to the nesting colony location after construction is complete could result in disturbance of future nesting colony activities, potentially causing tricolored blackbirds to discontinue use of this nesting habitat. Therefore, the impact to tricolored blackbirds would be considered **potentially significant**.

Tricolored blackbird is threatened under the California ESA (CESA). In the event that impacts are unavoidable and an incidental take permit would be required under CESA and CDFW may require mitigation. CESA requires impacts to be "fully mitigated" (CA Fish and Game Code Section 2081(b)(2)), a threshold higher than what is required under CEQA.

Burrowing Owl. Annual grassland habitat within the project site provides potential nesting and foraging habitat for burrowing owl. No burrowing owls or grasshopper sparrows or active nests were observed during the biological surveys, but no protocol-level surveys were conducted (Appendix C). Some soils within the project site are sandy and friable, which could provide suitable burrowing sites. While no soil mounds were visible during the field surveys, surrounding fence posts would provide suitable perches above potential nests within the annual grassland habitat. The annual grassland habitat also provides suitable foraging habitat for this species. Direct impacts could include mortality or injury to owls or destruction of burrows/nests if owls are present in or adjacent to the project footprint during ground-disturbing activities. In addition, loud construction activities could cause indirect impacts (extending up to 500 feet from the limits of construction) leading to an adult owl to abandon an active nest burrow that is in close proximity to construction, which could lead to nest failure and the mortality of young. Following project construction, ongoing human disturbance from residents and visitors to the site could indirectly affect burrowing owl use of suitable habitat within open space or preserve areas or adjacent offsite areas. Therefore, the impact to burrowing owl would be considered **potentially significant**.

The burrowing owl is a candidate species under CESA, if the species is present, and could be impacted by the project, then an incidental take permit may be required under CESA. CDFW may require compensatory mitigation, to meet the "fully mitigated" standard (CA Fish and Game Code Section 2081(b)(2)), a threshold higher than CEQA requirements.

Other Nesting and Migratory Birds and Birds of Prey (including white-tailed kite and grasshopper sparrow). Suitable nest trees are located within and adjacent to the project site providing nesting habitat for a variety of native birds and raptors protected by the California FGC and the MBTA. Habitat features within the project site and adjacent areas, such as trees, shrubs, and herbaceous plants, could also serve as nesting habitats or foraging areas for common migratory birds and raptors, including the state Fully Protected white-tailed kite. Should any protected birds such as grasshopper sparrow or raptors occur in the project site while nesting, they could be impacted by project construction. Direct and indirect impacts to nesting birds and raptors would be similar to those described above for burrowing owl and tricolored blackbird. The impact to nesting birds would be

less than significant if construction activities occur during the non-breeding season (i.e., from September 1 through January 31). Construction activities conducted during the breeding season while an active nest is present would be considered **potentially significant**.

Offsite Infrastructure

The discussion of project site impacts includes the emergency access road, which is within an undeveloped area. All of what are considered offsite impacts in this analysis would be in Latrobe Road or adjacent developed/disturbed areas. The offsite impact areas are either not suitable or are too near to high levels of disturbance (e.g., Latrobe Road) to be considered habitat for burrowing owl and no vernal pools or other habitat for vernal pool branchiopod species was documented in the offsite areas (Appendix C). Impacts to burrowing owl and vernal pool branchiopod species from offsite infrastructure construction would be **less than significant**.

However, there is some potential for tricolored blackbird to be present in the riparian habitat along the perennial drainage area near the water treatment plant. If the species were present, it could be subject to indirect impacts from project construction. There is also some potential for northwestern pond turtle to be present in the perennial drainage area near the water treatment plant. If these species were present, they could be subject to indirect impacts from project construction, or even direct effects if they were to inhabit uplands areas adjacent to the habitat. This is a **potentially significant impact**.

Mitigation Measures

Compliance with mitigation measure BIO-1 would ensure impacts to special-status plant species (dwarf downingia, Tuolumne button-celery, Boggs Lake hedge-hyssop, Ahart's dwarf rush, legenere, and pincushion navarretia) would be reduced to a less-than-significant level by requiring plant surveys be conducted if more than a year has elapsed since the prior survey, and also requiring avoidance or salvage/transplanting if special-status plant cannot be avoided. Compliance with mitigation measures BIO-2 and BIO-3 would reduce overall project impacts to wetland habitats through delineation of work sites and worker environmental training that would collectively reduce potential impacts to a **less-than-significant level**.

With implementation of mitigation measures BIO-2, BIO-3, and BIO-4 the project's impact, both onsite and offsite on northwestern pond turtle would be reduced to less than significant. These measures require preconstruction surveys and construction monitoring to ensure the avoidance of the species, worker environmental training, and proper delineation of work sites. If project maintenance of existing vehicular/pedestrian crossings or utility crossings above and/or below the creek becomes necessary, a Streambed Alteration Agreement from CDFW would be obtained, which could stipulate additional protection measures for the northwestern pond turtle. This would ensure the project's impact on the species is reduced to a **less-than-significant level**.

Implementation of mitigation measure BIO-5 would reduce impacts to tricolored blackbird by requiring pre-construction nesting bird surveys and avoidance of occupied colony sites, both onsite and offsite. Mitigation measure BIO-6 would require that the project applicant provide compensatory mitigation for direct and indirect impacts to the tricolored blackbird colony from project construction. Finally, compliance with mitigation measures BIO-2 and BIO-3 would reduce the project's impact to tricolored blackbird through proper delineation of work sites, and worker environmental training. Taken together, implementation of these mitigation measures would reduce potential impacts to **less than significant**.

Implementation of mitigation measure BIO-7 would reduce impacts to burrowing owl by requiring pre-construction nesting bird surveys and avoidance of occupied burrowing owl nest locations. Compliance with mitigation measure BIO-2 and BIO-3 would reduce the project's impact to burrowing owl through delineation of work sites, and worker environmental training. Taken together, implementation of these mitigation measures would reduce potential impacts to **a less-than-significant level**.

Implementation of mitigation measure BIO-5 which involves preconstruction surveys for nesting birds and implementation of avoidance buffers (during the nesting season February through August), would avoid and/or minimize potential impacts to these species reducing potential impacts to **less than significant.**

BIO-1: Rare Plant Survey. If more than three years has elapsed since the last protocol-level rare plant survey in April 2022 (i.e., April 2025), a qualified botanist shall conduct plant surveys during the appropriate blooming period for potentially occurring special-status plant species prior to ground disturbance. The purpose of the survey shall be to delineate and flag populations of special-status plant species for avoidance. Special-status plant populations identified during the pre-construction survey shall be mapped using a hand-held submeter GPS unit and avoided where possible. Plant individuals or populations plus a 10-foot buffer shall be temporarily fenced during construction activities with high-visibility fencing or prominently flagged. If complete avoidance of populations is infeasible, further measures, as described below, shall be necessary.

If avoidance of special-status plant species is not feasible, a Rare Plant Salvage and Translocation Plan shall be prepared by a qualified botanist prior to implementation. The Rare Plant Salvage and Translocation Plan shall include, at a minimum: identification of occupied habitat to be preserved and removed; identification of on-site or off-site preservation, restoration, or enhancement locations; methods for preservation, restoration, enhancement, and/or translocation; goals and objectives; replacement ratio and success standard of 1:1 for impacted to established acreage; a monitoring program to ensure mitigation success; and adaptive management and remedial measures in the event that the performance standards are not achieved. If replanting and preservation occurs off-site, the replanting shall occur within existing rare plant preserves within the County that will be maintained in perpetuity.

Timing/Implementation: The developer/applicant shall be responsible for ensuring implementation of Mitigation Measure BIO-1. If a pre-construction survey is required (per the circumstances described in Mitigation Measure BIO-1), County Planning Services shall verify the survey's completion within 7 days of any ground disturbing activities. If grading would occur for implementation of improvements and/or infrastructure through the County Department of Transportation (DOT), DOT shall verify the completion of survey prior any ground disturbing activities. This mitigation measure shall be included as a note on any Final Map, grading plans, and construction plans.

BIO-2: Environmental Awareness Training. Before any work occurs in the project site, including site clearing, grading, and equipment staging, all construction personnel shall participate in an environmental awareness training provided by a qualified biologist regarding special-status species and sensitive habitats present in the project site. If new construction personnel are added to the project, they must receive the mandatory training before starting work. As part of the training, an environmental awareness handout shall be provided to all personnel that describes and illustrates sensitive resources to be avoided during project construction. The environmental

awareness handout shall be included with any grading permit plans being reviewed/to be reviewed by the County. This mitigation measure shall be noted on any Final Map, grading plans, and construction plans.

BIO-3: Work Area Delineation and Fencing. Before any site clearing, grading or other ground-disturbing activity occurs within the project site, the project applicant shall ensure that temporary orange barrier fencing is installed around the project site adjacent to sensitive habitat areas to be avoided, as appropriate. Construction personnel and construction activities shall avoid areas outside the fencing. The exact location of the fencing shall be determined by the resident construction contractor coordinating with a qualified biologist, with the goal of protecting sensitive biological habitat and water quality. The fencing material shall consist of temporary plastic mesh-type construction fence (Tensor Polygrid or equivalent) installed between the work area and environmentally sensitive habitat areas (i.e., waters of the U.S., special-status wildlife habitat, active bird nests), as appropriate. To minimize potential ground disturbance, the base of the fencing shall not be buried or keyed-in. Installation of the barrier fence shall occur under the supervision of a qualified biologist. The temporary orange barrier fencing shall also be installed in a manner that is consistent with applicable water quality requirements contained within the project's Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Plan (WPCP). The fencing shall be shown on any grading permit plans, building permit plans, and any final construction documents. The fencing shall be checked regularly and maintained until all construction is complete. No construction activity shall be allowed until this condition is satisfied. This mitigation measure shall be noted on any grading plans and/or construction plans.

BIO-4: Northwestern Pond Turtle Avoidance. To minimize adverse impacts on northwestern pond turtles and their habitat from project construction activities occurring within suitable habitat (intermittent stream and adjacent uplands), the project applicant and/or its contractor(s) shall implement the following measures during construction activities that require in-water work or ground disturbance within 300 feet of aquatic habitat in uninterrupted upland habitat (or within suitable upland habitat [e.g., annual grassland or valley foothill riparian]) or suitable aquatic habitat to minimize adverse impacts on northwestern pond turtles and their habitat:

- A qualified biologist shall be retained to conduct pre-construction visual encounter surveys of aquatic habitat for northwestern pond turtle occupancy. A minimum of two surveys shall be conducted at least 2 weeks apart during the morning (within 2 hours of 8:00 a.m.) or mid-afternoon (3:00 to 5:00 p.m.) when northwestern pond turtles are typically basking and the first inspection shall be completed no more than 4 weeks before construction activities commence. The purpose of the survey is to identify occupied aquatic habitat features around which further investigations of upland nesting would need to occur in subsequent measures. If no northwestern pond turtles are detected, implementation of the bullets listed below shall not be required. If northwestern pond turtle is detected during the surveys, the measures below shall be implemented.
- *(If detected during the pre-construction survey above)* Qualified biologists shall conduct visual detection/nesting surveys of upland areas for northwestern pond turtle within 160 feet of occupied aquatic habitat in May and June prior to project construction activities (including site clearing/grading) to mark/flag/protect as many nests as possible. An exclusion buffer of at least 50 feet around any found northwestern pond turtle nests shall

be created by installing construction fencing or another obvious barrier that shall not be crossed by construction equipment.

- *(If detected during the pre-construction survey above)* To prevent entrapment within the active work area, the biologist shall monitor any potential dewatering and/or diversion work to rescue and with necessary handling permits and prior approval from U.S. Fish and Wildlife Service and California Department of Fish and Wildlife will relocate northwestern pond turtles and other native aquatic wildlife species from to suitable habitat outside the work area.
- *(If detected during the pre-construction survey above)* Eggs shall be covered slightly with dry soil by the biologist and the nest site protected from construction/ predation (flagging, cage over the spot, etc.). The biological monitor or other responsible on-site party shall call USFWS (if species is listed under the ESA) and CDFW for further direction and the eggs shall not be moved unless direction from USFWS (if applicable) and CDFW to do so is received. If live hatchlings are excavated between August 1 through October 31, a qualified biologist with an appropriate handling permit from USFWS and CDFW shall transfer the neonates to the source water body nearest the nest site. If live hatchlings are excavated between November 1 through February 29, the nestling turtles will not survive outside the nest and must be transferred by a qualified biologist with a handling permit from USFWS and CDFW to a licensed wildlife rehabilitator.
- All equipment (e.g., buckets, boots, waders) that has contact with water bodies shall be sterilized in accordance with the CDFW Aquatic Invasive Species Disinfection/Decontamination Protocols (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=92821) or current guidance.

Timing/Implementation: The developer/ applicant shall be responsible for ensuring implementation of Mitigation Measure BIO-5. Per the circumstances described in Mitigation Measure BIO-5, the pre-construction survey shall be completed prior to any ground-disturbing activities. This mitigation measure shall be noted on any Final Map, grading plans, and construction plans.

BIO-5: Nesting Bird Avoidance. If site clearing, grading and other construction activities begin during the nesting season (February 1 to August 31), a qualified biologist (as approved by California Department of Fish and Wildlife [CDFW]) shall conduct a preconstruction survey for active nests in suitable nesting habitat within 500 feet of the disturbance area for nesting raptors, including white-tailed kite, and 250 feet for other nesting birds, including tricolored blackbird and grasshopper sparrow. Areas adjacent to the project site that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. The survey shall be conducted by a qualified biologist no more than seven days prior to the onset of grading or construction activities. If no active nests are identified during the preconstruction survey, no further mitigation is necessary. Also, if construction is initiated outside of the nesting season no surveys are required for activities occurring in previously disturbed and continually active portions of the project.

If any active nests are observed during the surveys, a qualified biologist shall establish a suitable avoidance buffer from the active nest, as approved by CDFW. The buffer distance, to be determined by the qualified biologist, shall typically range from 50 to 300 feet, and shall be determined based on factors such as the species of bird, topographic features, intensity and extent of the disturbance, timing relative to the nesting cycle, and anticipated ground disturbance

schedule. Limits of construction to avoid active nests shall be established in the field with flagging, fencing, or other appropriate barriers and shall be maintained until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist.

If at any time during the nesting season construction stops for a period of 7 days or longer, preconstruction surveys shall be conducted prior to construction resuming.

Timing/Implementation: The developer/ applicant shall be responsible for ensuring implementation of Mitigation Measure BIO-5. If a pre-construction survey is required (per the circumstances described in Mitigation Measure BIO-5), the survey's completion shall be within 7 days of any ground-disturbing activities. This mitigation measure shall be noted on any Final Map, grading plans, and construction plans.

BIO-6: Tricolored Blackbird Compensatory Mitigation. The project applicant shall purchase at least 0.30 acres of tricolored blackbird preservation credits (3:1 ratio for 0.10 acres of direct impacts) plus additional preservation credits for permanent disturbance of a breeding colony location if determined appropriate by the California Department of Fish and Wildlife (CDFW) during consultation under CESA during the Incidental Take Permit process. Credits shall be purchased at a conservation bank approved by CDFW for tricolored blackbird with a service area including the project, or at a conservation bank with a service area not including the project upon further approval of CDFW. Proof of purchase shall be provided to CDFW and El Dorado County prior to the issuance of any grading or building permit within 250 feet of the tricolored blackbird colony location.

BIO-7: Burrowing Owl Avoidance. Pre-construction surveys for burrowing owls shall be conducted by a qualified biologist prior to where clearing, grading or construction activities are planned within 500 feet of suitable habitat. Areas adjacent to the project site that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. Surveys shall be conducted no more than 30 days and no less than 14 days prior to the commencement of construction activities. If construction activities are delayed for more than 30 days after the initial preconstruction surveys, then a new preconstruction survey shall be required. All surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW, 2012). This mitigation shall be implemented by the project applicant or their contractor.

- If burrowing owls are discovered on the project site during construction, the California Department of Fish and Wildlife (CDFW) approved biologist shall be notified immediately. Occupied burrows shall not be disturbed without prior approval from CDFW, and if necessary, possession of a CDFW Incidental Take Permit may be requried for the species.
- If active burrows are observed within 500 feet of the project site, an impact assessment shall be prepared and submitted to the CDFW, in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012). If it is determined that project activities may result in impacts to nesting, occupied, and satellite burrows and/or burrowing owl habitat, the project applicant shall delay commencement of construction activities until the biologist determines that the burrowing owls have fledged and the burrow is no longer occupied. If this is infeasible, the project applicant shall consult with CDFW to obtain an Incidental Take Pemit (if necessary based on species listing decision) and develop a detailed mitigation plan such that the habitat acreage, number of burrows, and burrowing owls impacted are replaced. The

mitigation plan shall be based on the requirements set forth in Appendix F of the *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012). No construction can commence until CDFW has approved the mitigation plan. The mitigation prescribed by the mitigation plan shall meet the following requirements:

- Mitigation lands shall be selected based on comparison of the habitat lost to the compensatory habitat, including type and structure of habitat, disturbance levels, potential for conflicts with humans, pets, and other wildlife, density of burrowing owls, and relative importance of the habitat to the species range wide.
- If feasible, mitigation lands shall be provided adjacent or proximate to the site so that displaced owls can relocate with reduced risk of take. Feasibility of providing mitigation adjacent or proximate to the proposed project area depends on availability of sufficient suitable habitat to support displaced owls that may be preserved in perpetuity.
- If suitable habitat is not available for conservation adjacent or proximate to the proposed project area, mitigation lands shall be focused on consolidating and enlarging conservation areas outside of urban and planned growth areas and within foraging distance of other conservation lands. Mitigation may be accomplished through purchase of mitigation credits at a CDFW-approved mitigation bank, if available. If mitigation credits are not available from an approved bank and mitigation lands are not available adjacent to other conservation lands, alternative mitigation sites and acreage shall be determined in consultation with CDFW.
- If mitigation is not available through an approved mitigation bank and will be completed through permittee-responsible conservation lands, the mitigation plan shall include mitigation objectives, site selection factors, site management roles and responsibilities, vegetation management goals, financial assurances and funding mechanisms, performance standards and success criteria, monitoring and reporting protocols, and adaptive management measures. Success shall be based on the number of adult burrowing owls and pairs using the site and if the numbers are maintained over time. Measures of success, as suggested in the 2012 Staff Report, shall include site tenacity, number of adult owls present and reproducing, colonization by burrowing owls from elsewhere, changes in distribution, and trends in stressors.

Timing/Implementation: The developer/applicant shall be responsible for ensuring implementation of mitigation measure BIO-7. Per the circumstances described in mitigation measure BIO-7, County Planning Services shall verify the pre-construction survey's completion per the timing described in the first paragraph of mitigation measure BIO-7. This mitigation measure shall be noted on any Final Map, grading plans, and construction plans.

Impact 3.3-2. The proposed project could have an adverse effect on riparian habitat or other sensitive natural community.

Two vegetation communities found within the project site are considered of special concern by CDFW and should therefore be considered a sensitive natural community under CEQA: northern hardpan vernal pool and riparian habitat. Project grading would remove approximately 0.10 acre of riparian habitat consisting of Goodding's willow thickets, and 0.07 acre of northern hardpan vernal pool. The removal of these habitats would result in a potentially significant impact on habitat types identified as sensitive natural communities by the CDFW. Removal of vegetation within riparian areas, or any disturbance to the bed, bank, and/or channel would require authorization from CDFW in

the form of a Streambed Alteration Agreement pursuant to Section 1602 of the California FGC. Because these habitats are considered sensitive biological communities by CDFW and have substantial value to wildlife, loss would be considered a **potentially significant impact**.

Off-site Infrastructure

The discussion of project site impacts above includes the emergency access road, which is within an undeveloped area. Offsite impacts in this analysis would be in Latrobe Road or adjacent developed/disturbed areas, where sensitive natural communities are absent or would be completely avoided. Impacts from offsite infrastructure construction to sensitive natural communities would be **less than significant**.

Mitigation Measures

Implementation of mitigation measure BIO-9 would reduce the project's impact on vernal pools to less than significant by providing compensatory mitigation for direct impacts to vernal pool habitat. Compliance with mitigation measures BIO-2 and BIO-3 would reduce overall project impacts to wetland habitats through proper delineation of work sites, worker environmental training, and implementation of BMPs and reduce potential impacts to **less than significant**.

BIO-8: Implement mitigation measures BIO-2, BIO-3, and BIO-9.

Impact 3.3-3. The proposed project could have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means.

The project site contains 4.07 acres of aquatic resources that are considered potentially jurisdictional wetlands or other waters under the CWA and/or Porter-Cologne Water Quality Control Act. All perennial, intermittent, and ephemeral channels, along with adjacent wetlands and riparian features within the project site, are expected to fall under the jurisdiction of Section 1600 of the California FGC. Subject to requirements of Section 402 of the federal Clean Water Act, and the National Pollutant Discharge Elimination System (NPDES) permitting process, all construction projects that disturb more than one acre of land are required to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP is incorporated into all project plans and specifications. The restoration construction contractor(s) will be required to post a copy of the SWPPP at the project location, file a notice of intent to discharge stormwater with the RWQCB, and implement all measures required by the SWPPP. A Qualified SWPPP Practitioner (QSP) shall be responsible for construction monitoring to ensure that the provisions of the SWPPP are effectively enforced. In the event of noncompliance, the QSP shall have the authority to shut down the construction site or fine the responsible party or parties.

In addition to onsite resources, the project has the potential to impact aquatic resources and associated habitat values located downstream within the Carson Creek Preserve. This preserve area was required as part of permitting for the Carson Creek Specific Plan in order to ensure no net loss of aquatic resources from buildout of the Carson Creek Specific Plan. The proposed boundary for the Carson Creek Preserve is approximately 3,300 feet downstream of the project site, though no publicly available plans for the Carson Creek Preserve were available at the time of EIR preparation. Project construction could result in increased sedimentation, pollutants, and changes in flow rates or timing to this downstream watershed. Such inputs could result in impacts to these offsite aquatic resources, potentially impacting their aquatic resource and habitat values. However, the project would be designed to include a water quality bioswale, detention basins, and a hydromodification pond (e.g., retention/detention basin) at the western corner of the site. These features would retain and treat on-site

stormwater and settle any entrained runoff pollutants, reducing the potential for off-site water quality degradation. Detention basins would be strategically located throughout the plan area and would capture the upstream developed watershed storm runoff and provide water quality treatment and mitigate for the hydromodification of the receiving watercourse. Operation of the project may also result in impacts to downstream watersheds including the Carson Creek Preserve area through accidental or intentional release of pollutants as noted in Section 3.8, Hydrology and Water Quality. However, the project would comply with various federal, state and local requirements related to minimizing downstream water quality impacts as noted in Section 3.8. The project does integrate streams and others aquatic resources into the project design, as directed by General Plan Policies 7.3.3.5 and 7.3.4.1. However, development of the proposed project would have direct impacts through the removal of 4.07 acres of aquatic resources, resulting in the loss of potentially jurisdictional wetlands and other waters of the U.S. or state protected waters/wetlands. The loss of 4.07 acres of wetlands and other waters of the U.S. or state protected waters/wetlands would result in a **potentially significant impact**.

Off-site Infrastructure

The discussion of project site impacts above includes the emergency access road, which is within an undeveloped area. Offsite impacts in this analysis would be in Latrobe Road or adjacent developed/disturbed areas. However, the offsite study area does include some areas of wetlands and drainages. These wetlands and drainages could be impacted by construction of offsite infrastructure. Effects of offsite infrastructure construction on wetlands would be **a potentially significant impact.**

Mitigation Measures

Implementation of mitigation measure BIO-9 would offset impacts to wetlands through compensatory mitigation to ensure no net loss of wetlands and other waters of the United States. Additionally, mitigation measure BIO-10 would further reduce the project's impacts to the intermittent stream (Riverine) beyond such avoidance already included in the project design. Compliance with mitigation measures BIO-2 and BIO-3 would reduce overall project impacts to wetland habitats through proper delineation of work sites and worker environmental training and reduce potential impacts to **less than significant**.

BIO-9: Wetland Compensatory Mitigation. The project applicant shall demonstrate no net loss of wetlands and other waters of the United States or state. To ensure this, wetland mitigation shall be developed as a part of the permitting process. Mitigation shall be provided to El Dorado County prior to any construction-related impacts to the existing waters/wetlands. The exact mitigation ratio shall be determined in consultation with the applicable permitting agencies, which may include U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and/or the Regional Water Quality Control Board (RWQCB). The amount of mitigation shall be based on the type and value of the waters/wetlands affected by the project, and shall be determined in consultation with the USACE, RWQCB, and/or CDFW during the regulatory permitting process and shall, at a minimum, comply with the Habitat Mitigation Summary Table in Policy 7.4.2.8 of the General Plan. Compensation shall take the form of preservation or creation in accordance with USACE, RWQCB and/or CDFW mitigation requirements, as required under project permits. Preservation and creation may occur offsite through purchasing credits at a USACE, CDFW, and/or RWQCB-approved mitigation banks.

BIO-10: Stream Preservation with Park Design. Final design of the park in Lot K shall preserve a minimum of 0.08 acre of the existing intermittent stream that is adjacent to Q Drive and provide a minimum 50-

foot no-disturbance buffer (within which no ground disturbance shall occur) on both sides of the 0.08 acre of preserved intermittent stream. The park design shall retain the preservation area as a natural aesthetic feature within the park, but shall not include trails, benches, or other park improvements within the preservation area. Final park design shall incorporate fencing, including but not limited to post and cable fencing, around the buffer area to prevent public entry into the channel and buffer. Periodic upland (outside of intermittent stream banks) vegetation and thatch management to protect the ecological integrity of the stream and comply with El Dorado County Code Chapter 8.09 (Vegetation Management and Defensible Space) shall be performed under the direction of a qualified biologist to ensure no impacts to the intermittent stream. The tentative map shall note the preservation area within Lot K as "stream preservation."

BIO-11: Implement mitigation measures BIO-2 and BIO-3.

Impact 3.3-4. The proposed project is unlikely to interfere with established migratory wildlife corridors but could impede the use of native wildlife nursery sites.

Wildlife corridors are essential features that establish connections between two or more areas of habitat, which would otherwise be isolated and unusable. These corridors often include drainages, creeks, or riparian areas, which are frequently used by wildlife for movement as they provide cover and access across a landscape. Drainage features within the project site do not support sufficient riparian vegetation cover preferred by medium- and large-sized mammals to serve as valuable movement corridors. Furthermore, there are no known wildlife movement corridors on or near the project site. The project site is not located in an "Important Biological Corridor" as designated by the El Dorado County General Plan, nor is it identified as a crucial habitat for migratory deer herds (El Dorado County 2010). Given the absence of known wildlife corridors or migration routes in or around the project site, the project's impact on wildlife corridors and migration routes is anticipated to be **less than significant.**

A nesting colony of tricolored blackbirds, considered a native wildlife nursery site, is located in a riparian wetland feature in the western section of the project site. Project grading would remove approximately 0.10-acre of Riparian Wetland habitat suitable for tricolored blackbird nesting. In other portions of the nesting habitat, the limits of grading would be approximately 15 to over 100 feet away. Human disturbance and noise from construction activities could potentially cause colony abandonment and death of young or loss of reproductive success during the nesting season. Disturbance of active nest sites, which could result in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings, would be considered a **potentially significant impact**.

Off-site Infrastructure

The discussion of project site impacts above includes the emergency access road, which is within an undeveloped area. Offsite impacts in this analysis would be in Latrobe Road or adjacent developed/disturbed areas. None of those areas would include wildlife corridors or native wildlife nursery sites. Impacts from offsite infrastructure construction to migratory wildlife corridors and native wildlife nursery sites would be **less than significant**.

Mitigation Measures

Implementation of mitigation measure BIO-5 would reduce impacts to tricolored blackbird by requiring pre-construction nesting bird surveys and avoidance of occupied colony sites. Mitigation measure BIO-6 would require that the project applicant provide compensatory mitigation for direct and indirect impacts to the tricolored blackbird colony on the project site. Finally, compliance with mitigation measures BIO-2 and BIO-3 would reduce

the project's impact to tricolored blackbird through proper delineation of work sites, and worker environmental training. Taken together, implementation of these mitigation measures would reduce potential impacts to tricolored blackbirds to **less than significant**.

BIO-12: Implement mitigation measures BIO-2, BIO-3, BIO-5 and BIO-6.

Impact 3.3-5. The proposed project would not conflict with a local policy or ordinance protecting biological resources, such as a tree preservation policy or ordinance.

The project site contains 0.45 acres of blue oak woodland which is under the jurisdiction of the El Dorado County Oak Resources Conservation Ordinance (County Code Section 130.39). The proposed grading for the project would remove approximately 0.20 acres of this woodland with impacts to impacts to 2 oak trees.

According to the County ordinance, any project that removes less than 50% of the on-site oak woodland is required to provide mitigation at a 1:1 ratio. This mitigation can take several forms, including an in-lieu fee paid to the County (which is used to conserve oak woodland in high priority areas as per the El Dorado County [2017] ORMP), offsite conservation, replacement planting, or a combination of these methods.

This mitigation is incorporated into the development application and must be approved by the County during the review process. Therefore, while the project would result in the removal of some oak woodland, it would not conflict with the local ordinance as the project is required to comply with the County Ordinance and would replace the trees removed based on a 1:1 ratio. The project would not conflict with any other local policies or ordinances aimed at protecting biological resources and the impact would be **less than significant**.

Off-site Infrastructure

The discussion of project site impacts above includes the emergency access road, which is within an undeveloped area. Offsite impacts in this analysis would be in Latrobe Road or adjacent developed/disturbed areas. No oak woodlands are projected to be impacted in offsite areas. Impacts from offsite infrastructure construction related to local policies or ordinances aimed at protecting biological resources would be **less than significant**.

Mitigation Measures

No mitigation measures would be required.

Cumulative Impacts

Cumulative effects to biological resources would occur from the project in combination with other past projects, those remaining to be developed under buildout of the El Dorado County General Plan, and those projects proposed and approved since the adoption of the 2004 General Plan, see Chapter 3. This includes construction of approximately 5,107 new dwelling units within various specific plan and subdivision areas of the County. The cumulative study area for biological resources focuses on those developments that are adjacent to the project site and/or those that are not separated by substantial barriers. For example, development in El Dorado Hills north of White Rock Road and especially north of Highway 50 is not likely to contribute in a substantial way to cumulative impacts from the project to special-status species or wildlife movement because of the major impact to movement and genetic exchange posed by existing development and the major roadway and highway. For wetlands and waters, this same cumulative study area remains valid because it overlaps with the boundaries of

the Carson Creek watershed. Impacts to wetlands and waters from the project would be cumulative with those occurring from other projects in that watershed.

Key cumulative projects that are part of the cumulative study area include Carson Creek Specific Plan to the west, Blackstone (Valley View Specific Plan) to the east, and the Folsom Plan Area west of the project site in Sacramento County. Although other projects have been discussed in the project vicinity (e.g., a new high school to the south of the project site, the Community for Health and Independence conceptual plan spanning El Dorado County and Sacramento County to the south and west of the project site), these projects are considered too speculative at this time to be included in the cumulative context.

Impact 3.3-6. The proposed project, combined other past and reasonably foreseeable future projects, could result in a cumulative impact to candidate, sensitive, or special- status plant and wildlife species.

Special-Status Plants

Prior development along with approved projects throughout the cumulative study area, as defined above have impacted suitable habitat for special-status plant species such as dwarf downingia, Boggs Lake hedge-hyssop, Ahart's dwarf rush and others. Most potentially occurring special-status plant species are associated with vernal pools and seasonal wetlands, and the removal of these features poses the greatest threat on a cumulative basis. Although some mitigation has occurred for past projects, historical loss of these habitats has been extensive. Future projects would be expected to mitigate for impacts to special-status plants, but typical mitigation is in the form of habitat preservation which still results in net loss of habitat and special-status plant populations. This is considered a significant cumulative impact. The project's contribution to the existing cumulative impact is considerable because it is individually significant. The project's cumulative contribution would be avoided or substantially lessened to the extent feasible by avoiding direct impacts to approximately 46% of the site's wetlands and waters, which have the greatest potential for occurrence of special-status plants. Mitigation measure BIO-1 would ensure that any rare plants on the project site are identified, and if avoidance is infeasible are salvaged and/or replaced through compensatory mitigation. Indirect impacts from construction would be mitigated through worker education under mitigation measure BIO-2, and proper delineation of the work area and sensitive habitat areas under mitigation measure BIO-3. Compliance with mitigation would ensure the project's contribution would be reduced to **less than significant.**

Northwestern Pond Turtle

Northwestern pond turtles have been impacted throughout the cumulative study area through direct removal and degradation of aquatic habitat and adjacent upland habitat, as well as impacts to individuals that are located in construction areas. Approved projects in the cumulative study area would also potentially impact suitable habitat or individuals of northwestern pond turtle, especially those with onsite ponds or perennial riverine features. Other projects in the cumulative study area would likely be required to mitigate for their significant impacts to this species; however, past projects were often not required to mitigate for impacts to northwestern pond turtle as it was not a candidate for listing under the federal ESA. This is considered a significant cumulative impact. As stated under Impact 3.3-1, the proposed project has a potential for significant impacts to this species if present on the site; although there is only a low potential this species could be present. The project level impact on northwestern pond turtle is a considerable contribution to the cumulative impact because of the level of disturbance that has already occurred in the cumulative study area, and the range wide decline of the species that has led to its federally proposed threatened status. The project would implement mitigation measure BIO-4 to detect

northwestern pond turtles through preconstruction surveys, and if found, avoid direct impacts from construction to individuals and nests. Compliance with mitigation would ensure the project's contribution would be reduced to **less than significant.**

Tricolored Blackbird

Tricolored blackbird has experienced declining populations throughout much of their range. Loss of freshwater marsh breeding habitat is a major factor, though the species has shown adaptability by establishing colonies in thorny vegetation such as Himalayan blackberry. Development of foraging habitat has also threatened viability of some colonies as they may be unable to obtain sufficient large insect prey to feed nestlings. The cumulative study area represents the eastern edge of the species range and only twelve colony locations are known to exist within the County (UC Davis 2024), but foothill habitat such as that in the cumulative study area may become increasingly important for the species with climate-related shifts in habitat suitability. Cumulative projects in the vicinity are not known to have removed active tricolored blackbird colonies but have certainly removed suitable foraging habitat and may induce abandonment of colonies such as the one within the Carson Creek Specific Plan Area to the west of the project area (UC Davis 2024). Future cumulative projects would likely be required to mitigate for impacts to colony locations but impacts to foraging habitat are often not mitigated. This is considered a significant cumulative impact. The project's contribution to cumulative impacts on tricolored blackbird is cumulatively considerable because the incremental effects of the project alone are significant. The project would implement mitigation measure BIO-5 to detect tricolored blackbird through preconstruction surveys, and if found, avoid direct impacts from construction to individuals and nests. Further, the project would implement mitigation measure BIO-6 to provide compensatory mitigation for impacts to the tricolored blackbird colony onsite from project construction and operation. Compliance with mitigation would ensure the project's contribution would be reduced to **less than significant.**

Burrowing Owl

Cumulative projects such as development of the Carson Creek Specific Plan have resulted in conversion of suitable burrowing owl habitat to development. Completion of existing specific plan developments in the cumulative study area would result in additional loss of suitable habitat and potential displacement and harm to individual burrowing owls. Increased development in the cumulative area is also likely to result in increased use of rodenticides to control rodent pests, which can lead to secondary poisoning of rodent predators and reduce overall prey abundance for this species. Each cumulative project is required to mitigate independently for impacts to burrowing owls, but compensatory mitigation for loss of suitable habitat is not uniformly required. Therefore, a net reduction in habitat for this species is expected to continue. This is considered a significant cumulative impact. The project's contribution to cumulative impacts on burrowing owl is cumulatively considerable because the incremental effects of the project alone are significant. The project would implement mitigation measure BIO-7 to ensure avoidance of burrowing owl during construction and protect active burrows, and mitigation measures BIO-2 and BIO-3 would require worker environmental education and delineation of work areas, to minimize general environmental impacts of construction. Compliance with mitigation would ensure the project's contribution would be reduced to **less than significant.**

Other Nesting and Migratory Birds and Birds of Prey:

Loss of natural habitats suitable for nesting birds has occurred throughout the cumulative study area as natural habitats have been converted to urban development by past projects and would continue to occur from planned projects in the vicinity. Each project must comply with local ordinances and policies, in addition to CESA, ESA,

CWA, Fish and Game Code, and other relevant regulations permits and requirements. Nevertheless, the loss of natural habitats for nesting birds and birds-of-prey is a potential cumulative impact, as is the impact to individual birds from direct effects of cumulative projects. The project's contribution is cumulatively considerable because the incremental effects of the project alone are significant. The cumulative impact to nesting birds is potentially significant. The project would implement mitigation measure BIO-5 to detect nesting birds through preconstruction surveys, and if found, avoid disturbances from construction near the nests. Compliance with mitigation would ensure the project's contribution would be reduced to **less than significant.**

Mitigation Measures

Implementation and compliance with mitigation measures BIO-1 through BIO-7 would ensure the project's cumulative contribution to biological resource impacts would be reduced to **less than significant**.

BIO-13: Implement mitigation measures BIO-1 through BIO-7.

Impact 3.3-7. The proposed project, combined with other past and reasonably foreseeable future projects, would not result in a cumulative impact to riparian habitat or other sensitive natural communities.

Oak resources have been impacted through historic development of the cumulative study area and would continue to be impacted as natural habitats have been converted to urban development. Other past, present and foreseeable future projects in the vicinity would remove similar oak resources to those removed by the project, and in many cases could have a greater impact than the relatively small oak woodland removal associated with the project (0.20 acres). The loss of oak resources is a potentially significant cumulative impact due to the historic losses of oak trees within the County and the cumulative study area. However, any new projects within the cumulative study area, including the proposed project must comply with the County's Oak Resources Conservation Ordinance and mitigate for loss of oak trees. This would be compliant with General Plan Policy 7.4.4.4 directing that projects mitigate for loss of oak trees through the Oak Resources Management Plan. Therefore, the project's contribution to the cumulative impact would not be considerable and the impact to sensitive natural communities would be **less than significant.**

Mitigation Measures

No mitigation measures would be required.

Impact 3.3-8. The proposed project, combined other past and reasonably foreseeable future projects, could result in a cumulative impact to state or federally protected wetlands.

Other projects in the cumulative study area have impacted or would impact waters of the U.S. and state. The loss of waters of the U.S. and state is a potentially significant cumulative impact. The project's contribution is cumulatively considerable because the incremental effects of the project alone are significant. The cumulative impact to waters of the U.S. and state, including wetlands, is potentially significant.

Compliance with mitigation measure BIO-8 would require compensation of all waters of the U.S. and state removed by the project to a standard of no net loss. Other cumulative projects would also be expected to meet this mitigation standard. The mitigation measure reduces the project's contribution to this cumulative impact a **less-than-significant level.**

Mitigation Measures

Implementation and compliance with mitigation measure BIO-9 would ensure the project's cumulative contribution to biological resource impacts would be reduced to **less than significant**.

BIO-14: Implement mitigation measure BIO-9.

Impact 3.3-9. The project, combined other past and reasonably foreseeable future projects, could result in a cumulative impact to migratory wildlife corridors or native wildlife nursery sites.

Neither the project, nor the cumulative projects considered in the effects analysis for biological resources are located in areas designated by the County as Important Biological Corridors (IBC), Priority Conservation Areas (PCA), or Preserve (EP) overlays on General Plan maps. They are also located outside of important habitat for migratory deer herds. The cumulative projects are mostly surrounded by fragmented development and are near or adjacent to major roads, reducing their value as wildlife movement corridors.

As stated under Impact 3.3-6, the project would contribute to the loss of tricolored blackbird colonies through direct impacts to a portion of their habitat as well as introducing ongoing disturbance near an existing colony location due to construction and operation of the project. Other tricolored blackbird colonies in the cumulative study area have been affected by past development, and one or more colonies in the cumulative study area (e.g., Carson Creek Specific Plan Area) may be affected similarly to the project through future development. This is a significant cumulative impact. Other projects would be expected to mitigate for impacts to tricolored blackbird colony locations, but some colonies have been disrupted through surrounding development in the cumulative study area without effective mitigation. The project's contribution is cumulatively considerable because the incremental effects of the project alone are significant.

Compliance with mitigation measure BIO-5 would detect the presence of tricolored blackbirds through preconstruction surveys, and if found, avoid direct impacts from construction to individuals and nests. Further, the project would implement mitigation measure BIO-6 to provide compensatory mitigation for impacts to the tricolored blackbird colony onsite from project construction and operation. Implementing the mitigation measures reduces the project's contribution to this cumulative impact a **less-than-significant level.**

Mitigation Measures

Implementation and compliance with mitigation measures BIO-5 and BIO-6 would ensure the project's cumulative contribution to biological resource impacts would be reduced to **less than significant**.

BIO-15: Implement mitigation measures BIO-5 and BIO-6.

3.3.5 References

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3.4 Cultural Resources

This section assesses potential effects on cultural resources that may be impacted as a result of implementation of the Creekside Village Specific Plan (CVSP or proposed project). Cultural resources are defined as precontact or historic-period archaeological resources. Historic-period architectural resources include historic period engineering features, such as canals and railroad resources. Precontact resources include sites and artifacts associated with the indigenous, non-Euro-American population prior to contact with people of European descent. Historical resources consist of structures, features, artifacts, and sites that date from Euro-American settlement of the region. Precontact and Native American resources of cultural and religious significance that are identified as Tribal Cultural Resources are addressed in Section 3.13, Tribal Cultural Resources. This section describes the cultural setting of the project site, discusses known resources within the area, identifies the resource sensitivity of the site, discusses the relevant state and local regulatory considerations, and evaluates how implementation of the CVSP may affect cultural resources that may be present.

One public comment related to cultural resources was received in response to the November 6, 2020, Notice of Preparation (NOP). The Native American Heritage Commission (NAHC) submitted a letter regarding Assembly Bill (AB) 52 and Senate Bill (SB) 18 consultation methods and consistency. This is a standard letter submitted by the NAHC and does not raise any site-specific concerns. No additional comments were received at the second scoping meeting held on September 26, 2023. A copy of the NOP and comments received is included in Appendix A.

The primary sources referenced include the May 2019 Cultural Resources Inventory and Evaluation (May 2019 Evaluation), the January 2021 Creekside Village Determination of Site Boundaries, and the March 2021 Off-Site Utilities Cultural Resource Assessment (March 2021 Off-Site Assessment), all prepared by Windmiller Consulting. A follow up records search from the North Central Information Center (NCIC) was requested in August 2023 with the results documented in a Memorandum prepared by Environmental Science Associates (ESA Associates). El Dorado County staff have copies of these reports, but they are not available for public review due to sensitive and confidential information. Additional sources referenced include the El Dorado County General Plan Conservation and Open Space Element (El Dorado County 2017) and Google Earth aerial imagery.

3.4.1 Environmental Setting

The proposed project is a specific plan featuring a mix of single-family homes, parks, open space, and neighborhood commercial space located in the community of El Dorado Hills, in unincorporated El Dorado County (County). The project site lies on the west side of Latrobe Road approximately two miles south of the Latrobe Road and White Rock Road intersection. Two miles north of the project site is the historic town of Clarksville. Three miles southeast lies the historic town of Latrobe. The project site currently consists of undeveloped rolling grasslands and has not previously been developed.

The Cultural Resources Inventory and Evaluation prepared for the project used a geographic area of potential effects (APE) of 240 acres which is larger than the project site and includes areas bordering the El Dorado Hills Business Park to the north. Note that the term “APE” is used throughout this section to ensure consistency with the cultural resources technical studies but should be understood to constitute the entirety of the area of direct impact for the proposed project. The proposed project site consists of 208 acres not including the 32 acres of land bordering the El Dorado Hills Business Park. The APE in relation to the project site is illustrated in Figure 3.4-1, Area of Potential Effects. The Off-site Utilities Cultural Resources Assessment assessed areas slated for project

improvements to local roadways and water and sewer hookups that are outside of the project boundaries. The APE for these off-site improvements is included in Figure 2-9 in Chapter 2, Project Description.

El Dorado Hills Setting

Pre-Contact History

Initial human entry into California occurred at the beginning of the Paleo-Indian Period between about 10,000 and 6,000 B.C. (Fredrickson 1974). The oldest traditionally accepted evidence of people in California's Central Valley is marked by the presence of Clovis fluted projectile points found at widely scattered locations, most of which came from remnants of the landscape left behind by the last Ice Age. These early peoples are thought to have subsisted using a combination of hunting and scavenging in lakes. However, there is evidence of occupation on Southern California's Northern Channel Islands dated 2,000 to 3,000 years earlier than the Clovis fluted projectile finds. This and other evidence suggest that ethnically diverse peoples used not only the Bering land bridge and the ice-free corridor to enter North America but migrated by sea along a coastal route.

During the Lower Archaic period between 8550 and 5550 calibrated (cal) Before Christ (B.C.), many lakes created by rainfall across California became dry as a result of climatic changes. Previous finds of milling stones and Pinto-like projectile points at sites in the Marble Valley area, three miles east of the project APE, could reflect Native American use of the area dating back 4,000 to 7,000 years.

During the Middle Archaic period, dating between 5550 and 550 cal B.C., aboriginal cultures in California's Great Central Valley flourished. Milling stones from archaeological sites of this period imply a greater emphasis on food gathering and less emphasis on hunting. Middle Archaic people may have used the lower foothills as a summer resource area. Reliance on acorns as a staple is inferred from what is generally recognized as the first appearance of mortars and pestles in archeological sites dating early in the period.

Sedentary villages were established in the western Sierra by the time of Christ or possibly earlier. In the mid-Sacramento Valley, these developments followed the formation of the Sacramento Delta and marsh lands, which by 2000 B.C. were fully formed. Archaeologists have speculated that people of the same language group occupied the juncture between the Great Basin and Plateau provinces before 2500 B.C., although it is also possible that other Great Basin peoples occupied the area in place of the proto-Yokutsan speaking people of the Windmiller Pattern. The “Martis Complex,” with its characteristic basalt dart points originally identified by archaeologists at sites in the high Sierra, is also represented in the Sierra foothills and may reflect local settlement by an entirely different language group. Such sites may date to the period 2000 B.C. to A.D. 500. Large, Martis-like projectile points have been discovered at archaeological sites in the lower foothills. Finds in Marble Valley included projectile point styles similar to Martis.

Between 2000 and 500 B.C., Utian populations appear to have occupied the Sacramento Delta, the areas along rivers and streams, marsh land, as well as the hills on both the east and west sides of the Sacramento Valley. Expansion westward into the San Francisco Bay area is hypothesized to have brought about a fusion between the bearers of Utian languages (Miwok and Ohlone people) and the resident speakers of Hokan and Yukian languages. This apparent fusion of cultures resulted in what archaeologists now recognize as the Berkeley Pattern, sometimes referred to as the "Middle Horizon."

SOURCE: Helix Environmental 2019

FIGURE 3.4-1
Area of Potential Effects

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Ancestors of the Nisenan, a Maiduan people who historically inhabited the American River drainage and who lived for part of their history in the El Dorado Hills vicinity, migrated to the region rather late in time. During the Upper Archaic between 550 cal B.C. cal and A.D. 1100, particularly in the first 200 years of the Christian era, Maiduan groups spread farther west to territory in northeastern California. It is suggested that Maiduan-speakers entered California from the north around A.D. 500 and settled first in the foothills or valley edge in what historically became Nisenan territory.

The Emergent Period, cal Anno Domini (A.D.) 1100-Historic, was characterized by the consolidation of territories formed as a result of the migration of native groups, including the Nisenan. Interregional trade seems to have expanded greatly during the Emergent, up to the succeeding Mission Period when Spanish intrusions began to take place.

Ethnography

The project APE is located within a boundary zone between traditional Valley Nisenan and Plains Miwok territories. The broad boundary area is located between the Town of Latrobe to the south and the City of Folsom to the north.

Economic life for these groups revolved around hunting, fishing, and the collecting of plant foods. In both Valley Nisenan and Plains Miwok groups, the tribelet (a loose political organization) controlled specific districts usually bounded by the land between drainages. Prior to the gold rush, the establishment of Sutter's Fort in Sacramento, and the 1833 epidemic, villages were distributed along the banks and tributaries of major rivers such as the Sacramento, American, and Cosumnes. Villages ranged in size from small, extended families of 15 to 25 people to large villages with populations of over 500. The 1833 epidemic, thought to be malaria brought south from Oregon by a party of trappers, decimated an estimated 75% of California's native population. By the 1840s, a number of the remaining Nisenan people settled around Sutter's Fort and worked for John Sutter while others pressed farther toward the Sierra Nevada Mountain range into traditional Miwok territory.

Prior to 1843, it is likely that Valley Nisenan held the territory along the American River and Plains Miwok held the entire valley drainage of the Cosumnes River from its juncture with the Mokelumne River in the foothills. It is theorized that the area between the two drainages may have been used by both groups.

Historic Context

Following the initial discovery of gold at Sutter's Mill in January 1848, gold was found in the South Fork of the American River about a mile above its confluence with the river's North Fork. This discovery at "Mormon Island' in March 1848 started the gold rush. The discoveries spurred thousands of immigrants to California. By May 1848, there were only a few hundred working at shallow placer mines. By 1849, almost 40,000 gold seekers followed routes by land and sea to the gold fields. Early mining focused on deposits of gravel along the river meanders. Early placer mining expanded from Coloma to Weber Creek and then to the rich creek gravels in the vicinity of present-day Placerville. Fueled by discoveries at Coloma, Placerville and Folsom, nearly every ravine in the region was mined. The earliest settlement nearest the project site was Mormon Tavern. The tavern was situated at the foot of the first steep grade into the Sierra foothills from Sacramento. The original Mormon Tavern was built at the intersection of the Sacramento-Placerville Road and the stage road from Folsom and Mormon Island. The tavern remained in business through the 1860s and 1870s. One-half mile east of Mormon Tavern, Clarksville was established in 1850 as a mining camp and way station. By this time, ravines throughout the region were dotted with camps and cabins.

As mining became more corporate and began to eliminate small-scale participation, many miners turned to agriculture and other support industries. Most of the early ranches that resulted were self-sufficient operations which included a variety of livestock, small plots dedicated to growing vegetables and grain, and orchards and vineyards. The area's early ranchers included William S. Cothrin, a stock raiser who owned 3,213 acres. In the late 1850s, the Cothrins raised sheep, grew barley and bran, and cut and sold firewood. In 1910, Cothrin's estate included 4,786 acres. Robert Euer subsequently purchased the land including interest in livestock, farming tools, and dairy equipment. By 1925, the Euer family's land holdings included over 5,000 acres, among other surrounding properties. The land remained in Robert Euer's hands until approximately 1950.

Mining was a secondary source of income for ranchers of the Clarksville-Latrobe region. Within a mile east of Latrobe Road and the project APE, a mining claim was filed on Plunket Creek in the early 1880s. During the so-called "second gold rush" of the Great Depression in the 1930s, dragline and dry-land dredging was conducted along Carson Creek within two miles northwest of the project APE at the Jumbo Placer Mine.

Resources Identified and Assessment of Eligibility

Resources Identified within the Project Site APE

Within the project APE a number of archaeological resources have been identified based on the numerous surveys conducted. As part of the May 2019 Evaluation conducted by Windmiller Consulting, the cultural resource records search identified twelve previous studies that had been conducted and thirty-one precontact and historic archaeological resources recorded within the one quarter mile radius of the APE. There are 12 previously recorded cultural resources identified within the project's APE, including four precontact sites and one isolate and seven historic-period resources.[1] The precontact resources are addressed Section 3.13, Tribal Cultural Resources. The seven historic-period resources are listed below in Table 3.4-1. In August 2023, an updated records request was completed and confirmed that there have been no newly recorded resources or updated resources identified since the original records search was conducted in 2018.

Table 3.4-1. Historic-Period Archaeological Resources in the Project APE

Field No.	Primary No.	Trinomial	Description
Historic-Era Archaeological Resources			
CS-2	P-09-006005	—	Mine shaft and tailing pile
CS-3	P-09-006006	—	Mine shaft
CS-4	P-09-006012	—	Ditch
CS-5	P-09-006008	—	Placer mine and tailing pile
CS-6	P-09-006009	—	Concrete livestock watering trough
CS-7	P-09-006010	—	Well/spring box
CS-10	P-09-006013	—	Improved Spring

Source: Confidential appendix.

[1] While one precontact resource was initially not located on site, a tribal representative located it on a subsequent site visit. The isolate was never relocated.

Historic-Period Resources

Seven historic-period resources were identified within the APE. Three of the resources reflect historic grazing on the project site while the remaining four resources appear to be associated with mining. All of the resources were evaluated for listing on the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) and it was determined none were eligible. A description of the resources is provided below.

P-09-006005: Field No. CS-2 (Mine Shaft). This minor historic archaeological resource is a mine shaft and a deflated tailings dump located on the south side of the shaft. The shaft is an estimated 20 feet deep to the present water level. The shaft was driven vertically to an unknown depth. However, the size of the deflated tailings suggests that the shaft was not driven deeper than 25-30 feet. The rock exposed in the shaft may be Jurassic metamorphic igneous rock as shown on geologic maps of the region.

P-09-006006: Field No. CS-3 (Mine Shaft). This minor historic archaeological resource is a largely in-filled shaft surrounded by weathered dirt and some rock. The shaft portal is roughly circular with a diameter of approximately 15 feet. Depth of the shaft is approximately five feet. Original depth is unknown, although the surviving evidence suggests shallow workings.

P-09-0066012: Field No. CS-4 (Ditch). This minor historic resource is a largely in-filled ditch segment located at the foot of a northwest trending low ridge. The ditch apparently captured water from the unnamed drainage downstream from the placer mine, Field No. CS-5, then re-directed the captured water back into the natural stream channel approximately 200 feet downstream. Several short ditches appear to have drained the longer ditch into the unnamed natural stream channel. While there is a physical association with the placer mine, Field No. CS-5, no further information such as period of use or relationship between the ditch and the placer mine was found during the study.

P-09-006008/CA-ELD-003108H: Field No. CS-5 (Placer Mine). This historic archaeological site is centered on a portion of an unnamed seasonal tributary to Carson Creek. The mine includes stream bank diggings and piles of excavated dirt and cobbles. The stream channel appears to have been altered with possible damming and excavation producing alternative channels.

P-09-006009: Field No. CS-6 (Livestock Watering Trough). This minor historic resource is a concrete livestock watering trough. No date has been assigned to this feature, although it may have been poured on-site in the 1950s or 1960s. The trough may be associated with Field No. CS-7, a nearby well (open spring box) lined with similar concrete.

P-09-006010: Field No. CS-7 (Well/Spring Box). This minor historic resource is a square, concrete lined well at a spring. The well is approximately five feet deep to the present water level in the well. The well's concrete appears similar to that of the nearby watering trough, Field No. CS-6. Both spring box and associated watering trough display the same or similar construction methods. There is no direct evidence of the builder, period of construction, or association with a person important in the past.

P-09-006013: Field No. CS-10 (Improved Spring). This minor historic archaeological resource is an improved spring consisting of stacked local rock measuring eight feet east-west and six feet north-south. The site is located between two low north-facing ridges. The present setting is hilly grassland. The spring may have had a spring box at one time in which water was pooled. Condition appears fair to poor. Some of the rock may have been removed or scattered. Vegetation obscures most of the resource.

Resources Identified within the Off-site Improvements APE

As described in Chapter 2, Project Description, the project requires extending water and sewer lines as well as connections to electric and natural gas services, roadway improvements, and construction of an additional emergency access road. All of the utility work would be within the existing right-of-way along Latrobe Road. An approximately 650-foot-long emergency access road that would be also used as a class 1 bike path would connect the project site to the adjacent business park, located northwest of the site (see Figure 2-9 in Chapter 2, Project Description). A cultural resources assessment of the off-site improvements APE was conducted by Windmiller Consulting in 2021.

Five previously recorded cultural resources are located within the off-site improvements APE and 15 reports of previous cultural resource studies have been completed within the same area. A pedestrian field survey of the off-site improvements APE was conducted by an archaeologist using transects spaced approximately 15 meters apart. The five resources identified included two historic-period resources, a mine site, a road, and one precontact resource (see Section 3.13, Tribal Cultural Resources). The four historic-period resources were determined not to be historic and include P-09-000992 (barbed wire fence recorded as an isolate), P-09-006007 (an unnamed earthen ditch segment), P-09-006008 (mine and tailings piles), and P-09-005667 (an unnamed dirt road connecting historic ranch sites), shown below in Table 3.4-2 and discussed within the March 2021 Off-Site Assessment.

A summary of the historic resources identified with the project's offsite APE is provided below.

Table 3.4-2. Historic-Era Archaeological Resources in the Project's Off-site APE

Field No.	Primary No.	Trinomial	Description
	P-09-0000992		Barbed wire fence (Isolate)
	P-09-006007		Unnamed earthen ditch segment
CS-5	P-09-006008	CA-ELD-3108H	Placer mine and tailings piles
	P-09-005667		Unnamed dirt road

Source: Confidential appendix.

P-09-6008/CA-ELD-3108H: Field No. CS-5 (Placer Mine). This resource was included in the May 2019 Evaluation for the project APE and has been previously described above.

During the May 2019 pedestrian study, the mine was reported as lying on the west side of Latrobe Road. A follow up survey in November 2020 concluded that the mine lies on both the east and west sides of Latrobe Road, a small portion of which lies within the Royal Oaks Drive-Latrobe Road intersection. The field survey confirmed that mining at the site continued east of Latrobe Road. The same site features are repeated in the "new" portion of the mine. Although the mined debris nearly doubled in size with recognition that the mine extended east from Latrobe Road, the evaluation of National Register eligibility remains the same: not eligible for the National Register and not eligible for the California Register under any criterion.

3.4.2 Regulatory Setting

Federal, state, and local governments have developed laws and regulations designed to protect and preserve significant cultural resources that may be affected by actions that they undertake or regulate. The National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA) are the basic federal and state laws

governing the preservation of historic and archeological resources of national, regional, state, and/or local or tribal significance within the state.

Cultural resources are defined as precontact or historic-period archaeological resources, historic-period architectural resources, and historic-period engineering features, including canals and railroad resources.

Federal

National Historic Preservation Act

The National Historic Preservation Act (NHPA) established the NRHP and the President's Advisory Council on Historic Preservation (ACHP), and provided that states may establish State Historic Preservation Officers to carry out some of the functions of the NHPA. Most significantly for federal agencies responsible for managing cultural resources, Section 106 of the NHPA directs the following:

> [t]he head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP.

Section 106 also affords the ACHP a reasonable opportunity to comment on the undertaking (16 USC 470f).

Title 36 of the Code of Federal Regulations, Part 800 (36 CFR 800) implements Section 106 of the NHPA. It defines the steps necessary to identify historic properties (those cultural resources listed in or eligible for listing in the NRHP), including consultation with federally recognized Native American tribes to identify resources with important cultural values; to determine whether they may be adversely affected by a proposed undertaking; and the process for eliminating, reducing, or mitigating the adverse effects.

The content of Title 36 of the Code of Federal Regulations, Section 60.4, defines criteria for determining eligibility for listing in the NRHP. The significance of cultural resources identified during an inventory must be formally evaluated for historic significance in consultation with the ACHP and the California State Historic Preservation Officer to determine if the resources are eligible for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Regarding criteria A through D of Section 106, the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, cultural resources, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that (36 CFR 60.4):

A. Are associated with events that have made a significant contribution to the broad patterns of our history; or
B. Are associated with the lives of persons significant in our past; or
C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. Have yielded or may be likely to yield, information important in prehistory or history.

The 1992 amendments to the NHPA enhance the recognition of tribal governments' roles in the national historic preservation program, including adding a member of an Indian tribe or Native Hawaiian organization to the ACHP.

The NHPA amendments:

- Clarify that properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined eligible for inclusion in the National Register
- Reinforce the provisions of the Council's regulations that require the federal agency to consult on properties of religious and cultural importance.

The 1992 amendments also specify that the ACHP can enter into agreement with tribes that permit undertakings on tribal land and that are reviewed under tribal regulations governing Section 106. Regulations implementing the NHPA state that a federal agency must consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking.

Clean Water Act, Section 404

A Clean Water Act, Section 404 permit is anticipated for the proposed development. Therefore, the U.S. Army Corps of Engineers (ACOE) must initiate a National Historic Preservation Act, Section 106 consultation in an effort to avoid harm to any historic properties listed in or eligible for the National Register of Historic Places. The Cultural Resources Inventory and Evaluation was designed to assist the ACOE in identifying historic properties that may be affected by the undertaking (issue of a federal permit).

State

California Register of Historical Resources

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (Public Resources Code [PRC] Section 5020.1[j]). Historical resources are not limited only to built environment resources, they can take many different forms as long as the resource is eligible for or listed in the CRHR. In 1992, the California legislature established the CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP, enumerated below. According to PRC Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains "substantial integrity," and (ii) meets at least one of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Is associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

In order to understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see 14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of precontact and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Environmental Quality Act

Under CEQA (PRC Section 21000 et seq.), public agencies must consider the effects of their actions on both historical resources and unique archaeological resources. Pursuant to Section 21084.1 of the PRC, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." Section 21083.2 requires agencies to determine whether proposed projects would have effects on "unique archaeological resources."

"Historical resource" is a term of art with a defined statutory meaning (see PRC Section 21084.1, and 14 CCR 15064.5(a) and 15064.5(b)). The term embraces any resource listed in or determined to be eligible for listing in the CRHR. The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be "historical resources" for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC Section 5024.1, and 14 CCR 4850). Unless a resource listed in a survey has been demolished or has lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process, lead agencies have a responsibility to evaluate them against the CRHR criteria as discussed previously, prior to making a finding as to a proposed project's impacts to historical resources (PRC Section 21084.1, and 14 CCR 15064.5(a)(3)). The fact that a resource is not listed or determined to be eligible for listing does not preclude a lead agency from determining that it may be a historical resource (PRC Section 21084.1, and 14 CCR 15064.5(a)(4)).

CEQA also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource, as described previously, and unique archaeological resources. Under CEQA, an archaeological resource is considered "unique" if it:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or

- Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC Section 21083.2(g)).

CEQA states that if a proposed project would result in an impact that might cause a substantial adverse change in the significance of a historical resource, then an EIR must be prepared, and mitigation measures and alternatives must be considered. A "substantial adverse change" in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (14 CCR 15064.5(b)(1)).

The CEQA Guidelines (Section 15064.5(c)) also provide specific guidance on the treatment of archaeological resources, depending on whether they meet the definition of a historical resource or a unique archaeological resource. If the site meets the definition of a unique archaeological resource, it must be treated in accordance with the provisions of PRC Section 21083.2.

CEQA Guidelines Section 15064.5(e), requires that excavation activities be stopped whenever human remains are uncovered, and the county coroner be called in to assess the remains. Additional protections are required for Native American remains, which are discussed in Section 3.13, Tribal Cultural Resources.

Senate Bill 297

SB 297 addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction; and establishes the NAHC to resolve disputes regarding the disposition of such remains. The provisions of SB 297 have been incorporated into Section 15064.5(e) of the CEQA Guidelines.

California Health and Safety Code

Section 7050.5(b) of the California Health and Safety Code specifies protocols to address any human remains that may be discovered. The code states:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in section 5097.98 of the Public Resources Code.

Local

El Dorado County General Plan

The Conservation and Open Space Element included in the County General Plan (last amended 2019) contains the following goals, objectives, and policies related to cultural resources that are relevant to the proposed project:

Conservation and Open Space Element

Goal 7.5: Cultural Resources**:** Ensure the preservation of the County's important cultural resources.

Objective 7.5.1: Protection of Cultural Heritage: Creation of an identification and preservation program for the County's cultural resources.

Policy 7.5.1.2: Reports and/or maps identifying specific locations of archaeological or historical sites shall be kept confidential in the Planning Department but shall be disclosed where applicable.

Policy 7.5.1.3: Cultural resource studies (historic, prehistoric, and paleontological resources) shall be conducted prior to approval of discretionary projects. Studies may include, but are not limited to, record searches through the North Central Information Center at California State University, Sacramento, the Museum of Paleontology, University of California, Berkeley, field surveys, subsurface testing, and/or salvage excavations. The avoidance and protection of sites shall be encouraged.

Policy 7.5.1.4: Promote the registration of historic districts, sites, buildings, structures, and objects in the National Register of Historic Places and inclusion in the California State Office of Historic Preservation's California Points of Historic Interest and California Inventory of Historic Resources.

Objective 7.5.2: Visual Integrity: Maintenance of the visual integrity of historic resources.

Policy 7.5.2.4: The County shall prohibit the modification of all National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) listed properties that would alter their integrity, historic setting, and appearance to a degree that would preclude their continued listing on these registers. If avoidance of such modifications on privately owned listed properties is deemed infeasible, mitigation measures commensurate with NRHP/CRHR standards shall be formulated in cooperation with the property owner.

Objective 7.5.3: Recognition of Prehistoric/Historic Resources - Recognition of the value of the County's prehistoric and historic resources to residents, tourists, and the economy of the County, and promotion of public access and enjoyment of prehistoric and historic resources where appropriate

3.4.3 Thresholds of Significance and Methodology

Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 of the CEQA Guidelines.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines.
- Disturb any human remains, including those interred outside of dedicated cemeteries.

Methodology

A records search was conducted by the NCIC of the California Historical Resource Information System (CHRIS) for the project APE in September 2018 and a pedestrian survey was conducted in November and December 2018. An updated records search was conducted at the NCIC in August 2023 to determine if any new recorded resources or updated resources were documented since the 2018 search. No newly recorded resources or updated resources were identified.

Several types of information were considered relevant to evaluating the types of cultural sites and site distribution that might be encountered within the project site. The information evaluated includes precontact and historic-period archaeological resources based on a records search by the NCIC via the CHRIS; contacts with the Clarksville Region Historical Society, the El Dorado County Historical Society and knowledgeable others to help identify significant historic sites; archival research to document a historic context; a review of previous cultural resource studies conducted on the same property to identify any previously recorded cultural resources on and immediately adjacent to the property that may be affected by the proposed project; a pedestrian field survey, documentation of each identified cultural resource on Department of Parks and Recreation (DPR) 523 forms distributed by the California Office of Historic Preservation; assessment of National Register eligibility for each cultural resource based on the surface survey results; and an assessment of effect of the undertaking on historic properties. As noted previously, the precontact resources are addressed in Section 3.13, Tribal Cultural Resources.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1.8 acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. The potential impacts to cultural resources are not expected to be different with implementation of either option because the development footprint, intensity, and disturbed area would remain the same as under the proposed project. Therefore, the impact analysis below would be the same under both options as the proposed project.

3.4.4 Impacts Analysis

Project Impacts

Impact 3.4-1. The proposed project would not cause a substantial adverse change in the significance of a historical resource.

As detailed in Chapter 2, Project Description, the project proposes to develop approximately 163 acres of the 208-acre project site. Development would include residences, a small 1.8-acre commercial use or an additional park if the commercial use is not approved, parks, and roadways. Approximately 45 acres would be left in open space. Project construction would require site clearing, grading, and trenching for utilities. "Historical resources", for the purposes of this analysis is understood to be the same as "historic built environment resources" defined as existing, functional buildings, features, and/or structures over 45 years in age. No such resources are present within the APE. Archaeological resources, consisting of remnants, destroyed, or abandoned elements, or other physical evidence of, past historic period and precontract activities are addressed below under Impact 3.4-2.

The May 2019 Evaluation prepared for the project (as verified by the updated records search) did not identify any historic period environment resources within the APE, including in the off-site APE. Therefore, the project would not impact any known historic built environment resources and the potential loss of and/or substantial damage to any such resources is considered a **less-than-significant impact**.

Mitigation Measures

No mitigation measures are required.

Impact 3.4-2. The proposed project could cause a substantial adverse change in the significance of an archaeological resource.

A total of 12 archaeological resources were identified on the project site. Future development of the site as described above under Impact 3.4-1 could disturb known on-site archaeological resources resulting in the destruction or removal of historic-period and precontact archeological resources. The May 2019 Evaluation identified seven historic-period archaeological resources addressed here and five precontact resources, including one isolate[2], that are discussed in Section 3.13, Tribal Cultural Resources. Of the historic-period archaeological resources, three reflect historic grazing on the project site while the remaining four resources appear to be associated with mining. These include a concrete livestock watering trough (P-09-006009), a ditch (P-09-006012), a concrete well/spring box (P-09-006010), mine shafts/tailing pile (P-09-006006, P-09-006008) and an improved spring (P-09-006013). The seven historic-period resources were evaluated and found not eligible for the NRHP or CRHR under any criterion. The four precontact archaeological sites (P-09-006004; P-09-006011; P-09-006012 (all within the Project APE); and P-09-000168 (in the offsite APE)) have been evaluated and recommended eligible for NRHP/CRHR listing (see Section 3.13, Tribal Cultural Resources for an analysis of these resources). One precontact isolate (P-09-006003) was never relocated and is categorically limited in its potential to meet CRHR criteria as thresholds of significance or be classified as a "unique" resource under CEQA due to being a single artifact with no specific temporal, ethnic, or spatially diagnostic associations. As such, this resource is not CRHR eligible.

[2] An isolate is considered a group of no more than three artifacts within approximately 100-feet (30 meters) of one another.

Development within the County is subject to the County's General Plan, which provides policies and actions that safeguard cultural resources from unnecessary impacts. These General Plan policies include Goal 7.5 which ensures the preservation of the County's important cultural resources, and Objective 7.5.1 that requires the County to create a preservation program for the County's cultural resources. Other policies include Policy 7.5.1.2 which requires the County to keep specific locations of archaeological or historical sites confidential; and Policy 7.5.1.4 that promotes the registration of historic districts, sites, buildings, structures, and objects in the NRHP and inclusion in the State Office of Historic Preservation's California Points of Historic Interest and California Inventory of Historic Resources.

As noted under Impact 3.4-1, development of the proposed project would include ground-disturbing activities to construct residences, park/recreation areas, roads, and a potential commercial (or park) site. Construction activities could result in damaging or destroying unknown archeological resources. Archaeological resources are often difficult to identify from surface evidence alone and may contain buried cultural deposits in areas with appropriate soils. Such subsurface deposits are most likely to be exposed within three feet of the surface during activities requiring grading and other ground preparation. Additionally, recreation areas, such as paths and trails introduce access by higher frequencies of people to areas where unknown archaeological resources may be present, thereby elevating the potential for resources to be identified and disturbed by the public that may have been missed during an archaeological survey.

The project would not impact any known NRHP or CRHR eligible archeological resources; however, due to the presence of resources in the area it suggests that the project may have the potential to unearth additional unknown archeological resources resulting in a substantial adverse change in the significance of the resource. The potential loss of and/or substantial damage to undiscovered archaeological resources is considered a **potentially significant impact**.

Offsite Infrastructure

The March 2021 Off-site Assessment reviewed areas slated for project improvements to local roadways and water and sewer hookups that are outside of the project boundaries. Since completion of that report, some of the required roadway improvements have been updated, as noted in Chapter 2, Project Description. However, there is no change to the extension of utilities along Latrobe Road and construction of the proposed emergency access. The APE for these off-site improvements is included in Figure 2-9 in Chapter 2, Project Description and all off-site areas have been evaluated for cultural resources.

A pedestrian field survey of the offsite APE was conducted by an archaeologist along transects approximately 15 meters apart. A total of five archaeological resources were identified within the offsite improvements APE, including one precontact resource that is addressed in Section 3.13, Tribal Cultural Resources. The other resources include P-09-0006008 (a placer mining site that also intersects the project APE and is discussed above), P-09-000992 (barbed wire fence recorded as an isolate), P-09-006007 (unnamed earthen ditch segment), and P-09-005667 (unnamed dirt road connecting historic ranch sites). As discussed above, P-09-006008 is not eligible for the NRHP or CRHR. The three other resources are not evaluated for eligibility for the NRHP or CRHR. Although the March 2021 Off-Site Assessment indicates the probability of encountering additional cultural resources is low, construction of required off-site improvements could impact unknown resources which would be considered a **potentially significant impact.**

Mitigation Measures

Compliance with mitigation measures CUL-1 and CUL-2 would ensure that potential impacts to archaeological resources are appropriately addressed, and impacts would be reduced to **less than significant**.

CUL-1: Cultural Resource Awareness Training. Mitigation Measure TCR-1 shall be implemented and as noted therein, include training on potential archaeological or cultural resources.

CUL-2: Unanticipated Discovery of a Cultural Resource. If unanticipated cultural or archeological resources are exposed during construction activities, all construction work occurring within 100 feet of the find shall immediately stop to provide up to 48 hours for the archeologist to evaluate the significance of the find and determine whether or not additional study is warranted. Temporary flagging or staking shall be required around the resource to avoid any disturbance from construction equipment if the archeologist determines that temporary flagging is necessary to protect the resource. The work exclusion buffer may be reduced based on the recommendation of the archeologist. If the unanticipated cultural resource appear to be human remains, Mitigation Measures CUL-3 and TCR-4 shall be implemented.

If the cultural or archeological resource is not determined to be a Tribal Cultural Resource under Mitigation Measure TCR-3 and is within an Open Space area that was not approved for grading or other disturbance, preservation in place shall occur, if recommended by the archeologist. Alterntaviely, the archeologist may determine that one of the other treatment strategies identified below is preferred for the particular cultural or archeological resource, in which case that treatment strategy shall be implemented.

If the cultural or archeological resource is not determined to be a Tribal Cultural Resource under Mitigation Measure TCR-3 and is within an area planned for residential lots, road and infrastructure improvements, grading, park improvements, or other development activity approved as part of the project, the archeologist shall direct whether the treatment of the cultural or archeological resource is one or more of the following: (1) recordation of the resource; (2) recovery and reburial in or relocation to an Open Space preserve area within the Specific Plan; (3) preservation in place through burial if feasible given the final elevation of the area and intended development; or (4) removal and preservation. Prior to the relocation, burial, or removal of a cultural or archeological resource, the project applicant shall document the cultural or archeological resource through pictures that are provided to the County. The photographs and management strategies recommended by the archaeologist shall remain confidential and be provided to the County in writing and approved by the El Dorado County Director of Planning and Building. The project construction contractor shall adhere to the management strategies approved by the archaeologist and County. Ground-disturbing activities may resume once the management strategies have been implemented to the satisfaction of the archaeologist and County's Director of Planning and Building.

CUL-3: Onsite Archaeological Monitoring. The project proponent or their construction contractor shall comply with the following measure to assist with identification of any unknown cultural resources at the earliest possible time during project-related earthmoving activities. These measures shall be included as notes on the project improvement plans prior to their approval by the County.

An archaeological monitor shall monitor the vegetation grubbing, stripping, grading, trenching, and other ground disturbing activities within 200 feet of P-09-006004; P-09-006011; P-09-006012 (all within the Project APE); and P-09-000168. All ground-disturbing activities within such areas shall be subject to archaeological monitoring unless otherwise determined unnecessary by archaeological monitor.

Impact 3.4-3. The project could potentially damage or disturb human remains during project construction activities.

Development of the proposed project site could result in the destruction, damage, or discovery of human remains during site disturbing construction activities, particularly site clearing, grading, trenching and excavation. As stated above, the area has been used both historically and during precontact times by Native American inhabitants as well as early settlers to the area. Human remains were not discovered during the site survey and a search of the NAHC Sacred Land Files (see Section 3.13, Tribal Cultural Resources) failed to identify any known onsite resources. Nonetheless, given the prior use of the site it is considered sensitive for the presence of human remains, including those interred outside of formal cemeteries. Therefore, there is the potential project construction could have the potential to encounter human remains.

Section 7050.5(b) of the California Health and Safety code specifies protocol to follow in the event human remains are discovered. In addition, CEQA Guidelines Section 15064.5(e), specifies steps that should be taken whenever human remains are uncovered, including stopping excavation activities in areas suspected of containing remains, and contacting the county coroner to determine if the cause of death needs to be investigated. If the county coroner determines that the remains are those of Native Americans, the coroner is responsible for contacting Native American Heritage Commission (NAHC) within 24 hours. The NAHC is responsible for identifying the most likely descendent of the deceased Native American, who may then make recommendations to the landowner or individual responsible for excavation regarding the means of treating or disposing of the remains. The Guidelines also make a provision for appropriate burial of the remains if the NAHC cannot identify a most likely descendent, if the identified individual fails to make recommendations, or if the recommendations are not acceptable to the landowner.

The proposed project would comply with Section 7050.5 of the California Health and Safety Code as well as CEQA Guidelines Section 15064.5; however, since ground-disturbing construction activities have the potential to uncover and potentially impact previously unrecorded human remains and due to the sensitivity of the site, this impact would be considered **potentially significant**.

Mitigation Measures

Management strategies have been developed with the intent of responding to the inadvertent discovery of human remains and to ensure compliance with applicable regulations and codes. Mitigation measure CUL-4 requires that project activities in the vicinity of any possible human remains be halted, and the County coroner be notified in the event human remains are discovered. The coroner would then identify if the remains are human and, if so, whether they are Native American in origin. If potential human remains are Native American, landowner coordination with the Tribe would be required in order to determine the appropriate course of action and methods for respectful treatment. With these measures implemented, impacts to human remains would be reduced to **less than significant.**

CUL-4: Discovery of Non-Native American Human Remains. If human remains are discovered during ground-disturbing construction work, all construction within 100 feet of the remains shall be halted immediately, and the El Dorado County coroner shall be notified immediately. If the remains are found to be non-Native American or the result of a crime scene, then the procedures in state law and mitigation measure TCR-4 shall be followed.

The County shall be responsible for confirming compliance with Section 5097.98 and CEQA Guidelines Section 15064.5(e) and the resumption of ground-disturbing activities within 100 feet

of the boundaries of the sensitive area defined by the investigation where the remains were discovered shall not occur until compliance with those standards is demonstrated in writing.

Cumulative Impacts

Cumulative impacts on cultural resources which include CEQA historical resources (primarily built environment), archaeological resources, and human remains consider whether impacts of the proposed project together with other projects in the County and the larger region, when taken as a whole, substantially diminish the number of such resources within the same or similar context or type. For cultural resources, this use is primarily associated with the record of past activity. The cumulative impact to these non-renewable resources are generally considered in terms of their cultural and/or informational value based on their resource type, context and relationships to the surrounding landscape and/or tribal histories. With regard to cultural resources (including historical built environment and archaeological resources), the importance of this type of information is revealed through review of the larger historical and archaeological record which, in turn, is dependent on the contribution of shared data resulting from technical investigations.

Chapter 3, Environmental Analysis, includes a list of projects that have been approved for development since the adoption of the County's General Plan in 2004.

Impact 3.4-4. The proposed project, in combination with past, present and reasonably foreseeable future development, could result in a cumulative impact on archeological resources and human remains.

As discussed under Impacts 3.4-1 through 3.4-3, the proposed project as presently designed would not directly impact NRHP and CRHR-eligible archeological resources. No human remains have been identified within the project site. However, urban development in the county and within nearby areas has resulted in the loss and alteration of significant cultural resources, and it is reasonable to assume that past, present and future development activities, including those planned and reasonably foreseeable County projects would continue to damage and/or destroy significant cultural resources. Because cultural resources are unique and non-renewable, all adverse effects or negative impacts contribute to a dwindling resource base, this is considered a significant cumulative impact.

As discussed in the regulatory setting, numerous laws, regulations, and statutes, on both the federal and state levels, seek to protect cultural resources. Future projects within the County and in nearby areas would also be subject to the same requirements as the proposed project. Technical studies would be required as part of the due diligence process and would result in the documentation and appropriate consideration of any resources that may be present. In addition, development within the County is subject to the County's General Plan, which provides policies and actions that further safeguard cultural resources from unnecessary impacts, as discussed above.

Although unlikely, there is the potential the proposed project could adversely affect significant cultural resources, including human remains and archaeological resources that are unique and non-renewable members of finite classes if discovered during site disturbing activities. In addition, due to the size of the project site it is reasonable to assume the project's incremental contribution to the cumulative loss of cultural resources is considerable resulting in a **potentially significant cumulative impact**. Implementation of project level mitigation measures CUL-1 through CUL-4 would address potential impacts to historic-period resources, archaeological resources, and human remains.

Mitigation Measures

Implementation of project-level mitigation measures CUL-1 through CUL-3 would address potential impacts to historic-period resources, archeological resources, and human remains and cumulative impacts would be **less than significant.**

CUL-5: Implement mitigation measures CUL-1 through CUL-3.

3.4.5 References

ESA. 2024. Alternatives and Recommendations for P-09-006011 (CA-ELD-3109) and P-09-006012 (CA-ELD-3110) *Confidential* Memorandum for the Creekside Village Project, El Dorado County, California. January 2024.

ESA. 2025. Off-site Improvements – Supplemental Records Search. *Confidential* Memorandum for the Creekside Village Project, El Dorado County, California. January 2025.

El Dorado County. 2017. *El Dorado County General Plan Conservation and Open Space Element*. Adopted July 19, 2004, amended October 2017. Available online at: https://edcgov.us/government/planning/adopted generalplan/documents/7conservation.pdf

Windmiller Consulting. 2019. Cultural Resources Inventory and Evaluation Report for the Creekside Village Project *(Confidential)*, El Dorado County, California. May 2019.

Windmiller Consulting. 2021. Off-Site Utilities Cultural Resources Assessment for the Creekside Village Project *(Confidential)*, El Dorado County, California. January 2021.

Windmiller Consulting. 2021. Determination of Site Boundaries for the Creekside Village Project *(Confidential),* El Dorado County, California. March 2021.

3.5 Energy

This section describes the energy conditions of the proposed Creekside Village Specific Plan (proposed project or CVSP), and identifies associated regulatory requirements, and evaluates potential impacts of the proposed project with respect to the potential for wasteful, inefficient or unnecessary use of energy associated with construction and operation of the proposed project.

Comments received in response to the November 6, 2020, Notice of Preparation (NOP) included concerns regarding the potential increase in demand for public services and utilities including electricity associated with the proposed project. Section 3.12, Transportation addresses the project's increase in vehicle trips and associated vehicle miles traveled. No additional comments were received at the second scoping meeting held on September 26, 2023. A copy of the NOP and comments received is included in Appendix A.

The primary sources referenced to prepare this section include the Air Quality and Greenhouse Gas Impact Analysis prepared by Raney Planning & Management (Appendix B) and the 2022 California Building Standards Code.

3.5.1 Environmental Setting

Electricity

Pacific Gas and Electric Company (PG&E) provides electrical and natural gas service to the region. Incorporated in California in 1905, PG&E is one of the largest combination natural gas and electric utilities in the United States. It currently provides service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west, to the Sierra Nevada Mountains in the east. The service area includes 106,681 circuit miles of electric distribution lines, 18,466 circuit miles of interconnected transmission lines. PG&E and other privately owned public utilities in the state are regulated by the California Public Utilities Commission (CPUC) (PG&E 2023).

According to the U.S. Energy Information Administration (EIA), California used approximately 247,250 gigawatt hours of electricity in 2021 (EIA 2022a). Electricity usage in California for different land uses varies substantially by the types of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. In 2019, California was the second-largest total energy consumer among the states, but its per capita energy consumption was less than in all other states except Rhode Island, due in part to its mild climate and its energy efficiency programs. (EIA 2022b).

In El Dorado County (County), PG&E reported an annual electrical consumption of approximately 1,293 million kilowatt hours (kWh) in 2021 (CEC 2023a).

Pioneer Community Energy is a new community electrical provider and currently serves 166,000 customers throughout unincorporated El Dorado and Placer counties and the cities of Grass Valley and Nevada City. Pioneer Community Energy also provides 100% renewable energy to customers, if requested (Pioneer Energy 2024).

Natural Gas

According to the EIA, California used approximately 2,092,612 million cubic feet of natural gas in 2021 (EIA 2023a). The majority of California's natural gas customers are residential and small commercial customers (core customers). These customers account for approximately 35% of the natural gas delivered by California utilities

(CPUC 2021). Large consumers, such as electric generators and industrial customers (noncore customers), account for approximately 65% of the natural gas delivered by California utilities (CPUC 2021). CPUC regulates California natural gas rates and natural gas services, including in-state transportation over transmission and distribution pipeline systems, storage, procurement, metering, and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. Biogas (e.g. from wastewater treatment facilities or dairy farms) is just beginning to be delivered into the gas utility pipeline systems, and the state has been encouraging its development (CPUC 2021).

In 2021, PG&E delivered approximately 33 million therms of natural gas to the County (CEC 2023b).

Petroleum

According to the EIA, California used approximately 524 million barrels of petroleum in 2020 (most recent data available), with the majority (433 million barrels) used for the transportation sector, which was a substantial reduction from 2019 (659 million barrels of petroleum) due to the COVID-19 pandemic (EIA 2023b). According to EIA's "Energy Outlook 2021", it may take years for the U.S. to return to 2019 levels of energy consumption following the impact of COVID-19 on the U.S. economy and global energy sector (EIA 2021). There are 42 U.S. gallons in a barrel, so in 2020, total daily use of approximately 60.3 million gallons of total petroleum was consumed in California. Petroleum usage in California includes petroleum products such as motor gasoline, distillate fuel, liquefied petroleum gases, and jet fuel. At the federal and state levels, various policies, rules, and regulations have been enacted to improve vehicle fuel efficiency, promote the development and use of alternative fuels, reduce transportation-source air pollutants and greenhouse gas (GHG) emissions, and reduce vehicle miles traveled (VMT). Section 3.7.2, Regulatory Setting, discusses in more detail both federal and state regulations that would help increase fuel efficiency of motor vehicles and energy required to heat and cool building as a means to reduce GHG emissions. Market forces have driven the price of petroleum products steadily upward over time, and technological advances have made use of other energy resources or alternative transportation modes increasingly feasible.

Largely as a result of and in response to these multiple factors, gasoline consumption within the state has declined in recent years, and availability of other alternative fuels/energy sources has increased. The quantity, availability, and reliability of transportation energy resources have increased in recent years, and this trend will likely continue and accelerate. Increasingly available and diversified transportation energy resources act to promote continuing reliable and affordable means to support vehicular transportation within the state. According to the California Air Resources Board's (CARB's) Emission Factor (EMFAC) Web Database, the County's on-road transportation sources are projected to consume about 72 million gallons of petroleum in 2028 (CARB 2021), which is analyzed as the first year of project operations herein.

3.5.2 Regulatory Setting

Federal

Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards. In 2012, new fuel economy standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 FR 62624–

63200). Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States.

Energy Policy Act of 2005

In January 2005 the Energy Policy Act was signed into law. It addresses energy production in the United States, including energy efficiency; renewable energy; oil and gas; coal; tribal energy; nuclear matters and security; vehicles and motor fuels, including ethanol; hydrogen; electricity; energy tax incentives; hydropower and geothermal energy; and climate change technology. Another provision of the Energy Policy Act is the Renewable Fuel Standard (RFS), which increases the amount of biofuel that must be mixed with gasoline sold in the United States.

Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. In addition to setting increased corporate average fuel (CAFE) standards for motor vehicles, the EISA facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory RFS that requires fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.
- Requiring approximately 25% greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200% greater efficiency for light bulbs, or similar energy savings, by 2020.
- While superseded by the U.S. Environmental Protection Agency (EPA) and NHTSA actions described previously, establishing miles per gallon targets for cars and light trucks and directing the NHTSA to establish a fuel economy program for medium-and heavy-duty trucks and create a separate fuel economy standard for trucks.

This federal legislation requires ever-increasing levels of renewable fuels (the RFS) to replace petroleum (EPA 2023). EPA is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains at least a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

The RFS program was created under the Energy Policy Act and established the first renewable fuel volume mandate in the United States. As required under the Energy Policy Act, the original RFS program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded in several ways that laid the foundation for achieving significant reductions in GHG emissions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the renewable fuels sector in the United States. The updated program is referred to as "RFS2" and includes the following:

- The EISA expanded the RFS program to include diesel, in addition to gasoline.
- The EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.
- The EISA established new categories of renewable fuel and set separate volume requirements for each one.

- The EISA required EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, research for alternative energy, additional research in carbon capture, international energy programs, and the creation of green (environmentally beneficial) jobs.

Infrastructure Investment and Jobs Act

The Infrastructure Investment and Jobs Act (Infrastructure Deal) was signed into law November 15, 2021. The legislation includes $39 billion of new investment to modernize transit, in addition to continuing the existing transit programs for 5 years as part of surface transportation reauthorization. The Infrastructure Deal would also invest $7.5 billion to build out a national network of electric vehicle (EV) chargers. The Infrastructure Deal would provide funding for deployment of EV chargers along highway corridors to facilitate long-distance travel and within communities to provide convenient charging where people live, work, and shop to support a goal of building a nationwide network of 500,000 EV chargers. This would accelerate the adoption of EVs, which would help reduce emissions and improve air quality. In addition, the Infrastructure Deal would include more than $65 billion dollars of investments in clean energy transmission including upgrading existing power infrastructure through expanding transmission lines to facilitate the expansion of renewables and clean energy.

The Inflation Reduction Act of 2022

The Inflation Reduction Act was signed into law by President Biden in August 2022. The act includes specific investment in energy and climate reform and is projected to reduce GHG emissions within the United States by 40% as compared to 2005 levels by 2030. The act allocates funds to boost renewable energy infrastructure (e.g., solar panels and wind turbines), includes tax credits for the purchase of electric vehicles, and includes measures that will make homes more energy efficient.

State

Warren-Alquist Act

The California Legislature passed the Warren–Alquist Act in 1974, which created the California Energy Commission (CEC). The legislation also incorporated the following three key provisions designed to address the demand side of the energy equation:

- It directed the CEC to formulate and adopt the nation's first energy conservation standards for both buildings constructed and appliances sold in California.
- The act removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high-demand projections, and transferred it to a more impartial CEC.

The CEC was directed to embark on an ambitious research and development program, with a particular focus on fostering what were characterized as non-conventional energy sources.

State of California Energy Action Plan

The CEC and the CPUC approved the first State of California Energy Action Plan in 2003. The plan established shared goals and specific actions to ensure the provision of adequate, reliable, and reasonably priced electrical power and natural gas supplies; it also identified cost-effective and environmentally sound energy policies, strategies, and actions for California's consumers and taxpayers. In 2005, the CEC and CPUC adopted a second Energy Action Plan to reflect various policy changes and actions of the prior 2 years.

At the beginning of 2008, the CEC and the CPUC determined that it was not necessary or productive to prepare a new energy action plan. This determination was based, in part, on a finding that the state's energy policies have been significantly influenced by the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (discussed below). Rather than produce a new energy action plan, the CEC and CPUC prepared an "update" that examines the state's ongoing actions in the context of global climate change.

Assembly Bill 1007

AB 1007 (2005) required the CEC to prepare a statewide plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). CEC prepared the plan in partnership with the CARB and in consultation with other state agencies, plus federal and local agencies. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

California Code of Regulations, Title 24, Part 6

The California Building Standards Code was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure that new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every 3 years by the Building Standards Commission and CEC and revised if necessary (California Public Resources Code Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, to "reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (California Public Resources Code Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California Public Resources Code Section 25402[d]) and cost effectiveness (California Public Resources Code Section 25402[b][2–3]). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The current Title 24, Part 6 standards, referred to as the 2022 Title 24 Building Energy Efficiency Standards, became effective on January 1, 2023. The 2022 energy code focuses on four key areas in newly constructed homes and businesses quality (CEC 2021):

- Encouraging electric heat pump technology for space and water heating, which consumes less energy and produces fewer emissions than gas-powered units.
- Establishing electric-ready requirements for single-family homes to position owners to use cleaner electric heating, cooking, and EV charging options whenever they choose to adopt those technologies.

- Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available on site and complement the state's progress toward a 100% clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

California Code of Regulations, Title 24, Part 11

In addition to CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24), which is commonly referred to as CALGreen, establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. CALGreen took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals.

The 2022 CALGreen standards are the current applicable standards. For residential projects, some of the key mandatory CALGreen standards involve requirements related to EV parking spaces and charging infrastructure, indoor and outdoor water efficiency and conservation, construction waste management, low volatile organic compound paints and finishes, and formaldehyde limits in wood products (24 CCR, Part 11). For nonresidential projects, some of the key mandatory CALGreen standards involve requirements related to bicycle parking, designated parking for clean air vehicles, EV charging stations for passenger vehicles, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR, Part 11).

California Code of Regulations, Title 20

Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency (20 CCR 1401–1410). CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

Senate Bill 1078, Senate Bill 1368, Executive Order S-14-08, Executive Order S-21-09 and Senate Bill X1-2, Senate Bill 350, Senate Bill 100, and Senate Bill 1020

Senate Bill (SB) 1078 (2002) (California Public Utilities Code Section 399.11 et seq.) established the Renewables Portfolio Standard (RPS) program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, Executive Order [EO] S-14-08, and EO S-21-09).

SB 1368 (2006) required CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities (California Public Utilities Code Section 8340-8341). These standards must be consistent with the standards adopted by CPUC.

EO S-14-08 (2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. California Natural Resources Agency, in collaboration with CEC and the California Department of Fish and Wildlife, was directed to lead this effort.

EO S-21-09 (2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with CPUC and CEC to ensure that the regulation builds upon the RPS program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health, as well as those that can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved regulations to implement a Renewable Electricity Standard; however, this regulation was not finalized because of subsequent legislation (SB X1-2) signed by Governor Brown in April 2011.

SB X1-2 (April 2011) expanded RPS by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current and that meets other specified requirements with respect to its location. SB X1-2 applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All these entities must meet the renewable energy goals listed above.

SB 350 (2015) further expanded the RPS program by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires CPUC, in consultation with CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

SB 100 (2018) increased the standards set forth in SB 350, establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024; 52% by December 31, 2027; and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources does not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

SB 1020 (September 2022) revises the standards from SB 100, requiring the following percentage of retail sales of electricity to California end-use customers to come from eligible renewable energy resources and zero-carbon resources: 90% by December 31, 2035; 95% by December 31, 2040; and 100% by December 31, 2045.

State Vehicle Standards (Assembly Bill 1493 and Executive Order B-16-12)

In response to the transportation sector accounting for more than half of California's carbon dioxide (CO_2) emissions, AB 1493 was enacted in 2002. AB 1493 required CARB to set GHG emissions standards for passenger vehicles, light-duty trucks, and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state. AB 1493 required that CARB set GHG emissions standards for motor vehicles manufactured in 2009 and all subsequent model years. The 2009–2012 standards resulted in a reduction in GHG emissions of approximately 22% compared to emissions from the 2002 fleet, and the 2013-2016 standards resulted in a reduction of approximately 30% compared to the 2002 fleet.

In 2019, EPA and NHTSA published the Safer Affordable Fuel-Efficient Vehicles Rule Part One: One National Program (SAFE-1) (84 FR 51310), which revoked California's authority to set its own GHG emissions standards and set ZEV mandates in California. In March 2020 Part Two was issued, which set CO_2 emissions standards and CAFE standards for passenger vehicles and light-duty trucks for model years 2021 through 2026. In December 2021, NHTSA withdrew its portions of the SAFE I rule (NHTSA 2021). In March 2022, EPA reinstated California's authority under the Clean Air Act to implement its own GHG emission standards and ZEV sales mandate. EPA's action concludes its reconsideration of the 2019 SAFE-1 rule by finding that the actions taken under the previous administration as a part of SAFE-1 were decided in error and are now entirely rescinded.

Although the focus of the state's vehicle standards is on the reduction of air pollutants and GHG emissions, one co-benefit of implementation of these standards is a reduced demand for petroleum-based fuels.

Senate Bill 375

SB 375 (California Government Code Section 65080) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG-reduction targets for the automobile and light-truck sector for 2020 and 2035 and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations to prepare a sustainable communities strategy as part of their regional transportation plan that will achieve the GHG-reduction targets set by CARB. If a metropolitan planning organization is unable to devise a sustainable communities strategy to achieve the GHG-reduction target, the metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG-reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

A sustainable communities strategy does not (1) regulate the use of land; (2) supersede the land use authority of cities and counties; or (3) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it (California Government Code Section 65080[b][2][K]). Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars (ACC) I program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package of regulations: the low-emission vehicle regulation for criteria air pollutant and GHG emissions and a technology forcing regulation for ZEVs that contributes to both types of emission reductions (CARB 2012). The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars,

and provide the fuels for clean cars. To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025 cars will emit 75% less smog-forming pollution than the average new car sold in 2015. The ZEV program will act as the focused technology of the ACC I program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid EVs in the 2018 to 2025 model years.

The ACC II program, which was adopted in August 2022, established the next set of low-emission vehicle and ZEV requirements for model years after 2025 to contribute to meeting federal ambient air quality ozone standards and California's carbon neutrality standards (CARB 2022). The main objectives of ACC II are as follows:

- Maximize criteria and GHG emission reductions through increased stringency and real-world reductions.
- Accelerate the transition to ZEVs through both increased stringency of requirements and associated actions to support wide-scale adoption and use.

The ACC II rulemaking package also considers technological feasibility, environmental impacts, equity, economic impacts, and consumer impacts.

Executive Order N-79-20

EO N-79-20 (September 2020) requires CARB to develop regulations as follows: (1) passenger vehicle and truck regulations requiring increasing volumes of new ZEVs sold in the state towards the target of 100% of in-state sales by 2035; (2) medium- and heavy-duty vehicle regulations requiring increasing volumes of new zero-emission trucks and buses sold and operated in the state towards the target of 100% of the fleet transitioning to ZEVs by 2045 everywhere feasible and for all drayage trucks to be zero emission by 2035; and (3) strategies, in coordination with other state agencies, EPA, and local air districts, to achieve 100% zero emissions from off-road vehicles and equipment operations in the state by 2035. EO N-79-20 called for the development of a ZEV Market Development Strategy, which was released February 2021, to be updated every 3 years, that ensures coordination and implementation of the EO and outlines actions to support new and used ZEV markets. In addition, the EO specifies identification of near-term actions and investment strategies to improve clean transportation, sustainable freight, and transit options and calls for development of strategies, recommendations, and actions by July 15, 2021, to manage and expedite the responsible closure and remediation of former oil extraction sites as the state transitions to a carbon-neutral economy.

Local

Metropolitan Transportation Plan/ Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or SB 375, coordinates land use planning, regional transportation plans, and funding priorities to help California meet its GHG emissions reduction mandates established in AB 32. As codified in California Government Code Section 65080, SB 375 requires Metropolitan Planning Organizations (MPOs) to include a sustainable communities strategy in their regional transportation plans. The main focus of the sustainable communities strategy (SCS) is to plan for growth in a fashion that will ultimately reduce GHG emissions, but the strategy is also part of a bigger effort to address other development issues, including transit and vehicle miles traveled (VMT), which influence the consumption of petroleum-based fuels.

SACOG is designated by the state and federal governments as the MPO and is responsible for developing the Metropolitan Transportation Plan (MTP)/SCS in coordination with Sacramento, Yolo, Yuba, Sutter, El Dorado and

Placer counties and the 22 cities within those counties (excluding the Tahoe Basin). In November 2019, SACOG adopted the 2020 MTP/SCS, which lays out a path for improving our air quality, preserving open space and natural resources, and helping California achieve its goal to reduce GHG that contribute to climate change (SACOG 2019). SB 375 requires updates to the long-range transportation and land use plan every four years, and SACOG is currently working on the 2025 MTP/SCS, which is referred to as the 2024 Blueprint Update.

El Dorado County General Plan

The El Dorado County General Plan (last amended 2019) includes the following goals, objectives, and policies related to sustainability and energy conservation in the Transportation and Circulation, Housing, Public Services and Utilities, Public Health, Safety, and Noise, and Conservation and Open Space Elements of the General Plan (El Dorado County 2019) applicable to the proposed project.

Transportation and Circulation Element

Goal TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.

Policy TC-4c: The County shall give priority to bikeways that will serve population centers and destinations of greatest demand and to bikeways that close gaps in the existing bikeway system.

Policy TC-4e: The County shall require that rights-of-way or easements be provided for bikeways or trails designated in adopted master plans, as a condition of land development when necessary to mitigate project impacts.

Policy TC-4g: The County shall support development of facilities that help link bicycling with other modes of transportation.

Policy TC-4i: Within Community Regions and Rural Centers, all development shall include pedestrian/bike paths connecting to adjacent development and to schools, parks, commercial areas and other facilities where feasible. In Rural Regions, pedestrian/bike paths shall be considered as appropriate.

Goal TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

Policy TC-5a: Sidewalks and curbs shall be required throughout residential subdivisions, including land divisions created through the parcel map process, where any residential lot or parcel size is 10,000 square feet or less.

Housing Element

Goal HO-5: To increase the efficiency of energy and water in new and existing homes.

Policy HO-5a: The County shall require all new dwelling units to meet current state requirements for energy efficiency and shall encourage the retrofitting of existing units.

Policy HO-5b: New land use development standards and review processes should encourage energy and water efficiency, to the extent feasible.

Public Services and Utilities Element

Goal 5.6: Sufficient utility service availability consistent with the needs of a growing community.

Objective 5.6.2: Encourage development of energy-efficient buildings, subdivisions, development, and landscape designs.

Policy 5.6.2.1: Require energy conserving landscaping plans for all projects requiring design review or other discretionary approval.

Policy 5.6.2.2: All new subdivisions should include design components that take advantage of passive or natural summer cooling and/or winter solar access, or both, when possible.

Public Health, Safety, and Noise Element

Goal 6.7: Strive to achieve and maintain ambient air quality standards established by the EPA and CARB and minimize exposure to TACs or HAPs and air pollutants that create unpleasant odors.

Objective 6.7.2: Reduce motor vehicle air pollution by developing programs aimed at minimizing congestion and reducing the number of vehicle trips made in the County and encouraging the use of clean fuels.

Policy 6.7.2.5: Upon reviewing projects, the County shall support and encourage the use of, and facilities for, alternative-fuel vehicles to the extent feasible. The County shall develop language to be included in County contract procedures to give preference to contractors that utilize low-emission heavy-duty vehicles.

Objective 6.7.4: Encourage project design that protects air quality and minimizes direct and indirect emissions of air contaminants.

Policy 6.7.4.1: Promote the development of new residential uses within walking or bicycling distance to the County's larger employment centers.

Policy 6.7.4.4: All discretionary development applications shall be reviewed to determine the need for pedestrian/bike paths connecting to adjacent development and to common service facilities (e.g., clustered mailboxes, bus stops, etc.).

Policy 6.7.4.5: Specific plans submitted to the County shall provide for the implementation of all policies contained under Objective 6.7.4 herein.

Policy 6.7.4.6: The County shall regulate wood-burning fireplaces and stoves in all new development. EPA approved stoves and fireplaces burning natural gas or propane are allowed. The County shall discourage the use of non-certified wood heaters and fireplaces during periods of unhealthy air quality.

Conservation and Open Space Element

Goal 7.3: Conserve, enhance, and manage water resources and protect their quality from degradation.

Objective 7.3.1: Preserve and protect the supply and quality of the County's water resources including the protection of critical watersheds, riparian zones, and aquifers.

Policy 7.3.1.2: Establish water conservation programs that include both drought tolerant landscaping and efficient building design requirements as well as incentives for the conservation and wise use of water.

Objective 7.3.5: Conservation of water resources, encouragement of water conservation, and construction of wastewater disposal systems designed to reclaim and re-use treated wastewater on agricultural crops and for other irrigation and wildlife enhancement projects.

Policy 7.3.5.4: Require efficient water conveyance systems in new construction. Establish a program of ongoing conversion of open ditch systems shall be considered for conversion to closed conduits, reclaimed water supplies, or both, as circumstances permit.

Policy 7.3.5.5: Encourage water reuse programs to conserve raw or potable water supplies consistent with State Law.

3.5.3 Thresholds of Significance

Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the project would do any of the following:

- Result in potential significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.5.4 Impacts and Mitigation Measures

Methodology

Construction

Electricity

The amount of electricity used during construction of the project would be minimal because demand generally would be generated from use of electrically powered hand tools. As such, construction electricity demand is qualitatively addressed.

Natural Gas

Natural gas is not anticipated to be required during construction of the project; therefore, construction natural gas demand is qualitatively addressed.

Petroleum

Potential impacts were assessed for off-road equipment and on-road vehicle trips during construction based on the California Emissions Estimator Model (CalEEMod) outputs (see Appendix B). Fuel consumption from equipment and vehicles was estimated by converting the total CO_2 emissions to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per metric ton (MT) CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per MT CO_2 per gallon (The Climate Registry 2023). Heavy-duty construction equipment associated with construction activities, vendor trucks, and haul trucks are assumed to use diesel fuel. Worker vehicles are assumed to be gasoline fueled. The details for construction criteria air pollutant emissions modeling discussed in Section 3.2, Air Quality applies to the energy analysis as well; see Section 3.2.3, Methodology.

Operation

Energy consumption in support of or related to project operations would include facilities energy demands (energy consumed by building operations and site maintenance activities), transportation energy demands (energy consumed by on-road vehicles accessing the project site), and stationary sources.

Electricity

The project's operational phase would require electricity for multiple purposes including, but not limited to, building heating and cooling, lighting, appliances, electronics, and for water and wastewater treatment and conveyance.

Natural gas

Project natural gas consumption is based on the estimated total annual building load summaries from CalEEMod, if the project is developed to include natural gas. Default natural gas usage rates in CalEEMod were used for the residential and nonresidential components of the proposed project. The energy use from the residential and nonresidential land uses (natural gas usage per square foot per year) is calculated in CalEEMod based on the Residential Appliance Saturation Survey and Uncalibrated Commercial Sector Forecast. CalEEMod default values for energy consumption, which assume compliance with the 2019 Title 24 Building Energy Efficiency Standards.

Petroleum

Fuel consumption resulting from the project's operational phase would primarily be attributable to vehicles traveling to and from the project site. Energy that would be consumed by traffic is a function of total VMT and estimated vehicle fuel economies for the vehicles accessing the project. Annual VMT was estimated based on the default trip lengths in CalEEMod and the trip generation rates for the project (weekdays and Saturdays), which are based on the traffic data provided in Section 3.12, Transportation. Saturday trip rates were also input for Sundays to provide a conservative analysis. With respect to estimated VMT, the project would generate an estimated 17,230,430 VMT. Finally, gasoline was assumed to be required for landscaping equipment. Fuel consumption from all operational equipment and vehicles was estimated by converting the total CO_2 emissions to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Details of these calculations and assumptions are provided in Appendix B.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1,8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. Construction emissions would essentially be the same as the proposed project under the Active Adult option; therefore, the impact analysis below indicates whether the Active Adult option would result in a change in impact significance or require new mitigation.

Project Impacts

Impact 3.5-1. The proposed project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

Construction

Electricity

Temporary electric power for as-necessary lighting and electronic equipment it is assumed would be provided by PG&E. The amount of electricity used during construction would be minimal because typical demand would be generated by electrically powered hand tools. The electricity used for construction activities would be temporary and minimal; therefore, project construction would not result in wasteful, inefficient, or unnecessary consumption of electricity.

Natural Gas

Natural gas is not anticipated to be required during construction of the project. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed below. Any minor amounts of natural gas that may be consumed due to project construction would be temporary and negligible and would not have an adverse effect; therefore, project construction would not result in wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

Offroad equipment used during project construction would primarily rely on diesel fuel, as would vendor and haul trucks. In addition, construction workers would travel to and from the project site throughout the duration of construction. It is assumed in this analysis that construction workers would travel in gasoline-powered light-duty vehicles.

The estimated diesel fuel usage from construction equipment and trucks, as well as estimated gasoline fuel usage from worker vehicles, is shown in Table 3.5-1. See Appendix B, Energy Calculations, for details.

Table 3.5-1. Total Project Construction Petroleum Demand

Scenario	Off-Road Equipment (diesel)	Haul Trucks (diesel)	Vendor Trucks (diesel)	Worker Vehicles (gasoline)
	Gallons			
Project Construction	98,352	0.00	96,855	153,207
			Total Petroleum Consumed for Project Construction	**349,948**

Source: Appendix B.

In summary, construction associated with the development of the project is estimated to consume a total of approximately 348,948 gallons of petroleum. The project would be subject to CARB's In-Use Off-Road Diesel Vehicle Regulation that applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulation requires the following: (1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; (2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; (3) restricts the adding of older vehicles into fleets starting on January 1, 2014; and (4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The fleet must either show that its fleet average index was less than or equal to the calculated fleet average target rate, or that the fleet has met the Best Achievable Control Technology requirements.

Overall, while construction activities would consume petroleum-based fuels, consumption of such resources would be temporary and would cease upon the completion of construction. Further, the petroleum consumed related to construction would be typical of construction projects of similar types and sizes and would not necessitate new petroleum resources beyond what are typically consumed in California. The construction energy use, including petroleum use, is not expected to change significantly with the Active Adult option. Therefore, because petroleum use during project construction would be temporary and minimal and would not be wasteful or inefficient, project impacts, including the Active Adult option are determined to be **less than significant**.

Operations

Electricity

Project operation would require electricity for multiple purposes including, but not limited to, building heating, ventilation, and air conditioning; lighting; appliances; and electronics. Additionally, the supply, conveyance, treatment, and distribution of water would indirectly result in electricity usage. Based on information contained in the Air Quality and Greenhouse Gas Impact Analysis (Appendix B), the project would consume approximately 8,404,718 kWh of electricity per year during operation. The additional electricity demand for the project would be comparable to other similar projects of scale and configuration and would not be unusual or wasteful as compared to overall local and regional demand for energy resources. Notably, regarding solar power, the project would comply with the applicable Title 24 building energy efficiency standards and is anticipated to include solar panels, which at a minimum, would be provided for new residential buildings, and non-residential buildings which are anticipated to be solar-ready which would reduce the electricity demand of the project. For these reasons, electricity consumption of the project would not be considered inefficient or wasteful, and impacts would be less than significant. Table 3.5-2 shows the estimated annual operational electricity demand by land use. See Appendix B, Energy Calculations, for details.

Table 3.5-2 Annual Operational Electricity Demand

Electricity Demand	kWh/year
Single Family Housing	7,826,601
Fast Food Restaurant with Drive Thru	96,369
Fast Food Restaurant w/o Drive Thru	60,230
High Turnover (Sit Down Restaurant)	60,230
Subtotal	*8,043,431*

Table 3.5-2 Annual Operational Electricity Demand

Electricity Demand	kWh/year
Water Consumption	361,287
Total	**8,404,718**

Source: Appendix B.
Note: kWh = kilowatt-hour.

Natural Gas

The project would provide natural gas to approximately 918 residential units (if natural gas is provided) and the proposed neighborhood commercial use, if approved as part of the CVSP otherwise the 1.8-acre parcel would be converted to a park. Based on information contained in the Air Quality and Greenhouse Gas Impact Analysis (Appendix B), the project would consume approximately 27,362,638 kBTU per year during operation. The additional natural gas demand for the project would be comparable to the scale and configuration of other similar projects and would not be unusual or wasteful as compared to overall local and regional demand for natural gas resources. Notably, the project would also be required to implement mitigation measure GHG-1, which would require the project to be designed such that the project is built all-electric, and natural gas infrastructure shall be prohibited onsite. For these reasons, natural gas consumption of the project would not be considered inefficient or wasteful, and impacts would be less than significant. Table 3.5-3 shows the estimated annual operational electricity demand by land use. See Appendix B, Energy Calculations, for details.

Table 3.5-3 Annual Operational Natural Gas Demand

Land Use Demand	Natural Gas (kBTU/year)
Single Family Housing	26,704,643
Fast Food Restaurant with Drive Thru	292,442
Fast Food Restaurant w/o Drive Thru	182,776
High Turnover (Sit Down Restaurant)	182,776
Total	**27,362,638**

Source: Appendix B.
Note: kBTU = thousand British Thermal Units

Petroleum

During operations, fuel consumption would involve the use of motor vehicles traveling to and from the project site and landscaping equipment. Fuel demand estimates for the project are provided in Table 3.5-4.

Table 3.5-4. Annual Operational Petroleum Demand

	On-Road Vehicles (gasoline)	On-Road Vehicles (diesel)	Landscape Equipment (gasoline)
Scenario	Gallons		
Project Operations	691,633	37,238	25
Total Petroleum Consumed for Project Operations			**728,897**

Source: Appendix B.

As summarized in Table 3.5-4, the project would result in an estimated annual increase in fuel demand of approximately 728,897 gallons of petroleum. The proposed project would include a maximum of 5,400 sf of neighborhood commercial uses on-site. The VMT associated with this commercial use is not required to be evaluated because it is below 50,000 square feet, as explained in Section 3.12, Transportation. Therefore, this VMT reduction was not accounted for in the estimate of petroleum provided in Table 3.5-4. Furthermore, based on the results of the VMT Analysis provided in Section 3.12, Transportation, the residential component of the project is anticipated to generate 13.6 VMT per capita for the Baseline (2018) Condition, and 13.1 VMT per capita for the Cumulative (2040) Condition, which is below the 17.3 VMT per capita threshold. Under the Active Adult option this would likely be further reduced given that age-restricted housing generates fewer trips compared to traditional housing. The project's trip generation and VMT would be consistent with other projects of similar scale and configuration. That is, the project does not propose uses or operations that would inherently result in excessive and wasteful activities, nor associated excess and wasteful vehicle energy consumption. Finally, enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease the project's future fuel demands. As supported by the preceding discussions, the project's operational petroleum consumption would not be considered inefficient, wasteful, or otherwise unnecessary and impacts would be less than significant.

Renewable Energy Potential

As part of the project's design process, the County considered how the project could potentially increase its reliance on renewable energy sources to meet its energy demand. Renewable energy sources that were considered for their potential to be used to power the project, consistent with the CEC's definition of eligible renewables, include biomass, geothermal, solar, wind, and small hydroelectric facilities.

Given the project's location and the nature of the project, there are considerable site constraints including incompatibility with surrounding land uses for large scale power generation facilities, unknown interconnection feasibility, compatibility with utility provider systems, and no known water or geothermal resources to harness, that would eliminate the potential for biomass, geothermal, wind, and hydroelectric renewable energy to be installed onsite.

The project would comply with all applicable Title 24 code provisions, such as installation of solar photovoltaic panels on residential homes and would be required to have electrical conduit installed that is capable of supporting a Level 2 EV charging station. Nonresidential uses would also meet the mandatory building standards requiring EV charging station installation in parking spaces. While the project does not propose battery storage at the time, future residents could install battery storage at their discretion.

Active Adult Option

As explained in Section 3.9, Land Use, Population and Housing, the Active Adult option is assumed to have a population reduction of approximately 40% for active adult residential units. Assuming 2.52 residents per unit for 150 conventional units and a 40% reduction per unit for the remaining 768 units, the Active Adult option would have approximately 1,540 new residents. As compared to the estimated 2,314 new residents with the proposed project that assumes all conventional units, the Active Adult option would likely have an overall approximately 33.5% reduction in new residents. A reduction in project residents would likely correlate with a reduced consumption of energy during project operations due to fewer persons per household. A reduction in the amount of petroleum used would also occur under this option given the lower vehicle miles traveled and fewer daily trips, as explained in Section 3.12, Transportation.

Summary

As explained above, the project would install solar panels and EV charging stations in compliance with Title 24 and would not result in wasteful, inefficient, or unnecessary consumption of energy resources, including electricity, natural gas, or petroleum during project construction or operation. Project impacts, including the Active Adult option would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.5-2. The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The proposed project as well as the Active Adult option would be subject to and would comply with, at a minimum, the California Building Energy Efficiency Standards (24 CCR Part 6). Part 6 of Title 24 establishes energy efficiency standards for residential and non-residential buildings constructed in California in order to reduce energy demand and consumption. As such, the proposed project would comply with the California code requirements for energy efficiency.

Part 11 of Title 24 sets forth voluntary and mandatory energy measures that are applicable to the proposed project under CALGreen. CALGreen institutes mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential, high-rise residential, state-owned buildings, schools, and hospitals, as well as certain residential and non-residential additions and alterations. Additionally, energy consumed by the proposed project's operation is calculated to be comparable to energy consumed by other residential uses of similar scale and intensity that are constructed and operating in the County. On this basis, the proposed project, including the Active Adult option would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. This impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

This section provides an evaluation of cumulative energy impacts associated with the project and past, present, and reasonably foreseeable future projects. The geographic scope for the analysis of cumulative energy impacts consists of the County, as well as all other surrounding areas serviced by PG&E for electrical and natural gas service. Implementation of either option would result in impacts similar to the proposed project; therefore, the analysis of cumulative impacts below would not change if one of the options were selected.

Impact 3.5-3. The proposed project would not result in a cumulatively considerable impact due to the consumption of electricity, natural gas and petroleum fuels during construction and operation.

Potential cumulative impacts on energy would result if the project, in combination with past, present, and future projects, would result in the wasteful or inefficient use of energy. Significant energy impacts could result from development that would not incorporate sufficient building energy efficiency features, achieve building energy efficiency standards, or if projects result in the unnecessary use of energy during construction or operation.

As discussed in Impacts 3.5-1 and 3.5-2, the project, including the Active Adult option would not result in wasteful, inefficient, or unnecessary use of energy during construction or operations, nor would it conflict with applicable plans. Each of the cumulative projects listed in Table 3-1 in Chapter 3.0, Environmental Analysis would have a construction period during which primarily petroleum would be used; however, it is expected that such usage would be temporary and would not constitute a wasteful, inefficient, or unnecessary consumption of energy. Regarding operations, it is anticipated that these other projects would also be designed to be comparable to the scale and configuration of other similar projects and would not contribute to any potential cumulative energy impacts. Furthermore, commercial and residential cumulative projects that include long-term energy demand would be subject to CALGreen, which requires energy efficiency standards. In addition, cumulative projects would be required to meet or exceed the Title 24 building standards, as applicable, further reducing the inefficient use of energy. Furthermore, various federal and state regulations, including the Low Carbon Fuel Standard, Pavley Clean Car Standards, and Low Emission Vehicle Program, would serve to reduce the transportation fuel demand of cumulative projects.

For the reasons above, the project, together with the cumulative projects would not result in wasteful, inefficient, or unnecessary use of energy or conflicts with applicable plans. Therefore, the project, would not contribute to a significant cumulative impact related to energy and the cumulative impact is **less than significant.**

Mitigation Measures

No mitigation measures are required.

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3.6 Geology, Soils and Paleontology

This section describes the geologic, soils, and paleontological conditions on and near the Creekside Village Specific Plan (proposed project or CVSP) area (project site or plan area); discusses the relevant federal, state, and regional regulatory considerations; and evaluates how implementation of the CVSP may affect the geology, soils, and paleontology of the plan area.

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) and the follow up second scoping meeting held on September 26, 2023, did not include any concerns related to geology, soils, or paleontological resources. A copy of the NOP and comments received is included in Appendix A.

The primary sources referenced to prepare this section include the Geotechnical Feasibility Study for Creekside Village (Geotechnical Study) prepared by Youngdahl Consulting Group, Inc. (Appendix D), as well as publicly available geologic/soils documents from the California Geological Survey (CGS), U.S. Geological Survey (USGS), Natural Resources Conservation Service (NRCS), and the El Dorado County (County) General Plan.

3.6.1 Environmental Setting

This section describes the existing conditions in the plan area based on the site-specific Geotechnical Study (Appendix D), along with published geologic maps and reports, and online resources.

Regional Geology

The project site is located along the western foothills of the Sierra Nevada geomorphic province of California (CGS 2002).[1] The Sierra Nevada Province is located in the east central portion of the state and characterized by a northwest trending mountain range that stretches from Bakersfield to Lassen Peak. It includes the Sierra Nevada mountain range and a broad belt of the western foothills. Due to a lesser predominance of alluvial cover, the Sierra Nevada Province is characterized by high levels of bedrock unit exposure, and relatively low levels of alluvium cover.[2] The topography ranges from 400 to 14,496 feet above mean sea level (AMSL) with many peaks on the order of 9,000 to 12,000 feet AMSL. The rocks that make up the Sierra Nevada Province primarily consist of metasedimentary basement rocks[3] intruded by the Sierra Nevada batholith.[4]

Topography

As described in Chapter 2, Project Description, the project site consists of approximately 208 acres of land located on the west side of Latrobe Road, south of Investment Boulevard, directly adjacent to the southern boundary of the El Dorado Hills Business Park. The project site is covered by undeveloped grasslands covering gently rolling hills with broad valleys. There are three seasonal drainages that cross the project site and merge at the western boundary to form one intermittent drainage that drains offsite. The site generally slopes to the west, with the elevation ranging from 470 feet along the western boundary to a high of 640 feet AMSL in the southeast corner.

1 A geomorphic province is a naturally defined geologic region that displays a distinct combination of features based on geology, faults, topography, and climate. Eleven geomorphic provinces are recognized in the state.
2 Alluvium is sand, silt, clay, gravel, or other matter deposited by flowing water, as in a riverbed, floodplain, delta, or alluvial fan.
3 Basement rocks are those located below sedimentary rock cover, and metasedimentary rock is a rock that was first formed through the deposition and solidification of sediment, and then subsequently buried and subjected to high pressures and temperatures, causing the rock to recrystallize.
4 A batholith is a large mass of volcanic rock larger than 40 square miles that form from cooled magma deep in the earth's crust.

Approximately 80% of the project site contains slopes of less than 10%; 16% of the site contains slopes of between 11 and 20%; 3% of the site contains slopes of between 21 and 29%; and the remaining 1% of the project site contains slopes of 30% or greater (CTA Engineering & Surveying 2023).

Local Geologic and Soil Conditions

The Geotechnical Study (Appendix D) indicates that, based on investigations in the vicinity of the project site, the subsurface conditions on the project site likely consist of silty clay and clayey silt soils overlying metavolcanic bedrock.[5] There are numerous outcrops of shallow bedrock protruding out of the ground along northeastern side of the project site. Groundwater is anticipated to occur at depths greater than 100 feet below the ground surface, however, due to relatively shallow bedrock, it is likely that perched water could be encountered near the soil and bedrock contact at the project site.

The Geotechnical Study's characterization of subsurface conditions on the project site are consistent with CGS mapping, which indicates that the project site is underlain by undivided Mesozoic age volcanic and metavolcanic rocks (CGS 2023). It is also consistent with NRCS mapping, which indicates that the project site contains shallow soils classified as rocky and gravelly loam and silt loam soils overlying bedrock (NRCS 2020).[6] The distribution of soils across the project site, as well as the estimated shrink-swell potential and hydrologic characteristics, are summarized in Table 3.6-1 and shown in Figure 3.6-1.

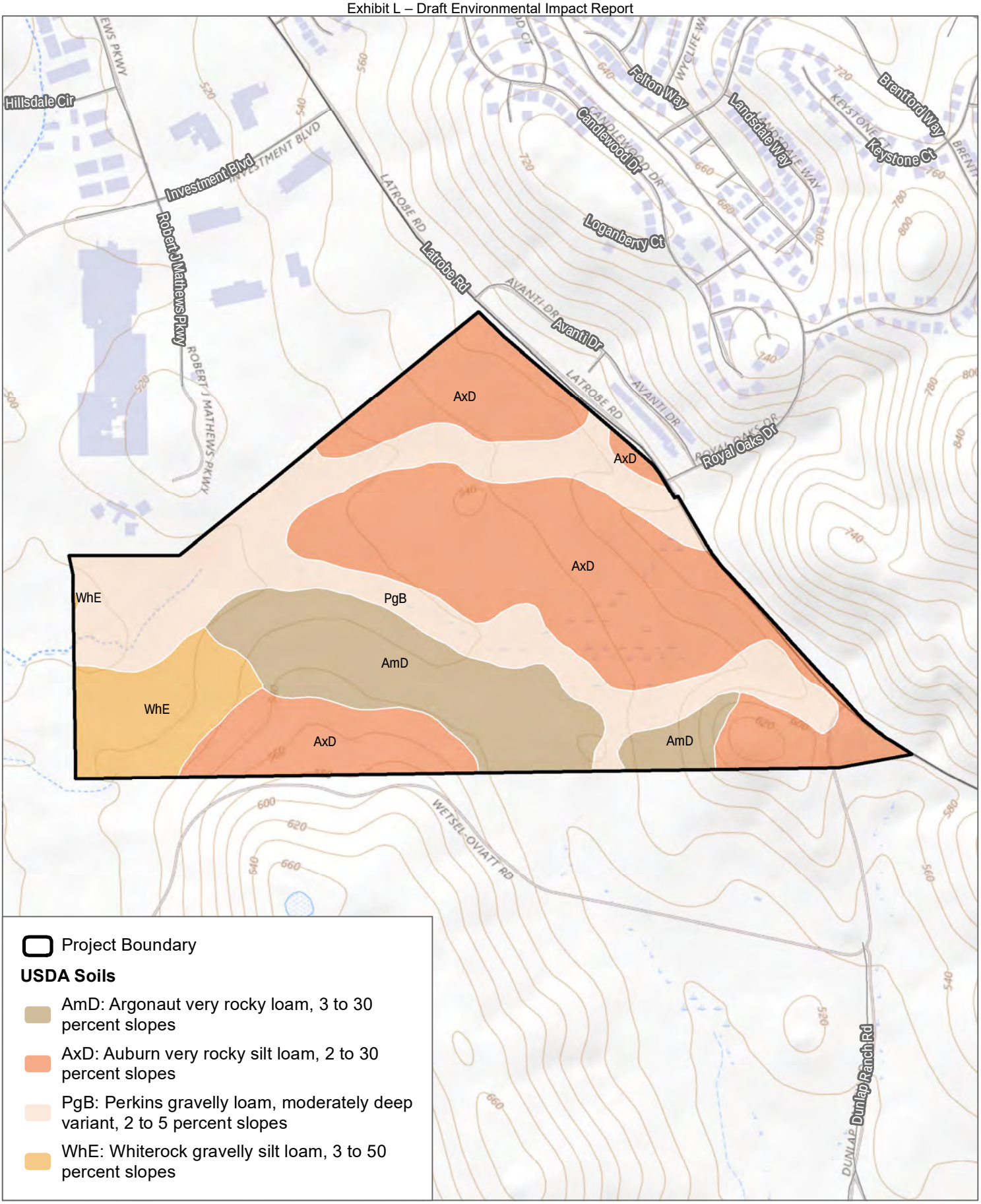
Geologic and Soil Hazards

Regional Faulting

The potential for ground shaking in the western foothills of the Sierra Nevada, where the project site is located, is low (Branum et al. 2016). The nearest fault to the project site is the Foothill fault, which primarily runs north to south approximately 8 miles northwest of the site (U.S. Geological Survey 2020). However, the Bear Mountain Fault, the western most strand of the Foothill fault zone, is within 100 feet of the site. Although located in close proximity, this fault is not considered an active fault, which is defined by the state of California has having surface displacement within the past 11,700 years. The nearest active faults to the project site are the West-Tahoe Dollar Point fault, located approximately 55 miles to the east, and the Rio Vista fault, located approximately 55 miles to the west (U.S. Geological Survey 2020). The project site is not located within an Alquist-Priolo Earthquake Fault Zone (California Department of Conservation 2020).

[5] Metavolcanic rock is a rock that was first produced by a volcano and was then buried and subjected to high pressures and temperatures, causing the rock to recrystallize.

[6] A loam is a type of soil with roughly equal proportions of sand, silt, and clay.



SOURCE: USGS National Map 2024; Open Street Map 2019; USDA SSURGO 2024

FIGURE 3.6-1
Soils

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Table 3.6-1. Soils in Plan Area

Soil Association/Name	Approximate Acreage/Percent of Total Project Area	Typical Profile Summary[a]	Shrink-Swell Potential[a,b]	Hydrologic Soil Group[a,b]
Argonaut very rocky loam, 3 to 30% slopes	37.7 acres/18.0%	15 percent rock outcrops 0 to 10 inches: gravelly loam 10 to 30 inches: clay 30 to 36 inches: weathered bedrock	Low High	D
Auburn very rocky silt loam, 2 to 30% slopes	98.1 acres/46.9%	15 percent rock outcrops 0 to 14 inches: silt loam 14 to 18 inches: unweathered bedrock	Low	D
Perkins gravelly loam, moderately deep variant, 2 to 5% slopes	56.6 acres/27.1%	0 percent rock outcrops 0 to 12 inches: gravelly loam 12 to 17 inches: clay loam 17 to 30 inches: very gravelly sandy clay loam 30 to 37 inches: sandy clay 37 to 41 inches: unweathered bedrock	Low Moderate Low High	C
Whiterock gravelly silt loam, 3 to 50% slopes	16.6 acres/8.0%	2 percent rock outcrops 0 to 8 inches: gravelly silt loam 8 to 12 inches: unweathered bedrock	Low	D

Source: NRCS 2020.
Notes:
[a] For complexes, description is of the non-urban land soil in the complex.
[b] Shrink-swell potential of soils is determined by measuring the linear extensibility, which is the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. A moderate, high, or very high shrink-swell potential can cause significant changes in soil volume as moisture content changes, which can result in damage to overlying improvements and buildings.
[c] Hydrologic soil groups are based on estimates of runoff potential. Group A soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. Group B soils have a moderate infiltration rate when thoroughly wet. Group C soils have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material.

Liquefaction, Lateral Spreading, and Seismically Induced Settlement

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. In the process, the soil undergoes loss of strength, which commonly causes ground displacement or ground failure to occur. Lateral spreading is a form of horizontal displacement of soil toward an open channel or other "free" face, such as an excavation boundary. In a lateral spread failure, a layer of ground at the surface is carried on an underlying layer of liquefied material over a nearly flat surface toward a river channel or other bank. The lateral spreading hazard tends to mirror the liquefaction hazard for a site, assuming an exposed slope face is located nearby. Seismically induced settlement occurs when loose sandy soils become denser when subjected to shaking during an earthquake. In general, saturated, loose to medium-dense sands with a silt content of less than 25% and located within 50 feet below the ground surface are most susceptible to liquefaction and lateral spreading.

Potential impacts from liquefaction, lateral spreading, and seismically induced settlement include loss of bearing capacity, differential settlement[7], lateral movements, and surface manifestation such as sand boils. Based on the absence of a permanently elevated groundwater table, the low seismicity of the area, and the shallow depth to bedrock, the Geotechnical Study characterizes the potential for seismically induced liquefaction, lateral spreading, and seismically induced settlement as negligible (Appendix D).

Expansive Soils

Expansion and contraction of soil volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly. Shrink-swell potential is influenced by the amount and type of clay minerals present, which higher clay content resulting in a greater potential for expansive properties and can be measured by the percent change of the soil volume. Shrink-swell potential is also influenced by the location of the soils; soils below the groundwater table maintain a steady moisture content and would therefore not be subject to shrink-swell effects. The movement of expansive soils may result in cracking foundations, distortion of structures, and warping of doors and windows.

The Geotechnical Study indicates soils on the project site are generally not expected to be dominated by high-clay soils, but notes that pockets of clay soils with expansive properties could be encountered throughout the project site (Appendix D). This is consistent with the soils shrink-swell potential presented in Table 3.6-1, which indicates that some soils present on the project site may contain clay layers with moderate to high shrink-swell potential (NRCS 2020).

Landslides

Slope failure can occur as either rapid movement of large masses of soil (landslide) or slow, continuous movement (creep) on slopes of varying steepness. Areas susceptible to landslides are characterized by steep slopes and downslope creep of surface materials. The project site, as well as surrounding areas, are characterized by gently rolling hills with broad valleys. Observations that were conducted as part of the Geotechnical Study noted that existing slopes on the project site are shallow, vegetated, and show no indications of slope instability such as tension cracks, slump blocks, seeps or springs. The Geotechnical Study concludes that the potential for slope instability to occur in the plan area is negligible (Appendix D).

[7] Differential settlement occurs when a structure spans over soils of variable compression and/or density characteristics causing uneven settlement across a foundation.

Settlement and Differential Settlement

Settlement is the lowering of the land surface elevation as a result of loading (i.e., placing heavy loads, typically fill or structures), which often occurs with the development of a site. Settlement or differential (i.e., unequal) settlement could occur if buildings or other improvements are built on low-strength foundation materials (including imported non-engineered fill) or if improvements straddle the boundary between different types of subsurface materials (e.g., a boundary between native material and/or new engineered fill). Although settlement generally occurs slowly enough that its effects are not dangerous to inhabitants, it can cause significant building damage over time. The Geotechnical Study characterized the soils on the project site as ranging from soft to medium stiff. Soft soils are generally susceptible to settlement. The Geotechnical Study concluded that settlement and differential settlement could occur when structures are developed on the project site if not engineered appropriately (Appendix D).

Subsidence is the lowering of the land-surface elevation. The mechanism for subsidence is generally related to groundwater pumping and subsequent consolidation of loose aquifer sediments. The primary hazards associated with subsidence are increased flooding hazards and damage to underground utilities as well as above-ground structures. Other effects of subsidence include changes in the gradients of stormwater and sanitary sewer drainage systems in which the flow is gravity driven.

Paleontological Resources

Paleontological resources include fossilized remains or traces of organisms, including plants, vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and microscopic plants and animals (microfossils), including their imprints, from a previous geological period. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 years) (Society of Vertebrate Paleontology 2010). Paleontological remains are primarily found in sedimentary rock formations. As described in the County's General Plan Draft EIR, the County's geology is predominantly igneous (volcanic) in nature and the type of sedimentary deposits where paleontological resources might be present are virtually nonexistent (El Dorado County 2003). No comprehensive paleontological studies have been conducted within the county and, as a result, no information is available regarding the sensitivity of certain areas to contain such resources. While paleontological finds could occur in river and stream gravel deposits, given the location of the project site and the underlying geology, the possibility the project site contains paleontological resources is remote. Consequently, paleontology is an area of research and concern generally not applicable to the County.

3.6.2 Regulatory Setting

Federal Regulations

National Earthquake Hazards Reduction Act

The National Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) and creation of the National Earthquake Hazards Reduction Program (NEHRP) established a long-term earthquake risk-reduction program to better understand, predict, and mitigate risks associated with seismic events. The following four federal agencies are responsible for coordinating activities under NEHRP: USGS, National Science Foundation, Federal Emergency Management Agency, and National Institute of Standards and Technology. Since its inception, NEHRP has shifted its focus from earthquake prediction to hazard reduction. The current program goals (NEHRP 2020) are to:

1. Develop effective practices and policies for earthquake loss reduction and accelerate their implementation.
2. Improve techniques for reducing earthquake vulnerabilities of facilities and systems.

3. Improve earthquake hazards identification and risk assessment methods, and their use.
4. Improve the understanding of earthquakes and their effects.

Implementation of NEHRP objectives is accomplished primarily through original research, publications, and recommendations and guidelines for state, regional, and local agencies in the development of plans and policies to promote safety and emergency planning.

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction activities. The Occupational Safety and Health Administration's (OSHA's) Excavation and Trenching standard, Title 29 of the Code of Federal Regulations (CFR), Part 1926.650, covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist–Priolo Earthquake Fault Zoning Act (Public Resources Code Section 2621 et seq.) was passed to reduce the risk to life and property from surface faulting in California. The Alquist–Priolo Act prohibits construction of most types of structures intended for human occupancy on the surface traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as "active," and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." Before a project can be permitted, cities and counties are required to have a geologic investigation conducted to demonstrate that the proposed buildings would not be constructed across active faults.

Historical seismic activity and fault and seismic hazards mapping in the project vicinity indicate that the area has relatively low potential for seismic activity (Branum et al. 2016). No active faults have been mapped in the project site, and none of the known faults have been designated as an Alquist-Priolo Earthquake Fault Zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690–2699.6) establishes statewide minimum public safety standards for mitigation of earthquake hazards. While the Alquist–Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist–Priolo Act. The state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other seismic hazards, and cities and counties are required to regulate development within mapped seismic hazard zones. In addition, the act addresses not only seismically induced hazards but also expansive soils, settlement, and slope stability.

Mapping and other information generated pursuant to the SHMA is to be made available to local governments for planning and development purposes. The state requires: (1) local governments to incorporate site-specific

geotechnical hazard investigations and associated hazard mitigation, as part of the local construction permit approval process; and (2) the agent for a property seller or the seller if acting without an agent, must disclose to any prospective buyer if the property is located within a Seismic Hazard Zone. Under the Seismic Hazards Mapping Act, cities and counties may withhold the development permits for a site within seismic hazard zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

California Building Standards Code

The state regulations protecting structures from most geo-seismic hazards are contained in the California Building Code (CBC; Cal. Code Regs. tit. 24, Part 2), which is updated on a triennial basis. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every public and private building in the state or any appurtenances connected or attached to such buildings or structure. The 2022 CBC, effective January 1, 2023, is based on the current (2021) International Building Code.

The 2022 CBC includes structural design requirements governing seismically resistant construction, including (but not limited to) factors and coefficients used to establish seismic site class and seismic occupancy category for the soil/rock at the building location and the proposed building design. Included in the CBC are requirements for foundation and soil investigations; excavation, grading, and fill; damp-proofing and waterproofing; allowable load-bearing values of soils; the design of foundation walls, retaining walls, embedded posts and poles and foundations; and design of shallow foundations and deep foundations. The CBC also includes requirements for safeguards at work sites to ensure stable excavations in the event any excavation or cut/fill work is required.

California Division of Occupational Safety and Health (CalOSHA)

Construction activities are subject to occupational safety standards for excavation and trenching, as specified in the California Safety and Health Administration regulations (Title 8 of the California Code of Regulations) and in Chapter 33 of the CBC. These regulations specify the measures to be used for excavation and trench work where workers could be exposed to unstable soil conditions. All project contractors would be required to employ these safety measures during excavation and trenching activities.

Construction General Permit (SWRCB Order 2021-0057-DWQ)

For stormwater discharges associated with construction activity in the state, the State Water Resources Control Board (SWRCB) has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. The Construction General Permit applies to all projects in which construction activity disturbs one acre or more of soil. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling and excavation. The Construction General Permit requires the development and implementation of a stormwater pollution prevention plan (SWPPP), which would include and specify water quality Best Management Practices (BMPs) designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters. Routine inspection of all BMPs is required under the provisions of the Construction General Permit, and the SWPPP must be prepared and implemented by qualified individuals as defined by the SWRCB.

California Public Resources Code

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under state laws and regulations. Public Resources Code, Chapter 1.7, Sections 5097.5 and 30244 regulate removal of paleontological resources from state lands, define unauthorized removal of fossil resources as a misdemeanor, and require mitigation of disturbed sites. Professional standards of practice, such as those adopted by the Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee (2010), offer additional guidance for the control and remediation of adverse effects on significant paleontological resources.

Local Regulations

El Dorado County General Plan

The County General Plan was adopted in 2004; the last amendment to the General Plan was December 10, 2019 (El Dorado County 2019). The following goals, objectives, and policies related to geology, soils, and paleontological resources are included in the Public Health, Safety, and Noise Element and Conservation and Open Space Element of the General Plan (El Dorado County 2019) are applicable to the proposed project.

Public Health, Safety, and Noise Element

Goal 6.3: Geologic and Seismic Hazards. Minimize the threat to life and property from seismic and geologic hazards.

Objective 6.3.2: Continue to evaluate seismic related hazards such as liquefaction, landslides, avalanche, and seiche, particularly in the Tahoe Basin.

Policy 6.3.2.4: Applications for development of habitable structures shall be reviewed for potential hazards associated with steep or unstable slopes, areas susceptible to high erosion, and avalanche risk. Geotechnical studies shall be required when development may be subject to geological hazards. If hazards are identified, applicants shall be required to mitigate or avoid identified hazards as a condition of approval. If no mitigation is feasible, the project will not be approved.

Conservation and Open Space Element

Goal 7.1: Soil Conservation. Conserve and protect the County's soil resources.

Objective 7.1.2: Minimize soil erosion and sedimentation.

Policy 7.1.2.1: Development or disturbance of slopes over 30% shall be restricted. Standards for implementation of this policy, including but not limited to exceptions for access, reasonable use of the parcel, and agricultural uses shall be incorporated into the Zoning Ordinance.

Policy 7.1.2.2: Discretionary and ministerial projects that require earthwork and grading, including cut and fill for roads, shall be required to minimize erosion and sedimentation, conform to natural contours, maintain natural drainage patterns, minimize impervious surfaces, and maximize the retention of natural vegetation. Specific standards for minimizing erosion and sedimentation shall be incorporated into the Zoning Ordinance.

Policy 7.1.2.3: Enforce Grading Ordinance provisions for erosion control on all development projects and adopt provisions for ongoing, applicant-funded monitoring of project grading.

Goal 7.3: Water Quality and Quantity. Conserve, enhance, and manage water resources and protect their quality from degradation.

Objective 7.3.2: Maintenance of and, where possible, improvement of the quality of underground and surface water.

Policy 7.3.2.1: Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity.

Policy 7.3.2.2: Projects requiring a grading permit shall have an erosion control program approved, where necessary.

El Dorado County Design and Improvement Standards Manual

The purpose of the County's Design and Improvement Standards Manual is to standardize development practices used in the hillside environment that is prevalent in the County and to minimize the environmental effects of construction. The manual provides requirements for the land capability reports that must be submitted as part of development projects, including reports related to surface water, geology, traffic, and noise. The manual also includes design standards for the development of subdivisions, including standards related to water supply, fire protection, sewage collection, underground power and communications infrastructure, and drainage. Volume III of the manual provides guidance on how to implement the erosion and sediment control standards in Chapter 110.14 (Grading, Erosion, and Sediment Control) of the County Code (Grading Ordinance).

Grading, Erosion, and Sediment Control Ordinance

Chapter 110.14 (Grading, Erosion, and Sediment Control) of the County Code regulates grading within unincorporated areas of the County in order to protect the public and avoid pollution of watercourses. The chapter establishes the administrative procedures for the issuance of grading permits and approval of grading plans, and the requirements for inspection of grading construction.

Chapter 110.14 enforces the procedures in Volume III: Grading, Erosion and Sediment Control of the Design Improvement Standards Manual (Grading Manual) (El Dorado County 2007). The Grading Manual includes standards for geotechnical, geologic, drainage, and soil studies that are required for development projects. A grading plan prepared by a professional civil engineer must be prepared in support of the grading permit application and must be consistent the design standards of the Grading Manual. An Erosion and Sediment Control Plan must also be submitted whenever the following would occur:

1. The graded portion of the site includes more than ten thousand (10,000) square feet of area for a non-agricultural grading project or more than one acre of area for an agricultural grading project.
2. There is a significant risk that more than two thousand five hundred (2,500) square feet will be unprotected or inadequately protected from erosion during any portion of the rainy season.
3. Grading will occur within twenty feet of any pre-existing watercourse.
4. Grading would occur within the 100-year event flood plain.
5. The Director determines that the grading could potentially result in significant erosion or sediment discharge.

The Erosion and Sediment Control Plan must be designed to prevent increased discharge of sediment at all stages of grading and development, from initial disturbance of the ground to project completion, and shall be consistent with all local, state, and federal rules and regulations. It must include an effective revegetation program to stabilize all disturbed areas that would not be otherwise protected.

Building Services

Effective January 1, 2023, the El Dorado County Building Services requires adherence to the 2022 California Building Standards Code (California Code of Regulations, Title 24), also referred to as the California Building Code (CBC).

Creekside Village Specific Plan

If the project is approved and the CVSP is adopted, there would be design elements required of all proposed improvements that are consistent with the County Code of Ordinances including the County's building code requirements. However, none of the design requirements are directly related to geology and soils.

3.6.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
  i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
  ii. Strong seismic ground shaking
  iii. Seismic-related ground failure, including liquefaction
  iv. Landslides
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- Directly or indirectly destroy a unique paleontological resources or site or unique geologic feature.

Significance Threshold Criteria Not Applicable to the Proposed Project

As described under *Regional Faulting*, no active faults have been mapped in the plan area, and none of the known faults have been designated as an Alquist-Priolo Earthquake Fault Zone. Therefore, the potential rupture of a known

earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map is not applicable to the proposed project and is not discussed further.

Wastewater conveyance and treatment services to the proposed project would be provided by the El Dorado Irrigation District. Therefore, the use of septic tanks or alternative wastewater disposal systems is not applicable to the proposed project and is not discussed further.

3.6.4 Impacts and Mitigation Measures

Methodology

The Geotechnical Study, project plans, and publicly available geologic/soils documents were reviewed to determine if the proposed project would directly or indirectly result in increased exposure to health and/or safety risks associated with geologic, soils, or seismic hazards, or if the project would destroy unique paleontological resources or geologic features.

Analysis of impacts related to geology, soils, and paleontological resources are assessed by comparing existing conditions to changes that could occur associated with implementation of the proposed project. Implementation of the CVSP must be consistent with the County's General Plan goals and policies, and all applicable regulations such as CBC standards. Therefore, such policies and standards are not identified as mitigation, and compliance with relevant goals, policies, and federal, state or City requirements are presumed to be followed and are instead described within the impact analysis.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1,8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. The potential impacts to geology and soils are not expected to be different with implementation of either option because the development footprint, intensity, and disturbed area would remain the same as under the proposed project. Therefore, the impact analysis below would be the same under both options as the proposed project.

Project Impacts

Impact 3.6-1. The proposed project would not be affected by strong seismic ground shaking and secondary seismic hazards, including seismic-related ground failure, liquefaction, lateral spreading, and seismically induced settlement.

As described under *Regional Faulting* in the Environmental Setting, the potential for seismic ground shaking in the vicinity of the project site is relatively low (Branum et al. 2016). However, active faults to the west and east could potentially generate moderate ground shaking at the project site (USGS 2014), which in turn could expose the proposed residential development to varying levels of damage depending on distance to the fault and intensity of the earthquake as well as how the structures are constructed. Seismic-related ground shaking could also induce liquefaction, lateral spreading, and/or seismically induced settlement in the plan area.

The Geotechnical Study indicates that based on the shallow soils and the absence of a permanently elevated groundwater table (i.e., less than 50 feet below ground surface), the potential for liquefaction, lateral spreading, and seismically induced settlement on the project site is negligible (Appendix D). Although the strength of ground

shaking depends on the magnitude of the earthquake, type of fault, and distance from the epicenter, all proposed development would be constructed to meet the CBC to provide increased earthquake safety for residents and visitors. The Geotechnical Study provides anticipated design criteria for the proposed project that is consistent with the seismic design standards of the CBC. The Study notes that a final design-level geotechnical investigation based on detailed geotechnical exploration, testing, and engineering analysis would be required to develop final design criteria for the project prior to issuance of a building permit. The County's building permit process also requires the recommendations of the design-level geotechnical investigation report to be incorporated into the project design, thereby ensuring that development proposed under the CVSP would be seismically resistant consistent with current seismic design criteria within the CBC.

Therefore, compliance with the CBC and County building permit requirements, which requires a design-level geotechnical investigation report, would reduce the potential of the proposed project to expose people or structures to substantial adverse effects from seismic ground shaking or seismic-related ground failure including liquefaction, lateral spreading, and seismically induced settlement due to an earthquake. The County's building permit process would ensure that geotechnical recommendations are incorporated into the project design to ensure buildings are seismically resistant and do not expose people or the project to increase risks from earthquakes. For these reasons, the impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.6-2. The proposed project would not be affected by or result in adverse effects involving landslides.

As described under *Landslides* in the Environmental Setting, the plan area, as well as surrounding areas, is characterized by gently rolling hills with broad valleys. Existing slopes on the project site are shallow, vegetated, and show no indication of slope instability such as tension cracks, slump blocks, seeps or springs. However, steep slopes, in conjunction with certain soil types, can be prone to landslides. Some of the natural causes of this instability are earthquakes, weak soils, erosion, heavy rainfall, and fire. Human activities such as poor grading, excessive irrigation, and removal of vegetation can also contribute to landslides. As described in the Environmental Setting, 16% of the site contains slopes of between 11% and 20%; 3% of the site contains slopes of between 21% and 29%; and the remaining 1% of the project site contains slopes of 30% or greater. The steeper slopes are primarily located within the existing drainage channels as well as areas on the western side of the hill located in the southeast corner of the plan area. General Plan policy 7.1.2.1 restricts development or disturbance of slopes over 30%. A majority of the development would occur along relatively flat areas, while existing areas of steeper slopes would be untouched for preservation, visual quality, and safety (e.g., the southeastern hill) or recontoured to a flatter grade during site grading. Additionally, the soils at the project site are relatively shallow before encountering bedrock and thus are less likely to pose a landslide hazard.

The Geotechnical Study concluded that the potential for slope instability to occur in the plan area is negligible (Appendix D). Therefore, the potential of the proposed project to expose people or structures substantial adverse effects from landslides would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.6-3. The proposed project would not result in significant soil erosion or loss of topsoil.

As discussed in the *Local Geologic and Soil Conditions* in the Environmental Setting, the plan area consists of shallow soils atop Mesozoic age (between 252 and 66 million years ago) volcanic and metavolcanic rocks (CGS 2010). Site clearing and construction activities associated with development under the CVSP, including vegetation removal, excavation, and grading, would temporarily expose underlying soils, thereby increasing the potential of wind- and water-induced soil erosion. The effects of erosion are intensified with an increase in slope and the narrowing of runoff channels.

Construction of the proposed project would be required to comply with Chapter 110.14 (Grading, Erosion, and Sediment Control) of the County Code, which states when grading more than 250 cubic yards an Erosion and Sediment Control Plan must be prepared and implemented that specifies best management practices to prevent increased discharge of sediment at all stages of grading and development. Furthermore, grading activities would disturb more than 1 acre and therefore would be subject to the requirements of the Stormwater Construction General Permit, which requires projects to implement a SWPPP that also includes sediment and erosion control measures (see Section 4.9, Hydrology, Water Quality and Drainage for further detail). Therefore, compliance with local and state regulations would reduce the potential of the proposed project to result in substantial soil erosion or the loss of topsoil and impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.6-4. The proposed project would not be developed on unstable soils that could become unstable resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

As discussed under Impact 3.6-1 and Impact 3.6-2 above, the potential of landslides, liquefaction, lateral spreading, or seismically induced settlement on the project site is negligible, and the development of new residences and a small commercial space along with associated facilities under the proposed CVSP would not alter geologic and soils conditions in a manner that would increase the potential occurrence of these events.

The project site is underlain by shallow soils over bedrock, with the groundwater table located more than approximately 100 feet below the ground surface. The proposed project would tie into existing water infrastructure and does not propose pumping groundwater from the underlying aquifer. Based on near-surface bedrock and deep groundwater conditions, the potential for the proposed project to be subject to or result in subsidence or collapse of on-site soils would be a less-than-significant impact.

Due to the likely presence of soft soils on the project site, the Geotechnical Study concluded that settlement and differential settlement could occur when structures are developed on the project site if not given appropriate ground improvements (Appendix D). The Study noted that the mass grading typically associated with the development of foothill areas generally removes soft soils and reduces the potential for settlement to occur. However, depending on the depth of grading and depth of the soft soils across the project site, a program of over-excavation and recompaction would likely be necessary and no import or export of soils would be required. A final design-level geotechnical investigation report, as required by the County would be prepared that would provide detailed recommendations in accordance with CBC requirements on the over-excavation and recompaction program. The County's building permit process also requires geotechnical report recommendations be incorporated into the project's design specifications, thereby ensuring that development under the CVSP would be resistant to soil

instability. Compliance with the CBC and the County's building permit requirements would reduce the potential of the proposed project to expose people or structures to substantial adverse effects from unstable soils. Therefore, the impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.6-5. The proposed project would not be located on expansive soils.

As described in the *Local and Geologic Hazards* in the Environmental Setting, expansive soils are those that greatly increase in volume when water is absorbed and shrink when the soils dry out. When buildings are placed on expansive soils, foundations may rise each wet season and fall each dry season. This movement may result in cracking foundations, distortion of structures, and warping of doors and windows.

As discussed in the Environmental Setting, the Geotechnical Study indicated soils on the project site are generally not dominated by high-clay soils, but notes that pockets of expansive clay soils could be encountered throughout the project site (Appendix D). This is consistent with the soil shrink-swell potential presented in Table 3.6-1, which indicates that some soils present on the project site may contain clay layers with moderate to high shrink-swell potential. The Study noted that the mass grading typically associated with the development of foothill areas generally removes soft soils and reduces the potential for settlement to occur. However, depending on the depth of grading and depth of the high-clay expansive soils across the project site, measures to reduce the potential exposure of the proposed development to expansive soils may need to be implemented. Such measures typically include mixing of expansive and non-expansive soils during site grading, focused clay excavations, and special foundation and slab preparation recommendations. A final design-level investigation geotechnical report would be prepared that would provide detailed recommendations in accordance with CBC requirements on the measures required to protect proposed structures from damage by expansive soils. The County's building permit process requires geotechnical report recommendations to be incorporated into the final project design specifications, thereby ensuring that development under the CVSP would be resistant to substantive property damage from expansive soils. Compliance with the CBC and the County's building permit requirements would reduce the potential of the proposed project to expose people or structures to substantial adverse effects from expansive soils, resulting in a **less-than-significant impact**.

Mitigation Measures

No mitigation measures are required.

Impact 3.6-6. The proposed project would not destroy a unique paleontological resource or unique geologic features.

The project site is characterized by gently rolling hills with broad valleys and does not contain any unique geologic features. The California Department of Parks and Recreation defines a geologic feature and landscape as a mountain peaks, coastal cliffs, headlands, beaches and dunes, caves, lava fields and tufa structures (DPR 2024). None of these features exist within the project site. The potential to disturb paleontological resources during project construction depends on the types of geologic units (and their fossil-bearing characteristics) that would be encountered. As discussed under *Paleontological Resources* in the Environmental Setting, geology in the county is predominantly igneous (volcanic) in nature, and the type of sedimentary deposits where paleontological resources

might be present are virtually nonexistent (El Dorado County 2003). The possibility of encountering paleontological resources in river and stream gravel deposits within the project site is also remote. The project site's geologic conditions are consistent with the shallow soils and overlying volcanic bedrock found throughout the County. There is no indication that sedimentary deposits are located on the project site. Consequently, the potential of the proposed project to destroy or adversely impact a unique paleontological resource is **less than significant**.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

The geographic context for the cumulative analysis is the foothills of the Sierra Nevada Mountain range based on the regional generalized contextual similarity of conditions. However, geologic and soil impacts typically do not extend far beyond a project's boundaries because geologic and soils conditions can vary widely over a short distance and therefore potential impacts are typically confined to discrete locations and do not combine to create a significant cumulative impact. The exception to this generalization would occur where the effects from the development of the proposed project could affect the geology of an off-site location (e.g., construction would destabilize an area prone to landslides) or where effects from the proposed project and cumulative projects could contribute to a potential cumulative effect. There are no large landslide features or fault zones present in the vicinity of the project site. Thus, the project would not contribute to a potential cumulative effect.

The geographic scope of cumulative impacts to paleontological resources includes other projects within the county that would disturb geologic and soils materials similar to the project site (i.e., shallow soils overlying metavolcanic bedrock).

Impact 3.6-7. The proposed project would not result in a cumulative impact related to loss of paleontological resources.

As discussed under Impact 3.6-6, geology in the county is predominantly igneous (volcanic) in nature, and the type of sedimentary deposits where paleontological resources might be present are virtually nonexistent (El Dorado County 2003). The possibility of encountering paleontological resources in river and stream gravel deposits within the project site is also remote. There are also no unique geologic or soils features on or near the location of the project site. Because overlying volcanic bedrock is found throughout the county the potential for the project, together with other past, present, and probable future projects, would not combine to create a significant cumulative impact. Therefore, the project would not contribute to a significant cumulative impact and there would be no cumulative contribution, and the impact is **less than significant**.

Mitigation Measures

No mitigation measures are required.

3.6.5 References

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3.7 Greenhouse Gas Emissions

The following analysis identifies potential impacts related to climate change and greenhouse gases (GHGs) due to implementation of the proposed Creekside Village Specific Plan (proposed project or CVSP). This section describes the existing GHG conditions in El Dorado County (County), identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project.

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) included concerns related to increasing GHG emissions and potential adverse effects including an increase in global temperatures, increase in wildfires, decrease in snowpack, and an increase in flooding. No additional comments were received at the second scoping meeting held on September 26, 2023. All of these concerns are addressed in this section. A copy of the NOP and comments received is included in Appendix A.

The primary sources referenced to prepare this section include the Air Quality and Greenhouse Gas Impact Analysis and Creekside Village Specific Plan Project Active Adult Project Option Technical Memorandum prepared by Raney Planning & Management (Appendix B) and the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) Guide to Air Quality Assessment in Sacramento County.

3.7.1 Environmental Setting

Climate Change Overview

Climate change refers to any significant change in measures of climate—such as temperature, precipitation, or wind patterns—lasting for an extended period of time (decades or longer). The Earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017).

The greenhouse effect is the trapping and buildup of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a three-part process as follows: (1) short-wave radiation emitted by the Sun is absorbed by the Earth, (2) the Earth emits a portion of this energy in the form of long-wave radiation, and (3) GHGs in the upper atmosphere absorb this long-wave radiation and emit it both into space and back toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature and creates a pleasant, livable environment on the Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus, enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of the Earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. However, recent climate changes, in particular the warming observed over the past century, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of warming since the mid-twentieth century and are the most significant driver of observed climate change (IPCC 2013; EPA 2017). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system

(IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013). Continued emissions of GHGs will cause further warming and changes in all components of the climate system.

Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g), for purposes of administering many of the State's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (see also see also 14 California Code of Regulations [CCR] Section 15364.5).1 Some GHGs, such as CO2, CH4, and N2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO2 and CH4 are the predominant GHGs emitted from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO2, include fluorinated gases, such as HFCs, PFCs, and SF6, which are associated with certain industrial products and processes. The following provides a summary of the most common GHGs and their sources.[2] Please see Appendix E for a more detailed description of GHGs.

Carbon Dioxide

CO2 is a naturally occurring gas and a by-product of human activities; it is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO2 include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO2 include the combustion of fuels such as coal, oil, natural gas, and wood, and changes in land use.

Methane

CH_4 is produced through both natural and human activities. CH_4 is a flammable gas and is the main component of natural gas. CH_4 is produced through anaerobic (i.e., without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Nitrous Oxide

N_2O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N_2O. Sources of N_2O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using N_2O as a propellant (such as in rockets, racecars, and aerosol sprays).

1 Climate-forcing substances include GHGs and other substances such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in California Health and Safety Code, Section 38505. Impacts associated with other climate-forcing substances are not evaluated herein.

2 The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007), The California Air Resources Board's (CARB's) Glossary of Terms Used in GHG Inventories (CARB 2020), and EPA's Glossary of Climate Change Terms (EPA 2017).

Fluorinated Gases

Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone (O_3)-depleting substances (e.g., chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons).

Chlorofluorocarbons

CFCs are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. CFCs are chemically unreactive in the lower atmosphere (troposphere), and the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric O_3.

Hydrochlorofluorocarbons

HCFCs are a large group of compounds whose structure is very close to that of CFCs—containing fluorine, chlorine, and carbon atoms—but also including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of CFCs for some applications; however, their use in general is being phased out.

Black Carbon

Black carbon is a component of fine particulate matter ($PM_{2.5}$), which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation; influences cloud formation; and darkens the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived substance that varies spatially, which makes it difficult to quantify its global warming potential (GWP). Diesel particulate matter emissions are a major source of black carbon and are toxic air contaminants that have been regulated and controlled in California for several decades to protect public health. In relation to declining diesel particulate matter as a result of the California Air Resources Board's (CARB's) regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have decreased by 70% between 1990 and 2010 (latest information available), with 95% control expected by 2020 (CARB 2014).

Water Vapor

The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere and maintains a climate necessary for life.

Ozone

Tropospheric O_3, which is created by photochemical reactions involving gases from both natural sources and human activities, acts as a GHG. Stratospheric O_3, which is created by the interaction between solar ultraviolet radiation and molecular oxygen, plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric O_3, which occurs due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet-B radiation.

Aerosols

Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2017). The Intergovernmental Panel on Climate Change (IPCC) developed the GWP concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons of CO_2 equivalent (MT CO_2e).

The current version of the California Emissions Estimator Model (CalEEMod) (Version 2022.1) assumes that the GWP for CH_4 is 25 (so emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the IPCC's Fourth Assessment Report (IPCC 2007).

Greenhouse Gas Inventories and Climate Change Conditions

Contributions of Greenhouse Gas Emissions

Global Inventory

Anthropogenic GHG emissions worldwide in 2020 (the most recent year for which data is available) totaled approximately 49,800 million metric tons (MMT) of CO_2e, excluding land use change and forestry (PBL 2022). The top six GHG emitters include China, the United States, the Russian Federation, India, Japan, and the European Union, which accounted for approximately 60% of the total global emissions, or approximately 30,270 MMT CO_2e (PBL 2022). Table 3.7-1 presents the top GHG-emissions-producing countries.

Table 3.7-1. Six Top GHG Producer Countries

Emitting Countries	2020 GHG Emissions (MMT CO2e)a
China	14,300
United States	5,640
European Union	3,440
India	3,520
Russian Federation	2,210
Japan	1,160
Total	**30,270**

Source: PBL 2022.
Notes: MMT CO_2e = million metric tons of carbon dioxide equivalent.
[a] Column may not add due to rounding.

National Inventory

Per the EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2021, total United States GHG emissions were approximately 6,340.2 million MT CO_2e (MMT CO_2e) in 2021 (EPA 2023). Total U.S. emissions have decreased by 2.3% from 1990 to 2021, down from a high of 15.8% above 1990 levels in 2007. Emissions increased from 2020 to 2021 by 5.2% (314.3 MMT CO_2e). Net emissions (i.e., including sinks) were 5,586.0 MMT CO_2e in 2021. Overall, net emissions increased 6.4% from 2020 to 2021 and decreased 16.6% from 2005 levels Between 2020 and 2021, the increase in total GHG emissions was driven largely by an increase in CO_2 emissions from fossil fuel combustion due to economic activity rebounding after the height of the COVID-19 pandemic. The CO_2 emissions from fossil fuel combustion increased by 6.8% from 2020 to 2021, including a 11.4% increase in transportation sector emissions and a 7.0% increase in electric power sector emissions. The increase in electric power sector emissions was due in part to an increase in electricity demand of 2.4% since 2020. Overall, there has been a decrease in electric power sector emissions from 1990 through 2021, which reflects the combined impacts of long-term trends in many factors, including population, economic growth, energy markets, technological changes including energy efficiency, and the carbon intensity of energy fuel choices (EPA 2023).

State Inventory

According to California's 2000–2020 GHG emissions inventory (2022 edition), California emitted approximately 369.2 MMT CO_2e in 2020, including emissions resulting from out-of-state electrical generation (CARB 2022a). The sources of GHG emissions in California include transportation, industry, electric power production from both in-state and out-of-state sources, residential and commercial activities, agriculture, high-GWP substances, and recycling and waste. Table 3.7-2 presents California GHG emission source categories and their relative contributions to the emissions inventory in 2020.

Table 3.7-2. GHG Emissions Sources in California

Source Category	Annual GHG Emissions (MMT CO2e)	Percent of Total*
Transportation	136.60	37%
Industrial uses	73.84	20%
Electricity generation[a]	59.07	16%
Residential and commercial uses	36.92	10%
Agriculture and Forestry	33.22	9%
High GWP substances	22.15	6%
Recycling and waste	7.38	2%
Total	**369.2**	**100%**

Source: CARB 2022a.
Notes: GHG = greenhouse gas; GWP = global warming potential; MMT CO_2e = million metric tons of carbon dioxide equivalent. Emissions reflect 2020 California GHG inventory.
Total may not sum due to rounding.
[a] Includes emissions associated with imported electricity, which account for 18.46 MMT CO_2e.

Per capita GHG emissions in California have dropped from a 2001 peak of 13.8 MT per person to 9.3 MT per person in 2020, a 33% decrease. In 2016, statewide GHG emissions dropped below the 2020 GHG limit of 431 MMT CO2e and have remained below that level since that time (CARB 2022a).

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 IPCC Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, rising sea levels, and ocean acidification (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, frequency of severe weather events, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed global mean surface temperature for the decade 2006–2015 was 0.87°C (1.6°F) (likely between 0.75°C [1.4°F] and 0.99°C [1.8°F]) higher than the average over the 1850–1900 period (IPCC 2018). Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. Human activities are estimated to have caused approximately 1.0°C (1.8°F) of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C (1.4°F to 2.2°F) (IPCC 2018). Global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if it continues to increase at the current rate (IPCC 2018).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment (OEHHA) identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernible evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes in the state's climate have been observed including an increase in annual average air temperature, more frequent extreme heat events, more extreme drought, a decline in winter chill, an increase in cooling degree days and a decrease in heating degree days, and an increase in variability of statewide precipitation (OEHHA 2022).

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the state's annual water supply. Impacts of climate on physical systems have been observed such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in spring snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters (OEHHA 2022).

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming: elevational or latitudinal shifts in range, changes in the timing of key plant and animal life cycle events, and changes in the abundance of species and in community composition. Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has been increasing.

The California Natural Resources Agency (CNRA) has released four California Climate Change Assessments (in 2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. To address local and regional governments' need for information to support action in their communities, the Fourth Assessment includes reports for nine regions of the state. Key projected climate changes for the Sierra Nevada region (which includes the County) include the following (CNRA 2018):

> Climate change is already underway in the Sierra Nevada region, affecting heat and precipitation extremes, with long-term warming trends, declining snowpacks, and changes in streamflow timing. These ongoing trends foreshadow larger changes to come. By the end of the 21st century, temperatures in the Sierra Nevada are projected to warm by 6 to 9°F on average, enough to raise the transition from rain to snow during a storm by about 1,500 to 3,000 feet. In contrast, future precipitation is predicted to vary less than temperature; long-term changes may be no more than ±10-15% of current totals. However, precipitation extremes (both as deluge and drought) are expected to increase markedly under climate change. These climatic changes will depend on and reflect many factors, including elevation within the mountain range, with quicker warming trends and precipitation changes at highest elevations.
>
> As a result of projected warming, Sierra Nevada snowpacks will very likely be eradicated below about 6,000 feet elevation and will be much reduced by more than 60% across nearly all of the range. Notably, though, recent studies suggest that even these snowpack-loss projections may be underestimates, due to feedback loops with warming trends causing snow cover losses, and snow cover losses resulting in warmer land surfaces and thus enhanced warming trends in turn.
>
> The loss of snowpack will combine to dry soils 15% to 40% below historical norms, depending on elevations. The result will be reduced soil and vegetation moisture; changes in rivers and lakes; and ultimately stresses on fora and fauna. Loss of snowpack and overall drying will lead to increased winter stream flows and floods, and to (largely compensating) reductions in spring and summer stream flows.

3.7.2 Regulatory Setting

The following is a summary of regulations relevant to the proposed project.

Federal Regulations

Federal Vehicle Standards

In 2007, in response to the *Massachusetts v. EPA* U.S. Supreme Court ruling, the Bush Administration issued Executive Order (EO) 13432 directing EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, National Highway Traffic Safety Administration (NHTSA) issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012 through 2016 (75 FR 25324–25728).

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021 (77 FR 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks.

On April 2, 2018, EPA, under administrator Scott Pruitt, reconsidered the final determination for light-duty vehicles and withdrew its previous 2017 determination, stating that the current standards may be too stringent and therefore should be revised as appropriate (83 FR 16077–16087).

In August 2018, EPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards then in place, the 2018 proposal would increase U.S. fuel consumption by about half a million barrels per day (2% to 3% of total daily consumption, according to the Energy Information Administration) and would impact the global climate by 3/1000th of 1°C by 2100 (EPA and NHTSA 2018). California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives.

In 2019, the EPA and NHTSA published the Safer Affordable Fuel-Efficient Vehicles Rule Part One: One National Program (SAFE-1) (84 FR 51310), which revoked California's authority to set its own GHG emissions standards and set zero-emission vehicle (ZEV) mandates in California. In March 2020, Part Two was issued, which set CO_2 emissions standards and CAFE standards for passenger vehicles and light-duty trucks for model years 2021 through 2026.

In response to EO 13990, on December 21, 2021, NHTSA finalized the CAFE Preemption rulemaking to withdraw its portions of the Part One Rule. The final rule concluded that the Part One Rule overstepped the agency's legal authority and established overly broad prohibitions that did not account for a variety of important state and local interests.

Then, in March 2022, NHTSA established new fuel economy standards that would require an industry-wide fleet average of approximately 49 miles per gallon for passenger cars and light trucks in model year 2026, by increasing fuel efficiency by 8% annually for model years 2024 and 2025, and 10% annually for model year 2026.

Infrastructure Investment and Jobs Act

The Infrastructure Investment and Jobs Act (Infrastructure Deal) was signed into law November 15, 2021. The legislation includes $39 billion of new investment to modernize transit, in addition to continuing the existing transit programs for 5 years as part of surface transportation reauthorization. The Infrastructure Deal would also invest $7.5 billion to build-out a national network of electric vehicle (EV) chargers. The Infrastructure Deal would provide funding for deployment of EV chargers along highway corridors to facilitate long-distance travel and within communities to provide convenient charging where people live, work, and shop to support a goal of building a nationwide network of 500,000 EV chargers. This would accelerate the adoption of EVs, which would help reduce emissions and improve air quality. In addition, the Infrastructure Deal would include more than $65 billion of

investments in clean energy transmission including upgrading existing power infrastructure through expanding transmission lines to facilitate the expansion of renewables and clean energy.

The Inflation Reduction Act of 2022

The Inflation Reduction Act was signed into law by President Biden in August 2022. The bill includes specific investment in energy and climate reform and is projected to reduce GHG emissions within the United States by 40% as compared to 2005 levels by 2030. The bill allocates funds to boost renewable energy infrastructure (e.g., solar panels and wind turbines), includes tax credits for the purchase of electric vehicles, and includes measures that will make homes more energy efficient.

EPA National Pollution Standards

In March 2024, EPA announced the final Multi-Pollutant Emissions Standards for passenger-carrying light-duty vehicles (Class 2b) and medium-duty vehicles (Class 3) rule. These new standards aim to significantly reduce GHG and other air toxic emissions from new passenger cars, light trucks, and larger pickups and vans and would be phased in gradually over model years 2027 through 2032. For light-duty vehicles, these standards project to achieve a nearly 50% reduction in projected average emissions for the light-duty fleet by 2032 relative to the existing model year 2026 standards. For medium-duty vehicles, a nearly 4% reduction in projected average emissions for the medium-duty fleet is projected for 2032 relative to the existing model year 2026 standards.

State Regulations

The statewide GHG emissions regulatory framework is summarized in this subsection by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, water, solid waste, and other state actions. The following text describes EOs, Assembly Bills (ABs), Senate Bills (SBs), and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues. Appendix E includes additional regulations which are not included within this Draft EIR section.

State Climate Change Targets

The state has taken a number of actions to address climate change. These actions are summarized below, and include EOs, legislation, and CARB plans and requirements.

Executive Order S-3-05

EO S-3-05 (June 2005) identified GHG emissions-reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO identified the following targets:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry.

Assembly Bill 32

In furtherance of the goals identified in EO S-3-05, the Legislature enacted AB 32, the California Global Warming Solutions Act of 2006 (California Health and Safety Code Sections 38500–38599). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions at 1990 levels by 2020, and initiate the transformations required to achieve the state's long-range climate objectives.

Executive Order B-30-15

EO B-30-15 (April 2015) identified an interim GHG-reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050, as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Climate Change Scoping Plan (Scoping Plan) to express the 2030 target in terms of MMT CO_2e. The EO also called for state agencies to continue to develop and implement GHG emission-reduction programs in support of the reduction targets.

Senate Bill 32 and Assembly Bill 197

SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions-reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to the Board as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants from reporting facilities; and requires CARB to identify specific information for GHG emissions-reduction measures when updating the Scoping Plan.

Executive Order B-55-18

EO B-55-18 (September 2018) identified a policy for the state to achieve carbon neutrality as soon as possible (no later than 2045) and achieve and maintain net negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state's GHG emissions. CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

Assembly Bill 1279

The Legislature enacted AB 1279, the California Climate Crisis Act, in September 2022. The bill declares the policy of the state to achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter. Additionally, the bill requires that by 2045, statewide anthropogenic GHG emissions be reduced to at least 85% below 1990 levels.

Although AB 1279 establishes an overall policy to achieve net zero greenhouse gas emissions as soon as possible, but no later than 2045, recognizing the need to implement CO_2 removal and carbon capture, utilization and storage technologies, the Legislature established a specific target of 85% below 1990 levels by 2045 for anthropogenic GHG emissions. Therefore, the net zero target does not directly apply to development projects, but the 2045 target

of 85% below 1990 levels represents the reductions required to contribute to accomplishing the State's overall net zero policy.

California Air Resources Board's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a scoping plan for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (California Health and Safety Code Section 38561[a]), and to update the plan at least once every 5 years. In 2008, CARB approved the first scoping plan: The Climate Change Proposed Scoping Plan: A Framework for Change (Scoping Plan) (CARB 2008). The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission-reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (2014 Scoping Plan) defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EO S-3-05 and EO B-16-2012 (CARB 2014). The 2014 Scoping Plan concluded that California was on track to meet the 2020 target but recommended that a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The 2014 Scoping Plan recommended a mix of technologies in key economic sectors to reduce emissions through 2050 including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies.

In December 2017, CARB released the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan) for public review and comment (CARB 2017a). The 2017 Scoping Plan built on the successful framework established in the initial Scoping Plan and 2014 Scoping Plan, while identifying new technologically feasible and cost-effective strategies to serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' known commitments include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the Low Carbon Fuel Standard, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant (SLCP) Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, the 2017 Scoping Plan recommended continuing the Cap-and-Trade Program which is a market-based policy that aims to reduce GHG emissions through a statewide cap on emissions that decreases each year including a measure to reduce GHGs from refineries by 20%. The 2017 Scoping Plan was approved by CARB's Governing Board on December 14, 2017.

The Final 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) was issued on November 16, 2022 (CARB 2022b) and approved on December 15, 2022. The 2022 Scoping Plan lays out a path not just to carbon neutrality by 2045 but also to the 2030 GHG emissions reduction target. The 2022 Scoping Plan analyzed four scenarios, with the objective of informing the most viable path to remain on track to achieve the 2030 GHG reduction target. The scenario modeling indicates that, if the plan described in the Proposed Scenario is fully implemented, and done so on schedule, the State would cut GHG emissions by 85% below 1990 levels, result in a 71% reduction in smog-forming air pollution, reduce fossil fuel consumption by 94%, and create 4 million new jobs, among other benefits (CARB 2022b).

The 2022 Scoping Plan details "Local Actions" in Appendix D. The Local Actions include recommendations intended to build momentum for local government actions that align with the State's climate goals, with a focus

on local GHG reduction strategies (commonly referred to as climate action planning) and approval of new land use development projects, including through environmental review under CEQA. The recommendations provided in Appendix D are non-binding and should not be interpreted as a directive to local governments, but rather as evidence-based analytical tools to assist local governments with their role as essential partners in achieving California's climate goals.[3] Appendix D recognizes consistency with a CEQA-qualified GHG reduction plan such as a Climate Action Plan as a preferred option for evaluating potential GHG emission impacts under CEQA. Absent a qualified GHG reduction plan, Appendix D provides recommendations for key attributes that residential and mixed-use projects should achieve that would align with the State's climate goals (CARB 2022b). Projects that achieve all key attributes are considered clearly consistent with the State's climate and housing goals and would have a less-than-significant GHG impact under CEQA (CARB 2022b). However, projects that do not achieve all attributes are not considered to result in a potentially significant GHG emission impact. Additional potential threshold options identified when a CEQA-qualified GHG reduction plan is not available included a net-zero threshold and use of air district recommended thresholds of significance.

The 2022 Scoping Plan also emphasizes that there is no realistic path to carbon neutrality without carbon removal and sequestration, and to achieve the state's carbon neutrality goal, carbon reduction programs must be supplemented by strategies to remove and sequester carbon.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs; it also establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it would meet the general policies in reducing GHG emissions to facilitate the achievement of the state's goals and would not impede attainment of those goals.

Building Energy

The California Building Standards Code was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure that new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every 3 years by the Building Standards Commission and the California Energy Commission (CEC) and revised if necessary (California Public Resources Code Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, to "reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (California Public Resources Code Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California Public Resources Code Section 25402[d]) and cost effectiveness (California Public Resources Code Section 25402[b][2–3]). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment. The current Title 24 standards are the 2022 Title 24 building energy efficiency standards, which became effective January 1, 2023. The 2022 Energy Code focuses on four key areas in newly constructed homes and businesses (CEC 2021):

- Encouraging electric heat pump technology for space and water heating, which consumes less energy and produces fewer emissions than gas-powered units.

[3] The threshold approaches outlined in the 2022 Scoping Plan, Appendix D, are recommendations only and are not requirements; they do not supplant lead agencies' discretion to develop their own evidence-based approaches for determining whether a project would have a potentially significant impact on GHG emissions.

- Establishing electric-ready requirements for single-family homes to position owners to use cleaner electric heating, cooking, and electric vehicle (EV) charging options whenever they choose to adopt those technologies.
- Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available on site and complement the state's progress toward a 100% clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

In addition to CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24), which is commonly referred to as California's Green Building Standards (CALGreen), establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The 2022 CALGreen standards are the current applicable standards. For nonresidential projects, some of the key mandatory CALGreen 2022 standards involve requirements related to bicycle parking, designated parking for clean air vehicles, EV charging stations for passenger vehicles, medium heavy duty and heavy duty trucks , shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR, Part 11).

Renewable Energy and Energy Procurement

SB 350 (2015) expanded the Renewables Portfolio Standard (RPS) program by establishing a goal of 50% of the total electricity sold to retail customers in California per year be secured from qualifying renewable energy sources by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires California Public Utilities Commission (CPUC), in consultation with CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

SB 100 (2018) increased the standards set forth in SB 350, establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024; 52% by December 31, 2027; and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

SB 1020 (September 2022) revises the standards from SB 100, requiring the following percentage of retail sales of electricity to California end-use customers to come from eligible renewable energy resources and zero-carbon resources: 90% by December 31, 2035; 95% by December 31, 2040; and 100% by December 31, 2045.

Mobile Sources

State Vehicle Standards (Assembly Bill 1493 and Executive Order B-16-12)

AB 1493 (July 2002) was enacted in a response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by CARB to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. EO

B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of ZEVs. It ordered CARB, CEC, CPUC, and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 identified a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare. As explained under the "Federal Vehicle Standards" description in the Federal Regulations section above, EPA and NHTSA approved the SAFE Vehicles Rule Part One and Two, which revoked California's authority to set its own GHG emissions standards and set ZEV mandates in California. In March 2022, EPA reinstated California's authority under the Clean Air Act to implement its own GHG emission standards and ZEV sales mandate. EPA's action concludes its reconsideration of the 2019 SAFE-1 rule by finding that the actions taken under the previous administration as a part of SAFE-1 were decided in error and are now entirely rescinded.

Executive Order S-1-07

EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining Low Carbon Fuel Standard for GHG emissions measured in CO_2e grams per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel—including extraction/feedstock production, processing, transportation, and final consumption—per unit of energy delivered.

Senate Bill 375

SB 375 (California Government Code Section 65080) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG-reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations (MPOs) to prepare a sustainable communities strategy (SCS) as part of their Regional Transportation Plan that will achieve the GHG-reduction targets set by CARB. If an MPO is unable to devise an SCS to achieve the GHG-reduction target, the MPO must prepare an alternative planning strategy demonstrating how the GHG-reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

An SCS does not: (1) regulate the use of land; (2) supersede the land use authority of cities and counties; or (3) require that a city or county land use policies and regulations, including those in a general plan, be consistent with it (California Government Code Section 65080[b][2][K]). Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars (ACC) I program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package of regulations: the Low-Emission Vehicle (LEV) regulation for criteria air pollutant and GHG emissions and a technology forcing regulation for ZEVs that contributes to both types of emission reductions (CARB 2023). The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars. To improve air quality, CARB has implemented new emission standards

to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025 cars will emit 75% less smog-forming pollution than the average new car sold in 2015. The ZEV program will act as the focused technology of the ACC I program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid EVs in the 2018 to 2025 model years.

The ACC II program, which was adopted in August 2022, established the next set of LEV and ZEV requirements for model years after 2025 to contribute to meeting federal ambient air quality ozone standards and California's carbon neutrality standards (CARB 2023). The main objectives of ACC II are as follows:

- Maximize criteria air pollutant and GHG emission reductions through increased stringency and real-world reductions.
- Accelerate the transition to ZEVs through both increased stringency of requirements and associated actions to support wide-scale adoption and use.

The ACC II rulemaking package also considers technological feasibility, environmental impacts, equity, economic impacts, and consumer impacts.

Executive Order N-79-20

EO N-79-20 (September 2020) requires CARB to develop regulations as follows: (1) Passenger vehicle and truck regulations requiring increasing volumes of new ZEVs sold in the state towards the target of 100% of in-state sales by 2035; (2) medium- and heavy-duty vehicle regulations requiring increasing volumes of new zero-emission trucks and buses sold and operated in the state towards the target of 100% of the fleet transitioning to ZEVs by 2045 everywhere feasible and for all drayage trucks to be zero emission by 2035; and (3) strategies, in coordination with other state agencies, the EPA, and local air districts, to achieve 100% zero emissions from off-road vehicles and equipment operations in the state by 2035. EO N-79-20 called for the development of a ZEV Market Development Strategy, which was released February 2021, to be updated every 3 years, that ensures coordination and implementation of the EO and outlines actions to support new and used ZEV markets. In addition, the EO specifies identification of near-term actions, and investment strategies, to improve clean transportation, sustainable freight, and transit options; and calls for development of strategies, recommendations, and actions by July 15, 2021, to manage and expedite the responsible closure and remediation of former oil extraction sites as the state transitions to a carbon-neutral economy.

In-Use Off-Road Diesel-Fueled Fleets Regulation

The In-Use Off-Road Diesel-Fueled Fleets Regulation applies to all self-propelled off-road diesel vehicles 25 horsepower or greater used in California and most two-engine vehicles (except on-road two-engine sweepers). The In-Use Off-Road Diesel Vehicle Regulation has timetables by which manufacturers must comply, and existing operators must upgrade their diesel-powered equipment. CARB recently approved additional amendments to the Off-Road Regulation which are effective October 1, 2023. Notably, the changes include the procurement and use of renewable diesel (R99 or R100) starting January 1, 2024, with limited exceptions.

Other State Actions

Senate Bill 97

SB 97 (2007) directed the Governor's Office of Planning and Research and CNRA to develop guidelines under CEQA for the mitigation of GHG emissions. CNRA adopted the CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures (14 CCR 15126.4[c]). The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. CNRA also acknowledged that a lead agency could consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009).

With respect to GHG emissions, CEQA Guidelines Section 15064.4(a), as subsequently amended in 2018, states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines now note that an agency "shall have discretion to determine, in the context of a particular project, whether to: (1) Quantify greenhouse gas emissions resulting from a project; and/or (2) Rely on a qualitative analysis or performance-based standards" (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]).

Local Regulations

Metropolitan Transportation Plan/Sustainable Communities Strategy

The El Dorado County Transportation Commission (EDCTC) is the Regional Transportation Planning Agency (RPTA) for El Dorado County, except for that portion of the County within the Tahoe Basin, which is under the jurisdiction of the Tahoe Regional Planning Agency (TRPA). One of the fundamental responsibilities which results from this designation, is the preparation of the County's Regional Transportation Plan. Under the terms of a Memorandum of Understanding (MOU) between the EDCTC and the Sacramento Area Council of Governments (SACOG), EDCTC submits the Regional Transportation Plan for inclusion into the SACOG Metropolitan Transportation Plan (MTP) and SCS. This process is important to both the SACOG MTP and the EDCTC RTP, as it allows for a locally developed RTP to be included in the regional air quality conformity process. The MOU also stipulates that EDCTC shall utilize data and data analysis methodologies which are consistent with that developed by SACOG. This data includes existing and projected travel data, socio-economic data, and travel demand forecasts and assumptions. However, this data is integrated into this locally developed RTP process which is focused on local consensus of policies, projects,

programs, and funding decisions. The El Dorado County 2020-2040 RTP was adopted in November 2020 is included in the El Dorado County portion of the SACOG MTP (EDCTC 2020). EDCTC has initiated the 2025-2045 RTP in January 2024 and is currently in the process of conducting public outreach.

SACOG is designated by the state and federal governments as the MPO and is responsible for developing the MTP/SCS in coordination with Sacramento, Yolo, Yuba, Sutter, El Dorado and Placer counties and the 22 cities within those counties (excluding the Tahoe Basin). In November 2019, SACOG adopted the 2020 MTP/SCS, which lays out a path for improving our air quality, preserving open space and natural resources, and helping California achieve its goal to reduce GHG that contribute to climate change (SACOG 2019). For the 2020 MTP/SCS, CARB assigned SACOG a GHG reduction target from passenger vehicles of 19% below 2005 levels per capita by 2035.

El Dorado County Air Quality Management District

The El Dorado County Air Quality Management District (EDCAQMD) is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the County, where the project is located. The EDCAQMD has not established plans or thresholds for GHGs.

Environmental Vision for El Dorado County Resolution No. 29-2008

On March 25, 2008, the El Dorado County Board of Supervisors adopted the "Environmental Vision for El Dorado County" Resolution No. 29-2008. The Resolution sets forth goals and calls for implementation of positive environmental changes to reduce global impact, improve air quality and reduce dependence on landfills, promote alternative energies, increase recycling, and encourage local governments to adopt green and sustainable practices (El Dorado County 2008).

El Dorado County General Plan

The following goals, objectives, and policies related to GHGs in the El Dorado County General Plan (last amended 2019) are included in the Transportation and Circulation; Housing; Public Services and Utilities; Public Health, Safety, and Noise; and the Conservation Elements of the General Plan (El Dorado County 2019) and are applicable to the proposed project.

Transportation and Circulation Element

Goal TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.

Policy TC-4c: The County shall give priority to bikeways that will serve population centers and destinations of greatest demand and to bikeways that close gaps in the existing bikeway system.

Policy TC-4e: The County shall require that rights-of-way or easements be provided for bikeways or trails designated in adopted master plans, as a condition of land development when necessary to mitigate project impacts.

Policy TC-4g: The County shall support development of facilities that help link bicycling with other modes of transportation.

Policy TC-4i: Within Community Regions and Rural Centers, all development shall include pedestrian/bike paths connecting to adjacent development and to schools, parks, commercial areas and other facilities where feasible. In Rural Regions, pedestrian/bike paths shall be considered as appropriate.

Goal TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

Policy TC-5a: Sidewalks and curbs shall be required throughout residential subdivisions, including land divisions created through the parcel map process, where any residential lot or parcel size is 10,000 square feet or less.

Housing Element

Goal HO-5: To increase the efficiency of energy and water in new and existing homes.

Policy HO-5a: The County shall require all new dwelling units to meet current state requirements for energy efficiency and shall encourage the retrofitting of existing units.

Policy HO-5b: New land use development standards and review processes should encourage energy and water efficiency, to the extent feasible.

Public Services and Utilities Element

Goal 5.6: Sufficient utility service availability consistent with the needs of a growing community.

Objective 5.6.2: Encourage development of energy-efficient buildings, subdivisions, development, and landscape designs.

Policy 5.6.2.1: Require energy conserving landscaping plans for all projects requiring design review or other discretionary approval.

Policy 5.6.2.2: All new subdivisions should include design components that take advantage of passive or natural summer cooling and/or winter solar access, or both, when possible.

Public Health, Safety, and Noise Element

Goal 6.7: Strive to achieve and maintain ambient air quality standards established by the EPA and CARB and minimize exposure to TACs or HAPs and air pollutants that create unpleasant odors.

Objective 6.7.2: Reduce motor vehicle air pollution by developing programs aimed at minimizing congestion and reducing the number of vehicle trips made in the County and encouraging the use of clean fuels.

Policy 6.7.2.5: Upon reviewing projects, the County shall support and encourage the use of, and facilities for, alternative-fuel vehicles to the extent feasible. The County shall develop language to be included in County contract procedures to give preference to contractors that utilize low-emission heavy-duty vehicles.

Objective 6.7.4: Encourage project design that protects air quality and minimizes direct and indirect emissions of air contaminants.

Policy 6.7.4.1: Promote the development of new residential uses within walking or bicycling distance to the County's larger employment centers.

Policy 6.7.4.4: All discretionary development applications shall be reviewed to determine the need for pedestrian/bike paths connecting to adjacent development and to common service facilities (e.g., clustered mailboxes, bus stops, etc.).

Policy 6.7.4.5: Specific plans submitted to the County shall provide for the implementation of all policies contained under Objective 6.7.4 herein.

Policy 6.7.4.6: The County shall regulate wood-burning fireplaces and stoves in all new development. EPA approved stoves and fireplaces burning natural gas or propane are allowed. The County shall discourage the use of non-certified wood heaters and fireplaces during periods of unhealthy air quality.

Conservation and Open Space Element

Goal 7.3: Conserve, enhance, and manage water resources and protect their quality from degradation.

Objective 7.3.1: Preserve and protect the supply and quality of the County's water resources including the protection of critical watersheds, riparian zones, and aquifers.

Policy 7.3.1.2: Establish water conservation programs that include both drought tolerant landscaping and efficient building design requirements as well as incentives for the conservation and wise use of water.

Objective 7.3.5: Conservation of water resources, encouragement of water conservation, and construction of wastewater disposal systems designed to reclaim and re-use treated wastewater on agricultural crops and for other irrigation and wildlife enhancement projects.

Policy 7.3.5.4: Require efficient water conveyance systems in new construction. Establish a program of ongoing conversion of open ditch systems shall be considered for conversion to closed conduits, reclaimed water supplies, or both, as circumstances permit.

3.7.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the project would do any of the following:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

In addition, the CEQA Guidelines specify that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7[c]).

The extent to which a project increases or decreases GHG emissions in the existing environmental setting should be estimated in accordance with Section 15064.4, Determining the Significance of Impacts from Greenhouse Gas Emissions, of the CEQA Guidelines. The CEQA Guidelines indicate that when calculating GHG emissions resulting from a project, lead agencies shall make a good-faith effort based on scientific and factual data (Section 15064.4 (a)), and lead agencies have discretion to select the model or methodology deemed most appropriate for enabling decision makers to intelligently assess the project's incremental contribution to climate change (Section 15064.4 (c)).

Air Quality Thresholds

The EDCAQMD has not formally adopted a numerical threshold of significance for GHG emissions within the region. However, EDCAQMD staff recommended use of the Sacramento Metropolitan Air Quality Management District's (SMAQMD) adopted thresholds in order to determine impacts of the project (pers. com Rania Serieh).

The GHG analysis has been prepared to show compliance with SMAQMD's GHG thresholds of significance.[4] For construction related GHG emissions, SMAQMD has adopted a threshold of significance of 1,100 MT CO_2e/yr. For evaluating operational GHG emissions, SMAQMD has prepared a two-tiered framework of analysis for new projects. All development projects are required to implement Tier 1 measures (BMP 1 and 2). In addition, if operations would exceed 1,100 MT CO_2e/yr after implementation of the Tier 1 measures, then the project is required to implement Tier 2 measures (BMP 3). The Tier 1 and Tier 2 measures are presented below.

The 1,100 MT CO_2e/yr numerical thresholds used by SMAQMD is a screening level threshold that has been established as a universally accepted threshold throughout the state, with several other air districts, including the Placer County Air Pollution Control District (PCAPCD), which also has jurisdiction of a portion of the MCAB, having adopted the same 1,100 MT CO_2e/yr numerical threshold. In any case, SMAQMD has further included requirements to implement best management practices (BMPs), as presented below, to reduce operational GHG emissions associated with new development. The SMAQMD BMPs are consistent with the statewide CARB GHG reduction targets by focusing on reducing GHG emissions related to natural gas and vehicle trips, which are widespread sources of GHG emissions. Therefore, while other approaches may be used in other areas of the state, and even by other development projects within the County, to reduce GHG emissions, for the reasons stated above, use of the SMAQMD GHG thresholds for the proposed project is appropriate. The SMAQMD BMPs are also consistent with guidance from other agencies, including the Governor's Office of Land Use and Climate Innovation (formerly the Office of Planning and Research [OPR]).

[4] Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment, Chapter 6: Greenhouse Gas Emissions.* February 2021.

Tier 1

The SMAQMD adopted the following Tier 1 BMPs in which projects would be required to comply with, including the proposed project. The proposed Tier 1 BMPs are as follows:

- **BMP 1:** No natural gas: Projects shall be designed and constructed without natural gas infrastructure.
- **BMP 2:** Electric vehicle (EV) ready: Projects shall meet the current California Green Building Code (CalGreen) Tier 2 standards, except all EV Capable spaces shall instead be EV Ready.

If a project would not comply with both BMPs, the project would be required to include features that would achieve an equivalent level of GHG emissions reductions. For instance, a project that includes natural gas infrastructure may include prewiring to allow for the future retrofit of all natural gas appliances with all-electric appliances. Furthermore, projects that are below OPR's *de minimis* vehicle miles traveled (VMT) criteria,[5] and/or projects that emit less than 1,100 MT CO_2e/yr prior to implementation of BMP 1 and BMP 2 would be considered sufficiently small to screen out of further requirements and would be assumed to result in a less-than-significant impact related to GHG emissions and climate change. Projects that are not small enough to screen out of further review are subject to review under Tier 2 of SMAQMD's updated Thresholds.

Tier 2

The second tier of SMAQMD's updated thresholds includes the following BMP:

- **BMP 3:** Residential projects shall achieve a 15% reduction in VMT per resident, and office projects should achieve a 15% reduction in VMT per worker compared to existing average VMT per capita for the county, or for the city if a more local Senate Bill (SB) 743 target has been established. Retail projects should achieve no net increase in total VMT, as required to show consistency with SB 743. These reductions can be achieved by many strategies, such as:
  - Locate in an area that already has low VMT due to location, transit service, etc.;
  - Adopt CAPCOA measures;
  - Adopt measures noted in Sacramento's CAP checklist;
  - Join a Transportation Management Association;
  - Incorporate traffic calming measures;
  - Incorporate pedestrian facilities and connections to public transportation; and/or
  - Promote electric bicycle or other micro-mobility options.

As noted in SMAQMD's Guidance, for jurisdictions with SB 743 targets already established, projects that show consistency with those established targets would show consistency with the SMAQMD GHG targets. For the County, the 15% reduction goal for residential projects would be applicable for the proposed project.

If a project cannot incorporate the BMPs listed above, other reductions or purchasing and retiring of GHG/carbon offsets can be used as an alternative method of compliance. Additionally, while the all electric requirement in

[5] Projects which would be considered below the OPR's de minimis VMT criteria include projects within half a mile of an existing major transit stop or within a quarter of an existing stop along a high-quality transit corridor, 100% affordable residential development in infill locations, projects that generate or attract fewer than 110 trips per day; and local-serving retail developments (considered to be less than 50,000 square feet in size).

SMAQMD's BMP 1 has not been challenged and is consistent with guidance from other agencies, the Ninth Circuit recently held that the Energy Policy and Conservation Act expressly preempted an ordinance banning natural gas piping within new buildings for appliances covered by the Act unless narrow exceptions applied.[6] While that Ninth Circuit decision does not address mitigation measures or GHG emissions thresholds, a similar challenge could be brought forth in the future and a future court decision could find that all-electric mitigation requirements or GHG emissions thresholds are similarly preempted for covered appliances. The feasibility of BMP 1 also relies on the adequate availability of electricity at the time of development.

Governor's Office of Planning and Research Guidance

The Governor's Office of Planning and Research (OPR)[7] technical advisory titled, CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review, states that "public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2018). Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice" (OPR 2008).

3.7.4 Impacts and Mitigation Measures

Methodology

Construction

CalEEMod Version 2022.1.1.21 was used to estimate potential project generated GHG emissions during construction. Construction of the proposed project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. The analysis of GHG emissions used the same methodology and assumptions as the analysis of air quality impacts in Section 3.2, Air Quality, of this EIR. All details for construction criteria air pollutants discussed in Section 3.2.3, Methodology (Construction) are also applicable for the estimation of construction related GHG emissions. Please see Section 3.2 for a discussion of construction emissions calculation methodology and assumptions that is also used in the GHG emissions analysis. In addition, California has recently amended the In-Use Off-Road Diesel-Fueled Fleets Regulation, which requires the use of renewable diesel fuel in all off-road equipment greater than 25 horsepower. CalEEMod does not include renewable diesel as a fuel type for off-road equipment. As such, off-model calculations were conducted to determine the emissions reduction associated with renewable diesel-powered off-road equipment anticipated to be used during project construction.

6 *California Restaurant Association v. City of Berkeley* (9th Cir. 2023) 65 F.4th 1045, opinion modified (9th Cir. 2024) 89 F.4th 1094, rehearing and request for En banc hearing denied on January 2, 2024.

7 As of July 1, 2024, the Governor's Office of Planning and Research has been renamed the Governor's Office of Land Use and Climate Innovation.

Operation

Emissions from the operational phase of the proposed project were estimated using CalEEMod Version 2022.1.1.21. Operational year 2028 was assumed which would be the first full year after construction of the proposed project.

Potential project generated operational GHG emissions were estimated for area sources (landscape maintenance), energy sources (natural gas and electricity), mobile sources, solid waste, water supply and wastewater treatment, and refrigerants. Emissions from each category are discussed in the following text with respect to the proposed project. For additional details, see Section 3.2.3, Methodology (Operational), in Section 3.2, Air Quality, for a discussion of operational emission calculation methodology and assumptions, specifically for area, energy (natural gas), and mobile sources that also apply to the assessment of GHG emissions.

Area

CalEEMod was used to estimate GHG emissions from the proposed project's area sources, which include operation of gasoline-powered landscape maintenance equipment, which produce minimal GHG emissions. See Section 3.2.3 in Section 3.2, Air Quality, for a discussion of landscaping equipment emissions calculations that are also applicable to the analysis of GHG emissions. Consumer product use and architectural coatings result in VOC emissions, which are analyzed in air quality analysis only, and little to no GHG emissions.

Energy

The estimation of operational energy emissions was based on CalEEMod land use defaults and units or total area (i.e., square footage) of the proposed project land uses. The energy use (electricity or natural gas usage per square foot per year) from residential land uses is calculated in CalEEMod based on the Residential Appliance Saturation Study, while the energy use from nonresidential land uses is calculated in CalEEMod based on the California Commercial End-Use Survey database. Emissions are calculated by multiplying the energy use by the utility carbon intensity (pounds of GHGs per kilowatt-hour for electricity or 1,000 British thermal units for natural gas) for CO_2 and other GHGs. Annual natural gas and electricity emissions were estimated in CalEEMod using the emissions factors for Pacific Gas and Electric Company (PG&E), which would be the energy provider for the proposed project.

CalEEMod default energy intensity factors (CO_2, CH_4, and N_2O mass emissions per kilowatt-hour) for PG&E were used for the project analysis. As explained in Section 3.7.2, state SB X1 2 established a target of 33% from renewable energy sources for all electricity providers in California by 2020 and SB 100 calls for further development of renewable energy, with a target of 60% by 2030. As such, GHG emissions associated with project electricity demand would continue to decrease over time.

Mobile Sources

All details for criteria air pollutants discussed in Section 3.2, Air Quality, are also applicable for the estimation of operational mobile source GHG emissions. Regulatory measures related to mobile sources include AB 1493 (Pavley) and related federal standards. AB 1493 required that CARB establish GHG emission standards for automobiles, light-duty trucks, and other vehicles determined by CARB to be vehicles that are primarily used for noncommercial personal transportation in the state. In addition, the NHTSA and EPA have established corporate fuel economy standards and GHG emission standards, respectively, for automobiles and light-, medium-, and heavy-duty vehicles. Implementation of these standards and fleet turnover (replacement of older vehicles with newer

ones) will gradually reduce emissions from the project's motor vehicles. The effectiveness of fuel economy improvements was evaluated by using the CalEEMod emission factors for motor vehicles in 2028 for the proposed project to the extent it was captured in EMFAC 2014.[8]

Solid Waste

The proposed project would generate solid waste, and therefore, result in CO_2e emissions associated with landfill off-gassing. CalEEMod default values for solid waste generation were used to estimate GHG emissions associated with solid waste for the proposed project. It was assumed that the proposed project would be consistent with the County's 75% diversion goal by 2020 in accordance with AB 341.

Water and Wastewater Treatment

Supply, conveyance, treatment, and distribution of water for the project require the use of electricity, which would result in associated indirect GHG emissions. Similarly, wastewater generated by the project requires the use of electricity for conveyance and treatment, along with GHG emissions generated during wastewater treatment. Water consumption estimates for both indoor and outdoor water use and associated electricity consumption from water use and wastewater generation were estimated using default values in CalEEMod.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1,8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. Due to the similarities between the proposed project and the Active Adult option GHG emissions attributed to construction activities would essentially be the same as the proposed project. Therefore, where applicable, the impact analysis below indicates if a proposed option would result in a change in impact significance or require new mitigation. GHG emissions associated with the Active Adult option were analyzed in the December 5, 2024, *Creekside Village Specific Plan Project – Active Adult Project Option Technical Memorandum* ("Active Adult Technical Memorandum" provided in Appendix B).

Project Impacts

Impact 3.7-1. The proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Construction Emissions

Construction of the proposed project would result in GHG emissions, which are primarily associated with the use of off-road construction equipment, haul trucks, on-road vendor trucks, and worker vehicles.

CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 3.7.3, Methodology (Construction). Construction of the proposed project is anticipated to commence in June 2025 and end by approximately August 2028. On-site sources of GHG emissions include off-road equipment and off-

[8] The Low Carbon Fuel Standard calls for a 10% reduction in the "carbon intensity" of motor vehicle fuels by 2020, which would further reduce GHG emissions. However, the carbon intensity reduction associated with the Low Carbon Fuel Standard was not assumed in EMFAC 2014 and thus, was not included in CalEEMod 2022.1.1.21.

site sources including vendor trucks and worker vehicles. Table 3.7-3 presents construction emissions for the proposed project from on-site and off-site emission sources.

Table 3.7-3. Estimated Annual Construction Greenhouse Gas Emissions - Unmitigated

Source	CO_2e Metric Tons per Year
Project Emissions	997
SMAQMD Threshold	1,100
Exceeds Threshold?	**No**

Source: See Appendix B.
Notes: CO_2e = carbon dioxide equivalent; SMAQMD = Sacramento Metropolitan Air Quality Management District.

As shown in Table 3.7-3, the estimated maximum total GHG emissions during construction of would be approximately 997 MT CO_2e which would be below the SMAQMD significance threshold. Therefore, project construction would not be considered to result in a cumulatively considerable contribution to global climate change. As with project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the proposed project would be short-term in nature, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Operational Emissions

Operation of the proposed project would generate GHG emissions through motor vehicle and delivery truck trips to and from the project site; landscape maintenance equipment operation; energy use (natural gas and generation of electricity consumed by the proposed project); solid waste disposal; and generation of electricity associated with water supply, treatment, distribution and wastewater treatment, and refrigerants. CalEEMod was used to calculate the annual GHG emissions based on the operational assumptions described in Section 3.7.3, Methodology (Operation). Furthermore, the proposed project's compliance with the SMAQMD's BMPs is discussed in further detail below.

BMP-1: No Natural Gas

In order to be consistent with BMP 1, the proposed project is required to include all electric appliances and plumbing. However, project specific information is not available to ensure that the project would be designed and constructed without natural gas infrastructure, thus, mitigation measure GHG-1 implements BMP 1.

It should be noted, however, that as discussed above, the potential exists that a challenge could be brought forth in the future and a future court decision could find that all-electric mitigation requirements or GHG emissions thresholds are preempted for covered appliances. The feasibility of BMP 1 also relies on the adequate availability of electricity at the time of development. Therefore, because the implementation of BMP 1 may not be enforceable or commercially feasible at the time of development for certain project components, this is considered a potentially significant impact.

BMP-2: EV-Ready

Consistent with BMP-2, the proposed project would be required to provide EV Ready parking spaces at the ratio with which the current CalGreen Tier 2 standards require EV Capable spaces (see Table 3.7-4).

Table 3.7-4. EV Ready Parking Space Requirements

Land Use Type	Requirements for New Construction		
1-2 family dwelling units/townhouses[1]	Each dwelling unit shall accommodate a dedicated 208/40-volt branch circuit		
Nonresidential[2]	**Total Number of Parking Spaces**	**EV Capable Spaces**	**EV Ready Spaces**
	0-9	3	0
	10-25	8	3
	26-50	17	6
	51-75	28	9
	76-100	40	13
	101-150	57	19
	151-200	79	26
	201 and over	45% of actual parking spaces	33% of EV Ready Spaces

Source: Appendix B.
Notes:
1 2022 CalGreen Code Section A4.106.8.1.
2 2022 CalGreen Code Table A5.106.5.3.3.

BMP-3: VMT Reduction

As noted above, the project would be required to implement BMPs 1 and 2. However, even with implementation of BMPs 1 and 2, the project would still result in annual emissions over the SMAQMD's threshold of significance and, therefore, would be subject to BMP 3. The proposed project would not qualify for an exemption from BMP 3 under the OPR's *de minimis* VMT criteria. Therefore, in order to address the VMT reduction required by BMP-3, the project's transportation consultant conducted a VMT Analysis for the proposed project (Appendix H).

Consistent with the County's VMT Guidance (Resolution 141-2020), for the residential component of the project, a VMT model run was conducted for the Baseline Condition and Baseline Plus Project Condition (2018), as well as the Cumulative and Cumulative Plus Project Condition (2040) using the County's Travel Demand Model. Based on County guidance, project VMT was compared to the 15% reduction threshold of 17.3 VMT per capita. Based on the results of the VMT Analysis, the residential component of the project is anticipated to generate 13.6 VMT per capita for the Baseline (2018) Condition, and 13.1 VMT per capita for the Cumulative (2040) Condition, which is below the County's 17.3 VMT per capita threshold (see Section 3.12, Transportation, for more information on transportation-related impacts).

In addition, with regard to the commercial component of the proposed project, the OPR Technical Advisory notes that projects less than 50,000 square feet (sf) can generally be considered local serving. The proposed project would include a maximum of 5,400 sf of commercial uses on-site. Thus, the neighborhood commercial component[9] of the project would be well below 50,000 sf, and, as a result, would be considered local serving. In addition, given the nature of the project and the existing residential uses located in the direct vicinity of the project site, a reasonable assumption can be made that the majority of patrons visiting the neighborhood commercial use would

9 There would be an option for converting the neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The expansion of onsite parks would not impact the project's VMT or GHG emissions.

be traveling from the immediately surrounding area. As such, the proposed project would be classified as local-serving, and, based on guidance provided by OPR, may be presumed to result in a less-than-significant VMT impact.

Based on the above, implementation of the proposed project would result in a reduction in local VMT in compliance with the relevant thresholds of significance and, consequently, the project would be considered to comply with BMP-3.

The estimated existing and project operational GHG emissions from area sources, energy usage, motor vehicles, solid waste generation, and water usage and wastewater generation are shown in Table 3.7-5.

Table 3.7-5. Estimated Annual Operational Greenhouse Gas Emissions

Emission Source	CO_2e Metric Tons per Year
Mobile	6,582
Area	731
Energy	2,210
Water supply and wastewater	55
Solid Waste	180
Refrigerants	4
Total	**9,761**
SMAQMD Threshold	1,100
Exceeds Threshold?	**Yes**

Source: See Appendix B.
Notes: CO_2e = carbon dioxide equivalent; SMAQMD = Sacramento Metropolitan Air Quality Management District.

Active Adult Option

Based on the reduced trips associated with the Active Adult option, the Active Adult Technical Memorandum concluded that the maximum unmitigated operational GHG emissions would be reduced by approximately 247 MTCO2e/yr. However, given the similarities of the proposed project and the Active Adult option, consistency with SMAQMD BMP-1 and BMP-2 cannot be ensured at this time. Therefore, even with the reduction in GHG emissions, because the analysis is based on SMAQMD's qualitative BMP-based thresholds of significance, impacts associated with operational GHG emissions would remain the same as under the proposed project.

Conclusion

Based on the information presented above, the proposed project and the Active Adult option would not meet BMP-1 or BMP-2 without mitigation; therefore, the project including the Active Adult option could be considered to generate GHG emissions during operations that would have a significant impact on the environment. The Active Adult option would contribute slightly less GHG emissions. However, the proposed project as well as the Active Adult option would result in a **potentially significant impact**.

Mitigation Measures

Implementation of the following mitigation measure would ensure the project and the Active Adult option would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Compliance with this mitigation measure would reduce the impact to **less than significant** by not including natural gas, incorporation of EV parking spaces, and with the purchase of carbon offset credits.

GHG-1: The following requirements shall be noted on project improvement plans, subject to review and approval by the El Dorado County Planning Services Department:

- The proposed project shall be designed such that the project is built all-electric, and natural gas infrastructure shall be prohibited onsite; and
- The project shall be constructed to include electric vehicle (EV) ready parking spaces at the ratio with which the current CalGreen Tier 2 standards require EV Capable spaces in effect at the time building permits are issued.

If the use of all-electric for any project component(s) (e.g., an appliance) is not enforceable or commercially feasible at the time of issuance of building permit(s), the project applicant shall require future residential homebuilders to include pre-wiring in all residential units and the neighborhood commercial space (if approved as part of the Creekside Village Specific Plan) to allow for the future retrofit of all natural gas appliances with all-electric appliances and purchase off-site mitigation credits or forecasted mitigation units ("FMUs") (collectively, "GHG credits") for project-related greenhouse gas (GHG) emissions from the component(s) using natural gas instead of electric. The emissions from the use of natural gas shall be calculated by a qualified professional using El Dorado County Air Quality Management District (EDCAQMD), California Air Resource Board (CARB), or the EPA-approved emissions models and quantification methods available and submitted to the County for review and approval, which shall include third-party review by a qualified consultant of the County's selection and be subject to applicant reimbursement of consultant costs.

Any and all GHG credits to off-set for the use of natural gas must be created through a CARB-approved registry. These registries are currently the American Carbon Registry (ACR), Climate Action Reserve (CAR), and Verra, although CARB may accredit additional registries in the future. These registries use robust accounting protocols for all GHG credits created for their exchange, including the six currently approved CARB protocols. This mitigation measure specifically requires GHG credits created for the project originate from a CARB-approved protocol or a protocol that is equal to or more rigorous than CARB requirements under 17 CCR 95972. The selected protocol must demonstrate that the GHG emissions reductions are real, permanent, quantifiable, verifiable, enforceable, and additional. Definitions of these terms from 17 CCR 95802(a) are provided below.

1. Real: GHG reductions or enhancements result from a demonstrable action or set of actions and are quantified using appropriate, accurate, and conservative methodologies that account for all GHG emissions sources, GHG sinks, and GHG reservoirs within the [GHG credit] project boundary and account for uncertainty and the potential for activity-shifting and market-shifting leakage.
2. Additional: GHG reductions or removals that exceed any GHG reduction, or removals otherwise required by law, regulation, or legally binding mandate, and that exceed any GHG reductions or removals that would otherwise occur in a conservative Business as Usual scenario.
3. Permanent: GHG reductions and removal enhancements are not reversible or, when GHG reductions and GHG-removal enhancements may be reversible, mechanisms are in place

to replace any reversed GHG-emission reductions and GHG-removal enhancements to ensure that all credited reductions endure for at least 100 years.

4. Quantifiable: The ability to accurately measure and calculate GHG reductions or GHG-removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the [GHG credit] project boundary, while accounting for uncertainty. Activity-shifting, and market-shifting leakage.
5. Verifiable: A [GHG credit] project report assertion is well-documented and transparent such that it lends itself to an objective review by an accredited verification body.
6. Enforceable: The authority for CARB to hold a particular party liable and take appropriate action if any of the provisions of this article are violated. Note that this definition of enforceability is specific to the Cap and-Trade regulation, where CARB holds enforcement authority, but this measure shall employ GHG credits from the voluntary market, where CARB has no enforcement authority. Applying the definition to this mitigation measure means that GHG reductions must be owned by a single entity and backed by a legal instrument or contract that defines exclusive ownership.

Geographic Prioritization of GHG Credits

GHG credits from reduction projects in El Dorado County (County) shall be prioritized before projects in larger geographies (i.e., northern California, California, United States, and international). The project applicant shall inform brokers of the required geographic prioritization for the procurement of GHG credits. GHG credits from reduction projects identified in the County that are of equal or lesser cost compared to the settlement price of the latest Cap-and-Trade auction must be included in the transaction. GHG credits from reduction projects outside of the County may be purchased if adequate credits cannot be found in the County or if they exceed the maximum price identified above. The economic and geographic analysis undertaken to inform the selection of GHG credits must be provided by the project applicant to the County as part of the required documentation discussed below under Plan Implementation and Reporting.

Types of GHG Credits

GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or FMUs for future committed GHG emissions meeting protocols. Because emissions reductions from GHG offsets have already occurred, their benefits are immediate and can be used to compensate for an equivalent quantity of project-generated emissions at any time. GHG credits from FMUs must be funded and implemented within 5 years of project GHG emissions to qualify as a GHG credit under this measure (i.e., there can only be a maximum of 5 years lag between project emissions and their real-world reductions through funding a FMU in advance and implementing the FMU on the ground). Any use of FMUs that result in a time lag between project emissions and their reduction by GHG credits from FMUs must be compensated through a prorated surcharge of additional FMUs proportional to the effect of the delay. Because emissions of CO_2 in the atmosphere reach their peak radiative forcing within 10 years, a surcharge of 10% for every year of lag between project emissions and their reduction through a FMU shall be added to the GHG credit requirement (i.e., 1.10 FMUs would be required to mitigate 1 metric ton of project GHG emissions generated in the year prior to funding and implementation of the FMU).

Verification and Independent Review of GHG Credits

All GHG credits shall be verified by an independent verifier accredited by the ANSI National Accreditation Board (ANAB) or CARB, or an expert with equivalent qualifications to the extent necessary to assist with the verification. Following the standards and requirements established by the accreditation board (i.e., ANAB or CARB), the verifier shall certify the following.

- GHG credits conform to a CARB-approved protocol or a protocol that is equal to or more rigorous than CARB requirements under 17 CCR 95972. Verification of the latter requires certification that the credits meet or exceed the standards set in 17 CCR 95972.
- GHG credits are real, permanent, quantifiable, verifiable, enforceable, and additional, as defined in this measure.
- GHG credits are purchased according to the geographic prioritization standard defined in this measure under Geographic Prioritization of GHG Credits.

Verification of GHG offsets must occur as part of the certification process for compliance with the accounting protocol. Because FMUs are GHG credits that result from future projects, additional verification must occur beyond initial certification is required. Verification for FMUs must include initial certification and independent verification every 5 years over the duration of the FMU generating the GHG credits. The verification shall examine both the GHG credit realization on the ground and its progress toward delivering future GHG credits. The project applicant shall retain an independent verifier meeting the qualifications described above to certify reductions achieved by FMUs are achieved following completion of the future reduction project.

Impact 3.7-2. The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Potential to Conflict with State Reduction Targets and CARB's Scoping Plan

The state passed the Global Warming Solutions Act of 2006 (AB 32) to provide initial direction to limit California's GHG emissions to 1990 levels by 2020 and initiate the state's long-range climate objectives. Since the passage of AB 32, the State has adopted GHG emissions reduction targets for future years beyond the initial 2020 horizon year. For the project, the relevant GHG emissions reduction targets include those established by SB 32 and AB 1279, which require GHG emissions be reduced to 40% below 1990 levels by 2030, and 85% below 1990 levels by 2045, respectively. In addition, AB 1279 requires the state achieve net zero GHG emissions by no later than 2045 and achieve and maintain net negative GHG emissions thereafter.

As defined by AB 32, CARB is required to develop the Scoping Plan, which provides the framework for actions to achieve the State's GHG emission targets. The Scoping Plan is required to be updated every five years and requires CARB and other state agencies to adopt regulations and initiatives that will reduce GHG emissions statewide. As discussed in Section 3.7.2.3, the first Scoping Plan was adopted in 2008, and was updated in 2014, 2017, and most recently in 2022. While the Scoping Plan is not directly applicable to specific projects, nor is it intended to be used as the sole basis for project-level evaluations, it is the official framework for the measures and regulations that will be implemented to reduce California's GHG emissions in alignment with the adopted targets. Therefore, a project would be found to not conflict with the statutes if it would meet the Scoping Plan policies and would not impede attainment of the goals therein.

CARB's 2017 Climate Change Scoping Plan update was the first to address the state's strategy for achieving the 2030 GHG reduction target set forth in SB 32 (CARB 2017), and the most recent CARB 2022 Scoping Plan for Achieving Carbon Neutrality update outlines the state's plan to reduce emissions and achieve carbon neutrality by 2045 in alignment with AB 1279 and assesses progress is making toward the 2030 SB 32 target (CARB 2022b). As such, given that SB 32 and AB 1279 are the relevant GHG emission targets, the 2017 and 2022 Scoping Plan updates that outline the strategy to achieve those targets, are the most applicable to the project.

The 2017 Scoping Plan included measures to promote renewable energy and energy efficiency (including the mandates of SB 350), increase stringency of the carbon intensity of transportation fuels (LCFS), measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increase stringency of SB 375 targets. The 2022 Scoping Plan builds upon and accelerates programs currently in place, including moving to zero-emission transportation; phasing out use of fossil gas use for heating homes and buildings; reducing chemical and refrigerants with high GWP; providing communities with sustainable options for walking, biking, and public transit; and displacement of fossil-fuel fired electrical generation through use of renewable energy alternatives (e.g., solar arrays and wind turbines) (CARB 2022b). Many of the measures and programs included in the Scoping Plan would result in the reduction of project-related GHG emissions with no action required at the project-level, including GHG emission reductions through increased energy efficiency and renewable energy production (SB 350), reduction in LCFS, and the accelerated efficiency and electrification of the statewide vehicle fleet (Mobile Source Strategy).

Regarding VMT reduction efforts, as previously discussed, the OPR Technical Advisory notes that commercial projects less than 50,000 sf can generally be considered local serving. The proposed project would include a maximum of 5,400 sf of neighborhood commercial uses on-site. Thus, the commercial component of the proposed project would be well below 50,000 sf, and, as a result, would be considered local serving.

Table 3.7-6 highlights measures that have been developed under the 2017 Scoping Plan and presents the project's consistency with the applicable 2017 Scoping Plan measures. Given the similarities between the proposed project and the Active Adult option, the Active Adult option would also be consistent with the 2017 and 2022 Scoping Plan and there would be no change in the analysis provided below.

Table 3.7-6. Project Potential to Conflict with the 2017 Scoping Plan GHG Reduction Measures

Action	Potential to Conflict
Transportation Sector	
Advanced Clean Cars	**No conflict.** The project's residents, employees, and visitors would purchase vehicles in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase.
Low Carbon Fuel Standard	**No conflict.** Motor vehicles driven by the project's residents, employees, and visitors would use available compliant fuels.
Reduction in VMT	**No Conflict.** The project would not prevent CARB from implementing this measure. As discussed above, the project is anticipated to result in a reduction in the total regional VMT.

Table 3.7-6. Project Potential to Conflict with the 2017 Scoping Plan GHG Reduction Measures

Action	Potential to Conflict
Electricity and Natural Gas Sector	
Energy Efficiency Measures (Electricity)	**No conflict.** The project would be constructed in accordance with CALGreen and Title 24 building standards.
Energy Efficiency (Natural Gas)	**No conflict.** With mitigation measure GHG-1, the project would designed such that it would be built all-electric, and natural gas infrastructure shall be prohibited onsite.
Renewables Portfolio Standard (33% by 2020)	**No conflict.** The project would procure electricity from PG&E, which is in compliance with this measure.
Renewables Portfolio Standard (50% by 2050)	**No conflict.** The project would procure electricity from PG&E, which is on trajectory to be compliance with this measure.
Water Sector	
Water Use Efficiency	**No conflict.** The project would be constructed in accordance with CALGreen and Title 24 building requirements, including water conservation measures.
Recycling and Waste Management Sector	
Mandatory Commercial Recycling	**No conflict.** The project would include recycling and solid waste diversion, pursuant to regulatory requirements.

Source: CARB 2014, 2017.
Notes: GHG = greenhouse gas; CARB = California Air Resources Board; VMT = vehicle miles traveled; SB = Senate Bill; PG&E = Pacific Gas and Electric.

Table 3.7-7 highlights the measures from the 2022 Scoping Plan that are relevant to the project.

Table 3.7-7. Project Potential to Conflict with 2022 Scoping Plan GHG Reduction Measures

Action	Potential to Conflict
GHG Emissions Reductions Relative to the SB 32 Target	
40% below 1990 levels by 2030	**No conflict.** While the SB 32 GHG emissions reduction target is not an Action that is analyzed independently, it is included in Table 2-1 of the 2022 Scoping Plan for reference. The project would implement mitigation measure GHG-1, which requires the project be designed such that the project is built all-electric, and natural gas infrastructure shall be prohibited onsite and include EV ready parking spaces consistent with the current CalGreen Tier 2 standards. Furthermore, GHG-1 would require the project to use GHG credits to off-set the use of natural gas if the use of all-electric for

Table 3.7-7. Project Potential to Conflict with 2022 Scoping Plan GHG Reduction Measures

Action	Potential to Conflict
	any project component(s) (e.g., an appliance) is not enforceable or commercially feasible at the time of issuance of building permit(s). Implementation of mitigation measure GHG-1 would reduce the project's GHG emissions and would ensure that the project would not obstruct or interfere with agency efforts to meet the SB 32 reduction goal.
Smart Growth / VMT Sector	
VMT per capita reduced 25% below 2019 levels by 2030, and 30% below 2019 levels by 2045	**No conflict.** The project would not obstruct or interfere with agency efforts to meet this regional VMT reduction goal, including through implementation of SB 375. As detailed below, the project would be consistent with the SACOG 2020 MTP/SCS, which is the regional growth management strategy that targets per capita GHG reduction from passenger vehicles and light trucks pursuant to SB 375.
Light-duty Vehicle (LDV) Zero Emission Vehicles (ZEVs) Sector	
100% of Light-Duty Vehicle (LDV) sales are ZEV by 2035	**No conflict.** As this action pertains to LDV sales within California, the project would not obstruct or interfere with its implementation. Furthermore, the project would support the transition from fossil fuel LDV to zero emission vehicles (ZEV) through its provision of EV chargers.
Truck ZEVs Sector	
100% of medium-duty vehicle (MDV)/ heavy-duty vehicle (HDV) sales are ZEV by 2040	**No conflict.** As this action pertains to MDV and HDV sales within California, the project would not obstruct or interfere with its implementation.
Electricity Generation Sector	
Sector GHG target of 38 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2030 and 30 $MMTCO_2e$ in 2035 Retail sales load coverage[1] 20 gigawatts (GW) of offshore wind by 2045 Meet increased demand for electrification without new fossil gas-fired resources	**No conflict.** As this action pertains to the statewide procurement of renewably generated electricity, the project would not obstruct or interfere with its implementation. However, the project would support increased usage of renewable electricity through the installation of on-site solar panels, per Title 24 Standards.
New Residential and Commercial Buildings Sector	
All electric appliances beginning 2026 (residential) and 2029 (commercial), contributing to 6 million heat pumps installed statewide by 2030	**No conflict.** The project would not obstruct or interfere with agency efforts to meet the all-electric appliance and heat pump goals.
Construction Equipment Sector	
25% of energy demand electrified by 2030 and 75% electrified by 2045	**No conflict.** As this action pertains to the electrification of off-road equipment across California, the project would not obstruct or interfere with its implementation.

Table 3.7-7. Project Potential to Conflict with 2022 Scoping Plan GHG Reduction Measures

Action	Potential to Conflict
Low Carbon Fuels for Transportation Sector	
Biomass supply is used to produce conventional and advanced biofuels, as well as hydrogen	**No conflict.** The project would not obstruct or interfere with agency efforts to increase the provision of low carbon fuels for transportation.
Low Carbon Fuels for Buildings and Industry Sector	
In 2030s biomethane blended in pipeline Renewable hydrogen blended in fossil gas pipeline at 7% energy (~20% by volume), ramping up between 2030 and 2040 In 2030s, dedicated hydrogen pipelines constructed to serve certain industrial clusters	**No conflict.** The project would not obstruct or interfere with agency efforts to increase the provision of low carbon fuels for use in buildings and industry. Notably, however, the project would designed such that it would be built all-electric, and natural gas infrastructure shall be prohibited onsite.
High GWP Potential Emissions Sector	
Low GWP refrigerants introduced as building electrification increases, mitigating HFC emissions	**No conflict.** The project would not obstruct or interfere with agency efforts to introduce low GWP refrigerants.

Source: CARB 2022b.
Notes:
[1] As noted in Table 2-1 of the 2022 Scoping Plan, SB 100 speaks only to retail sales and state agency procurement of electricity (i.e., wholesale or non-retail sales and losses from storage and transmission and distribution lines are not subject to the law).

Based on the analysis in Tables 3.7-6 and 3.7-7, the project and the Active Adult option would not conflict with the applicable strategies and measures in the 2017 Scoping Plan and 2022 Scoping Plan, respectively.

The 2045 carbon neutrality goal required CARB to expand proposed actions in the 2022 Scoping Plan to include those that capture and store carbon in addition to those that reduce only anthropogenic sources of GHG emissions. However, the 2022 Scoping Plan emphasizes that reliance on carbon sequestration in the state's natural and working lands will not be sufficient to address residual GHG emissions, and achieving carbon neutrality will require research, development, and deployment of additional methods to capture atmospheric GHG emissions (e.g., mechanical direct air capture). Given that the specific path to neutrality would require development of technologies and programs that are not currently known or available, the project's role in supporting the statewide goal would be speculative and cannot be wholly identified at this time. Therefore, the project would not be consistent with state GHG reduction targets and CARB's Scoping Plan.

Potential to Conflict with the Sacramento Area Council of Governments 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy

As discussed in Section 3.7.2, for the 2020 MTP/SCS, CARB assigned SACOG a GHG reduction target from passenger vehicles of 19% below 2005 levels per capita by 2035. There are many factors that influence the amount people drive and the emissions their vehicles generate. Two of these factors are largely outside of the region's control. First, changes in auto operating cost related to the cost of owning and driving a vehicle (e.g., maintenance, tires, insurance) and second, demographic factors like aging of the population (SACOG 2019). To achieve the GHG reduction target, SACOG identified five additional factors related to policies and actions in the 2020 MTP/SCS, which are outlined in Table 3.7-8 below. As shown in the table, the proposed project would not conflict with any of the MTP/SCS policies and actions. Given the similarities between the proposed project and the Active Adult option,

the Active Adult option would also be consistent with applicable MTP/SCS policies and actions and there would be no change in the analysis provided below.

Table 3.7-8. Project Potential to Conflict with 2020 MTP/SCS Policies and Actions

Action	Potential to Conflict
Shortened Vehicle Trips	
Reducing the average trip length of the vehicle trips that residents take daily. This is accomplished largely through a more compact development pattern with a greater density of uses.	**No conflict.** As described previously, the project would potentially result in reduced regional VMT and would be considered local serving.
Increased Transit, Bike, Walk Trips	
Shifting trips from vehicle travel (which generate passenger vehicle GHGs) to non-vehicle modes such as transit, biking, and walking.	**No conflict.** Based on the project's configured uses, and its location, the project would serve the local community by providing a park and a small neighborhood commercial use (if approved) where visitors could walk and bike, rather than driving to parks or commercial uses that are farther away. The project also proposes Class I bike facilities and would connect to existing trails.
Express Lanes and Pay-As-You-Go Fees	
Price signals are an important factor in predicting how people will travel. Transitioning away from the California fuel tax, which will diminish on a per-mile-traveled basis over time, to tolling and a pay-as-you-go or mileage-based fee, will not only help generate revenue to build and maintain the system, but help to better manage demand on that system.	**No conflict.** As this action pertains to shifting price signals in the region, the project would not obstruct or interfere with its implementation.
ITS/TSM	
Implementing intelligent transportation systems (ITS) and transportation system management (TSM), will smooth traffic flows which have the benefits of making the system more reliable, making better use of existing travel lanes, and reducing emissions from vehicles.	**No conflict.** As this action pertains implementing ITS/TSM in the region, the project would not obstruct or interfere with its implementation.
Electric Vehicles	
Locally funded and implemented programs that incentivize the use of EVs and accelerate the penetration of these vehicles into the regional market.	**No conflict.** The project would support the transition from fossil fuel EVs through its provision of EV chargers.

Source: SACOG 2019.

Based on the analysis above, the project as well as the Active Adult option would be consistent with SACOG's 2020 MTP/SCS.

Conclusion

Based on the information presented above, the proposed project as well as the Active Adult option could be considered to generate GHG emissions during operations that would have a significant impact on the environment.

In addition, project consistency with BMP-1 and BMP-2 cannot be assured at this time. Therefore, the proposed project including the Active Adult option could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Consequently, the project's impact would be **potentially significant**.

Mitigation Measures

See mitigation measure GHG-1. Implementation of GHG-1 would ensure the project (and the Active Adult option) would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Compliance with this mitigation measure would reduce the impact to a **less-than-significant level** by not including natural gas, incorporation of EV parking spaces, and with the purchase of carbon offset credits.

GHG-2: Implement mitigation measure GHG-1.

Cumulative Impacts

Global climate change is inherently a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. As previously discussed above, the project's GHG emissions contribute to the overall contribution of cumulative GHGs. As shown under Impacts 3.7-1 and 3.7-2, the project would be required to incorporate mitigation measure GHG-1 in order to ensure that the project's contribution to GHG emissions would be **less than significant.**

Mitigation Measures

No mitigation measures are required.

3.7.5 References

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3.8 Hydrology and Water Quality

This section describes potential adverse effects of the Creekside Village Specific Plan (proposed project or CVSP) on hydrology, water quality, drainage, and groundwater resources. Potential effects evaluated include those associated with grading and drainage changes within the CVSP area (project site or plan area), groundwater recharge, groundwater use, water quality, and stormwater runoff. Included in this discussion is a description of the existing environmental setting, and a summary of applicable laws, regulations, and agencies responsible for their implementation and oversight.

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) and the follow up second scoping meeting held on September 26, 2023, did not include any concerns related to hydrology or water quality. A copy of the NOP and comments received is included in Appendix A.

Main sources referenced to prepare this section include the Drainage Report Creekside Village prepared by CTA Engineering & Surveying (Appendix F), Geotechnical Feasibility Study for Creekside Village (Geotechnical Study) prepared by Youngdahl Consulting Group, Inc. (see Appendix D), Phase I Environmental Site Assessment (ESA) prepared by ENGEO (ENGEO 2016), and public agency reports, web map viewers, and databases. This includes U.S. Geological Survey (USGS) hydrography data, California Department of Water Resources (DWR) groundwater resource information, State Water Resources Control Board (SWRCB) water resource data, and flood information from the Federal Emergency Management Agency (FEMA).

3.8.1 Environmental Setting

Regional Watershed

The project site is located within the Cosumnes River watershed. The Cosumnes River flows approximately 52.5 miles west from the western slope of the Sierra Nevada Mountain range into the Central Valley, where the river merges with the Mokelumne River, which then flows to the Sacramento-San Joaquin Delta (Water Education Foundation 2020). The major tributaries flowing directly into the Cosumnes River are the South, Middle, and North Fork Cosumnes rivers, and Canyon Creek (El Dorado County 2003). Both Deer Creek and Carson Creek are also tributaries to the Cosumnes River (El Dorado County 2003). The majority of the project site (approximately 199.5 acres) is located within the Carson Creek subwatershed of the larger Cosumnes River watershed, while approximately 8.5 acres is located within the Upper Deer Creek subwatershed, as shown on Figure 3.8-1 (USGS 2020). Carson Creek flows to Deer Creek which then flows to the Cosumnes River (USGS 2020).

Topography and Drainage

As described in Chapter 2, Project Description, the project site consists of approximately 208 acres of land located on the west side of Latrobe Road, south of Investment Boulevard, directly adjacent to the southern boundary of the El Dorado Hills Business Park. The site is comprised of undeveloped grasslands covering gently rolling hills with broad valleys. There are three seasonal drainages that cross the project site and merge at the western boundary to form one intermittent drainage that drains offsite towards Carson Creek, which is located approximately 0.6 miles to the west. Deer Creek is located approximately 1 mile to the south.

The topography of the site generally slopes to the west, with the elevation ranging from 470 feet along the western boundary to a high of 640 feet above mean sea level in the southeast corner. Approximately 80% of the

project site contains slopes of less than 10%; 16% contains slopes of between 11% and 20%; 3% contains slopes of between 21% and 29%; and the remaining 1% of the plan area contains slopes of 30% or greater (CTA Engineering & Surveying Undated).

Climate

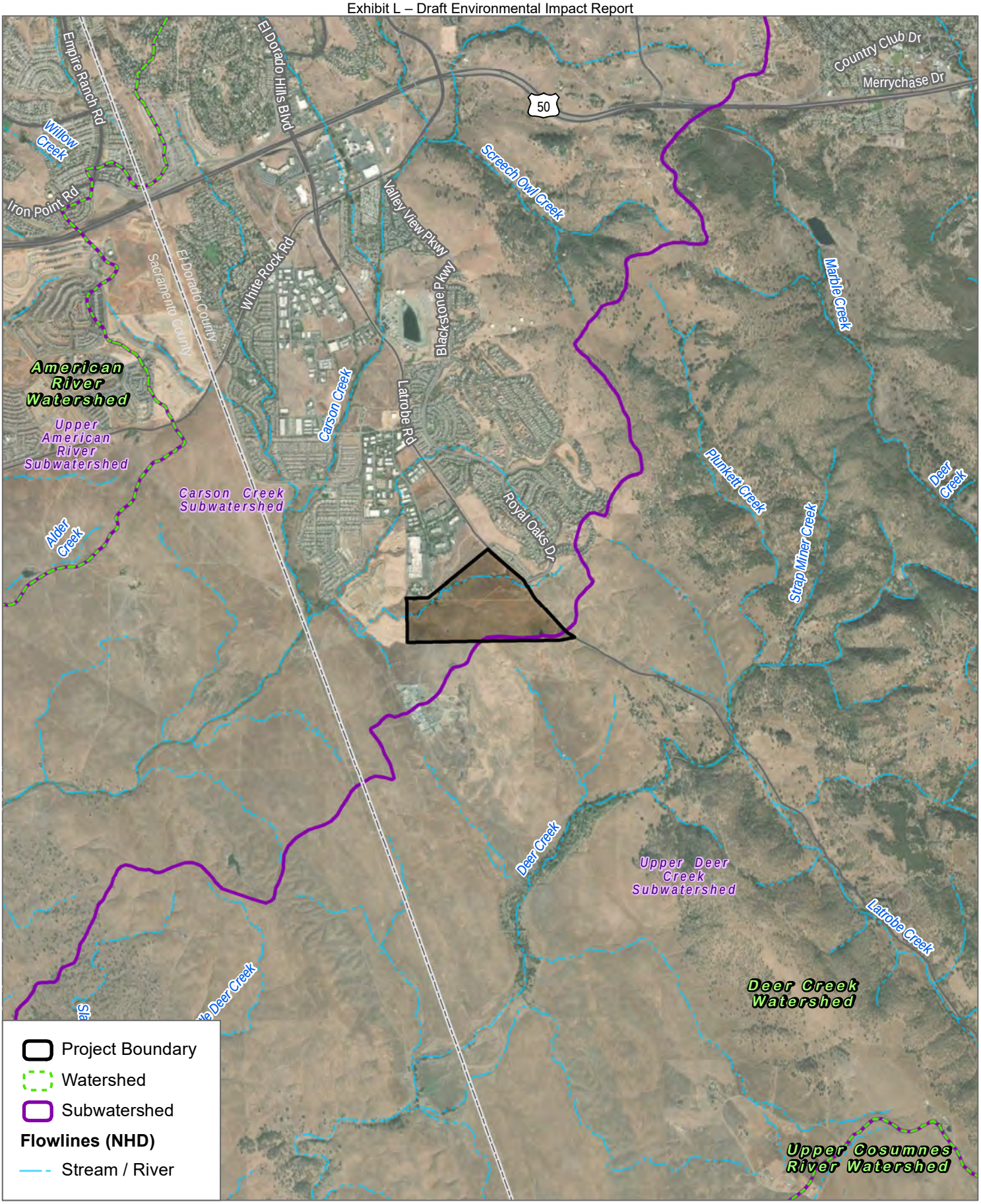
The climate of western El Dorado County (County) is characterized as Mediterranean, with cool wet winters and warm dry summers. The average annual high temperature is approximately 73.1 degrees Fahrenheit (ºF), and the average annual low temperature is approximately 49.8º F (WRCC 2012). However, during the summer and fall months temperatures can exceed 90º F. The mean annual rainfall is approximately 18.15 inches, and primarily occurs from October through April (WRCC 2023). Annual rainfall has varied from approximately 6.67 inches (1976) to approximately 37.62 inches (1983), with a highest one-day precipitation total of approximately 5.28 inches during the period of 1877 to 2023 (WRCC 2023).

Local Geologic and Groundwater Conditions

The Geotechnical Study prepared for the project (Appendix D) indicates that, based on investigations in the vicinity of the project site, the subsurface conditions on the project site likely consist of silty clay and clayey silt soils overlying metavolcanic bedrock.[1] There are numerous outcrops of shallow bedrock protruding out of the ground along the northeastern portion of the project site. Groundwater is anticipated to occur at depths greater than 100 feet below the ground surface; however, due to relatively shallow bedrock, it is likely that perched water is located near the soil and bedrock contact at the project site. The geologic and soils conditions within the project site are discussed further in Section 3.6, Geology and Soils.

The Department of Water Resources (DWR), California's Groundwater (Bulletin 118), is the state's official publication on the occurrence and nature of groundwater in California. The publication defines the boundaries and describes the hydrologic characteristics of groundwater basins within the entire state. Bulletin 118 also provides information on groundwater management and recommendations for the future (DWR 2020a). According to DWR Groundwater Basin Boundary Assessment Tool, no defined groundwater basins underly the project site (DWR 2020b).

[1] Metavolcanic rock is a rock that was first produced by a volcano and was then buried and subjected to high pressures and temperatures, causing the rock to recrystallize.



SOURCE: ESRI Imagery 2024; Open Street Map 2019; USGS NHD 2022; USFWS NWI 2022

DUDEK

0 2,000 4,000 Feet

FIGURE 3.8-1
Hydrologic Setting
Creekside Village Specific Plan EIR

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Flood Hazard Areas

Flood zones identified on FEMA Flood Insurance Rate Maps (FIRMs) are identified as a Special Flood Hazard Area. A Special Flood Hazard Area is defined as the area that will likely be inundated by a flood event having a 1% chance of being equaled or exceeded in any given year. The 1%-annual-chance flood is also referred to as the base flood or 100-year flood. FEMA mapping indicates that the project site is located within an area designated Zone X (Area of Minimal Flood Hazard) (FEMA 2008). Zone X is considered to be an area outside of a Special Flood Hazard Area and higher than the elevation of the 0.2% annual (500-year) chance flood (FEMA 2008).

A dam failure can occur due to an earthquake, an isolated incident because of structural instability, or during heavy stormwater runoff that exceeds spillway design capacity. Nine dams located within the County have been identified as having the potential of inundating habitable portions of the County in the unlikely event of dam failure. These nine dams are Echo Lake Dam, Union Valley Dam, Ice House Dam, Chili Bar Reservoir, Stumpy Meadows Dam, Weber Creek Dam, Slab Creek Dam, Loon Lake Auxiliary Dam, and Blakely Dam. According to the Division of Safety of Dams (DSOD), the project site is not located within a dam inundation zone (DSOD 2023). The nearest DSOD jurisdictional dam is associated with the Carson Creek Reservoir, known as the El Dorado Hills Dam, and the inundation map for this dam does not intersect the site (DSOD 2023). The project site is located hundreds of miles inland and due to the lack of large nearby lakes or reservoirs, the project site is not within an area prone to sea level rise, tsunami or seiche hazards.

Water Quality

The quality of surface water and groundwater in the vicinity of the project site is affected by past and current land uses within the site and the watershed and the composition of geologic materials in the vicinity. The SWRCB and nine regional water quality control boards regulate the quality of surface water and groundwater bodies throughout California. The Central Valley Regional Water Quality Control Board (CVRWQCB), among various other agencies, regulates water quality within the Upper American River Watershed, and is responsible for implementing the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin (Basin Plan) (CVRWQCB 2019). The Basin Plan establishes beneficial water uses for waterways and water bodies within the region and is a master policy document for managing water quality in the region. The existing and proposed beneficial uses of the Upper American River Watershed is shown in Table 3.8-1, Beneficial Uses.

Under Section 303 (d) of the Clean Water Act (Clean Water Act) (described in the Regulatory Setting), states must present the U.S. Environmental Protection Agency (EPA) with a list of “impaired water bodies,” defined as those water bodies that do not meet water quality standards, which in some cases results in the development of a total maximum daily load (TMDL). TMDLs specify the maximum amount of a pollutant a water body can receive and still meet water quality standards. On a broad level, the TMDL process leads to a “pollution budget” designed to restore the health of a polluted body of water. The TMDL process provides a quantitative assessment of the sources of pollution contributing to a violation of the water quality standards and identifies the pollutant load reductions or control actions needed to restore and protect the beneficial uses of the impaired waterbody.

Table 3.8-2 lists the 303(d) impairments for Carson Creek (from the Serrano Parkway to Deer Creek), Deer Creek (Sacramento County), and Cosumnes River, Lower (below Michigan Bar, partly in Delta Waterways, eastern portion). There are no 303(d) impairments listed for Deer Creek. The Cosumnes River is listed as impaired for indicator bacteria, invasive species, mercury, dissolved oxygen, and toxicity under Category 5 in the SWRCB Integrated Report, which includes waters where at least one beneficial use is not supported, and a TMDL is required. Carson Creek (from Serrano Parkway to Deer Creek) is listed as a Category 3 surface water where there

is insufficient information to assess beneficial use support, but some uses may be potentially threatened aldrin, aluminum, heptachlor epoxide, iron, manganese, PCBs, and specific conductivity, pH, copper, and dissolved oxygen (SWRCB 2022).

There is no water quality testing data presently available for the seasonal drainages that cross the project site. The Phase I ESA prepared for the project (ENGEO 2016) indicates that there have been no known releases of hazardous materials within the project site, and due to the undeveloped nature of the project site it is anticipated water quality is likely of good quality, and representative of natural conditions.

Table 3.8-1. Beneficial Uses

Surface Water Bodies	MUN	AGR		REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD
	Municipal and Domestic Supply	Irrigation	Stock Watering	Contact	Canoeing and Rafting	Other Noncontact	Warm	Cold	Warm (3)	Cold (4)	Warm (3)	Cold (4)	Wildlife Habitat
Cosumnes River, Source to Delta	E	E	E	E	E	E	E	E	E	E	E	E	E
Mokelumne River, Camanche Reservoir to Delta		E	E	E	E	E	E	E	E	E	E	E	E

Source: CVRWQCB 2019.
Notes: There are no beneficial uses listed for Carson Creek and Deer Creek.
Legend:

E	Existing Beneficial Uses
MUN	Municipal and Domestic Supply
AGR	Agricultural Supply – Irrigation and Stock Watering
REC-1	Water Contact Recreation and/or Canoeing and Rafting
REC-2	Non-contact Water Recreation
WARM	Warm Freshwater Habitat
COLD	Cold Freshwater Habitat
MIGR	Migration of Aquatic Organisms
SPWN	Spawning, Reproduction, and/or Early Development
WILD	Wildlife Habitat

Table 3.8-2. Water Quality Impairments

Water Body	2022 303(d) List of Water Quality Impairments	Source and TMDL Status
Carson Creek (from Serrano Parkway to Deer Creek)	aldrin, aluminum, heptachlor epoxide, iron, manganese, PCBs, and specific conductivity, pH, copper, and dissolved oxygen.[1]	NA
Deer Creek (Sacramento County)	None	NA
Cosumnes River, Lower (below Michigan Bar, partly in Delta Waterways, eastern portion)	Indicator bacteria Invasive species, Mercury, Dissolved Oxygen, and Toxicity	Sources of these pollutants are unknown. TMDLs are required but have not yet been developed.

Source: SWRCB 2022.
Notes:
PCBs = Polychlorinated biphenyl
WWTP = Wastewater Treatment Plant
NA = Not Applicable
TMDL = total maximum daily load
[1] Impairments listed as Category 3 which are defined as having insufficient information to assess beneficial use support, but some uses may be potentially threatened.

3.8.2 Regulatory Setting

Federal Regulations

Clean Water Act

Increasing public awareness and concern for controlling water pollution led to the enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act (33 USC 1251 et seq.). The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the waters of the United States. The Clean Water Act established basic guidelines for regulating discharges of pollutants into the waters of the United States. The Clean Water Act requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the Clean Water Act.

National Pollutant Discharge Elimination System (NPDES) Permit Program

The Clean Water Act was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit. The NPDES permit program, as authorized by Section 402 of the Clean Water Act, was established to control water pollution by regulating point sources that discharge pollutants into waters of the United States (33 USC 1342). In the State of California, the U.S. Environmental Protection Agency (USEPA) has authorized the SWRCB with permitting authority to implement the NPDES Program.

State Regulations

Section 303 of the Clean Water Act (Beneficial Uses and Water Quality Objectives)

The CVRWQCB is responsible for the protection of the beneficial uses of waterways within their jurisdiction. The proposed project is located within the CVRWCQB regulatory boundaries. The CVRWQCB uses its planning, permitting, and enforcement authority to meet its responsibilities adopted in the Basin Plan to implement plans, policies, and provisions for water quality management.

In accordance with state policy for water quality control, the CVRWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan for the Central Valley has identified existing and potential beneficial uses supported by key surface water drainages throughout its jurisdiction. Under Clean Water Act Section 303(d), the state is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. A total daily maximum load (TMDLs) action plan defines how much of a specific pollutant/stressor a given water body can tolerate and still meet relevant water quality standards. The CVRWQCB has developed TMDLs for select reaches of water bodies which includes Carson Creek, Deer Creek and Cosumnes River, as shown in Table 3.8-2.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (known as the Porter-Cologne Act), passed in 1969, dovetails with the Clean Water Act (see discussion of Clean Water Act above). It established the SWRCB and divided the state into nine regions, each overseen by a Regional Water Quality Control Board (RWQCB). The SWRCB is the primary state agency responsible for protecting the quality of the state's surface water and groundwater supplies; however, much of the SWRCB's daily implementation authority is delegated to the nine RWQCBs, which are responsible for implementing Clean Water Act Sections 401, 402, and 303(d). In general, SWRCB manages water rights and regulates statewide water quality, whereas RWQCBs focus on water quality within their respective regions.

The Porter–Cologne Act requires RWQCBs to develop water quality control plans (also known as basin plans) that designate beneficial uses of California's major surface-water bodies and groundwater basins and establish specific narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons that the waterbody is considered valuable). Water quality objectives reflect the standards necessary to protect and support those beneficial uses. Basin plan standards are primarily implemented by regulating waste discharges so that water quality objectives are met. Under the Porter-Cologne Act, basin plans must be updated every 3 years. The Basin Plan for the Central Valley was last updated February 2019.

NPDES Construction General Permit

Construction projects disturbing more than 1- acre of land are required to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2021-0057-DWQ, NPDES No. CAS000002 (Construction General Permit).

To obtain coverage under the Construction General Permit, the project applicant must provide via electronic submittal, a Notice of Intent, a Storm Water Pollution Prevention Plan (SWPPP), and other documents required by Attachment B of the Construction General Permit. Activities subject to the Construction General Permit include

clearing, grading, grubbing, and/or excavation. The permit also covers linear underground and overhead projects such as pipeline installations. Construction General Permit activities are regulated in the County by the CVRQCB.

The Construction General Permit uses a risk-based permitting approach and mandates certain requirements based on the project risk level (i.e., Level 1, Level 2, or Level 3). The project risk level is based on the risk of sediment discharge and the receiving water risk. The sediment discharge risk depends on the project location and timing (i.e., wet season versus dry season activities). The receiving water risk depends on whether the project would discharge to a sediment-sensitive receiving water. The determination of the project risk level would be made by the project applicant when the Notice of Intent is filed (and more details of the timing of the construction activity are known).

The performance standard in the Construction General Permit is that dischargers shall minimize or prevent pollutants in stormwater discharges and authorized non-stormwater discharges through the use of controls, structures, and best management practices (BMPs) that achieve Best Available Technology (BAT) for treatment of toxic and non-conventional pollutants and Best Conventional Technology (BCT) for treatment of conventional pollutants. A SWPPP must be prepared by a Qualified SWPPP preparer that meets the certification requirements in the Construction General Permit. The purpose of the SWPPP is the following: (1) to identify the sources of sediment and other pollutants that could affect the quality of stormwater discharges, and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges resulting from construction activity. Operation of BMPs must be overseen by a Qualified SWPPP Practitioner that meets the requirements outlined in the permit.

The SWPPP must also include a construction site monitoring program. Depending on the project risk level, the monitoring program may include visual observations of site discharges, water quality monitoring of site discharges (pH, turbidity, and non-visible pollutants, if applicable), and receiving water monitoring (pH, turbidity, suspended sediment concentration, and bioassessment).

NPDES Small MS4 Permit

Pursuant to Section 402 of the Clean Water Act and the California Porter-Cologne Water Quality Control Act, municipal stormwater discharges at the project site are regulated under the statewide NPDES General Permit for the Discharge of Storm Water from Small Municipal Separate Storm Sewer Systems (Small MS4 Permit). Locally, the NPDES program is overseen by the CVRWQCB. Implementation of the program elements is the responsibility of the small MS4 operator, which is usually either a city, county, community services district, or special district. Development projects in the County are subject to compliance with requirements of the current Small MS4 Permit, issued in February 2013 by State Water Board Order 2013-0001-DWQ. The Storm Water Management Plan for western El Dorado County (described below under Local Regulations) presents the program implemented by the County to reduce the discharge of pollutants in accordance with the Small MS4 Permit.

The Small MS4 Permit consists of the following program elements: Program Management, Public Involvement/Participation, Illicit Discharge Detection and Elimination, Construction Site Storm Water Runoff Control, Pollution Prevention/Good Housekeeping for Permittee Operations, Post Construction Storm Water Management for New Development and Re-development, Water Quality Monitoring Requirements, Program Effectiveness Assessment, and Annual Reporting. Besides requiring implementation of construction site BMPs, and performance criteria and design guidelines for development within the small MS4s service area, the Small MS4 Permit also requires operators to map their outfalls, properly maintain the storm drain system, educate the public on pollution prevention, and monitor and report on the quality of MS4 discharges to receiving waters, so that the effectiveness of the program can be evaluated. Collectively, the program elements are designed to ensure

discharges from the storm drain system do not contain pollutant loads at levels that violate water quality standards and Basin Plan objectives and policies (such as a TMDL for a Section 303(d) impaired water body).

Of particular relevance to the proposed project is that the Small MS4 Permit requires regulated projects[2] to implement post-construction measures in the form of site design, source control, stormwater treatment measures, and baseline hydromodification management measures to reduce the discharge of pollutants in storm water to the Maximum Extent Practicable.[3] These include:

- **Source Control Measures:** Source control measures seek to avoid introduction of water quality pollution/degradation altogether. Source control strategies include strategies such as covering refuse/trash areas, properly managing outdoor storage of equipment/materials, minimizing use of pesticides and fertilizers in landscaping, using sumps or special area drains to send non-stormwater discharges to the sewer, ensuring regular grounds maintenance, etc.
- **Site Design Measures:** Site design measures require early assessment and evaluation of how site conditions, such as soils, vegetation, and flow paths, will influence the placement of buildings and paved surfaces. The evaluation is used to meet the goals of capturing and treating runoff and maximizing opportunities to mimic natural hydrology. Options for site design measures include preserving trees, buffering natural water features, disconnecting impervious surfaces, and using green roofs or porous pavement.
- **Treatment Control Measures:** Treatment control measures retain, treat and/or infiltrate the site runoff produced under normal circumstances, controlling both the quality and quantity of stormwater released to the stormwater conveyance system and natural receiving waters. In most situations, this means implementing structural BMPs (e.g., infiltration, bioretention, and/or rainfall harvest and re-use) to address the volume and rate of runoff produced by an 85th percentile storm4 (i.e., design capture volume). The Small MS4 Permit requires regulated projects to prioritize stormwater capture (e.g., infiltration and/or harvest and re-use) unless site conditions (e.g., low-permeability soils) make it infeasible.
- **Hydromodification Measures:** Hydromodification measures are required for projects that create or replace one or more acres of impervious surfacing, so that post-project runoff shall not exceed the estimated pre-project flow rate for the 2-year, 24-hour storm. If the project creates or replaces less than 1 acre of impervious surfaces and demonstrates that post-project flows from the site are less than pre-project flows, then no hydromodification measures from Section E.12.e.(ii)(f) of the Phase II Small MS4 General Permit are required.
- **Operation and Maintenance Requirements:** The Small MS4 Permit requires that maintenance agreements stay in place with each property (executed and then recorded with the County Clerk) to ensure permanent treatment control measures developed on site are properly maintained and/or repaired in accordance with the stormwater quality control plan.

The aforementioned site design, treatment control, and hydromodification measures are often collectively referred to as “Low Impact Development” standards (or LID design). LID design employs principles such as preserving and

[2] Regulated Projects are defined in Section E.12.c of Water Quality Order 2013-0001-DWQ and include all projects that create and/or replace 5,000 square feet or more of impervious surface, not including: detached single-family home projects that are not part of a larger plan of development; interior remodels; routine maintenance or repair within the existing footprint; or linear underground/overhead projects.

[3] The Maximum Extent Practical standard involves applying BMPs that are effective in reducing the discharge of pollutants in stormwater runoff. The Maximum Extent Practical requires permittees to choose effective BMPs, and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive.

[4] The 85th percentile storm represents a value of rainfall, in inches, such that 85% of the observed 24-hour rainfall totals within the historical record will be less than that value.

recreating natural landscape features and minimizing impervious surfaces to create functional and appealing site drainage that treats stormwater as a resource, rather than as a waste product. LID measures provide effective stormwater treatment by filtering pollutants and sequestering them within soils.

Local Regulations

El Dorado County Design and Improvement Standards Manual

The purpose of the County's Design and Improvement Standards Manual is to standardize development practices used in the hillside environment that is prevalent in the County and to minimize the environmental effects of construction. The manual provides requirements for the land capability reports that must be submitted as part of development projects, including reports related to surface water, geology, traffic, and noise. The manual also includes design standards for the development of subdivisions, including standards related to water supply, fire protection, sewage collection, underground power and communications infrastructure, and drainage. Volume III of the manual provides guidance on how to implement the erosion and sediment control standards in Chapter 110.14 (Grading, Erosion, and Sediment Control) of the County Code (Grading Ordinance).

El Dorado County Ordinance Code - Grading Ordinance

Chapter 110.14 (Grading, Erosion, and Sediment Control) of the County Ordinance Code (Grading Ordinance) regulates grading within unincorporated areas of the County in order to protect the public and avoid pollution of watercourses. Chapter 110.14 enforces the procedures in Volume III: Grading, Erosion and Sediment Control of the Design Improvement Standards Manual (Grading Manual) (County of El Dorado 2007). The Grading Manual includes standards for geotechnical, geologic, drainage, and soil studies that are required for development projects.

The Grading Plan must be prepared by a professional civil engineer. An Erosion and Sediment Control Plan (ESCP) must also be submitted whenever:

- The graded portion of the site includes more than 10,000 square feet of area for a non-agricultural grading project or more than one acre of area for an agricultural grading project.
- There is a significant risk that more than 2,500 square feet will be unprotected or inadequately protected from erosion during any portion of the rainy season.
- Grading will occur within 20 feet of any pre-existing watercourse.
- Grading would occur within the 100-year event flood plain.
- The Director determines that the grading could potentially result in significant erosion or sediment discharge.

The ESCP must be designed to prevent increased discharge of sediment at all stages of grading and development, from initial disturbance of the ground to project completion, and shall be consistent with all local, state, and federal rules and regulations. It must include an effective revegetation program to stabilize all disturbed areas that will not be otherwise protected.

El Dorado County Drainage Manual (Drainage Manual)

The El Dorado County Drainage Manual (Drainage Manual) (El Dorado County 2020) establishes the computational techniques and criteria required for the performance of hydrologic and hydraulic analysis and design of stormwater drainage facilities within the County. The guidelines established by the Drainage Manual are intended to support the design of discretionary applications such as tentative subdivision maps and parcel maps. The Drainage Manual

is intended to be applied to projects concurrently with the Design and Improvement Standards Manual and the Grading Ordinance.

The Drainage Manual requires subdivisions to be designed to receive surface water, stream water, and flood water emanating from outside its boundaries and from within and passing such water through and off the subdivision without injury to improvements, buildings or building sites and without adversely impacting or exceeding the capacity of existing downstream drainage facilities. Surface waters shall be discharged into the natural watercourse to which they would normally drain. If surface waters are gathered, they must be conveyed under control to a water course.

The levels of risk and protection for drainage facilities in the county applicable to the proposed project are defined in the Drainage Manual as follows:

- Those watercourses set forth in master drainage plans for specific catchments within El Dorado County shall be designed and constructed not to exceed the quantities of water indicated in such master drainage plans when said plans are adopted. All other watercourses and drainage ways shall be designed by a civil engineer in accordance with the criteria described herein.
- Drainage facilities for areas greater than 100 acres shall be designed to safely convey the storm runoff from an event with an average recurrence interval of 100 years. All available headwater depth of the culvert may be utilized for these facilities. Flooding effects from back water shall be analyzed when available headwater depth is incorporated into the design.
- The use of natural channels for the collection and conveyance of stormwater runoff is preferred.
- The depth of flow or ponding shall not exceed a level which would cause inundation of building sites. One foot of freeboard shall be maintained between the building finished floor elevation and the water surface elevation resulting from a storm runoff event with an average recurrence interval of 100 years.
- Depressed areas that create ponding which encroach into the traveled land will not be allowed in El Dorado County.
- Depressed areas that create ponding due to site grading will generally not be allowed.

The submittal of a hydrologic and hydraulic analysis is required for all proposed drainage facilities. Provisions in the Grading Ordinance also require submittal of a grading and drainage plan when surface drainage is discharged onto any adjoining property. An analysis of the effect of the discharge is required to be included with the submittal. The Drainage Manual notes that stormwater drainage facilities must meet both drainage and water quality treatment requirements. The County's water quality treatment requirements are addressed in the Storm Water Management Plan for western El Dorado County, described below.

Storm Water Management Plan for Western El Dorado County

The County developed a Storm Water Management Plan (SWMP) that identifies how the County will comply with the provisions of the Small MS4 Permit. It describes the minimum procedures and practices the County uses to reduce the discharge of pollutants to storm drainage systems owned or operated by the County. The SWMP addresses stormwater pollution control related to project planning, design, construction, and maintenance activities throughout the unincorporated area of western El Dorado County (that portion of the county within the jurisdiction of the CVRWQCB, excluding the Tahoe Basin). In addition, the SWMP addresses assignment of responsibilities within the county for implementing stormwater management procedures and practices and training, public education and outreach, monitoring and research, program evaluation, and reporting activities (County of El Dorado 2004).

El Dorado County Storm Water Quality Ordinance

On May 19, 2015, the County Board of Supervisors formally adopted revisions to the Storm Water Quality Ordinance (Ordinance 4992). The ordinance establishes the County's legal authority to implement the requirements of the Small MS4 Permit by:

1. Prohibiting illicit discharges to a stormwater facility;
2. Establishing authority to adopt requirements for stormwater management, including source control requirements, to reduce pollution to the maximum extent practicable;
3. Establishing authority to adopt requirements for development projects to reduce stormwater pollution and erosion both during construction and after the project is complete; and
4. Establishing authority that will enable the County to implement and enforce any stormwater management plan adopted by the County.

Chapter 8.79 of the County's Title 8 Public Health and Safety Code provides the specifics of the County's Stormwater Quality Ordinance.

Carson Creek Regional Drainage Study

The Carson Creek Regional Drainage Study was completed in 1996 and updated in 2005 (2005 Update) for the 15-square-mile Carson Creek watershed, most of which is located in the southwestern portion of the county. The purpose of this drainage study was to provide a unified plan for stormwater management in the county's portion of the watershed. The study recognizes the drainage needs of individual projects, assesses the impacts of the proposed drainage improvements on the entire catchment area, and satisfies the requirements of the Drainage Manual.

The Carson Creek Regional Drainage Study uses results from previous drainage studies within the watershed, as well as land use information and drainage improvements included in the previous studies, to develop a regional drainage model. The 2005 Update incorporated revised parameters into the regional drainage model to reflect additional development in the lower watershed. The study concluded that runoff for the 100-year storm would result in minor downstream impacts in Sacramento County and that the increase in existing flood inundation areas would be negligible. The 2005 Update concluded that 100-year flows at key points along Carson Creek were substantially unchanged by the development in the lower watershed. The study recommended that future drainage improvements be designed and analyzed in context of the regional drainage model. Specific drainage improvements, such as culvert upgrades, channel improvements, and construction of a regional detention storage facility were also recommended (CTA Engineering & Surveying 2020).

El Dorado County General Plan

The County General Plan was adopted in 2004; the last amendment to the General Plan was December 10, 2019 (El Dorado County 2019). The Land Use Element of the General Plan contains goals and policies related to water supply and water quality protection (El Dorado County 2019). In addition, the Public Services and Utilities Element, the Public Health, Safety, and Noise Element, and the Conservation and Open Space Element contain goals and policies related to stormwater and flood infrastructure, mitigation of flood hazards, and preservation of water supply and quality, respectively (El Dorado County 2019). The following goals, objectives and policies apply to the proposed project:

Land Use Element

Goal 2.2: A set of land use designations which provide for the maintenance of the rural and open character of the County and maintenance of a high standard of environmental quality.

Objective 2.2.1: An appropriate range of land use designations that will distribute growth and development in a manner that maintains the rural character of the County, utilizes infrastructure in an efficient, cost-effective manner, and further the implementation of the Community Region, Rural Center, and Rural Region concept areas.

Policy 2.2.5.3: The County shall evaluate future rezoning: (1) To be based on the General Plan's general direction as to minimum parcel size or maximum allowable density; and (2) To assess whether changes in conditions would support a higher density or intensity zoning district. The specific criteria to be considered include, but are not limited to, the following:

- Availability of an adequate public water source or an approved Capital Improvement Project to increase service for existing land use demands;
- Availability and capacity of the public treated water system;
- Erosion hazard;
- Septic and leach field capability;
- Groundwater capability to support wells; and
- Proximity to a perennial watercourse.

Policy 2.2.5.14: Buffers shall be established around future water supplies and other public facilities to protect them from incompatible land uses. Such buffer lands should be contained on site where possible.

Public Services and Utilities Element

Goal 5.4: Storm Drainage. Manage and control stormwater runoff to prevent flooding, protect soils from erosion, prevent contamination of surface waters, and minimize impacts to existing drainage infrastructure.

Objective 5.4.1: Drainage And Flood Management Program. Initiate Countywide drainage and flood management program to prevent flooding, protect soils from erosion, and minimize impacts on existing drainage facilities.

Policy 5.4.1.1: Require storm drainage systems for discretionary development that protect public health and safety, preserve natural resources, prevent erosion of adjacent and downstream lands, prevent the increase in the potential for flood hazard or damage on either adjacent, upstream, or downstream properties, minimize impacts to existing facilities, meet the NPDES requirements, and preserve natural resources such as wetlands and riparian areas.

Policy 5.4.1.2: Discretionary development shall protect natural drainage patterns, minimize erosion, and ensure existing facilities are not adversely impacted while retaining the aesthetic qualities of the drainage way.

Policy 5.4.1.3: The County will evaluate the funding requirements for a maintenance, operation, and Infrastructure replacement program for regionally effective stormwater drainage management.

Public Health, Safety, and Noise Element

Goal 6.4: Flood Hazards. Protect the residents of El Dorado County from flood hazards.

Objective 6.4.1: Development Regulations. Minimize loss of life and property by regulating development in areas subject to flooding in accordance with FEMA guidelines, California law, and the El Dorado County Flood Damage Prevention Ordinance.

Policy 6.4.1.1: Continue participation in the NFIP and application of floodplain zoning regulations to qualify for flood insurance and disaster assistance.

Policy 6.4.1.2: Identify and delineate flood-prone study areas discovered during the completion of the master drainage studies or plans.

Policy 6.4.1.4: Creation of new parcels that lie entirely within the 100-year floodplain as identified on the most current version of the flood insurance rate maps provided by FEMA or dam failure inundation areas delineated in dam failure emergency response plans maintained by the County shall be prohibited.

Conservation and Open Space Element

Goal 7.3: Water Quality and Quantity. Conserve, enhance, and manage water resources and protect their quality from degradation.

Objective 7.3.1: Water Resource Protection. Preserve and protect the supply and quality of the County's water resources, including the protection of critical watersheds, riparian zones, and aquifers.

Policy 7.3.1.1: Encourage the use of BMPs, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.

Policy 7.3.1.2: Establish water conservation programs that include both drought-tolerant landscaping and efficient building design requirements as well as incentives for the conservation and wise use of water.

Policy 7.3.1.3: The County shall develop the criteria and draft an ordinance to encourage domestic gray water for landscape irrigation purposes. (See Title 22 of the State Water Code and the Graywater Regulations of the Uniform Plumbing Code).

Objective 7.3.2: Water Quality. Maintenance of and, where possible, improvement of the quality of underground and surface water.

Policy 7.3.2.1: Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity.

Policy 7.3.2.2: Projects requiring a grading permit shall have an Erosion and Sediment Control Plan approved, where necessary.

Policy 7.3.2.3: Where practical and when warranted by the size of the project, parking lot storm drainage shall include facilities to separate oils and salts from stormwater in accordance with the recommendations of the Storm Water Quality Task Force's California Storm Water Best Management Practices Handbooks.

Policy 7.3.2.5: As a means to improve the water quality affecting the County's recreational waters, enhanced and increased detailed analytical water quality studies and monitoring should be implemented to identify and reduce point and non-point pollutants and contaminants. Where such studies or monitoring reports have identified pollution sources, the County shall propose means to prevent, control, or treat identified pollutants and contaminants.

Objective 7.3.4: Drainage. Protection and utilization of natural drainage patterns.

Policy 7.3.4.1: Natural watercourses shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site without disturbance.

Policy 7.3.4.2: Modification of natural stream beds and flow shall be regulated to ensure that adequate mitigation measures are utilized.

Objective 7.3.5: Water Conservation. Conservation of water resources, encouragement of water conservation, and construction of wastewater disposal systems are designed to reclaim and reuse treated wastewater on agricultural crops and other irrigation and wildlife enhancement projects.

Policy 7.3.5.1: Drought-tolerant plant species, where feasible, shall be used for landscaping of commercial development. Where the use of drought-tolerant native plant species is feasible, they should be used instead of non-native plant species.

Policy 7.3.5.2: A list of appropriate local indigenous drought-tolerant plant materials shall be maintained by the County Planning Department and made available to the public.

Policy 7.3.5.4: Require efficient water conveyance systems in new construction. Establish a program of ongoing conversion of open ditch systems shall be considered for conversion to closed conduits, reclaimed water supplies, or both, as circumstances permit.

Policy 7.3.5.5: Encourage water reuse programs to conserve raw or potable water supplies consistent with State Law.

Creekside Village Specific Plan

If the project is approved and the CVSP is adopted, the following design elements associated with project design would apply to hydrology and water quality, specifically stormwater management (CVSP 2023). The Stormwater Drainage Master Plan prepared for the proposed project would comply with the requirements of the County's Phase II NPDES permit as well as the County's hydromodification standards. The plan would include post development runoff controls that incorporate low impact development features, flow duration control basins and in-stream

approaches (e.g., stream embankment stabilization measures and flow metering at roadway culvert crossings) to drainage control.

3.8.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
  - i.) result in substantial erosion or siltation on or off site;
  - ii.) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;
  - iii.) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
  - iv.) impede or redirect flood flows.
- Be inundated by a flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Significance Threshold Criteria Not Applicable to the Proposed Project

The project site is in an area of minimal flood hazard and thus has a low potential for flooding. Moreover, according to dam failure Inundation maps, the project site is not located within a dam inundation zone and thus would not be susceptible to inundation as a result of dam failure (DSOD 2023). As the project site is not located near the ocean nor an enclosed or semi-enclosed body of water, such as a lake or reservoir, there is no potential for tsunamis or seiches to affect the project site. As such, there would be no impact associated with releasing pollutants as a result of project inundation and this threshold is not discussed further.

3.8.4 Impacts and Mitigation Measures

Methodology

The Drainage Report (Appendix F), Geotechnical Feasibility Study (Appendix D), Phase I Environmental Site Assessment (ENGEO 2016), project plans, and publicly available resources related to hydrology and water quality were reviewed to determine if the proposed project would directly or indirectly result in adverse effects related to hydrology and water quality.

Implementation of the CVSP must be consistent with the County's General Plan goals and policies, and all applicable federal, state and local regulations such as the CWA, NPDES Permit requirements, and County ordinances. Therefore, such policies and standards are not identified as mitigation, and compliance with relevant goals, policies, and federal, state or County requirements are instead described within the impact analysis.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1.8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. The potential impacts to hydrology and water quality are not expected to be different with implementation of either option because the development footprint, intensity, and disturbed area would remain the same as under the proposed project. Therefore, the impact analysis below would be the same under both options as the proposed project.

Project Impacts

Impact 3.8-1. The proposed project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

Construction

The proposed project would result in the development of approximately 163 acres of currently vacant land into mixed land uses, leaving roughly 45 acres in undeveloped open space. Ground disturbance activities would include substantive grading, installing utilities, and excavations for construction of building foundations. No import or export of fill would be required. As such, the proposed construction activities would disturb site soils and potentially expose them to the effects of wind and water erosion such that sediments are transported offsite if construction activities are not managed appropriately.

The analysis of potential impacts of construction activities, construction materials, and non-stormwater runoff on water quality during the site clearing and construction phase focuses primarily on sediment and certain non-sediment-related pollutants. Construction-related activities that primarily result in sediment releases are related to exposing previously stabilized soils to potential erosion by rainfall/runoff and wind. Such activities include the removal of impervious surfaces and grading of the site. Environmental factors that affect erosion include topography, soil, and rainfall characteristics. Erosion and sedimentation affect water quality and interferes with photosynthesis; oxygen exchange; and the respiration, growth, and reproduction of aquatic species. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported to the three onsite drainages that continue on to downstream receiving waters, including the Carson Creek and the Cosumnes River, which could contribute to the degradation of water quality. Furthermore, during grading and temporary stockpiling of soil, there is the potential for soil migration off site via wind (Section 3.2, Air Quality, for further discussion of construction generated air quality impacts).

Non-sediment-related pollutants that are also of concern during construction include construction materials (e.g., paint, stucco); chemicals, liquid products, and petroleum products used in building construction or the maintenance of heavy equipment; and concrete-related pollutants.

The County is a co-permittee under the El Dorado County Municipal Phase II NPDES Small MS4 Permit. The MS4 Permit requires the County to enact construction related BMPs to prevent construction site discharges of pollutants and impacts on beneficial uses of receiving waters. To comply with the provisions of the MS4 Permit, the County

requires the implementation of an ESCP prior to permit issuance for building, grading, or land clearing activities. The ESCP must be consistent with the General Plan, the CVSP, the SWMP, and applicable County ordinances (County of El Dorado 2020).

To fulfill the regional requirements of the ESCP as well as ensure that the proposed project would not result in the incidental release of pollutants during construction activities, the project applicant or developer would comply with the provisions of the NPDES General Permit for Storm Water Associated with Construction Activities (Order No. 2022-0057-DWQ, NPDES No. CAS000002), also known as the Construction General Permit. Because the proposed project is greater than 1 acre in size, future developers would be required to submit a Notice of Intent to the CVRWQCB in order to obtain approval to complete construction activities under the Construction General Permit. This Permit would include a number of design, management, and monitoring requirements for the protection of water quality and the reduction of construction phase impacts related to stormwater (and some non-stormwater) discharges. Permit requirements would include the preparation of a SWPPP, implementation and monitoring of BMPs, implementation of best available technology for toxic and non-conventional pollutants, implementation of best conventional technology for conventional pollutants, and periodic submittal of performance summaries and reports to the CVRWQCB. The SWPPP would apply to the project and would include reference to the major construction areas, materials staging areas, and haul roads. Typical BMPs that could be incorporated into the SWPPP to protect water quality include the following:

- Diverting off-site runoff away from the construction site
- Vegetating landscaped/vegetated swale areas as soon as feasible following grading activities
- Placing perimeter straw wattles to prevent off-site transport of sediment
- Using drop inlet protection (filters and sandbags or straw wattles), with sandbag check dams within paved areas
- Regular watering of exposed soils to control dust during construction
- Implementing specifications for construction waste handling and disposal
- Using contained equipment wash-out and vehicle maintenance areas
- Maintaining erosion and sedimentation control measures throughout the construction period
- Stabilizing construction entrances to avoid trucks from imprinting soil and debris onto adjoining roadways
- Training, including for subcontractors, on general site housekeeping

Incorporation of required BMPs for materials and waste storage and handling, and equipment and vehicle maintenance and fueling would reduce the potential discharge of polluted runoff from construction sites, consistent with the NPDES General Construction Permit, SWMP, and County Ordinances. Compliance with existing regulations would prevent violation of water quality standards and minimize the potential for contributing sources of polluted runoff. Compliance with existing regulations would ensure that the project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface quality from construction activities. Therefore, short-term construction impacts associated with water quality standards and waste discharge requirements would be **less than significant**.

Operation

As previously mentioned, the project site currently consists of undeveloped rolling annual grasslands with no existing storm drainage infrastructure. Implementation of the proposed project would result in a substantial change in land use and substantial increase in impervious surfaces. As such, operations of the project site could contribute operational pollutants to stormwater runoff from uncovered parking areas and driveways (through small fuel and/or

fluid leaks), uncovered refuse storage/management areas, landscape/open space areas (if pesticides/herbicides and fertilizers are improperly applied), and general litter/debris.

During storm events, pollutants from paved areas without proper stormwater controls and BMPs could be conveyed off site in existing drainages that intersect the site. Most pollutants flowing off site in this manner would be dust, litter, and possibly residual petroleum products (e.g., motor oil, gasoline, diesel fuel). Certain metals, along with nutrients and pesticides from landscape areas, can also be present in stormwater runoff. Between periods of rainfall, surface pollutants tend to accumulate, and runoff from the first significant storm of the year ("first flush") would likely have the largest concentration of pollutants. Untreated runoff could be transported to the onsite drainages and could contribute to the degradation of water quality of downstream surface waters as well as impair established beneficial uses. As indicated in Table 3.8-2, Water Quality Impairments, the Lower Cosumnes River is impaired with Indicator bacteria invasive species, mercury, dissolved oxygen, and toxicity.

As previously discussed, the County is a co-permittee under the Phase II Small MS4 Permit. The MS4 Permit requires the County to implement a Post-Construction Storm Water Management Program for all Regulated Projects, as defined in the Phase II Small MS4 Permit, and consistent with the SWMP for western El Dorado County (CVRWQCB 2013; County of El Dorado 2004). Regulated Projects are those that create or replace 5,000 square feet or more of impervious surface.

The Post-Construction Program sets limits on pollutants being discharged into waterways and requires all new development to incorporate structural and non-structural BMPs to improve water quality and reduce on- and off-site runoff potential. Hydromodification Projects (projects that create or replace 1 acre or more of impervious surfaces) are required to retain and treat runoff generated by the 2-year 24-hour stormwater runoff events by implementing appropriately sized LID features, including infiltration, evapotranspiration, and/or harvesting/reuse treatment systems (County of El Dorado 2020).

Post-construction, the project would be designed to include a water quality bioswale, detention basins, and a hydromodification[5] pond (e.g., retention/detention basin) at the western corner of the site. These features would be sized to retain and treat on-site stormwater generated by the 2-year 24-hour storm event in accordance with the Post-Construction Program guidelines. These features would also be designed to settle any entrained runoff pollutants, reducing the potential for off-site water quality degradation. Detention basins would be strategically located throughout the plan area and would capture the upstream developed watershed storm runoff and provide water quality treatment and mitigate for the hydromodification of the receiving watercourse. Off-stream detention basins would meter the storm outflow out of the basin and into the receiving water closely matching that watercourse's pre-development runoff flow rates and durations. Some in-stream measures for addressing changes to drainage patterns and stormwater runoff discharges to the receiving watercourse may also be included. The in-stream measures to mitigate for these changes which largely consist of the introduction of new impervious surfaces would typically consist of stream embankment stabilization and flow metering at roadway culvert crossings.

In addition, General Plan policies such as Policy 5.4.1.1 require storm drainage systems to protect public health and safety, preserve natural resources, prevent erosion of adjacent and downstream lands, meet the NPDES requirements, and preserve natural resources such as wetlands and riparian areas. Policy 5.4.1.2 also requires

[5] Hydromodification refers to alterations in natural watershed hydrology associated with changes in land use or cover (e.g., introduction of new impervious surfaces).

protection of natural drainage patterns, including minimizing erosion to ensure existing facilities are not adversely impacted, which would also ensure protection of water quality standards and waste discharge requirements.

Implementation of LID features and BMPs would, to the maximum extent practicable, reduce the discharge of pollutants into receiving waters, including the inadvertent release of pollutants (e.g., hydraulic fluids and petroleum) and trash and debris in accordance with all relevant local and state development standards.

Residents of the nearby Carson Creek Specific Plan have raised concerns regarding the potential for the project to impact the Carson Creek Preserve, located approximately 3,300 feet downstream of the project site. As discussed above under construction, the project would be required to comply with the provisions of the Construction General Permit which includes a number of design, management, and monitoring requirements for the protection of water quality during construction. In addition to BMP Permit requirements would include the preparation of a SWPPP, implementation and monitoring of BMPs, implementation of best available technology for toxic and non-conventional pollutants, implementation of best conventional technology for conventional pollutants, and periodic submittal of performance summaries and reports to the CVRWQCB. Compliance with these mandatory requirements would ensure project construction would not adversely impact the downstream preserve. During project operation, as discussed above, the project includes a water quality bioswale, detention basins, and a hydromodification pond which would retain and treat on-site stormwater and settle any entrained runoff pollutants, reducing the potential for off-site water quality degradation in the preserve.

The final design of the proposed stormwater drainage master plan would undergo full review in accordance with County Code requirements and the NPDES Phase II MS4 Permit. As part of the County's permitting and inspection process, compliance with existing regulations pertaining to stormwater runoff and water quality of receiving waters would reduce the potential of the proposed project to adversely affect downstream waters. Therefore, long-term operational impacts associated with water quality standards and waste discharge requirements would be **less than significant.**

Mitigation Measures

No mitigation measures are required.

Impact 3.8-2. The proposed project would not decrease groundwater supplies or interfere with groundwater recharge that could impede sustainable groundwater management of the basin.

Groundwater Recharge

A Geotechnical Feasibility Study prepared for the project site (Appendix D) determined that the subsurface materials on the site primarily consist of shallow soils overlying bedrock. Based on a review of available resources, the Geotechnical Study concluded that groundwater was anticipated to be greater than 100 feet deep though perched water conditions are highly likely in areas. In general, bedrock units typically lack the porosity and permeability to constitute being considered a substantive groundwater unit. Moreover, according to the DWR Groundwater Basin Boundary Assessment Tool, no defined groundwater basins underly the project site (DWR 2023). In addition, while development of the site would result in an increase in impermeable surfaces, the project would incorporate LID BMP features, including detention basins and landscaped areas, to retain and infiltrate runoff generated by a 2-year 24-hour storm event such that post-project flows offsite do not exceed pre-project flows. As such, with the implementation of LID BMP features, local recharge rates would not substantially decrease compared to existing conditions. As a result, impacts would be **less than significant**.

Groundwater Supply

Water supply to serve the proposed project would be provided by the El Dorado Irrigation District (EID). According to EID's 2020 Urban Water Management Plan, water supply for the district is sourced entirely from Jenkinson Lake, the upper South Fork American River, and Folsom Reservoir. EID does not use groundwater as a supply but does capture and treat wastewater from many of the local communities, producing recycled water for irrigation to supplement its potable supplies (EID 2021). In addition, as noted above, the county does not overlie an established groundwater basin and as such there is no applicable groundwater management plan. Moreover, the project would incorporate LID BMP features to infiltrate runoff to the greatest extent feasible. As such, the proposed project would not substantially decrease groundwater supplies or impede a sustainable groundwater management plan. **No impact** would occur.

Mitigation Measures

No mitigation measures are required.

Impact 3.8-3. The proposed project would not alter the existing drainage pattern of the site through the addition of impervious surfaces, in a manner which would:

i) result in substantial erosion or siltation on or off site

Currently, runoff from the proposed project site occurs as sheet flow that flows from east to west. Development of the project site with impervious surfaces would substantially alter existing drainage patterns. This increase in impervious surfaces could increase localized on- and off-site runoff into nearby undeveloped land or the existing drainages. However, the proposed project would be constructed in accordance with a Stormwater Drainage Master Plan that has been prepared for the project that complies with the requirements of the County's Phase II NPDES permit as well as the County's hydromodification standards which incorporate LID BMP features, such as underground pipe conveyances, detention basins, and surface components of the system including inlets, filters, maintenance access and outfall structures that are designed to capture and infiltrate runoff generated by the 2-year 24-hour rainfall event. The calculated outflow would be designed to ensure that storm outflows do not exceed existing pre-development runoff flow rates and durations, consistent with the County's drainage control requirements. As such, substantial erosion or siltation on or off site due to increased runoff would not occur, and project impacts would be considered **less than significant**.

Mitigation Measures

No mitigation measures are required.

ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site

As noted above, development of the project site would represent a substantial increase in impermeable or impervious surfaces. As discussed above under (i), project development would be designed in accordance with the Stormwater Drainage Master Plan which would incorporate LID BMP features into the project design that are sized to retain and treat runoff generated by the 2-year, 24-hour storm event. The detention basins would provide flood storage of peak storm water runoff in accordance with all local drainage control requirements that would ensure the potential for flooding on

or off site is minimized. As such, the development of the project would not result in a substantial rate or amount of runoff that would result in flooding on or off site. Impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff

As previously discussed above, the proposed project would incorporate LID and BMP features, such as off-stream detention basins, sized to accommodate the 2-year, 24-hour storm event. These features would be designed to reduce the potential incidental release of contaminants into the environment, such as oil, grease, nutrients, heavy metals, and certain pesticides, including legacy pesticides. Moreover, stormwater in excess of the capacity of the detention basins would be slowed, allowing for entrained pollutants to settle before being discharged off site at a manageable rate. Therefore, the proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

iv) impede or redirect flood flows

According to the most recent FEMA Flood Map 06017C0950E, effective on September 26, 2008, the project site is located within Zone X, an area of minimal flood hazard. This zone is higher in elevation than the 0.2% annual flood chance (i.e., 500-year flood). In addition, as previously discussed, although site drainage patterns would be substantially altered as a result of project development, and the site would introduce new residential uses and a small commercial space, the project would include adequate stormwater conveyance as part of project design to ensure that stormwater runoff is adequately managed during peak storm events. Therefore, impacts associated with impeding or redirecting flood flows would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.8-4. The proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

As previously discussed, the project would comply with applicable water quality regulatory requirements, including implementation of a SWPPP, stormwater BMPs, and LID design, which would minimize potential off site surface water quality impacts and contribute to a reduction in water quality impacts within the overall Upper American River Watershed. In addition, with compliance with these regulatory requirements, the project would reduce potential water quality impairment of surface waters such that existing and potential beneficial uses of key surface water drainages downstream steam of the project site, including the Upper and Middle Fork of the American River, would not be adversely impacted. As a result, the project would not conflict with or obstruct the Central Valley Basin Plan with respect to water quality.

With respect the groundwater management, the project site is not located within a regulated groundwater management plan, and EID has no plans to use local or regional groundwater for its service area. Therefore, the project would not conflict with or obstruct any local or regional sustainable groundwater management plans. Impacts would be considered **less than significant**.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

This section provides an analysis of cumulative impacts from construction and operation of the proposed project in combination with other past, present, and reasonably foreseeable future projects within the county and areas adjacent to the county. The geographic context for the cumulative analysis as it relates to hydrology, flooding, and water quality is the Cosumnes River watershed. The geographic context for groundwater is also the Cosumnes River watershed boundaries since the project site is not located within an identified groundwater basin. The past, present, and reasonably foreseeable projects (i.e., cumulative projects) used for this analysis are presented in of Chapter 3 of this Draft EIR.

Impact 3.8-5. The proposed project combined with past, present, and reasonably foreseeable future projects would not violate any water quality standards or degrade surface or ground water quality.

The proposed project as well as other cumulative projects in undeveloped portions of the Cosumnes River watershed would alter existing land uses, which have the potential to increase the amount of pollutants in stormwater runoff during both construction and operation. Typical pollutants of concern associated with construction and operation would include sediment creation, fuels leakage, private vehicle use (e.g., any leakage of grease/oils), landscaping/grounds work (e.g., improper/excessive use of pesticides, herbicides, and/or fertilizers), and/or trash (e.g., due to improper waste disposal). This is considered a potentially significant cumulative impact.

All cumulative development in the Cosumnes River watershed would be subject to existing state and local regulatory requirements to protect water quality and minimize increase in stormwater runoff in compliance with the applicable NPDES permits, CALGreen Code, California Building Code, NPDES Phase II Small MS4 Permit, and the municipal codes and ordinances of other jurisdictions, including the requirement to implement a SWPPP for development disturbing an area of 1 or more acre(s) for coverage under the Construction General Permit. In summary, all cumulative development would be subject to existing regulatory requirements to protect water quality and minimize increases in stormwater runoff.

Every two years, the CVRWQCB must reevaluate water quality within its geographic region and identify those water bodies not meeting water quality standards. For those impaired water bodies, a TMDL must be prepared and implemented to reduce pollutant loads to levels that would not contribute to a violation of water quality standards. All development within the Cosumnes River watershed would be subject to the water quality standards outlined in the CVRWQCB Basin Plan and would comply with any established TMDLs. The continuing review process would ensure that cumulative development within the watershed would not substantially degrade water quality.

The project would be required to comply with existing and future regulations to protect water quality, including the Construction General Permit, WDRs for groundwater discharge and dewatering, NPDES Phase II Small MS4 Permit,

and all applicable County requirements. Compliance with existing regulations would prevent violation of water quality standards and minimize the potential for contributing additional sources of polluted runoff. Therefore, the project's contribution is not considerable resulting in a **less-than-significant cumulative impact** to hydrology and water quality.

Mitigation Measures

No mitigation measures are required.

Impact 3.8-6. The proposed project combined with past, present, and reasonably foreseeable future projects would not decrease groundwater supplies or interfere substantially with groundwater recharge.

The project site is not located within an identified groundwater basin and local water supplies are not sourced from groundwater. While cumulative projects could increase the amount of impervious surfaces which could impact groundwater recharge and may rely on groundwater for potable water, the existing regulatory requirements for LID drainage control features would provide opportunities for onsite infiltration to the extent feasible (i.e., where site subsurface materials can provide sufficient permeabilities to infiltrate peak storm events). As such, cumulative impacts related to groundwater supplies would be less than significant. Because there is not an underlying cumulative impact that the project could contribute to, cumulative impacts to groundwater would be **less than significant.**

Mitigation Measures

No mitigation measures are required.

Impact 3.8-7. The proposed project combined with past, present, and reasonably foreseeable future projects would not contribute to a cumulative impact relating to flooding, drainage capacity, and erosion.

As discussed above, cumulative development within the Consumnes River watershed could increase the amount of impervious surface area resulting in an increase in stormwater runoff rates and flooding, exceeding stormwater drainage capacity, and increased erosion; however, all development projects would be required to adhere to existing state and local regulatory drainage control requirements. Therefore, a substantial increase in the amount of surface water that would result in flooding or exceed the capacity of existing stormwater infrastructure would not occur. As such, cumulative impacts related to the alteration of existing drainage patterns would be less than significant. Because there is not an underlying cumulative impact that the project could contribute to, cumulative impacts to flooding, drainage capacity, and erosion would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

3.8.5 References

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3.9 Land Use, Population and Housing

The following analysis identifies potential impacts to land use and population resulting from implementation of the proposed Creekside Village Specific Plan (proposed project or CVSP).

Under the California Environmental Quality Act (CEQA), land use impacts relate to the environmental effects of physically dividing an established community or conflicting with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. Population and housing impacts relate to the environmental effects of inducing substantial unplanned population growth or displacing substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere that could result in environmental impacts. Changes in population and housing demand are considered social and economic effects, not environmental effects. Section 15382 of the CEQA Guidelines states: "An economic or social change by itself shall not be considered a significant effect on the environment." According to CEQA, these effects should be considered in an EIR only to the extent that they create adverse impacts on the physical environment. This section of the EIR examines the potential for the proposed project to result in unplanned population growth that was not contemplated in the El Dorado County General Plan as well as the potential for the project to conflict with the County's General Plan and any other relevant plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect.

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) include several comments related to the potential financial, transportation, housing, and cumulative impacts that could result from adding a new population to the area and the proposed land use and zoning change required for the project. As noted above, CEQA does not require economic or financial issues to be evaluated; therefore, comments requesting the economic consequences and effect on County revenues be addressed are not evaluated in this EIR. Section 3.12, Transportation addresses impacts associated with the project's increase in vehicle miles traveled, potential to create a hazardous condition, emergency access and cumulative impacts. A second scoping meeting was held on September 26, 2023, and an additional comment was received requesting that the EIR address population projections for local school districts. A discussion of impacts on schools is included in Section 3.11, Public Services and Recreation. A copy of the NOP and comments received is included in Appendix A.

Sources reviewed to prepare this section include the 2004 El Dorado County General Plan and Housing Element (El Dorado County 2019a; 2022), the El Dorado County Code, and the Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) (SACOG 2020), and U.S. Census Bureau data.

3.9.1 Environmental Setting

Existing Land Uses, General Plan Designation and Zoning

The proposed project site is located within an unincorporated area of El Dorado County (County) in the community of El Dorado Hills located in the western foothills, approximately 25 miles east of downtown Sacramento and 18 miles west of the City of Placerville (see Figure 2-1 in Chapter 2, Project Description). The approximately 208-acre project site consists of Assessor's Parcel Numbers (APN) 117-010-032 and a portion of 117-720-012. According to the County's General Plan Land Use Element, the proposed project site is located within the El Dorado Hills Community Region.

The project site is designated in the County's General Plan for Research & Development. Current County zoning is also Research & Development including a Design Review overlay (-DC combining zone). The project site was previously part of the El Dorado Hills Business Park and was approved to be de-annexed from the Business Park in 2018.

The R&D zone is intended to provide areas for the location of high technology, non-polluting manufacturing plants, research and development facilities, corporate and industrial offices, and support service facilities in a rural or campus-like setting, such as a business park environment (El Dorado County 2019).

A review of historical Google Earth aerial imagery indicates that the project site has never been developed, including for any commercial, retail, or industrial purpose, and there are no buildings or other structures located on the project site. The project site consists of undeveloped rolling grasslands with a small grove of blue oak trees located on a knoll in the southeast portion of the site. There are firebreaks that mostly run along the project site's boundaries as well as an east-west dirt firebreak through the middle of the site from Latrobe Road to the western site boundary. There are three seasonal drainages that cross the project site and merge at the western boundary to form one intermittent drainage that drains offsite. Seasonal wetlands and a small vernal pool are also present on the site.

Surrounding Land Uses

Adjacent land uses include the existing El Dorado Hills Business Park and the John Adams Academy Charter school to the north, the Blackstone residential community within the Valley View Specific Plan to the east, undeveloped land and industrial uses to the south, and undeveloped land designated for research & development, residential, open space and park uses within the Carson Creek Specific Plan to the west, as shown on Figure 2-2 in Chapter 2, Project Description. Zoning and General Plan land use designations adjacent to the project site include land zoned and designed R&D for the El Dorado Hills Business Park to the north, land zoned Valley View Specific Plan and designated Adopted Plan (AP) for the Blackstone residential community to the east, land zoned Carson Creek Specific Plan and designated AP to the west, land zoned Estate Residential (RE-10) and designated Rural Residential (RR) for land uses to the southwest, and land zoned and designated Industrial to the south. Public roadways nearest to the project site include Latrobe Road to the east and roads within the El Dorado Hills Business Park area to the north. No roadways exist adjacent to the western border of the project site. There are no public or paved roads within the project site; however, as mentioned previously, there are firebreaks throughout the property.

Demographics

Population

According to the U.S. Census Bureau, the County's population grew approximately 5.6% from 2010 to 2020. As of the most recent April 2020 Census, the County's population was 191,185, representing an increase of 10,127 from the 2010 Census (U.S. Census Bureau 2020). It should be noted that approximately 83% of the County's population live in the unincorporated portions of the county. The population in the unincorporated county (e.g., not including the cities of Placerville and South Lake Tahoe) was 159,108 as of the 2020 Census (U.S. Census Bureau 2020). The EIR (SCH #2020019055) prepared for the 2040 El Dorado County Regional Transportation Plan states that population growth in the county continues to be due in part, but not limited to:

- Sacramento Area jobholders taking up residence in the county;
- Job relocations to the Sacramento Area due to lower cost of doing business;
- In-state migration from other cities in California, including the San Francisco Bay Area;

- An increase in the economic interaction with surrounding counties; and
- An increase in employment opportunities for residents due to emerging job centers, such as the El Dorado Business Park.

Over the past 20 years, the County has experienced a significant increase in older residents in relation to the total population. In 2010, people 65 years and older made up 14.7% of the total population of 181,058 (26,524) (U.S. Census Bureau 2010a). In 2020, they made up 22.3% of the 2020 Census population of 191,185 (42,658 residents 65 years or older). The County has also experienced a higher rate of growth among people over 65 as compared to the rest of California. The population of the County is expected to experience slow yet consistent urban and suburban growth in the coming years. According to the projections contained in the Sacramento Area Council of Governments (SACOG) 2020 (most recent) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), the area expected to experience the most rapid growth over the 2016 to 2040 period is the Community Region of El Dorado Hills. According to the County's 2021-2029 Housing Element Update, it is anticipated that the County's population will increase to 225,419 in 2040 (El Dorado County 2022).

Housing

In the last two decades, suburban residential and employment growth has occurred at the county's western edge in the communities of El Dorado Hills, including the Carson Creek and Valley View developments, and Cameron Park (SACOG 2019a). Today, these areas are primarily made up of low-density housing and supporting commercial and public uses, as well as light industrial uses. The growth within the western portion of the county is primarily focused on development of single-family homes. The 2020 MTP/SCS provides housing unit projections for the County (not including the Tahoe Basin area, as this area is not included within the SACOG boundary). According to the 2020 MTP/SCS projections, the number of housing units within the county is expected to grow from 63,780 in 2016 to 72,280 in 2040, a growth of 13.3% (SACOG 2019a).

Employment

The number of workers in the county is expected to increase through 2040 due to steady population growth. However, the majority of the employed County workforce does not work within the county. The U.S. Census Bureau's Longitudinal Employment Data indicates that approximately 64% of people that lived in the county in 2021 worked outside of the county (U.S. Census Bureau 2021). The most common counties where these workers were employed were in Sacramento County (27.2%) and Placer County (7.7%). In 2010, 64.4% of the employed population worked outside of the county (U.S. Census Bureau 2010b). Overall, the ratio of county residents employed within the county has remained steady. Since a large share of the proposed growth in the local housing supply is concentrated in El Dorado Hills, which is near job centers outside of the county, the proportion of locally employed residents may drop in the short term.

Historically, the county has maintained a lower ratio of jobs to housing. The majority of the county's recent residential and employment growth has occurred in the unincorporated communities of El Dorado Hills and Cameron Park at the western edge of the county. These new communities are characterized by low-density residential and commercial development. However, in recent years, new business park and mixed-use developments have also emerged in El Dorado Hills. According to SACOG, the jobs/housing ratio was 0.8 as of 2016 (SACOG 2019b). According to the County's 2021-2029 Housing Element Update, the jobs/housing ratio was 0.7 in 2018 (El Dorado County 2022).

3.9.2 Regulatory Setting

Federal Regulations

There are no federal plans, policies, regulations, or laws pertaining to topics addressed under CEQA that are applicable to local land use and planning concerns. However, compliance with federal and state regulations that pertain to secondary effects attributed to an increase in population are discussed in the various technical sections in Chapter 3 of this EIR.

State Regulations

Housing Element Law

The Housing Element Law, enacted in 1969, requires that all local governments adequately plan to meet the housing needs of everyone in the community. Specifically, the law states that counties and cities must prepare and implement a Housing Element as part of their General Plan to encourage "the early attainment of decent housing and a suitable living environment for every Californian, including farmworkers" (Cal Government Code Section 65580[a]). The law recognizes that each locality is best capable of determining what efforts are required to contribute to the attainment of the state housing goal, provided such a determination is compatible with the state housing goal and regional housing needs.

State law requires the Housing Element to contain a program which sets forth a five-year schedule of actions of the local government to implement the goals and objectives of the housing element. With the passage of Senate Bill (SB) 375 in 2008, Housing Element Law under Government Code Section 65588 was modified to align that time period to eight years for those jurisdictions located within a region covered by a regional transportation planning agency, such as SACOG.

The County's current Housing Element covers the planning period from 2021 to 2029 (El Dorado County 2022).

Local Regulations

SACOG MTP/SCS

The MTP/SCS is a 20-year plan for growth and transportation investment within the Sacramento region. In partnership with its 28 member cities and counties, including El Dorado County, SACOG addresses complex regional issues that surpass the capacity of individual jurisdictions to handle independently. The MTP/SCS includes policies and strategies focused on building communities where residents have access to homes, jobs, clean air, and transportation infrastructure. While the MTP/SCS makes land use assumptions about future growth, the assumptions do not supersede land use regulations. (Gov. Code Section 65080(b)(2)(K).) SACOG is required to update the long-range transportation and land use plan every four years and is currently working on the 2025 Blueprint as an update that includes land use and transportation assumptions and policies through 2050 (SACOG 2019a). Because, as SACOG recognizes, it has "no authority to require or prohibit growth of any kind," there are no mandatory MTP/SCS policies that apply to the project. The policies are the responsibility of SACOG and its member cities and counties to implement (for example, pursuing new funding sources for mobility solutions), and the proposed project would not impact the ability of these policies to be implemented.

El Dorado County General Plan

California State law requires that each city and county adopt a general plan "for the physical development of the city and any land outside its boundaries which bears relation to its planning." Typically, a general plan is designed to address the issues facing a city or county for the next 15-20 years. The general plan expresses the community's development goals and incorporates public policies relative to the distribution of future public and private land uses. The County General Plan was adopted in 2004; the last amendment to the General Plan was December 10, 2019 (El Dorado County 2019).

The following goals, objectives, and policies related to land use are established in the Land Use Element, Housing Element and Economic Element of the General Plan and are applicable to the proposed project.

Land Use Element

Goal 2.1: Land Use. Protection and conservation of existing communities and rural centers; creation of new sustainable communities; curtailment of urban/suburban sprawl; location and intensity of future development consistent with the availability of adequate infrastructure; and mixed and balanced uses that promote use of alternate transportation systems.

Objective 2.1.1: The urban limit line establishes a line on the General Plan land use maps demarcating where the urban and suburban land uses will be developed. The Community Region boundaries as depicted on the General Plan land use map shall be the established urban limit line. Provide opportunities that allow for continued population growth and economic expansion while preserving the character and extent of existing rural centers and urban communities, emphasizing both the natural setting and built design elements which contribute to the quality of life and economic health of the County.

Policy 2.1.1.7: Development within Community Regions, as with development elsewhere in the County, may proceed only in accordance with all applicable General Plan Policies, including those regarding infrastructure availability as set forth in the Transportation and Circulation and the Public Services and Utilities Elements. Accordingly, development in Community Regions and elsewhere will be limited in some cases until such time as adequate roadways, utilities, and other public service infrastructure become available and wildfire hazards are mitigated as required by an approved Fire Safe Plan.

Goal 2.2: Land Use Designations. A set of land use designations which provide for the maintenance of the rural and open character of the County and maintenance of a high standard of environmental quality.

Objective 2.2.1: An appropriate range of land use designations that will distribute growth and development in a manner that maintains the rural character of the County, utilizes infrastructure in an efficient, cost-effective manner, and further the implementation of the Community Region, Rural Center, and Rural Region concept areas.

Policy 2.2.1.2: To provide for an appropriate range of land use types and densities within the County, the following General Plan land use designations are established and defined. Adopted Plan (AP): This land use category recognizes areas for which specific land use plans have been prepared and adopted. These plans (e.g., specific plan or community plan)

are accepted and incorporated by this reference, and the respective land use map associated with each such plan is hereby adopted as the General Plan map for each such area. The plans recognized by the AP category do not include the now-superseded Area Plans that comprised the County's General Plan prior to the adoption of this General Plan. The adopted plan for the Tahoe Basin is the Regional Plan for the Tahoe Basin and the Plan Area Statements, both adopted by the Tahoe Regional Planning Agency (TRPA), and the Meyers Area (Community) Plan, adopted by El Dorado County and TRPA.

Objective 2.2.5: General Policy Section

Policy 2.2.5.2: All applications for discretionary projects or permits including, but not limited to, General Plan amendments, zoning boundary amendments, tentative maps for major and minor land divisions, and special use permits shall be reviewed to determine consistency with the policies of the General Plan. No approvals shall be granted unless a finding is made that the project or permit is consistent with the General Plan. In the case of General Plan amendments, such amendments can be rendered consistent with the General Plan by modifying or deleting the General Plan provisions, including both the land use map and any relevant textual policies, with which the proposed amendments would be inconsistent.

Policy 2.2.5.3: The County shall evaluate future rezoning: (1) To be based on the General Plan's general direction as to minimum parcel size or maximum allowable density; and (2) To assess whether changes in conditions that would support a higher density or intensity zoning district. The specific criteria to be considered include, but are not limited to, the following:

1. Availability of an adequate public water source or an approved Capital Improvement Project to increase service for existing land use demands;
2. Availability and capacity of public treated water system;
3. Availability and capacity of public waste water treatment system;
4. Distance to and capacity of the serving elementary and high school;
5. Response time from nearest fire station handling structure fires;
6. Distance to nearest Community Region or Rural Center;
7. Erosion hazard;
8. Septic and leach field capability;
9. Groundwater capability to support wells;
10. Critical flora and fauna habitat areas;
11. Important timber production areas;
12. Important agricultural areas;
13. Important mineral resource areas;
14. Capacity of the transportation system serving the area;
15. Existing land use pattern;
16. Proximity to perennial water course;
17. Important historical/archeological sites; and
18. Seismic hazards and present of active faults.

Policy 2.2.5.21: Development projects shall be located and designed in a manner that avoids incompatibility with adjoining land uses that are permitted by the policies in effect at the time the development project is proposed. Development projects that are potentially incompatible with existing adjoining uses shall be designed in a manner that avoids any incompatibility or shall be located on a different site.

Goal 2.4: Maintain and enhance the character of existing rural and urban communities, emphasizing both the natural setting and built design elements which contribute to the quality of life, economic health, and community pride of County residents.

Objective 2.5.1: Provision for the visual and physical separation of communities from new development.

Policy 2.5.1.1: Low intensity land uses shall be incorporated into new development projects to provide for the physical and visual separation of communities. Low intensity land uses may include any one or a combination of the following: parks and natural open space areas, special setbacks, parkways, landscaped roadway buffers, natural landscape features, and transitional development densities.

Housing Element

Goal HO-1: To provide for housing that meets the needs of existing and future residents in all income categories.

Policy HO-1.1: When adopting or updating programs, procedures, or Specific Plans or other planning documents, the County shall ensure that the goals, policies, and implementation programs are developed with the consideration of achieving and maintaining the County's regional housing allocation.

Policy HO-1.24: The County shall encourage Accessory Dwelling Units to provide housing that is affordable to very low-, low- and moderate-income households.

Goal HO-2: To provide quality residential environments for all income levels.

Policy HO-2.6: The County shall encourage the enhancement of residential environments to include access to parks and trails.

Goal HO-5: To increase the efficiency of energy and water use in new and existing homes.

Policy HO-5.2: New land use development standards and review processes should encourage energy and water efficiency, to the extent feasible.

Goal HO-6: To assure equal access to sound, affordable housing for all persons regardless of age, race, religion, color, ancestry, national origin, sex, disability, familial status, or sexual orientation.

Policy HO-6.1: When considering proposed development projects and adopting or updating programs, procedures, Specific Plans, or other planning documents, the County shall endeavor to ensure that all persons have equal access to sound and affordable housing, regardless of race, religion, color, ancestry, national origin, sex, disability, familial status, or sexual orientation.

Economic Development Element

Goal 10.1: Cooperation. The County shall work with all levels of government and with the various economic development organizations including the business community to cooperatively identify and promote the County's positive opportunities and strength.

Objective 10.1.9: The County shall monitor the jobs-housing balance and emphasize employment creation.

Policy 10.1.9.2: Encourage specific plans and large planned developments in Community Regions and Rural Centers to include a broad mix of housing types and relate it to local wage structures to achieve balance with existing and forecasted resident household needs.

El Dorado County Zoning Ordinance

The zoning code of the County and each incorporated community within the county includes a set of detailed requirements that implement the General Plan land use designations and policies at the individual parcel level. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. Since 1971, state law has required the city or county zoning code to be consistent with the jurisdiction's general plan, except in charter cities. The Zoning Ordinance classifies and regulates the uses of land and structures within the unincorporated county in order to implement the goals and policies of the General Plan. The Zoning Ordinance directly influences development by specifying the distances between buildings, the height of buildings, landscaping, parking, and other regulations that combine to create the desired environment.

The Zoning Ordinance also includes specific use regulations related to housing. The following sections of the Zoning Ordinance are applicable to the proposed project:

Secondary Dwellings (Section 130.40.300)

This section implements California Government Code Section 65852.150 et seq. requiring ministerial approval of secondary dwellings, or accessory dwelling units (ADUs), consistent with the standards established in state law. Development standards include requiring the maximum floor area for attached/detached secondary dwellings to be 600 square feet (sf) for dwellings up to 9,999 sf, 800 sf for dwellings 10,000-19,999 sf, 1,200 sf for dwellings 20,000 sf to less than 1 acre, and 1,600 sf for dwellings 1 acre or greater. A secondary dwelling must also conform to the setbacks, height limits, lot coverage, and other requirements of the zone in which it is located. Secondary dwellings may be connected to the power source, water supply, and sewage disposal system of the primary dwelling or may have separate connections that provide the same standards required of the primary dwelling, subject to the requirements of the applicable service providers.

Specific Plans (Chapter 130.56)

This chapter states that the County Board of Supervisors shall have review authority of original jurisdiction for specific plan applications, after review and recommendation by the Planning Commission in compliance with Chapters 130.50 (Application Filing and Processing) and 130.51 (General Application Procedures). The Board shall approve the proposed specific plan by resolution or by ordinance. The approval of a specific plan is a discretionary project pursuant to CEQA. The proposed specific plan must include site plans, identification and explanation of public and private infrastructure needed to support the proposed uses, development standards and criteria, a

statement of the relationship of the specific plan to the General Plan, and any required implementation measures including regulations and programs.

Creekside Village Specific Plan

The County may also provide additional specificity in land use planning beyond that identified in their respective General Plans by developing community or specific plans for smaller, more specific areas within their jurisdiction. These more localized plans provide for focused guidance for developing a specific area, with development standards tailored to the area as well as systematic implementation of the General Plan. Under state law specific plans are required to be consistent with the General Plan (Cal. Government Code Section 65454) and cannot be approved if it is inconsistent with the General Plan; therefore, the proposed project could not proceed if determined by the County's Board of Supervisors to be inconsistent with the General Plan. The CVSP includes additional land use and development standards which supersede the standards outlined in the County Code. The CVSP provides for new residential (CV-SFL and CV-SFM-PD), parks (CV-P), commercial (CV-NC) and open space (CV-OS-1 and CV-OS-2) land use designations to accommodate for a variety of uses within the project site. Residential development standards include maximum lot area, maximum building coverage, minimum yard setbacks, maximum building height, and parking requirements. The CV-P designation provides land for active and passive recreational opportunities and allows for accessory structures and utilities. The CV-OS-1 designation is intended reserve and protect sensitive natural features while the CV-OS-2 designation is for passive recreational activities that complement park uses. The CVSP also includes its own unique site development standards that customize the requirements contained in the County Design and Improvements Standards Manual, including street, trail, lot, and grading standards. Where conflicts exist between the CVSP and the County Code, the CVSP standards shall govern. Where the CVSP is silent, the County Code and Design Standards Manual shall take precedence.

3.9.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Physically divide an established community.
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
- Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Significance Threshold Criteria Not Applicable to the Proposed Project

The project site is undeveloped; therefore, future development would not physically divide an established community nor displace people or housing and these topics are not discussed further in this Draft EIR.

3.9.4 Impacts and Mitigation Measures

Methodology

Land Use

The land use evaluation in this section is based on a qualitative comparison of existing and proposed uses on the site and their compatibility with existing and planned land uses, and policies that guide land use decisions as defined in the El Dorado County General Plan. The discussion differs from the impact discussions of other technical sections, in that only general land use plan or policy consistency issues are discussed, as opposed to a discussion of the physical impacts on the environment that could occur with implementation of the proposed project. An analysis of the physical impacts is included in the other technical sections included in Chapter 3 of this Draft EIR.

Consistency with Land Use Plans

CEQA Guidelines, Section 15125(d) (found in 14 CCR 15000 et seq.), states that an EIR must discuss "any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans." An inconsistency with a general plan or policy would not necessarily create an environmental impact. For example, certain general plan policies are intended to address housing availability, socioeconomics, or employment; impacts related to these topics are not considered impacts to the environment under CEQA (see above). Therefore, the significance determination for Impact 3.9-1 below is informed only by the proposed project's consistency with plans and policies adopted for the purpose of avoiding or mitigating an environmental effect pursuant to Appendix G of the CEQA Guidelines and the Thresholds of Significance (plans and policies that address environmental effects, but that do not guide land use decisions, are discussed in the applicable technical sections in Chapter 3 of this Draft EIR). Therefore, in accordance with CEQA Guidelines Section 15125(d), a brief discussion of the project's overall consistency with land use plans and policies adopted to avoid or mitigate environmental effects is included below.

El Dorado County General Plan

General plans provide long-term goals, policies and standards for development, and all development proposals must be substantially consistent with the overall land use guidance provided in a general plan. The County's General Plan guides land use planning in the unincorporated areas of the county. The General Plan includes several policies that apply to the proposed project (but are not necessarily adopted to avoid or mitigate an environmental effect). Policy 2.2.1.2 establishes the Adopted Plan (AP) land use category, which recognizes areas for which specific land use plans have been prepared and adopted. The proposed land use designation for the CVSP is AP, and the CVSP has developed a land use map for the area which would be adopted as part of the General Plan Land Use map. Policy 10.1.9.2 encourages specific plans to include a mix of housing types to meet existing and forecasted housing needs. The CVSP includes a CV-SFM-PD residential component which could consist of a mix of detached zero-lot-line lots, small lots, cluster lots, townhouses, and multi-unit residential structures (e.g., duplexes and triplexes).

The Housing Element contains policies intended to encourage housing that meets the needs of existing and future residents in all income categories. For example, Policy HO-1.24 states that the County shall encourage Accessory Dwelling Units (ADU) to provide housing that is affordable to very low-, low-, and moderate-income households. The CVSP allows for ADUs and junior accessory dwelling units (JADU) as permitted uses, as allowed by the state (Cal Gov't Code Sections 65852.2 and 65852.22), and therefore would not conflict with this policy. However, it should be noted that the project does not propose the construction of ADUs or JADUs and is not designed to facilitate or

encourage the addition of ADUs or JADUs; therefore, the development of ADUs or JADUs is not evaluated in this Draft EIR. The County's Zoning Ordinance and state law allow the addition of an ADU and/or JADU on lots zoned for single-family residential provided that the proposed ADU or JADU complies with objective criteria established in County Code and state law. Whether a future homeowner may seek to add an ADU or JADU at some point in the future is uncertain. The California Supreme Court has explained that "'where future development is unspecified and uncertain, no purpose can be served by requiring an EIR to engage in sheer speculation as to future environmental consequences.'" (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 395 [quoting *Lake County Energy Council v. County of Lake* (1977) 70 Cal.App.3d 851, 854-855].) The Supreme Court has also held that analysis of a potential future expansion is required only if "(1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." (Id. at p. 396.)

Here, a future homeowner's decision whether to apply for an ADU or JADU at some point in the future is not a reasonably foreseeable consequence of the project, especially when the project is not designed to accommodate ADUs or JADUs. Instead, any such decision would be based on the circumstances and goals of an unknown future homeowner and the state law at the time that decision is made, which are impossible to assess without pure speculation at this time. When state law currently requires ministerial review of ADUs and JADUs provided that they are consistent with objective criteria, the potential future addition of a secondary dwelling unit consistent with state law also could not change the scope or nature of the primarily residential project.

Overall, the proposed project is generally consistent with the County General Plan's guidance for land development while also satisfying the County's obligation to provide for sufficient and varied housing opportunities. Ultimately, it is within the County's decision makers' purview to decide if the proposed project is consistent with the General Plan. The information provided in this section is meant to inform that decision.

In addition, the Courts have recognized that, because general plans often contain numerous policies adopted to effect differing or competing legislative goals, a development project may be "consistent" with a general plan, taken as a whole, even though the project appears to be inconsistent or arguably inconsistent with some specific policies within a given general plan (*Sequoyah Hills Homeowners Association v. City of Oakland* (1993) 23 Cal.App.4th 704, 719). Furthermore, courts strive to "reconcile" or "harmonize" seemingly disparate general plan policies to the extent reasonably possible (*No Oil*, *supra*, 196 Cal.App.3d at p. 244). The ultimate determination of General Plan consistency for a proposed project often turns on whether the project is consistent with policies that are fundamental, mandatory, and specific. (*Families Unafraid to Uphold Rural El Dorado County v. El Dorado County Bd. of Supervisors* (1998) 62 Cal.App.4th 1332, 1341-1342.)

CEQA Impact Analysis

As previously discussed, the significance determination for Impact 3.9-1 below is informed only by the proposed project's consistency with plans and policies related to land use that were adopted for the purpose of avoiding or mitigating an environmental effect. Land use planning decisions can result in physical environmental impacts; for example, by planning for urban development that would require new infrastructure, the construction of which could impact the environment. The consistency analysis under Impact 3.9-1 provides the reader with a general overview of whether the project is in harmony with the overall intent of relevant goals and policies adopted for the purpose of avoiding or mitigating an environmental effect.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1.8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted

as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. Where applicable, the impact analysis below indicates if a proposed option would result in a change in impact significance or require new mitigation.

Population and Housing

Changes in population (and housing) in and of themselves are generally characterized as social and economic effects and are not considered physical effects on the environment. CEQA provides that economic or social effects are not considered significant effects on the environment unless the social and/or economic changes are connected to physical environmental effects. A social or economic change related to a physical change may be considered in determining whether the physical change is significant (CEQA Guidelines Section 15382). The guidance for assessing economic and social effects is set forth in Section 15131(a) of the CEQA Guidelines:

> Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on physical changes.

While an increase in population resulting from new development does not necessarily cause direct adverse physical environmental effects, indirect physical environmental effects such as increased vehicle trips and associated increases in air pollutant emissions and noise could occur. The information in this section is used as a basis for the analysis of project impacts in the technical sections contained in Chapter 3 of this Draft EIR.

Project Impacts

Impact 3.9-1. The proposed project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

General Plan

The CVSP provides for the development of up to 918 dwelling units, including 668 CV-SFL dwelling units ranging from 4 to 8 dwelling units per acre (du/ac) on approximately 116 acres, and 250 CV-SFM-PD dwelling units on 21 acres with a density of 5-12 du/ac. The remainder of the project site is proposed to be parks, open space, a potential 1.8-acre neighborhood commercial center (which could be converted to parkland if not adopted as part of the CVSP) and roadway infrastructure. In Chapter 2, Project Description, Figure 2-3 illustrates proposed land uses within the project site and Table 2-1 shows a breakdown of each land use, along with the applicable CVSP land use designation.

Table 3.9-1 provides an evaluation of the project's consistency with the County General Plan. As shown in the table, the proposed project is generally consistent with policies adopted for the purpose of avoiding or mitigating an environmental effect. As noted above, a specific plan must be consistent with the General Plan (Cal. Government Code Section 65454) and cannot be approved by the County if it is inconsistent with the General Plan. The CVSP also includes an evaluation of the project's consistency with goals and policies included in the General Plan and no conflicts were identified.

SACOG MTP/SCS

In the MTP/SCS, the project is located within the Community Type of Established Communities (El Dorado Hills) as determined by SACOG in its land use forecast in Appendix C of the MTP/SCS. The MTP/SCS forecasts 8,010 new homes in the unincorporated portion of the county by 2040 (2020 MTP/SCS Appendix C, p. 5). Based on SACOG's forecast, much of this growth through 2040 (approximately 3,300 homes) is projected to occur in the Established Communities areas within the county and, of the anticipated growth in Established Communities, approximately 70% is anticipated in the El Dorado Hills community (2,330 new homes in the Established Communities area in the County by 2040). The anticipated 3,300 new homes in the Established Communities are in addition to the anticipated growth from the approved Bass Lake Hills, Carson Creek, and Valley View (Blackstone) specific plans, which are identified and accounted for in the MTP/SCS as Developing Communities. As proposed, the project would develop approximately 918 single-family homes and therefore is well within the forecast of 3,300 new homes in the Established Communities areas.

The MTP/SCS anticipates that "[n]ew housing growth in Established Communities [will] range from very low density to medium-high density." (2020 MTP/SCS Appendix D, p. 31.) The MTP/SCS defines "low density" as 4 to 8 units per acre, "medium density" as 9 to 12 units per acre, and medium-high density as 13 to 24 units per acre. (2020 MTP/SCS Appendix D, p. 29.) As proposed, the project would develop 918 single-family homes within 115.8 acres of single-family low-density residential with 4 to 8 units per acre and 20.8 acres of single-family medium-density residential with 5 to 12 units per acre. The proposed residential densities would provide a range of housing products consistent with the surrounding communities and the anticipated densities in the MTP/SCS. The project thus proposes general land use, densities, and intensities consistent with the anticipated growth in the MTP/SCS.

While not adopted yet, the project is within the Dorado Hills Established Communities in SACOG's draft 2025 Blueprint and the various scenarios under consideration for the 2025 Blueprint anticipate between 2.000 to 2,700 new housing units within the El Dorado Hills Established Communities by 2050.

Active Adult Option

The SACOG MTP/SCS includes conventional and active adult housing together when estimating anticipated growth, thus implementation of the Active Adult option would remain consistent with the MTP/SCS. The MTP/SCS also recognizes that, "[c]ompared to 2019, the region has 253,000 more over-65-year-olds, and within that group, 210,000 more over-75-year-olds" and that, "[g]enerally, the majority are working longer and want to age in place in their own homes and communities." The MTP/SCS further estimates that, "[b]y 2040, 22 percent of the region's population will be over 65." (SACOG 2019a). The change in type of housing unit would also be consistent with the County's General Plan. Therefore, this option is consistent with the County's General Plan and MTP/SCS and the impact would be less than significant, the same as the proposed project.

The proposed project would be consistent with the County's General Plan and MTP/SCS and impacts were determined to be **less than significant.**

Table 3.9-1. Land Use Policy Consistency

Policy Number	Policy	Consistency Determination
El Dorado County General Plan		
Policy 2.1.1.7	Development within Community Regions, as with development elsewhere in the County, may proceed only in accordance with all applicable General Plan Policies, including those regarding infrastructure availability as set forth in the Transportation and Circulation and the Public Services and Utilities Elements. Accordingly, development in Community Regions and elsewhere will be limited in some cases until such time as adequate roadways, utilities, and other public service infrastructure become available and wildfire hazards are mitigated as required by an approved Fire Safe Plan.	**Consistent.** The CVSP is located within the existing boundaries of the El Dorado Hills Community Region and is required to be consistent with all applicable General Plan policies while providing adequate roadways, utilities, and public service infrastructure to serve the development. See Sections 3.11, 3.12, 3.14, and 3.15 of this Draft EIR for an evaluation of specific General Plan policies related to public services, transportation, utilities, and wildfire hazards.
Policy 2.2.5.3	The County shall evaluate future rezoning: (1) To be based on the General Plan's general direction as to minimum parcel size or maximum allowable density; and (2) To assess whether changes in conditions that would support a higher density or intensity zoning district. The specific criteria to be considered include, but are not limited to, the following: 1. Availability of an adequate public water source or an approved Capital Improvement Project to increase service for existing land use demands; 2. Availability and capacity of public treated water system; 3. Availability and capacity of public waste water treatment system; 4. Distance to and capacity of the serving elementary and high school; 5. Response time from nearest fire station handling structure fires; 6. Distance to nearest Community Region or Rural Center; 7. Erosion hazard; 8. Septic and leach field capability; 9. Groundwater capability to support wells; 10. Critical flora and fauna habitat areas;	**Consistent.** As allowed by state law and the General Plan, the CVSP proposes land use designations and development standards that allow for unique lot sizes and areas different than those in the General Plan and the Zoning Ordinance. The County would review the CVSP to ensure consistency with the criteria listed in Policy 2.2.5.3. Some of these criteria are addressed in other technical sections in Chapter 3 of this Draft EIR, and where relevant, mitigation measures are proposed in order to minimize environmental impacts.

Table 3.9-1. Land Use Policy Consistency

Policy Number	Policy	Consistency Determination
	11. Important timber production areas; 12. Important agricultural areas; 13. Important mineral resource areas; 14. Capacity of the transportation system serving the area; 15. Existing land use pattern; 16. Proximity to perennial water course; 17. Important historical/archeological sites; and 18. Seismic hazards and present of active faults. 19. Consistency with existing Conditions, Covenants, and Restrictions.	
Policy 2.2.5.21	Development projects shall be located and designed in a manner that avoids incompatibility with adjoining land uses that are permitted by the policies in effect at the time the development project is proposed. Development projects that are potentially incompatible with existing adjoining uses shall be designed in a manner that avoids any incompatibility or shall be located on a different site.	**Consistent.** The CVSP is designed to avoid land use incompatibilities that could potentially result in physical environmental effects. For example, proposed CVSP residential uses located to the west of El Dorado Hills Business Park access road would be buffered by an extensive open space system that varies in width from approximately 150-feet to 300-feet. This would reduce the potential for operations of the Business Park, such as those involving truck noise, to impact sensitive receptors at the project site. Proposed CVSP residential uses located in the area between the access road and Latrobe Road are located adjacent to an existing 25-acre undeveloped parcel that is owned by the project applicant, and future development of this parcel would be strictly controlled by the project applicant and designed to minimize conflicts between the development and the CVSP. Additionally, an open space buffer is also located along the entire southern property line of the CVSP to ensure compatibility with existing rural residential and light industrial uses to the south.
Policy 2.5.1.1	Low intensity land uses shall be incorporated into new development projects to provide for the physical and visual separation of communities. Low intensity land uses may include any one or a combination of the following: parks and natural open space areas, special setbacks, parkways, landscaped	**Consistent.** The CVSP contains open space, parks, natural landscape features and low intensity land uses. The inclusion of these low intensity land uses is intended to reduce visual impacts of the proposed project (see Section 3.1, Aesthetics).

Table 3.9-1. Land Use Policy Consistency

Policy Number	Policy	Consistency Determination
	roadway buffers, natural landscape features, and transitional development densities.	
Policy 2.5.1.2	Greenbelts or other means of community separation shall be included within a specific plan and may include any of the following: preserved open space, parks, agricultural districts, wildlife habitat, rare plant preserves, riparian corridors, and designated Natural Resource areas.	**Consistent.** The CVSP contains parks, open space preserves, open space buffers, and riparian corridors. These components help to reduce visual impacts as well as impacts to biological resources (see Section 3.3, Biological Resources).

Source: El Dorado County 2019.

Mitigation Measures

No mitigation measures are required.

Impact 3.9-2. The proposed project would induce unplanned population growth but would not result in significant adverse effects on the environment.

The project is proposing development of up to 918 dwelling units and based on the County's current average of 2.52 persons per household (PPH), the project would generate a total of approximately 2,314 new residents at buildout. Relative to the County's population of 191,185 in 2020, this would be an approximate 1.2% increase in the County population. Relative to only the unincorporated county (e.g., not including the cities of Placerville or South Lake Tahoe) population of 159,108 in 2020, this would be an approximate 1.5% increase in the unincorporated county population. Considering that the proposed project would not be fully built out until 2030 or later, population growth from the project would occur gradually over the years as new homes are built on the site. According to the County's 2021-2029 Housing Element Update, it is anticipated that the County population will increase to 225,419 in 2040 (El Dorado County 2022), which would be an approximately 15.2% increase from the population in 2020. As the project includes only an approximately 1.2% increase in population, it is likely within the estimated population increase. That said, the General Plan did not anticipate the population growth at the project site given the R&D land use designation and zoning.

As discussed in more detail above, the project is within an Established Communities of the SACOG MTP/SCS and draft 2025 Blueprint and the additional housing units and associated population growth is consistent with the assumed population growth in the Established Communities of El Dorado Hills.

Active Adult Option

Given the restricted residency for age-restricted housing under state law, age-restricted homes generally have fewer residents per unit than conventional single-family and multi-family homes. Specifically, Civil Code Section 51.3 generally limits "qualifying residents" in a "senior citizen housing development" to individuals 55 years of age or older and provides narrow exceptions to this requirement, such as allowing a disabled child or grandchild to reside in the unit if necessary due to a disabling injury or illness and only while that disabling injury or illness remains. (Civ. Code, Section 51.3, subd. (b)(3).)

As discussed in Sections 3.11, Public Services, 3.12, Transportation, and 3.14, Utilities and Service Systems consistent with residency restrictions in state law, numerous public agencies impose reduced impact fees for age-restricted dwelling units due to the reduced impacts and needs resulting from the potential future residents. Age-restricted units generate fewer residents, fewer vehicle trips, and a corresponding reduction in demand for potable water, wastewater treatment and other public services and utilities.

Therefore, this Draft EIR assumes a population reduction of approximately 40% for active adult residential units. Assuming 2.52 residents per unit for 150 conventional units and a 40% reduction per unit for the remaining 768 units, the Active Adult option would have approximately 1,540 new residents.[1] As compared to the estimated 2,314 new residents with the proposed project that assumes all conventional units, the Active Adult option would likely have an overall approximately 33.5% reduction in new residents. It is also worth noting that the assumption conservatively uses the same number of dwelling units as the proposed project, although the Specific Plan allows

[1] 2.52 x 150 = 378; 2.52 x 768 x 0.6 = 1,162; 378 + 1,162 = 1,540.

for a reduction of up to approximately 15% of the units with the Active Adult option to accommodate slightly larger lot sizes for single story homes. Overall, while the Active Adult option would generate fewer residents than the proposed project, development of the Active Adult option would also result in no impact the same as the project.

As discussed in the Methodology section above, changes in population (and housing) in and of themselves are generally characterized as social and economic effects which are not considered physical effects on the environment. CEQA provides that economic or social effects are not considered significant effects on the environment unless the secondary social and/or economic changes are connected to physical environmental effects. Therefore, while an increase in population resulting from the proposed project does not necessarily cause direct adverse physical environmental effects, secondary or indirect physical environmental effects such as an increase in vehicle trips and associated increases in air pollutant emissions and noise could occur. This Draft EIR has evaluated indirect environmental effects of the proposed project in the various technical or resource sections included in Chapter 3. For example, Section 3.2, Air Quality evaluates the increase in air emissions due to an increase in vehicle trips; Section 3.10, Noise addresses the potential for an increase in ambient noise levels resulting from project traffic; while Section 3.12, Transportation addresses the project's increase in vehicle miles traveled (VMT), which incorporates VMT from new project occupants. Therefore, because these potential impacts indirectly resulting from increased population have already been addressed in the appropriate technical sections of this EIR, there would be **no impact** due to unplanned population growth that has not previously been addressed in this EIR.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

The consistency analysis of applicable land use goals and policies and compatibility with existing adjacent uses is not an additive effect. Therefore, there are no significant land use consistency impacts where the project, in combination with impacts from other projects, could contribute to a cumulative land use impact. Potential cumulative issues related to proposed land uses, such as new residential development that could create an increase in noise, traffic, or air quality impacts, are addressed within the appropriate resource sections in Chapter 3 of this Draft EIR. Similar to the discussion above, an increase in population resulting from new development in the County would not necessarily cause direct adverse physical environmental effects. Instead, the primary concern is whether this increase in population from cumulative projects would result in indirect physical environmental effects which could combine to create a cumulative impact. Potential indirect cumulative impacts resulting from population increase in the County are adequately addressed in the resource or technical sections analysis of cumulative impacts in Chapter 3.

3.9.5 References

El Dorado County 2019. 2004 El Dorado County General Plan. Adopted July 19, 2004. Amended December 20, 2019.

El Dorado County 2022. 2021-2029 Housing Element. Adopted August 31, 2021. Amended March 22, 2022.

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3.10 Noise

This section describes the environmental and regulatory setting of the Creekside Village Specific Plan (proposed project or CVSP) project site (project site or plan area) and its surrounding vicinity with respect to noise and vibration and summarizes predicted noise and vibration impacts attributed to the proposed project.

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) included noise concerns that addressed noise along nearby roadways and the need for mitigation, which could involve erecting or upgrading walls. A second scoping meeting was held on September 26, 2023, and comments were accepted through October 12, 2023. The Latrobe School District requested that the EIR address noise impacts to schools, including increases in noise levels in the immediate vicinity of playing fields resulting from increased traffic. These concerns are addressed in this section.

The primary source referenced to prepare this section is the Environmental Noise and Vibration Assessment (ENVA) for the Creekside Village Specific Plan Development prepared by Bollard Acoustical Consultants, Inc. (Appendix G).

3.10.1 Environmental Setting

Fundamentals of Acoustics and Vibration

Glossary of Terms

Attachment A of the ENVA document (Appendix G) provides a glossary of noise and vibration terminology that are used to present and discuss the impact assessment. The key descriptors and metrics are summarized as follows:

- **Ambient Noise Level** – the composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
- **decibel (dB)** – The unit for expressing sound pressure level (SPL) and is equal to ten times the logarithm (to the base 10, or common logarithm) of the ratio of the measured sound pressure squared to a reference pressure squared, which is 20 micropascals.
- **A-Weighted Sound Level (dBA)** – the sound pressure level (SPL) in decibels as measured on a sound level meter (SLM) using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the measured sound in a manner similar to the frequency response of the average healthy human ear, and thus correlates well with assessment of environmental noise in a community setting where noise-sensitive receptors may be present.
- **Equivalent Sound Level (L_{eq})** – the value corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period.
- **Community Noise Equivalent Level (CNEL)** – defined as the 24-hour energy average noise level, with noise occurring during evening hours (7 p.m. to 10 p.m.) weighted by +5 dB and nighttime hours (10 p.m. to 7 a.m.) weighted by +10 dB.
- **Day-night Sound Level (L_{dn})** – comparable to CNEL, but the evening hours (7 p.m. to 10 p.m.) are considered daytime and thus not weighted by +5 dB in the energy averaging calculation to arrive at the L_{dn} value.
- *Peak particle velocity (PPV)* – the maximum instantaneous positive or negative peak of a vibration wave. In this noise section, a PPV descriptor with units of inches per second [in/sec or ips] is used to evaluate construction-generated vibration velocity for building damage risk and human annoyance.

- *Vibration velocity decibel (VdB)* – is ten times the common logarithm of the ratio of the square of the amplitude of the root mean squared (RMS) vibration velocity to the square of the amplitude of the reference RMS vibration velocity. The reference velocity in the United States is one micro-inch per second.

Sound and Vibration Concepts

The Noise and Vibration Fundamentals section of the ENVA document provides background information on acoustical concepts, including an explanation of how airborne sound and ground-borne vibration propagate. Additional important concepts can be summarized in the following bullets.

- Sound is expressed with a decibel scale to make a very large range of audible sound pressures convenient to describe and discuss. Zero dB is not the absence of sound, but the lowest level (relative to a standard reference quantity) that an average healthy human ear can hear.
- Sound energy dissipates with increasing distance from a source. From a point source of sound emission, the rate of level attenuation is 6 dB per doubling of distance. From a line source, such as roadway traffic, the attenuation rate is 3 dB per doubling of distance. Additional attenuation due to acoustical absorption by the air through which sound travels, and over a nearby porous ground surface, also occur when the conditions are present.
- Ground-borne vibration energy dissipates with distance as it travels through soils and rock strata away from a source, and the attenuation rate varies with the encountered soil/strata composition.
- While a 3 dB increase in noise represents a doubling of sound energy, it would be considered barely perceptible to average healthy human hearing. A *perceived* doubling of noise (i.e., an observer hearing the change and remarking "that sounds twice as loud") would typically require a 10 dB increase.

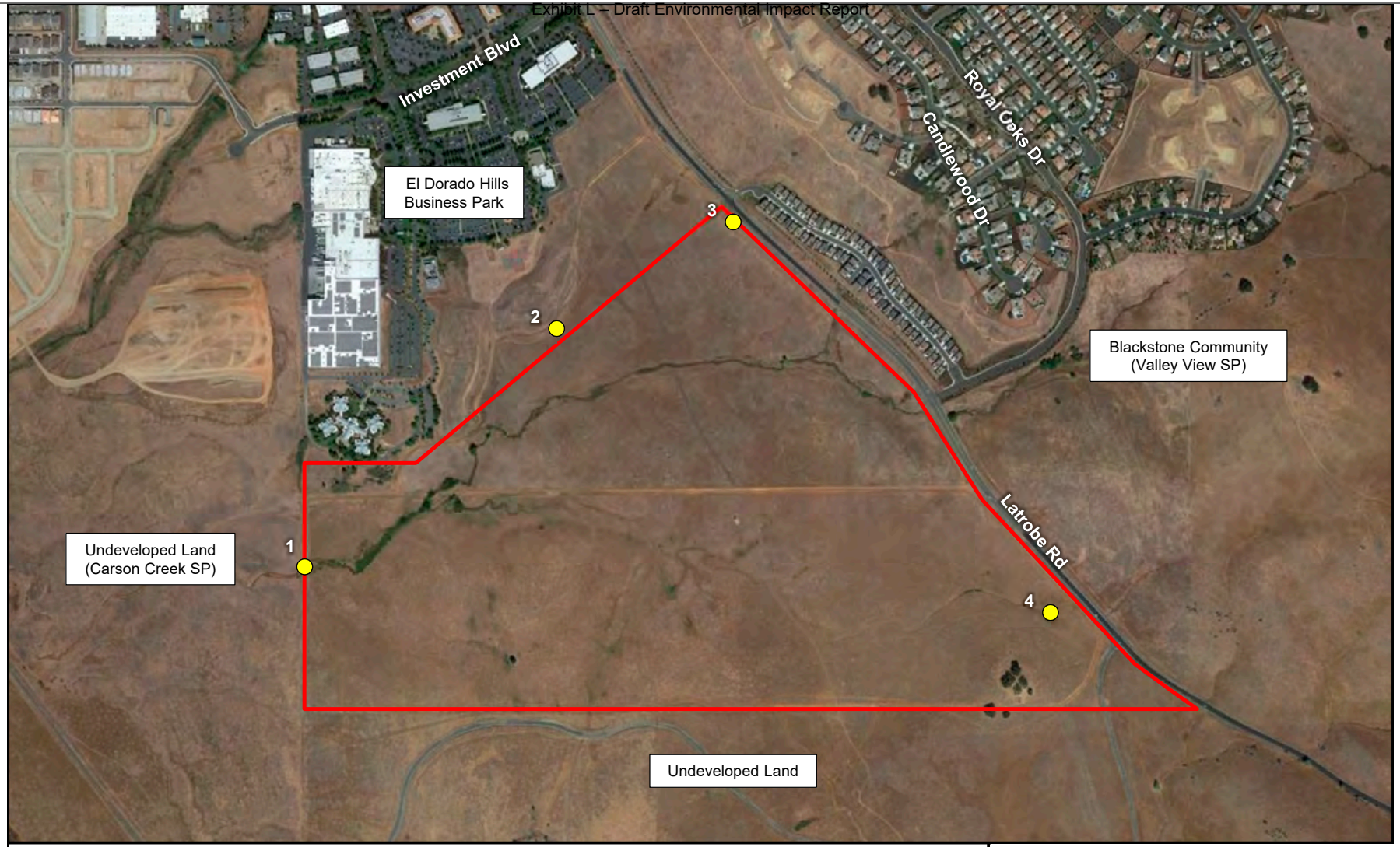
Figure 3 from the ENVA (see Appendix G, p. 5) illustrates sample outdoor and indoor sound sources and their corresponding typical levels with respect to a dB scale that resembles a thermometer and thus provides visual context on how such sample noise sources may rank with respect to magnitude and relate to reader experience.

Existing Ambient Noise and Vibration

Noise-sensitive Land Uses

Consistent with the County of El Dorado (County) General Plan, noise-sensitive land uses include hospitals, schools, churches, and residential uses. Section 130.37.040 from the County's noise standards with respect to sensitive receptors also includes "frequently inhabited outbuildings" for single and multi-family residences, rest homes, cemeteries, public libraries, and "other sensitive uses as determined by the Director" (El Dorado County 2023).

Existing noise-sensitive land uses within the project vicinity consist of residential uses to the east and northeast of the project site across Latrobe Road, residential uses under construction to the west of the project site and a public charter school located northwest of the project area (John Adams Academy). There is also a church located northwest of the project area (Live 58 Church), which is approximately 2,000 feet from the project site and there are multiple buildings between the project site and the church, including John Adams Academy and the Broadridge facility. Existing commercial and office land uses (i.e., El Dorado Hills Business Park) located north of the project site would not be considered noise sensitive. The project site and surrounding land uses are shown on Figure 3.10-1.



SOURCE: Bollard Acoustical Consultants 2020

FIGURE 3.10-1

Project Area and Survey Locations

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Existing Roadway Traffic Noise

Using estimates of hourly distribution for traffic over a typical 24-hour period, the Federal Highway Administration (FHWA) Traffic Noise Model (FHWA-RD-77-108) was used to predict distances at which incremental traffic-attributed L_{dn} values could be expected for a variety of roadway segments in the project vicinity, as shown in Table 3.10-1. Model input parameters for the existing conditions scenario relied upon the Transportation Impact Study (TIS) prepared by T. Kear Transportation Planning & Management, Inc. (2023).

Average daily traffic (ADT) volumes were conservatively estimated by multiplying the total of morning (AM) and afternoon (PM) peak hour conditions by five. Other inputs were obtained from observations and noise measurement data provided by the applicant's noise consultant, Bollard Acoustical Consultants, Inc. The existing traffic noise levels at the nearest noise-sensitive land uses to the project area roadways and distances from the centerlines of selected roadways to the 60 dBA, 65 dBA, and 70 dBA L_{dn} contours are summarized in Table 3.10-1. Attachment B-1 from the ENVA contains the FHWA model inputs used to predict the noise levels and distances shown in Table 3.10-1.

Table 3.10-1. Existing (2023) Traffic Noise Modeling Results

Roadway Segment #	Roadway Name	Segment Description	L_{dn} at Nearest Sensitive Receptor	Distance to Noise Contour (feet)		
				70 dBA L_{dn}	65 dBA L_{dn}	60 dBA L_{dn}
1	El Dorado Hills Blvd.	North of Serrano Pkwy.	68	82	176	380
2		Serrano Pkwy. To White Rock Rd.	62	88	189	408
3	Latrobe Rd.	White Rock Rd. to Golden Foothill Pkwy.	68	98	212	457
4		Golden Foothill Pkwy. To Investment Blvd.	53	8	16	35
5		Investment Blvd. to Avanta Dr./Q Dr.	51	13	29	62
6		Avanta Dr./Q Dr. to Project Commercial Entry	56	13	27	59
7		Project Commercial Entry to Royal Oaks Dr.	56	13	27	59
8		Royal Oaks Dr. to Wetsel Oviatt Rd.	50	11	25	53
9		Wetsel Oviatt Rd. to S. Shingle Rd.	62	38	81	175
10		South of S. Shingle Rd.	60	31	67	144
11	Lassen Ln.	West of El Dorado Hills Blvd.	54	9	18	40
12	Serrano Pkwy.	East of El Dorado Hills Blvd.	58	29	62	133
13	White Rock Rd.	West of Latrobe Rd.	58	17	37	81
14		East of Latrobe Rd.	64	30	66	141
15	Golden Foothill Pkwy.	West of Latrobe Rd.	57	11	24	52
16	Clubview Dr.	East of Latrobe Rd.	52	5	10	22
17	Investment Blvd.	Latrobe Rd. to Robert J. Mathews Pkwy.	36	2	5	11

Table 3.10-1. Existing (2023) Traffic Noise Modeling Results

Roadway Segment #	Roadway Name	Segment Description	L_{dn} at Nearest Sensitive Receptor	Distance to Noise Contour (feet)		
				70 dBA L_{dn}	65 dBA L_{dn}	60 dBA L_{dn}
18		West of Robert J. Mathews Pkwy.	47	5	10	21
19	Project Q Dr.	West of Latrobe Rd. (within project area)	—	—	—	—
20	Avanti Dr.	East of Latrobe Rd.	37	1	1	3
21	Project Commercial Entry	West of Latrobe Rd. (within project area)	—	—	—	—
22	Royal Oaks Dr.	West of Latrobe Rd. (within project area)	—	—	—	—
23		East of Latrobe Rd.	42	2	5	11
24	Wetsel Oviatt Rd.	West of Latrobe Rd.	19	1	2	4
25	S. Shingle Rd.	West of Latrobe Rd.	46	4	9	19
26		East of Latrobe Rd.	54	15	32	69
27	Robert J. Mathews Pkwy.	Investment Blvd. to Golden Foothill Pkwy.	51	16	35	76
28		South of Investment Blvd.	50	20	43	92
29	Palmdale Dr.	South of Carson Crossing Dr.	45	2	4	8
30	Carson Crossing Dr.	Palmdale Dr. to Four Seasons Dr.	51	4	8	17
31		Palmdale Dr. to Golden Foothill Pkwy.	51	4	8	18

Sources: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix G (see Attachment B for FHWA model inputs).

Measured Existing Outdoor Ambient Sound

Table 3.10-2 displays the results of a measurement survey to quantify the existing ambient outdoor noise environment taken in October 2020, which is currently dominated by noise from traffic on Latrobe Road. The long-term noise survey locations are shown on Figure 3.10-1.

Table 3.10-2. Long-Term Noise Level Measurement Results – October 3-5, 2020

Site Description[1]	Date (mm/dd/yy)	L_{dn}	Average Measured Hourly Noise Levels, dBA			
			Daytime[2]		Nighttime[3]	
			L_{eq} (daytime)	L_{max}	L_{eq} (nighttime)	L_{max}
Site 1: Western project area boundary, approximately 800' from existing commercial / offices uses to north	10/3/20	52	45	59	46	54
	10/4/20	57	41	56	51	56
	10/5/20	50	44	60	43	50
	10/3/20	53	50	68	46	63

Table 3.10-2. Long-Term Noise Level Measurement Results – October 3-5, 2020

Site Description[1]	Date (mm/dd/yy)	L_{dn}	Average Measured Hourly Noise Levels, dBA			
			Daytime[2]		Nighttime[3]	
			L_{eq} (daytime)	L_{max}	L_{eq} (nighttime)	L_{max}
Site 2: Northwest project area boundary, approximately 800' from existing commercial / office uses to north	10/4/20	57	55	69	48	62
	10/5/20	54	54	69	45	61
Site 3: Northern project area boundary, approximately 50' from centerline of Latrobe Road	10/3/20	63	63	83	55	74
	10/4/20	61	60	80	52	74
	10/5/20	65	62	82	57	77
Site 4: Southeast project area boundary, approximately 200' from centerline of Latrobe Road	10/3/20	56	53	70	49	64
	10/4/20	54	51	68	47	65
	10/5/20	58	53	70	51	67

Source: Appendix G (see Attachments D and E).
Notes:
1 Long-term ambient noise monitoring locations are identified on Figure 3.10-1.
2 Daytime hours: 7:00 AM to 10:00 PM.
3 Nighttime hours: 10:00 PM to 7:00 AM.

Measured Existing Ground-borne Vibration

During the project site survey to measure existing outdoor ambient sound levels, vibration velocity levels were also sampled and found to be well below the threshold of perception, as shown in Table 3.10-3.

Table 3.10-3. Summary of Ambient Vibration Monitoring Results – October 2, 2020

Site	Time	Average Measured Vibration Velocity Level, PPV (in. sec)[1]
Site 1: Western project area boundary	12:06 p.m.	< 0.001
Site 2: Northwest project area boundary	12:59 p.m.	< 0.001
Site 3: Northern project area boundary	1:59 p.m.	< 0.001
Site 4: Southeast project area boundary	2:29 p.m.	< 0.001

Source: Appendix G (see Attachment C).
Note:
1 PPV = Peak Particle Velocity (inches/second)

3.10.2 Regulatory Setting

Federal Regulations

There are no federal noise or vibration related regulations that would apply to the assessment of noise attributed to the project.

State Regulations

California Department of Transportation (Caltrans) Guidance

In the absence of vibration assessment thresholds at the federal, or County level, vibration impact criteria developed by the California Department of Transportation (Caltrans), shown in Table 3.10-4 and Table 3.10-5, offer quantified criteria to evaluate potential building damage risk and occupant annoyance due to transient and continuous sources of vibration, such as construction activities.

Table 3.10-4. Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (inches/second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2020).
Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = Peak Particle Velocity

Table 3.10-5. Guideline Vibration Annoyance Potential Criteria

Structure and Condition	Maximum PPV (inches/second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2020).
Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = Peak Particle Velocity

Local Regulations

El Dorado County General Plan

The El Dorado County General Plan was adopted in 2004; the last amendment to the General Plan was December 10, 2019 (El Dorado County 2019). The following goals, objectives, and policies related to noise are established in the Public Health, Safety, and Noise Element of the General Plan and are applicable to the proposed project.

Public Health, Safety, and Noise Element

Goal 6.5: Ensure that County residents are not subjected to noise beyond acceptable levels.

Objective 6.5.1: Protect existing noise-sensitive developments (e.g., hospitals, schools, churches and residential) from new uses that would generate noise levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels.

Policy 6.5.1.1: Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table HS-3 (re-printed as Table 3.10-6) or the performance standards of Table HS-4 (reprinted as Table 3.10-7), an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy 6.5.1.2: Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table HS-4 (re-printed as Table 3.10-7) at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy 6.5.1.3: Where noise mitigation measures are required to achieve the standards of Table HS-3 (re-printed as Table 3.10-6) and Table HS-4 (re-printed as Table 3.10-7), the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.

Policy 6.5.1.7: Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table HS-4 (re-printed as Table 3.10-7) for noise-sensitive uses.

Policy 6.5.1.8: New development of noise sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table HS-3 (re-printed as Table 3.10-6) unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in Table HS-3 (re-printed as Table 3.10-6).

Policy 6.5.1.9: Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table HS-3 (re-printed as Table 3.10-6) at existing noise-sensitive land uses.

Policy 6.5.1.11: The standards outlined in Table HS-5 (re-printed as Table 3.10-8), Table HS-6 (re-printed as Table 3.10-9) and Table HS-7 (re-printed as Table 3.10-10) shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on weekends, and on federally-recognized holidays. Further, the standards outlined in Tables HS-5 through HS-7 (re-printed as Tables 3.10-8 through 3.10-10) shall not apply to public projects to alleviate traffic congestion and safety hazards.

Policy 6.5.1.12: When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:

a) where existing or projected future traffic noise levels are less than 60 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 5 dBA L_{dn} caused by a new transportation noise source will be considered significant;

b) where existing or projected future traffic noise levels range between 60 and 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 3 dBA L_{dn} caused by a new transportation noise source will be considered significant; and

c) where existing or projected future traffic noise levels are greater than 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA L_{dn} caused by a new transportation noise source will be considered significant.

Policy 6.5.1.13: When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:

a) in areas in which ambient noise levels are in accordance with the standards in Table HS-3 (reprinted as Table 3.10-7), increases in ambient noise levels caused by new non-transportation noise sources that exceed 5 dBA shall be considered significant; and

b) in areas in which ambient noise levels are not in accordance with the standards in Table HS-3 (reprinted as Table 3.10-7), increases in ambient noise levels caused by new non-transportation noise sources that exceed 3 dBA shall be considered significant.

Table 3.10-6. Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] L_{dn}/CNEL, dBA	Interior Spaces	
		L_{dn}/CNEL, dBA	L_{eq} (1hr), dBA[2]
Residential	60[3]	45	—
Transient Lodging	60[3]	45	—
Hospitals, Nursing Homes	60[3]	45	—
Theaters, Auditoriums, Music Halls	—	—	35
Churches, Meeting Halls, Schools	60[3]	—	40
Office Buildings	—	—	45
Libraries, Museums	—	—	45
Playgrounds, Neighborhood Parks	70	—	—

Source: El Dorado County General Plan, Public Health & Safety Element, Table HS-3.
Notes:

1 In Community Regions and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dBA L_{dn} shall be applied at the building facade, in addition to a 60 dBA L_{dn} criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dBA L_{dn} shall be applied at a 100-foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dBA L_{dn} may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

2 As determined for a typical worst-case hour during periods of use.

3 Where it is not possible to reduce noise in outdoor activity areas to 60 dBA L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dBA L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Table 3.10-7. Noise Level Performance Protection Standards for Noise-Sensitive Land Uses Affected by Non-Transportation Sources (dBA)

Noise Level Descriptor	Daytime 7 am – 7 pm		Evening 7 pm – 10 pm		Nighttime 10 pm – 7 am	
	Community	Rural	Community	Rural	Community	Rural
Hourly, L_{eq}	55	50	50	45	45	40
Maximum, L_{max}	70	60	60	55	55	50

Source: El Dorado County General Plan, Public Health & Safety Element, Table HS-4.
Note:
Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site. In Community Regions the exterior noise level standard shall be applied to the property line of the receiving property. In Rural Areas the exterior noise level standard shall be applied at a point 100' away from the residence. The above standards shall be measured only on property containing a noise-sensitive land use as defined in Objective 6.5.1.

Table 3.10-8. Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Community Regions and Adopted Plan Areas – Construction Noise

Land Use	Time Period	Noise Level (dBA)	
		L_{eq} (1 hr)	L_{max}
Higher-Density Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am – 7 pm	70	90
	10 pm – 7 am	65	75
Industrial (I)	anytime	80	90

Source: El Dorado County General Plan, Public Health & Safety Element, Table HS-5.
Note:
[1] Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.

Table 3.10-9. Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Rural Centers – Construction Noise

Land Use	Time Period	Noise Level (dBA)	
		L_{eq} (1 hr)	L_{max}
All Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	40	55
Commercial and Public Facilities (C, TR, PF)	7 am – 7 pm	65	75
	10 pm – 7 am	60	70
Industrial (I)	anytime	70	80
Open Space (OS)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65

Source: El Dorado County General Plan, Public Health & Safety Element, Table HS-6.

Table 3.10-10. Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Rural Regions and Adopted Plan Areas – Construction Noise

Land Use	Time Period	Noise Level (dBA)	
		L_{eq} (1 hr)	L_{max}
All Residential (LDR)	7 am – 7 pm	50	60
	7 pm – 10 pm	45	55
	10 pm – 7 am	40	50
Commercial and Public Facilities (C, TR, PF)	7 am – 7 pm	65	75
	10 pm – 7 am	60	70
Industrial (I)	anytime	70	80
Rural Land, Natural Resources, Open Space, Agricultural Lands (RR, NR, OS, AL)	7 am – 7 pm	65	75
	7 pm – 10 pm	60	70

Source: El Dorado County General Plan, Public Health & Safety Element, Table HS-7.

Per Figure LU-1 (Land Use Diagram) of the General Plan, the project site including offsite areas are located within a Community Region; therefore, the noise level thresholds provided in Tables 3.10-6, 3.10-7, and 3.10-8 would be appropriate for assessing the project's noise levels.

El Dorado County Ordinance Code

Chapter 9.16 within Title 9 of the County's Ordinance Code establishes prohibitions on particular sources of noise that would typically be considered nuisances but does not quantify dB thresholds to assess potential exceedances. Chapter 130.37 of the County's Code, on the other hand, is within the Zoning title and enumerates performance standards for noise, depending on type of land use, with respect to "all noise generating uses requiring discretionary review or ministerial permits, with the exception of existing and new single-unit residential dwellings on legal lots that are not within areas governed by an Airport Comprehensive Land Use Plan" (El Dorado County 2023). The noise standards under Section 130.37.060 correlate with those already discussed in the preceding section on the County's General Plan Noise Element, as bulleted below:

- Table 130.37.060.1 — Noise Level Performance Standards for Noise Sensitive Land Uses Affected by Non-Transportation Sources – *see Table 3.10-7.*
- Table 130.37.060.2 — Noise Level Standards for Noise-Sensitive Land Uses Affected by Transportation Noise Sources – *see Table 3.10-6.*

Section 130.37.020, "Exemptions", of the County Code contains a list of noise sources that are exempted from Chapter 130.37 standards. The following subsections are noise sources relevant to the project:

A. Activities conducted in public parks, public playgrounds, and public or private school grounds, including but not limited to school athletic and school entertainment events, providing an amplified sound system is not required or used.
D. Noise sources associated with property maintenance, such as lawn mowers, trimmers, snow blowers, power tools in good working order, and cutting of firewood for non-commercial personal use, provided that the activities take place between the hours of eight a.m. and nine p.m. on weekdays and nine a.m. to nine p.m. on weekends and federal holidays.

H. Traffic on public roadways, railroad line operations, aircraft in flight, and any other activity where regulation thereof has been preempted by state or federal law.
I. Construction (e.g., construction, alteration or repair activities) during daylight hours provided that all construction equipment shall be fitted with factory installed muffling devices and maintained in good working order.

Section 130.37.050, "Acoustic Analysis Requirements", of the County Code contains a list of operations and land uses that would require the preparation of an acoustic analysis as follows:

A. New noise-generating land uses likely to exceed the performance thresholds in the Tables in Section 130.37.060 (Noise Standards) below in this Chapter when proposed in areas adjacent to sensitive receptors. Noise sources may include industrial operations, outdoor recreation facilities, outdoor concerts and events utilizing amplified sound systems, commercial land uses, fixed sound sources, and other similar uses; or
B. New noise-sensitive land uses proposed in areas exposed to existing or projected exterior noise levels likely to exceed the thresholds in the Tables in Section 130.37.060 (Noise Standards) below in this Chapter.

Please see Appendix G for more details regarding information contained in the County Code.

Creekside Village Specific Plan

The CVSP does not contain any policies or design elements that would impose more or less stringent standards than the County Code. Since the CVSP does not impose unique standards, the County Code, including Chapter 130.37, Noise Standards, would apply to the project.

3.10.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the County's general plan or noise ordinance, or applicable standards of other agencies.
- Result in generation of excessive ground-borne vibration or ground-borne noise levels.
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

These current CEQA "Appendix G" criteria for noise and vibration impact significance assessment can be recast with respect to Caltrans and County guidance and standards, respectively, to evaluate the significance of

environmental noise and vibration resulting from the project. A significant impact would occur if the project would do any of the following:

- Generate noise levels that exceed applicable noise standards from the El Dorado County General Plan or El Dorado County Code.
- Off-site traffic noise exposure or on-site activities would sufficiently increase noise levels at existing offsite noise-sensitive receptors in the project vicinity. Policies 6.5.1.12 (transportation noise sources) and 6.5.1.13 (non-transportation noise sources) from the County's General Plan Noise Element establish increase significance criteria.
- Construction activities or proposed onsite operations would expose offsite noise-sensitive receptors to excessive ground-borne vibration velocity levels that exceed appropriate Caltrans vibration impact thresholds guidance for building damage risk and occupant annoyance.

In *California Building Industry Association v. Bay Area Air Quality Management District*, the Supreme Court held that CEQA "generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents." The Court distinguished "between requirements that consider the *environment's* effects on a project and those that contemplate the *project's* impacts on the existing environment" and concluded that only the latter are within the scope of CEQA review. Following that ruling, the above-listed CEQA significance threshold statements were revised to remove exposure of persons to *elevated noise levels* as an impact. However, while not studied with respect to CEQA impact significance assessment an analysis of existing community noise effects upon proposed future project occupants is provided at the end of the Impacts and Mitigation Measures section under 3.10-5.

Significance Threshold Criteria Not Applicable to the Proposed Project

The nearest public or public-use airport is Cameron Airpark. The project site is located approximately 5.6 miles southwest of Cameron Airpark. The project area is also outside of the airport influence area and is located more than two miles from the airport. There is no potential to expose people in the project site to excessive airport-related noise and there would be no impact; therefore, this issue is not discussed further.

3.10.4 Impacts and Mitigation Measures

Methodology

Project Operation Noise Effect Evaluation

Transportation

Off-site Impacts from the Project

With development of the project, traffic volumes on the local roadway network would increase. The increase in daily traffic volumes would result in a corresponding increase in traffic noise levels at existing uses located along those roadways. The FHWA Traffic Noise Model was used with traffic input data from the Transportation Report prepared by T. Kear Transportation Planning & Management, Inc. (Appendix H) to predict project traffic noise level increases relative to Existing (2023) and Cumulative 2040 with project and without project conditions.

The project includes an option to develop a majority of the units as age-restricted leaving up to 150 conventional homes with the remainder (up to 768 units) as age-restricted consistent with state law under the Active Adult option. The Transportation Report evaluated the change in units and where there is a difference from the proposed project it is discussed below in the impact analysis.

Off-site Impacts upon the Project

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users or residents. Nevertheless, the County has policies that address existing/future conditions affecting the proposed project, which are discussed in the impact analysis below.

Non-transportation

Stationary Sources

The proposed project consists of approximately 918 dwelling units, parks, and approximately 46-acres of open space, and a 1.8-acre commercial component. If the commercial component is not adopted as part of the Specific Plan there would be an option for converting to park uses, as described in Chapter 2, Project Description in addition to an option to develop a majority of the units as age-restricted leaving up to 150 conventional homes with the remainder (up to 768 units) as age-restricted. The primary noise sources associated with proposed uses of the development have been identified as park activities and commercial activities. Noise from these on-site park activities and commercial activities could exceed local standards at offsite noise-sensitive receptors. Using file data provided by the noise consultant, noise levels at existing noise-sensitive land uses were calculated by applying the logarithmic distance propagation decrease to the reference noise level for park or commercial activities.

Project Construction Noise Effect Evaluation

On-site Construction

Operation of heavy equipment would be involved in the grading, site preparation, building erection, architectural finishing, and paving phases of project construction and offsite utility/transportation infrastructure improvements. Aggregate noise emission levels associated with these activities would vary depending on the types, quantities, condition, and activity intensities of equipment used. Noise from these construction activities could exceed local standards at offsite noise-sensitive receptors. Using reference data from the 2018 Federal Transit Administration (FTA) Noise and Vibration Impact Assessment Manual, $L_{eq\,(1\,hr)}$ and L_{max} values were predicted at the closest existing offsite residences based on the aforementioned reference sound levels attenuated by distance (i.e., geometric divergence [a.k.a., 6 dB per doubling of distance from a point source]). Table 3.10-11 indicates noise associated with various types of construction equipment at a distance of 200 feet.

Table 3.10-11. Construction Equipment Reference Noise Levels and Predicted Noise at 200 Feet

Equipment Description	Maximum Noise Level at 50 Feet (dBA)	Predicted Maximum Noise Level at 200 feet (dBA)
Air compressor	80	68
Backhoe	80	68

Table 3.10-11. Construction Equipment Reference Noise Levels and Predicted Noise at 200 Feet

Equipment Description	Maximum Noise Level at 50 Feet (dBA)	Predicted Maximum Noise Level at 200 feet (dBA)
Ballast equalizer	82	70
Ballast tamper	83	71
Compactor	82	70
Concrete mixer	85	73
Concrete pump	82	70
Concrete vibrator	76	64
Crane, mobile	83	71
Dozer	85	73
Generator	82	70
Grader	85	73
Impact wrench	85	73
Loader	80	68
Paver	85	73
Pneumatic tool	85	73
Pump	77	65
Saw	76	64
Scarifier	83	71
Scraper	85	73
Shovel	82	70
Spike driver	77	65
Tie cutter	84	72
Tie handler	80	68
Tie inserter	85	73
Truck	84	72

Source: Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1 (2018) or Appendix G – see Table 20.

Off-site Infrastructure Improvements

The project proposes off-site improvements associated with transportation and utility infrastructure. The overall area of potential effect (APE) for the improvements is presented in Attachment F-1 of the ENVA (Appendix G). Areas of potential effect associated with the individual work areas are shown in Attachments F-2 through F-5 in the ENVA (Appendix G).

Off-site infrastructure improvements include:

- Utility infrastructure improvements along Latrobe Road
- Transportation improvements at the intersection of Latrobe Road/Town Center Boulevard (turn lane extension, roadway re-paving and re-striping)
- Transportation improvements at Royal Oaks Drive/Latrobe Road and Avanti Drive/Latrobe Road intersections (intersection signalization and roadway re-striping)

- Utility infrastructure improvements at the intersection of Robert J. Mathews Parkway and future I Drive (Waterline Connection).

During the infrastructure improvements, noise from heavy equipment operations would add to the noise environment in the immediate project vicinity.

Project Vibration Effect Evaluation

Operation

As explained in the ENVA, the proposed residential and park uses do not typically have equipment that generates appreciable vibration. Further, the project does not propose equipment that would produce appreciable vibration.

Construction

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. Project construction vibration levels were predicted at the nearest offsite noise-sensitive receptors using the FTA Transit Noise and Vibration Impact Assessment Manual and calculations prepared by the noise consultant. Table 3.10-12 indicates vibration levels for construction equipment at a distance of 25 feet and 215 feet.

Table 3.10-12. Vibration Source Levels for Construction Equipment and Predicted Levels at 215 Feet

Equipment Description	Maximum Vibration Level at 25 Feet (PPV)[1]	Predicted Maximum Vibration Level at 215 Feet (PPV)
Large bulldozer	0.089	0.004
Hoe ram	0.089	0.004
Caisson drilling	0.089	0.004
Loaded trucks	0.076	0.003
Backhoe	0.051	0.002
Excavator	0.051	0.002
Grader	0.051	0.002
Loader	0.051	0.002
Jackhammer	0.035	0.001
Small bulldozer	0.003	< 0.001

Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual and calculations contained in Appendix H.
Note:
1 PPV = Peak Particle Velocity

Project Impacts

Impact 3.10-1. The proposed project could result in an increase in temporary (construction) ambient noise levels in excess of County standards.

Construction Noise

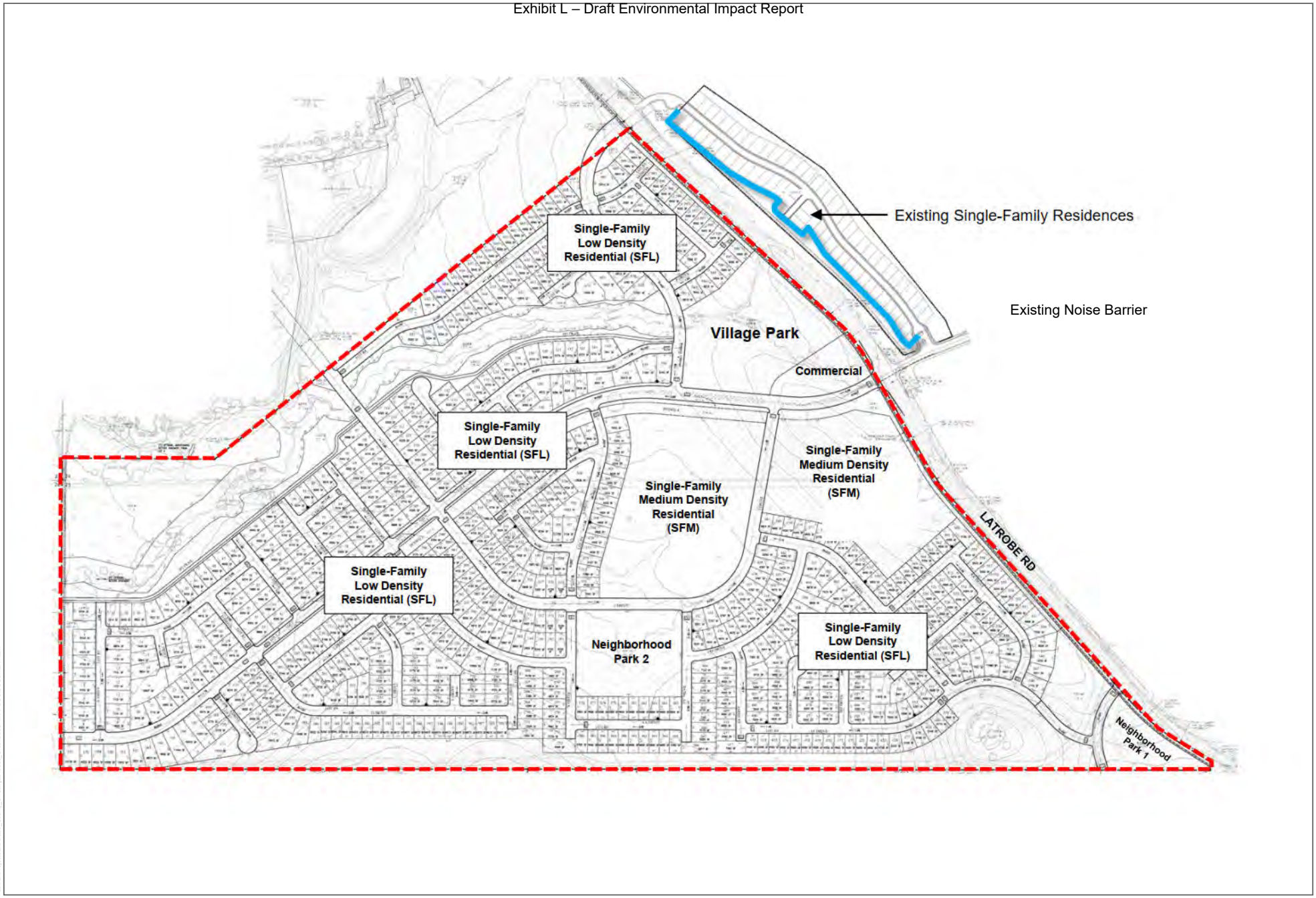
The nearest existing noise-sensitive receptors to the expected construction activity areas are residences that parallel the eastern side of Latrobe Road, which are as close as 200 feet. These nearest residences have existing property line noise walls to help reduce the noise levels received from project construction activities.

Table 3.10-11 displays the range of maximum noise levels for expected equipment associated with anticipated project construction activities, at full-power operation and at two horizontal distances between the source and a receptor position: 50 feet (reference) and 200 feet. Per Table 3.10-11, maximum noise levels at the nearest existing residential use 200 feet away are expected to range from approximately 64 to 73 dBA, which is less than the samples of outdoor ambient daytime maximum noise levels measured near those same residences (ambient measurement site 3). Furthermore, the property line walls along the western boundary of these residential uses parallel to Latrobe Road would likely reduce project construction noise levels at those locations—please refer to Figure 3.10-2 for a graphical depiction of these existing barrier extents. Nevertheless, under the right conditions project construction noise levels could exceed the applicable County General Plan noise level limits applicable to construction noise in community regions, which are identified in Table 3.10-8.

Policy 6.5.1.11 of the County's General Plan exempts noise sources associated with project on-site construction provided such activities take place between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 8:00 p.m. on weekends, and on federally recognized holidays. So long as project construction activities occur during these hours and days, construction activities would be considered a less than significant impact. However, if construction activities were proposed during hours external to those allowed by Policy 6.5.1.11, construction noise levels could exceed maximum noise level standards shown in Table 3.10-8 at the nearest existing residential uses. Given that the Active Adult option would develop substantially the same land plan and footprint as the proposed project, it would not be expected to have significant differences in construction noise and noise impacts from construction would be the same as the project. Consequently, noise impacts associated with on-site construction activities are considered **potentially significant.**

Off-Site Infrastructure Construction Noise

The nearest existing noise-sensitive receptors to the expected infrastructure improvement work areas are residences that parallel the eastern side of Latrobe Road, which per the figure in Attachment F of the ENVA are as close as the edge of the 150-foot radius APE for off-site improvements. (See Appendix G). These nearest residences have existing property line noise walls to help reduce the noise levels received from construction activities at these work areas.



SOURCE: Bollard Acoustical Consultants 2020

FIGURE 3.10-2
Existing Noise Barrier
Creekside Village Specific Plan EIR

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Table 3.10-13 displays the range of maximum noise levels for common roadway improvement project construction equipment, at full-power operation and at three horizontal distances between the source and a receptor position: 50 feet (reference), 30 feet (the distance value used in the ENVA), and 150 feet (to the APE edge).

Table 3.10-13. Typical Construction Equipment Noise – Roadway Improvement Projects

Equipment Description	Typical Maximum Noise Level at 50 Feet (dBA)	Predicted Maximum Noise Level at 30 Feet (dBA)	Predicted Maximum Noise Level at 150 Feet (APE edge, dBA)
Concrete mixer truck	85	89	80
Concrete saw	90	94	85
Dump truck	84	88	79
Flatbed truck	84	88	79
Front end loader	80	84	75
Generator (more than 25 kVA)	82	86	77
Paver	85	89	80
Pickup truck	55	59	50

Source: Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1 (2018) or Appendix G - Table 19.

With predicted equipment maximum noise levels ranging from 59 to 94 dBA at a distance of 30 feet, there is a potential for some infrastructure improvement activities to cause temporary short-term increases over ambient maximum noise levels at those nearby offsite residences. However, Policy 6.5.1.11 from the County's General Plan indicates that the thresholds appearing in Table 3.10-8 "shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on weekends, and on federally recognized holidays." Further, the standards outlined in Tables 3.10-8 through Table 3.10-10 shall not apply to public projects to "alleviate traffic congestion and safety hazards." If construction activities are proposed during the hours/days not exempted by the General Plan or County Code, noise levels generated by project roadway improvement construction activities could exceed the maximum noise level standards identified in Table 3.10-8 at the nearest existing residential uses. Consequently, short-term off-site construction noise is considered to be **potentially significant**.

Mitigation Measures

Compliance with mitigation measure NOI-1 would ensure construction activity noise, both onsite and offsite, would comply with the County's General Plan policies to help reduce construction noise levels experienced by nearby residences to reduce the impact to **less than significant**. This mitigation would also be required for the Active Adult option to ensure impacts would be reduced to less than significant.

NOI-1: Construction Noise Control Measures. To the maximum extent practical, the following construction-related measures shall be incorporated into on-site and off-site infrastructure improvement operations:

- Noise-generating infrastructure improvement construction activities shall only occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on weekends and on federal holidays.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.

Impact 3.10-2. The proposed project could result in an increase in permanent (operation) ambient noise levels in excess of County standards.

Long-Term/Operational Noise

Traffic Noise at Off-site Existing Noise-Sensitive Receptors

Comparable to the prediction of existing traffic noise levels as described in Section 3.10.1, the total of AM and PM peak hour traffic volumes for an Existing and Existing Plus Project scenario from the Transportation Report were multiplied by five to arrive at the average daily trips (ADT), which were then used to estimate traffic noise levels for comparison with the predicted levels at distances representing the closest noise-sensitive land uses to the project area roadways, as shown in Table 3.10-1. Table 3.10-14 evaluates the dB increase in L_{dn} between these two scenarios (Existing [E] and Existing plus Project [E+P]) and concludes for each studied roadway segment if the increase represents a potential significant impact (i.e., the predicted increase at a noise-sensitive receptor along the studied roadway segment exceeds the significance threshold established in General Plan Policy 6.5.1.12). Attachments B-1 and B-2 from the ENVA contain the FHWA Traffic Noise Model inputs used in the analysis (Appendix G). The Active Adult option was not modeled because the proposed project represents the worst-case scenario.

Based on the analyses presented in Table 13.10-14, project-generated traffic noise level increases would not result in significant noise impacts at existing noise-sensitive receptors located along the project area roadway network relative to the increase significance criteria contained in Policy 6.5.1.12 of the County's General Plan. As a result, the impact is **less than significant**.

Table 3.10-14. Predicted Project-Related Traffic Noise Level Increases – Existing (2023) vs. Existing (2023) Plus Project Conditions

Roadway Segment #	Roadway Name	Segment Description	Predicted Traffic Noise Level at Nearest Noise-Sensitive Receptor (L_{dn}, dBA)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E	E+P	Increase				
1	El Dorado Hills Blvd.	North of Serrano Pkwy.	67.8	67.9	0.1	1.5	No	Yes-Residence	No
2		Serrano Pkwy. To White Rock Rd.	62.0	62.4	0.4	3.0	No	Yes-Residence	No
3	Latrobe Rd.	White Rock Rd. to Golden Foothill Pkwy.	68.4	69.0	0.6	1.5	No	Yes-Residence	No
4		Golden Foothill Pkwy. To Investment Blvd.	52.6	54.7	2.1	5.0	No	Yes-Residence	No
5		Investment Blvd. to Avanta Dr./Q Dr.	50.9	53.6	2.7	5.0	No	Yes-Residence	No
6		Avanta Dr./Q Dr. to Project Commercial Entry	55.7	58.5	2.8	5.0	No	Yes-Residence	No
7		Project Commercial Entry to Royal Oaks Dr.	56.3	58.9	2.6	5.0	No	Yes-Residence	No
8		Royal Oaks Dr. to Wetsel Oviatt Rd.	49.7	50.6	0.9	5.0	No	Yes-Residence	No
9		Wetsel Oviatt Rd. to S. Shingle Rd.	61.9	62.5	0.6	3.0	No	Yes-Residence	No
10		South of S. Shingle Rd.	59.7	59.9	0.2	5.0	No	Yes-Residence	No
11	Lassen Ln.	West of El Dorado Hills Blvd.	53.7	53.7	0.0	5.0	No	Yes-Residence	No
12	Serrano Pkwy.	East of El Dorado Hills Blvd.	58.4	58.4	0.0	5.0	No	Yes-Residence	No

Table 3.10-14. Predicted Project-Related Traffic Noise Level Increases – Existing (2023) vs. Existing (2023) Plus Project Conditions

Roadway Segment #	Roadway Name	Segment Description	Predicted Traffic Noise Level at Nearest Noise-Sensitive Receptor (L_{dn}, dBA)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E	E+P	Increase				
13	White Rock Rd.	West of Latrobe Rd.	58.3	58.2	-0.1	5.0	No	Yes-Residence	No
14		East of Latrobe Rd.	64.1	64.4	0.3	3.0	No	Yes-Residence	No
15	Golden Foothill Pkwy.	West of Latrobe Rd.	56.8	57.3	0.5	5.0	No	Yes-Residence	No
16	Clubview Dr.	East of Latrobe Rd.	52.0	52.4	0.4	5.0	No	Yes-Residence	No
17	Investment Blvd.	Latrobe Rd. to Robert J. Mathews Pkwy.	36.1	36.2	0.1	5.0	No	Yes-Residence	No
18		West of Robert J. Mathews Pkwy.	47.3	47.3	0.0	5.0	No	Yes-Church	No
19	Project Q Dr.	West of Latrobe Rd. (within project area)	56.0[4]	31.3	-24.7	5.0	No	Yes-Residence	No
20	Avanti Dr.	East of Latrobe Rd.	36.7	36.7	0.0	5.0	No	Yes-Residence	No
21	Project Commercial Entry	West of Latrobe Rd. (within project area)	56.0[4]	29.0	-27.0	5.0	No	Yes-Residence	No
22	Royal Oaks Dr.	West of Latrobe Rd. (within project area)	56.0[4]	45.5	-10.5	5.0	No	Yes-Residence	No
23		East of Latrobe Rd.	42.1	42.2	0.1	5.0	No	Yes-Residence	No
24	Wetsel Oviatt Rd.	West of Latrobe Rd.	19.4	22.1	2.7	5.0	No	Yes-Residence	No
25	S. Shingle Rd.	West of Latrobe Rd.	45.5	46.4	0.9	5.0	No	Yes-Residence	No
26		East of Latrobe Rd.	53.9	54.4	0.5	5.0	No	Yes-Residence	No
27	Robert J. Mathews Pkwy.	Investment Blvd. to Golden Foothill Pkwy.	51.4	51.5	0.1	5.0	No	Yes-Church	No

Table 3.10-14. Predicted Project-Related Traffic Noise Level Increases – Existing (2023) vs. Existing (2023) Plus Project Conditions

Roadway Segment #	Roadway Name	Segment Description	Predicted Traffic Noise Level at Nearest Noise-Sensitive Receptor (L_{dn}, dBA)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E	E+P	Increase				
28		South of Investment Blvd.	50.2	50.2	0.0	5.0	No	Yes-School	No
29	Palmdale Dr.	South of Carson Crossing Dr.	45.4	45.4	0.0	5.0	No	Yes-Residence	No
30	Carson Crossing Dr.	Palmdale Dr. to Four Seasons Dr.	50.6	52.7	2.1	5.0	No	Yes-Residence	No
31		Palmdale Dr. to Golden Foothill Pkwy.	51.1	53.0	1.9	5.0	No	Yes-Residence	No

Sources: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix G (see Attachments B-1 and B-2 for FHWA model inputs).
Notes:
1 Significance thresholds established in General Plan Policy 6.5.1.12.
2 Sensitive receptors identified as existing residential, school, or church uses.
3 A significant impact is identified only along segments where the project-related traffic noise level increase would exceed threshold AND where sensitive receptors are present along the roadway segment.
4 Project traffic study did not contain data for segments 19, 21 and 22, which are access points to the project property (located within the project area). For the purposes of this analysis, the measured ambient L_{dn} at site 4 was used, which is believed to be representative of the existing ambient noise level environment along those roadway segments.

Traffic Noise at Schools

As mentioned previously, traffic volumes on the local roadway network would increase with development of the project. Those increases in daily traffic volumes would result in a corresponding increase in traffic noise levels at existing uses located along those roadways, which would include the school closest to the project site John Adams Academy and the Latrobe Elementary School (Tk-3rd) and Miller's Hill School (4th-8th) located at 7680 South Shingle Road and 7900 South Shingle Road.

Existing increases in off-site traffic noise levels which would result from the project were evaluated in Impact 3.10-1. As indicated in Table 3.10-11, existing plus project increases in traffic noise levels at the outdoor area/playground of the nearest existing school along the project roadway network (John Adams Academy, roadway segment 28) were calculated to be less than 0.1 dBA L_{dn}. In addition, Table 3.10-11 data indicates that noise levels at the outdoor area/playground for the Latrobe Elementary School and Miller's Hill School (roadway segment 9) were calculated to be 0.6 dBA L_{dn}.

The threshold of perception of the human ear is approximately 3 to 5 dBA – a 5 dBA change is considered to be clearly noticeable. Further, a doubling of traffic volumes would result in a logarithmic increase of 3 dBA, and a doubling of traffic volumes is unlikely to occur with the local roadway network. The calculated range of project-generated increases in ambient noise levels at the closest schools within the project roadway network (0.1 dBA L_{dn} to 0.6 dBA L_{dn}) would be well below the threshold of human perception.

Based on the analysis provided in the ENVA and the information above, project-generated increases in traffic noise levels are not expected to result in significant increases in ambient noise levels at existing outdoor areas of schools within the local roadway network. As a result, the impact is **less than significant**.

El Dorado Business Park Operations

As indicated in Figure 3.10-1, existing commercial / office uses (El Dorado Business Park) are located north of the proposed project. As noted above, an analysis that evaluates the impacts of the existing environment on new land uses constructed by a project is not typically required, unless the project would exacerbate the existing environmental effect. Because the El Dorado Business Park is an existing use this analysis is included for informational purposes only; therefore, no significance finding is provided.

Primary noise sources associated with the adjacent commercial uses have been identified as mechanical equipment (HVAC), parking lot movements, and truck loading dock activities. According to ambient noise level data collected at the project site (Appendix G – see Attachments D and E), not including natural sounds (i.e. frogs, crickets, etc.), noise from the existing commercial operations to the north did not exceed the County's noise standards applicable to stationary noise sources and the impact is **less than significant**.

Non-Transportation Noise

Park Noise at Existing (off-site) Noise-Sensitive Uses

As shown in Figure 3.10-2, the project proposes three (3) parks: one large "Village Park" and two smaller neighborhood parks "Neighborhood Park 1" and "Neighborhood Park 2." The Public Facilities and Services Chapter of the Creekside Village Specific Plan notes that all three proposed parks would include both passive and active uses. As described in

the ENVA and supporting file data, parks consisting of active uses (playing fields/playgrounds) have reference noise levels of approximately 60 dBA $L_{eq\ (1\ hr)}$ and 70 dBA L_{max} at a distance of 50 feet (Appendix G).

Existing noise-sensitive uses nearest to the Village Park are existing single-family residences located parallel with the eastern side of Latrobe Road, as shown in Figure 3.10-2. Table 3.10-15 presents estimated $L_{eq\ (1\ hr)}$ and L_{max} values at the nearest of these existing offsite residences based on the reference sound levels attenuated by distance (i.e., geometric divergence [a.k.a., 6 dB per doubling of distance from a point source]).

Assuming allowable park attendance hours would be limited to daytime and evening hours, the more conservative County standard to compare with the park activity noise level would be an evening limit modified by a 5 dBA penalty to account for likely shouts, songs, cheers, and other loud speech that typify active park usage. Table 3.10-15 contrasts the predicted active park noise levels at the existing nearby Latrobe Road residences with the downwardly adjusted evening outdoor thresholds and demonstrates the latter would not be exceeded.

Table 3.10-15. Predicted Park Activity Noise Levels at Nearest Existing Noise-Sensitive Uses

Noise-Sensitive Use[1]	Nearest Park[2]	Distance (ft)[3]	Predicted Noise Levels (dBA)[4]	
			L_{eq} (1 hr)	L_{max}
Residences east of Latrobe Road	Village	450	33	43
Applicable General Plan Community Evening Noise Level Standards5			45	55

Source: Appendix G.
Notes:
1 Locations of existing residences are shown on Figure 3.10-2.
2 Locations of proposed park areas are shown on Figure 3.10-2.
3 Distances measured from effective noise center of nearest park to nearest residence.
4 Predicted park activity noise levels at the nearest existing residences include consideration of the shielding that would be provided by existing traffic noise barriers along the property lines of those residences, have been conservatively adjusted by -8 dBA. Figure 3.10-2 shows the location of the existing traffic noise barriers.
5 Adjusted by -5 dBA to account for human speech.

Furthermore, predicted park activity noise levels shown in Table 3.10-15 are less than the sample daytime and evening time period (7:00 a.m. to 10:00 p.m.) existing noise levels measured to the east of Village Park (ambient measurement site 3). Hence, increases in ambient daytime and evening noise levels at the nearest existing sensitive uses attributed to project park usage would not exceed criteria contained in General Plan Policy 6.5.1.13.

Based on the analysis provided in the EVNA and satisfying applicable County General Plan standards with respect to both fixed threshold and relative increase criteria, potential noise from the project's park activities is considered to be **less than significant**.

Park Noise (on-site) at Proposed Residential Uses

According to the project's site plan shown on Figure 3.10-2, parks are proposed to be located adjacent to residential uses within the proposed specific plan including under the Active Adult option as well. Park activities have been identified as a primary noise source that could impact nearby residential uses proposed within the project.

The data referenced in the ENVA (see Appendix G) indicate that parks consisting of active uses have noise levels of up to 60 dBA $L_{eq\ (1\ hr)}$ and 70 dBA L_{max} at a distance of 50 feet. Park activities would likely consist of human speech (i.e., shouting and cheering during activities), which would be subject to the County General Plan's more restrictive

daytime, evening, and nighttime noise level standards for community regions shown in Table 3.10-7. However, it is reasonable to assume that park hours would likely be restricted to daytime and evening hours only (7:00 a.m. to 10:00 p.m.). Satisfaction with the General Plan's more restrictive evening noise level standards would ensure compliance with the General Plan's less restrictive daytime noise level limits. Therefore, project park noise exposure at the nearest proposed residential uses was assessed relative to the applicable General Plan nighttime noise level standards for community regions shown in Table 3.10-7. Figure 3.10-3 depicts the location of project residences located near proposed parks that would be affected by park related noise activities.

Based on the reference noise levels presented above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), park activity noise levels within 150 feet from a residential use is calculated to be 50 dBA $L_{eq\ (1\ hr)}$ and 60 dBA L_{max}. The predicted park activity noise levels of 50 dBA $L_{eq\ (1\ hr)}$ and 60 dBA L_{max} would exceed the County's General Plan nighttime noise level standards of 45 dBA $L_{eq\ (1\ hr)}$ and 55 dBA L_{max} for residential uses. As a result, this impact is **potentially significant**.

Commercial Noise (on-site) at Proposed Residential Uses

The project site plan includes a 1.8-acre commercial component (Neighborhood Commercial– NC) designed to provide neighborhood serving uses. As noted in Chapter 2, Project Description, a park would replace this use if it is not adopted as part of the Specific Plan. The location of the proposed commercial component is shown in Figure 3.10-2. A complete list of allowed commercial uses included within the Specific Plan for this land use is provided below:

Commercial Uses

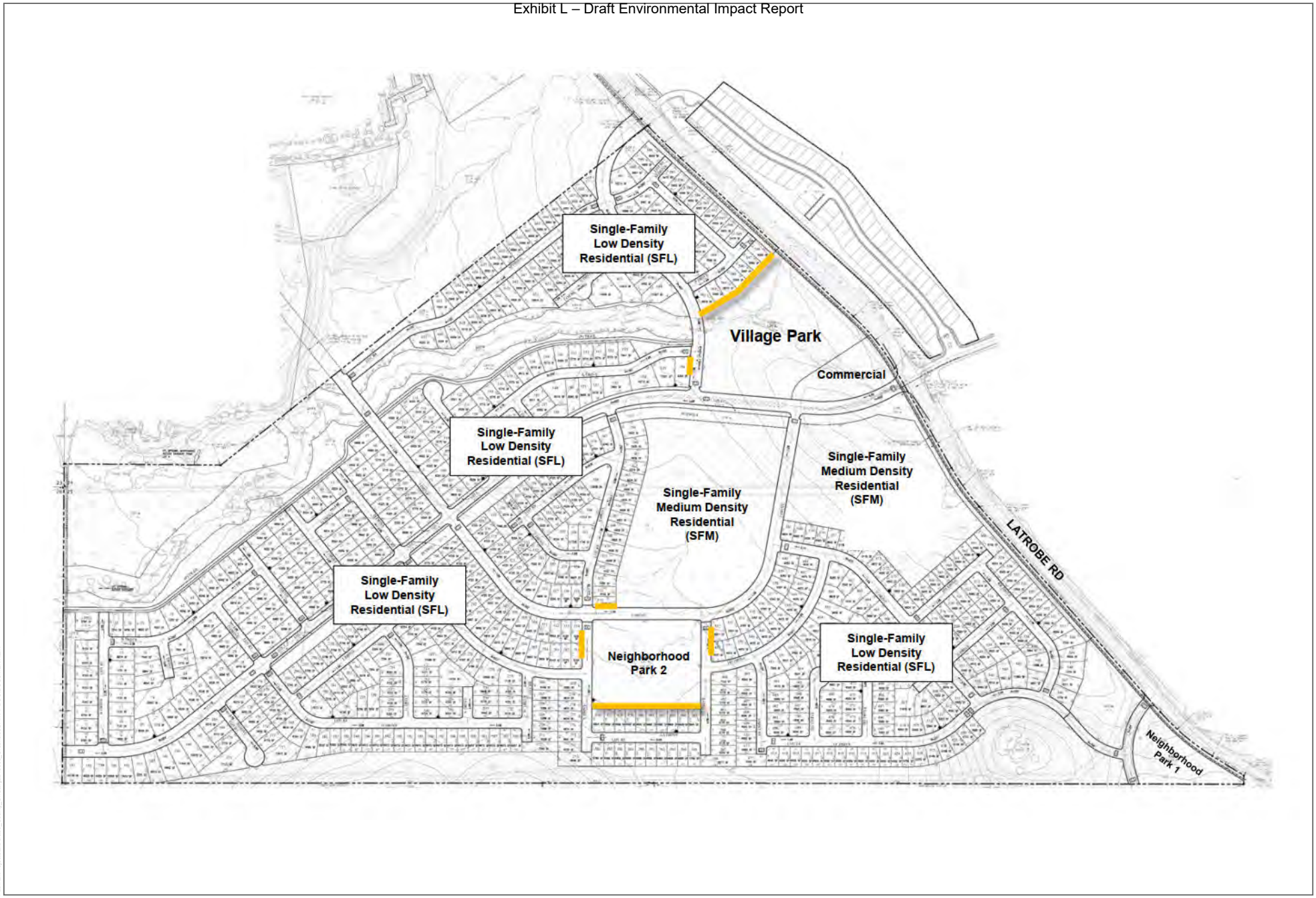
- Pet Grooming and Pet Stores
- Veterinary Clinic
- Banks and Financial Services
- Bars and Drinking Establishments
- Brewpub
- Micro-Brewery (CUP Required)
- Child Day Care Center
- Employer-Sponsored Child Day Care Center
- Restaurant
- Drive-Through Facility
- Automotive: Fuel Sales (CUP Required)
- Food and Beverage Retail Sale
- Building Supply Store
- Medical Services: Clinic
- Mixed Use Dwelling (DR Required)
- Nursery Commercial Retail
- Offices: Professional
- Offices: Medical
- Retail Sales & Services: Indoor Sales
- Retail Sales & Services: Personal Services
- Retail Sales & Services: Property Services
- Community Care Facility
- Research & Laboratory Services
- Specialized Education & Training
- Winery: Full-Service Facilities (CUP Required)

Recreation and Open Space

- Community Services: Minor
- Parks: Village, Neighborhood, Parklet

Transportation

- Parking Lot



SOURCE: Bollard Acoustical Consultants 2020

FIGURE 3.10-3
Residences Located Adjacent to Park Uses

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Utilities/Infrastructure

- Public Utility Service Facilities: Minor

As indicated above, the automotive (w/fuel sales), microbrewery, nursery/retail, and winery (full-service facilities) uses would trigger the need for a conditional use permit (CUP) and County Code section 130.37.030 requires specific noise studies for each of those uses as part of the County's CUP approval process if any of these uses were proposed. Based on this assumption, further consideration of noise sources associated with the automotive (w/fuel sales), microbrewery, nursery/retail, and winery uses within the proposed commercial component are not further evaluated. The primary noise sources associated with the remaining allowable commercial uses include parking movements, truck delivery activities, drive-through operations, childcare outdoor play area activities, building mechanical equipment (i.e., HVAC), forklift operations, and outdoor music.

Although the project's site plan contains the general location of the planned commercial component, detailed plans illustrating locations of specific uses have not yet been developed, County Code section 130.37.030 requires compliance with the County noise standards for all discretionary review or ministerial permits unless an enumerated exception applies. None of the exceptions apply to the commercial components and therefore demonstrated compliance with the County noise standards would be required. As a result, the following section provides a generalized analysis of noise associated with commercial operations that could occur at nearby existing noise-sensitive uses.

Parking Lot Movements

As a means of determining potential noise exposure due to the commercial component parking lot activities, the noise consultant used specific parking lot noise level measurements. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles. The results of those measurements revealed that individual parking lot movements generated mean noise levels of 65 dBA SEL and 65 dBA L_{max} at a reference distance of 50 feet.

For a conservative assessment of parking area noise generation, it was assumed that a parking area within the commercial component could accommodate up to 200 vehicles. This estimate of vehicle capacity was based on review of the land use plan and the use types of uses envisioned within the commercial component. It was also conservatively assumed that a parking area could fill or empty during any given peak hour of business operations. Using the parking lot noise measurement data and based on the operations assumptions above, noise exposure from an individual parking area having 200 vehicle stalls computes to approximately 52 dBA $L_{eq\ (1\ hr)}$ and 65 dBA L_{max} at a distance of 50 feet from the effective noise center of the area. Therefore, noise from parking lot activities would not exceed the County threshold and the impact is **less than significant.**

Truck Delivery Activities

Deliveries of product to commercial uses such as the ones allowed within the commercial component occur are typically done with medium-duty vendor trucks/vans. The primary noise sources associated with delivery activities are trucks stopping (air brakes), trucks backing into position (back-up alarms), and pulling away from the loading/unloading area (revving engines). The ENVA file data indicate that noise levels associated with medium-

duty truck deliveries (including side-step vans) are approximately 76 dBA SEL and 66 dBA L_{max} at a distance of 100 feet (see Appendix G).

For a conservative assessment of commercial component delivery truck noise generation, it was assumed that 5 medium duty trucks/vans would deliver products on a typical busy day. To compute delivery truck activity noise exposure relative to the county's hourly average ($L_{eq\ (1\ hr)}$) noise descriptor, it was assumed that 3 truck deliveries could occur within the same given hour. Using the noise measurement data and operations assumptions above, noise exposure from 3 truck deliveries computes to approximately 45 dBA $L_{eq\ (1\ hr)}$ at a distance of 100 feet (maximum noise level of 66 dBA L_{max}). Therefore, noise from delivery activities would not exceed the County threshold and the impact is **less than significant.**

Drive-Through Operations

The primary noise sources associated with drive-through operations are the amplified menu speaker board/post and low-speed vehicle passages and idling passenger vehicle engines queued up at the ordering, payment, and/or food reception stations. To quantify the noise emissions of drive-through operations, the noise consultant used noise measurement data collected for similar drive-through operations in the greater Sacramento area in recent years. The data indicates that drive-through speakers were measured to have average and maximum noise levels of approximately 60 dBA $L_{eq\ (1hr)}$ and 67 dBA L_{max} (respectively) at a distance of 10 feet. The data further indicates that vehicles within drive-throughs were measured to have average and maximum noise levels of 57 dBA $L_{eq\ (1\ hr)}$ and 70 dBA L_{max} (respectively) at a distance of 5 feet. Therefore, noise from drive-through operations would not exceed the County threshold and the impact is **less than significant.**

Playground Activities

It is reasonably assumed that childcare uses within the commercial component (should they be developed) would have an outdoor play area. For the assessment of play area noise impacts, noise level data collected by the noise consultant at various outdoor playgrounds in recent years was used. The primary noise source associated with play area use is shouting children. The data indicates that average and maximum noise levels are approximately 55 dBA $L_{eq\ (1\ hr)}$ and 75 dBA L_{max} at a distance of 50 feet from the focal point of the playground area. It is assumed any activities would not occur beyond 5:00 p.m. Therefore, noise from playground activities would not exceed the County threshold and the impact is **less than significant.**

HVAC Equipment

The HVAC systems within future buildings of the commercial component would likely consist of packaged rooftop air conditioning systems. Such HVAC units, which typically stand about 4-5 feet tall, would be shielded from view of nearby sensitive uses by the building parapets. As explained in the ENVA, such rooftop HVAC units frequently generate a noise level of approximately 45 dBA $L_{eq\ (1\ hr)}$ at a reference distance of 100 feet from the building facade, including shielding by the building parapet (estimated to provide approximately 10 dB of noise level reduction) (see Appendix G). Therefore, noise from HVAC equipment would not exceed the County threshold and the impact is **less than significant.**

Forklift Activities

According to the list of allowed commercial uses, it is expected that a building supply store and winery uses would have forklift operations for moving deliveries of product. To quantify the noise emissions of forklift activities, the

noise consultant used noise measurement data collected from commercial forklift operations. This data indicates that average and maximum noise levels for forklift loading/unloading operations can be expected to be approximately 67 dBA $L_{eq\ (1\ hr)}$ and 82 dBA L_{max} (respectively) at a distance of 10 feet from the operating forklift consistent with the County thresholds. Therefore, the impact is **less than significant.**

Outdoor Music

According to the list of allowed commercial uses, it is possible that a restaurant or brewpub may have an outdoor seating area with live and/or amplified music. To address this concern, Dudek's acousticians quantified the noise emissions of outdoor music using amplification, referencing speaker manufacturer data (LOUD Audio 2021). This data indicates that maximum noise levels for a single amplified speaker can be expected to be approximately 115 dBA L_{max} at an assumed distance of approximately 3 feet (one meter). To calculate an hourly L_{eq}, an acoustical usage factor can be applied to the L_{max} value. Assuming that the speaker could be operating at a magnitude of 115 dBA L_{max} for only 50% of the time, the calculated $L_{eq(1h)}$ at one meter is 112 dBA. Section 130.37.050 of the County Code requires an acoustic analysis be prepared prior to discretionary authorization or permit approval for events using amplified sound systems. This would be considered a **potentially significant impact.**

Predicted Commercial Operations Noise Levels at Existing (off-site) Noise-Sensitive Uses

Based on the reference noise level data and operations assumptions presented above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), commercial operations noise exposure at the nearest existing noise-sensitive uses was estimated. The results of those calculations are presented in Tables 3.10-16 and 3.10-17. The nearest existing noise-sensitive uses to the commercial component have been identified as residences along Latrobe Road east of the project site.

Table 3.10-16. Predicted Commercial Noise Levels at Nearest Existing Noise-Sensitive Uses - Hourly L_{eq}

Receiver[1]	Predicted Noise Level ($L_{eq\ (1\ hr)}$, dBA) from Contributing Project Sources (at indicated distance to Receiver in feet)							
	Parking (250')	Truck Delivery (250')	Drive-Thru (200')	Playground (200')	HVAC (200')	Forklift (200')	Music (200')	Aggregate[4]
Residential – East (with music)	30	29	29	25	39	33	76	76
Residential – East (without music)	30	29	29	25	39	33	n/a	41

Source: Appendix G, Table 17.
Notes:
1 Locations of existing residences are shown in Figure 3.10-2.
2 Predicted noise level when projected from commercial component to nearest residential property line.
3 Predicted commercial noise levels at the nearest existing residences include consideration of the shielding that would be provided by existing 8' traffic noise barriers along the property lines of those residences and have been adjusted by -8 dB. Figure 3.10-2 shows the location of the existing traffic noise barriers.
4 Aggregate noise level exposure, or logarithmic sum of concurrent operations/activities.

Table 3.10-17. Predicted Commercial Noise Levels at Nearest Existing Noise-Sensitive Uses - L_{max}

Receiver[1]	Predicted Noise Level (L_{max}, dBA) from Contributing Project Sources (at indicated distance to Receiver in feet)							
	Parking (250')	Truck Delivery (250')	Drive-Thru (200')	Playground (200')	HVAC (200')	Forklift (200')	Music (200')	Highest Predicted[4]
Residential – East (with music)	43	50	33	46	39	48	79	79
Residential – East (without music)	43	50	33	46	39	48	n/a	50

Source: Appendix G, Table 18.
Notes:
1 Locations of existing residences are shown in Figure 3.10-2.
2 Predicted noise level when projected from commercial component to nearest residential property line.
3 Predicted commercial noise levels at the nearest existing residences include consideration of the shielding that would be provided by existing 8' traffic noise barriers along the property lines of those residences and have been adjusted by -8 dB. Figure 3.10-2 shows the location of the existing traffic noise barriers.
4 Highest predicted maximum noise level from analyzed commercial operations/activities, assuming no sources are generating their associated L_{max} values simultaneously.

As presented in Tables 3.10-16 and 3.10-17, aggregate commercial operations noise generated by the project is predicted to be higher than the County's General Plan daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) community noise level threshold at the nearest existing noise-sensitive uses (single-family residential uses to the east of the project) only during conditions when potential outdoor music at commercial establishments would occur.

Based on the analysis and results provided above, and under potential project conditions that include amplified music as studied herein, noise level exposure from the analyzed commercial operations is predicted to exceed the General Plan noise level standards at the nearest existing sensitive uses (residential). Further, increases in ambient noise levels from those operations at the nearest existing sensitive uses would be significant relative to applicable General Plan Policy 6.5.1.13 criteria. Therefore, this impact is considered **potentially significant**.

Active Adult Option

The primary source of operational noise is from project vehicles and, as explained in Section 3.12, Transportation, and the Active Adult option would generate approximately 45% fewer trips per day than the proposed project, which would correlate with reduced noise from vehicles. With the proposed project, Table 3.10-14 demonstrates that project-generated traffic noise would have a less-than-significant impact at existing noise-sensitive receptors located along the project area roadway network and, while the Active Adult option would generate less traffic and thereby less traffic noise there would be no increase in permanent (operation) ambient noise levels in excess of County standards and the impact would be **less than significant.**

Summary of Impacts

Based on the assumptions outlined within the impact analysis, implementation of the CVSP, including the Active Adult option has the potential to result in short-term and long-term operational and stationary-source noise levels that exceed the noise level standards outlined in the County's General Plan and County Code resulting in a **potentially significant impact**.

Mitigation Measures

Compliance with mitigation measure NOI-2 for on-site park-related noise requires six-foot high noise barriers to break the line-of-sight and reduce predicted park noise levels to 45 dBA $L_{eq\ (1\ hr)}$ and 55 dBA L_{max} or less at the nearest proposed residential land uses and would satisfy the General Plan 45 dBA $L_{eq\ (1\ hr)}$ and 55 dBA L_{max} nighttime noise level standards. With implementation of this mitigation measure, impacts due to park noise would comply with the County's General Plan and be **less than significant.** This mitigation would also be required for the Active Adult option to ensure impacts would be reduced to less than significant.

Compliance with mitigation measure NOI-3 would ensure the project, including the Active Adult option, complies with the County's General Plan 60 dBA L_{dn} exterior noise level standard at the single-family low and medium density residential outdoor activity areas to ensure noise from outdoor speaker systems, including live performances, at any commercial uses is reduced to **less than significant.**

NOI-2: Park Activity Noise. The tentative map submitted for building and/or grading shall include an acoustical analysis (noise study) that verifies and demonstrates applicable County noise standards shall be met. The analysis shall be provided to the County's Planning and Building Department for review. Solid noise barriers measuring a minimum of six feet in height (relative to backyard elevation) shall be constructed along residences proposed adjacent to the north and west sides of Village Park and the north, south, west and east sides of Neighborhood Park 2. The recommended noise barrier extension shall either be a solid masonry wall or wood fence. If a wood fence is selected as a barrier, the fence slats shall overlap by a minimum of two inches and screwed to the framing rather than nailed. The purpose of the overlapping slats and using screws rather than nails is to ensure that prolonged exposure to the elements does not result in visible gaps through the slats which would result in reduced noise barrier effectiveness. The final barrier design shall be reviewed by a qualified acoustical consultant prior to issuance of building permits.

NOI-3: Live or Amplified Music. An acoustic analysis prepared by a qualified acoustic specialist shall be required prior to discretionary authorization or permit approval by El Dorado County for any commercial activity featuring live or amplified music, pursuant to County Code Section 130.37.050.

Impact 3.10-3. The proposed project would not generate significant on-site or off-site construction vibration.

On-Site Construction Vibration

Table 3.10-12 presents two columns of ground-borne vibration levels: reference emission levels for the listed equipment types at a reference distance of 25 feet and predicted levels at a distance of 215 feet (the closest existing residential structure along the eastern side of Latrobe Road, and within which would be occupants).

According to Table 3.10-12, predicted ground-borne vibration propagating from the nearest on-site construction activities as received by the nearest existing residential structures is predicted to be well below the Caltrans recommended threshold for damage risk to residential structures (i.e., 0.50 in/sec PPV shown in Table 3.10-4) and its "barely perceptible" level (0.01 in/sec PPV, as listed in Table 3.10-5) with respect to continuous/ intermittent sources of vibration causing potential annoyance for building occupants. Therefore, on-site construction within the project area is not expected to result in excessive ground-borne vibration levels at nearby existing residential uses. Given that the Active Adult option would develop substantially the same land plan and footprint as the proposed project, it would not be expected to have significant differences in construction vibration and impacts from construction would be the same as the project. For these reasons, on-site construction vibration levels are expected to comply with applicable Caltrans ground-borne vibration velocity impact significance criteria; therefore, this impact is considered to be **less than significant**.

Off-Site Infrastructure Construction Vibration

Construction of the planned off-site transportation and utility (waterline and sewer force main) infrastructure improvements would involve heavy equipment and thereby generate localized ground-borne vibration in the vicinity of the occurring activity. As previously mentioned for Impact 3.10-4, the ENVA conservatively estimates that equipment could be located as close as 30 feet away (i.e., with respect to residential receptors near Abatement A-3, A-5, A-7) (Appendix G).

Per Table 3.10-12, vibration levels associated with typical construction equipment range from 0.003 to 0.089 in/sec PPV at a reference distance of 25 feet. Extrapolating these PPV values to reflect a horizontal distance of 30 feet between the vibration source and the receptor, the predicted vibration velocity range changes to 0.002 to 0.068 in/sec PPV, which are well below the 0.50 in/sec PPV guidance threshold for building damage risk to residential structures as shown in Table 3.10-4. Further, these predicted vibration levels are below the "barely perceptible" human response level of 0.01 in/sec PPV as presented in Table 3.10-5. For these reasons, construction vibration levels associated with off-site infrastructure improvements are expected to comply with applicable Caltrans ground-borne vibration velocity impact significance criteria; therefore, this impact is considered **less than significant**.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

Future development within the County, including the proposed project, would affect the future (cumulative) ambient noise environment. While it is difficult to project exactly how the ambient noise conditions within the area would change, it is known that traffic noise levels would increase due to the additional traffic generated by the proposed project and other approved and reasonably foreseeable development in the county and the region. In the cumulative scenario, ongoing development in the county would be expected to increase the ambient noise environment in the area as a result of increased traffic volumes, increased residential population and commercial activities. Given that the Active Adult option would develop substantially the same land plan and footprint as the proposed project, although there would be a reduction in vehicle trips under this option; however, because the proposed project represents the worst-case scenario the cumulative analysis would also cover this option.

The primary factor for the cumulative noise impact analysis is the consideration of future traffic volumes. Non-transportation noise sources (e.g., project operation) and construction noise impacts are typically project-specific and highly localized. Construction activities associated with anticipated development within the area would contribute temporarily to the noise levels in the cumulative (2040) ambient noise environment, but in a highly localized and transient manner. As other development occurs in the area, noise from different types of uses (e.g., traffic, aircraft, fixed noise sources) would continue to combine, albeit on a localized basis, to cause increases in overall background noise conditions within the area. As a result, such sources do not significantly contribute to cumulative noise impacts at distant locations and are not evaluated on a cumulative level.

Impact 3.10-4. The proposed project would not increase cumulative traffic noise levels.

Comparable to the prediction of existing traffic noise levels as described in Section 3.10.1, the total of AM and PM peak hour traffic volumes for a Cumulative and Cumulative Plus Project scenario from the Transportation Report were multiplied by five to arrive at the project's ADT, which was then used to estimate traffic noise levels at distances representing the nearest noise-sensitive land uses to the project area roadways, as shown in Table 3.10-18. Table 3.10-18 also evaluates the dB increase in L_{dn} between these two scenarios (Cumulative [C] and Cumulative plus Project [C+P]) and concludes for each studied roadway segment if the increase represents a potential significant impact (i.e., the predicted increase at a noise-sensitive receptor along the studied roadway segment exceeds the significance threshold established in General Plan Policy 6.5.1.12). If a cumulative roadway noise impact is identified, it is further evaluated to assess whether the proposed project would make a cumulatively considerable contribution to the cumulative impact. This process is completed through a comparison of the roadway noise associated with the cumulative with project scenario against the cumulative no-project scenario, which is shown in Table 3.10-19. Attachments B-3 and B-4 from the ENVA contain the FHWA Traffic Noise Model inputs used in the analysis (see Appendix G).

As indicated in Table 3.10-18, project-generated traffic is calculated to exceed the applicable General Plan Policy 6.5.1.12 impact significance criterion along one roadway segment containing a noise-sensitive receptor (segment 29). However, the project-generated increase along that roadway segment is not calculated to have a cumulatively considerable contribution to the cumulative impact relative to the General Plan Policy 6.5.1.12 criterion (Table 3.10-15). Additionally, Table 3.10-18 data indicates that cumulative plus project increases in traffic noise levels at the outdoor area/playground of the closest existing school within project roadway network (John Adams Academy, roadway segment 28) were calculated to be 0.6 dBA L_{dn}. Table 3.10-18 data also indicates that cumulative plus project increase in traffic noise levels at the outdoor area/playgrounds for the Latrobe Elementary School and Miller's Hill School (roadway segment 9) were calculated to be 0.6 dBA L_{dn}.

Based on the analyses presented in Tables 3.10-18 and 3.10-19, project-generated (including the Active Adult option) traffic noise level increases would not result in a cumulative noise impact at existing noise-sensitive receptors located along the project area roadway network relative to the increase significance criteria contained in Policy 6.5.1.12 of the County's General Plan. As a result, this is a **less-than-significant cumulative impact**.

Mitigation Measures

No mitigation measures are required.

Table 3.10-18. Predicted Project-Related Traffic Noise Level Increases – Existing (2023) vs. Cumulative (2040) Plus Project Conditions

Roadway Segment #	Roadway Name	Segment Description	Predicted Traffic Noise Level at Nearest Noise-Sensitive Receptor (L_{dn}, dBA)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E	C+P	Increase				
1	El Dorado Hills Blvd.	North of Serrano Pkwy.	67.8	68.2	0.4	1.5	No	Yes-Residence	No
2		Serrano Pkwy. To White Rock Rd.	62.0	62.8	0.8	3.0	No	Yes-Residence	No
3	Latrobe Rd.	White Rock Rd. to Golden Foothill Pkwy.	68.4	69.9	1.5	1.5	No	Yes-Residence	No
4		Golden Foothill Pkwy. To Investment Blvd.	52.6	55.2	2.6	5.0	No	Yes-Residence	No
5		Investment Blvd. to Avanta Dr./Q Dr.	50.9	53.9	3.0	5.0	No	Yes-Residence	No
6		Avanta Dr./Q Dr. to Project Commercial Entry	55.7	58.7	3.0	5.0	No	Yes-Residence	No
7		Project Commercial Entry to Royal Oaks Dr.	56.3	59.2	2.9	5.0	No	Yes-Residence	No
8		Royal Oaks Dr. to Wetsel Oviatt Rd.	49.7	50.8	1.1	5.0	No	Yes-Residence	No
9		Wetsel Oviatt Rd. to S. Shingle Rd.	61.9	62.7	0.8	3.0	No	Yes-Residence	No
10		South of S. Shingle Rd.	59.7	59.7	0.0	5.0	No	Yes-Residence	No
11	Lassen Ln.	West of El Dorado Hills Blvd.	53.7	55.2	1.5	5.0	No	Yes-Residence	No
12	Serrano Pkwy.	East of El Dorado Hills Blvd.	58.4	58.7	0.3	5.0	No	Yes-Residence	No
13	White Rock Rd.	West of Latrobe Rd.	58.3	59.7	1.4	5.0	No	Yes-Residence	No

Table 3.10-18. Predicted Project-Related Traffic Noise Level Increases – Existing (2023) vs. Cumulative (2040) Plus Project Conditions

Roadway Segment #	Roadway Name	Segment Description	Predicted Traffic Noise Level at Nearest Noise-Sensitive Receptor (L_{dn}, dBA)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E	C+P	Increase				
14		East of Latrobe Rd.	64.1	66.1	2.0	3.0	No	Yes-Residence	No
15	Golden Foothill Pkwy.	West of Latrobe Rd.	56.8	58.4	1.6	5.0	No	Yes-Residence	No
16	Clubview Dr.	East of Latrobe Rd.	52.0	54.5	2.5	5.0	No	Yes-Residence	No
17	Investment Blvd.	Latrobe Rd. to Robert J. Mathews Pkwy.	36.1	37.7	1.6	5.0	No	Yes-Residence	No
18		West of Robert J. Mathews Pkwy.	47.3	49.5	2.2	5.0	No	Yes-Church	No
19	Project Q Dr.	West of Latrobe Rd. (within project area)	56.0[4]	30.2	-25.8	5.0	No	Yes-Residence	No
20	Avanti Dr.	East of Latrobe Rd.	36.7	36.7	0.0	5.0	No	Yes-Residence	No
21	Project Commercial Entry	West of Latrobe Rd. (within project area)	56.0[4]	28.5	-27.5	5.0	No	Yes-Residence	No
22	Royal Oaks Dr.	West of Latrobe Rd. (within project area)	56.0[4]	45.2	-10.8	5.0	No	Yes-Residence	No
23		East of Latrobe Rd.	42.1	43.8	1.7	5.0	No	Yes-Residence	No
24	Wetsel Oviatt Rd.	West of Latrobe Rd.	19.4	22.1	2.7	5.0	No	Yes-Residence	No
25	S. Shingle Rd.	West of Latrobe Rd.	45.5	47.1	1.6	5.0	No	Yes-Residence	No
26		East of Latrobe Rd.	53.9	54.8	0.9	5.0	No	Yes-Residence	No

Table 3.10-18. Predicted Project-Related Traffic Noise Level Increases – Existing (2023) vs. Cumulative (2040) Plus Project Conditions

Roadway Segment #	Roadway Name	Segment Description	Predicted Traffic Noise Level at Nearest Noise-Sensitive Receptor (L_{dn}, dBA)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E	C+P	Increase				
27	Robert J. Mathews Pkwy.	Investment Blvd. to Golden Foothill Pkwy.	51.4	53.5	2.1	5.0	No	Yes-Church	No
28		South of Investment Blvd.	50.2	50.8	0.6	5.0	No	Yes-School	No
29	Palmdale Dr.	South of Carson Crossing Dr.	45.4	52.0	6.6	5.0	Yes	Yes-Residence	Yes
30	Carson Crossing Dr.	Palmdale Dr. to Four Seasons Dr.	50.6	54.6	4.0	5.0	No	Yes-Residence	No
31		Palmdale Dr. to Golden Foothill Pkwy.	51.1	55.2	4.1	5.0	No	Yes-Residence	No

Sources: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix G (see Attachments B-3 and B-4 for FHWA model inputs).
Notes:
1 Significance thresholds established in General Plan Policy 6.5.1.12.
2 Sensitive receptors identified as existing residential, school, or church uses.
3 A significant impact is identified only along segments where the project-related traffic noise level increase would exceed threshold AND where sensitive receptors are present along the roadway segment.
4 Project traffic study did not contain data for segments 19, 21 and 22, which are access points to the project property (located within the project area). For the purposes of this analysis, the measured ambient L_{dn} at site 4 was used, which is believed to be representative of the existing ambient noise level environment along those roadway segments.

Table 3.10-19. Predicted Traffic Noise Level Increases at Existing Noise-Sensitive Receptors – Cumulative (2040) vs. Cumulative (2040) Plus Project Conditions

Roadway Segment #	Roadway Name	Segment Description	Predicted Traffic Noise Level at Nearest Noise-Sensitive Receptor (L_{dn}, dBA)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			C	C+P	Increase				
29	Palmdale Dr.	South of Carson Crossing Dr.	52.0	52.0	0.0	5.0	No	Yes-Residence	No

Sources: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix G (see Attachments B-3 and B-4 for FHWA model inputs).
Notes:
1 Significance thresholds established in General Plan Policy 6.5.1.12.
2 Sensitive receptors identified as existing residential, school, or church uses.
3 A significant impact is identified only along segments where the project-related traffic noise level increase would exceed threshold AND where sensitive receptors are present along the roadway segment.

3.10.5 Additional Project Considerations

As noted above, the existing environment's effects on a project are not within the scope of CEQA review unless the project would exacerbate the existing environmental effect. Only the effects of the project on the environment are required to be evaluated. An assessment of the cumulative plus project noise conditions on proposed future project occupants is therefore provided for informational purposes only.

Cumulative plus Project Other Noise Considerations

Traffic Noise at Proposed (onsite) Residential and Park Uses (cumulative)

This analysis is included for informational purposes only; therefore, no significance finding is provided. The analysis below also covers the Active Adult option.

Table 3.10-20 provides planned on-site locations of occupied residences and outdoor use areas, along with the distances between these exterior facades or outdoor areas and future (cumulative 2040 plus project) Latrobe Road traffic, and the predicted L_{dn} values attributed to this roadway traffic at the indicated sample positions.

Table 3.10-20. Predicted Exterior (Cumulative 2040 plus Project) Latrobe Road Traffic Noise Levels at Proposed Residential Uses

Location[1]	Description	Distance from Roadway Centerline (feet)[2]	Future Exterior L_{dn} (dB)[3]
Park	Village Park	300	61
Park	Neighborhood Park 1	150	62
SFL Lots 588-598	Backyards	95	68
	First-Floor Facades	110	67
	Upper-Floor Facades	110	69
SFL Lots 550-560	Backyards	95	65
	First-Floor Facades	110	64
	Upper-Floor Facades	110	66
SFM Large Lot 2	Backyards	230	60
	First-Floor Facades	60	68
	Upper-Floor Facades	60	70

Source: Appendix G (see Attachment G).
Notes:
1 Locations of parks and lots are shown on Figure 3.10-2.
2 Distances scaled from effective noise center of proposed parks and residential lots to roadway centerline using provided site plans.
3 A +2 dB offset was applied to upper-floor facades for reduced ground absorption of sound at elevated locations.

As presented in Table 3.10-20, predicted Latrobe Road future traffic noise level exposures at Village Park and Neighborhood Park 1 would satisfy the applicable County General Plan exterior noise level threshold of 70 dBA L_{dn} for playgrounds and neighborhood park uses. At the nearest single-family low density residential (SFL) backyards; however, predicted future Latrobe Road traffic noise would exceed the County's residential use exterior noise level standard of 60 dBA L_{dn}.

Although locations of individual residences and their outdoor activity areas are not known at this time, the project site plans contain the general location information for the proposed single-family medium density residential large lot units. Further, Table 3.10-20 shows that future Latrobe Road exterior traffic noise levels are predicted to be 60 dBA L_{dn} at a distance of 230 feet from the centerline of the roadway. The project's increase in traffic noise would less than the significance thresholds shown in Table 3.10-14; therefore, it would not exacerbate interior traffic noise conditions under cumulative plus project conditions. In addition, as indicated in Table 3.10-18, project-generated traffic is calculated to exceed General Plan Policy 6.5.1.12 impact significance criterion along one roadway segment containing a noise-sensitive receptor (segment 29). However, the project-generated increase along that roadway segment is not calculated to have a cumulatively considerable contribution to the cumulative impact relative to the General Plan Policy 6.5.1.12 criterion (Table 3.10-15). However, for residences within 230 feet or closer, future Latrobe Road traffic noise exposure would exceed the County's General Plan standard of 60 dBA L_{dn}. Figure 3.10-4 depicts the location of those residences that would be affected by an increase in traffic noise along Latrobe Road. The project applicant has agreed to implement mitigation measure NOI-4 and construct noise barriers along segments of Latrobe Road, as shown on Figure 3.10-4.

Traffic Noise (interior) at Proposed (on-site) Residential Uses (cumulative)

As noted above, an analysis that evaluates the impacts of the existing environment on new land uses constructed by a project is not typically required, unless the project would exacerbate the existing environmental effect. This analysis is included for informational purposes only; therefore, no significance finding is provided.

The project's increase in traffic noise would be less than the significance thresholds shown in Table 3.10-14; therefore, it would not exacerbate interior traffic noise conditions under cumulative plus project conditions. Also, as noted above project-generated traffic is calculated to exceed the applicable General Plan Policy along one roadway segment containing a noise-sensitive receptor (segment 29). However, the project-generated increase along that roadway segment is not calculated to have a cumulatively considerable contribution to the cumulative impact relative to the General Plan Policy 6.5.1.12 criterion (Table 3.10-15). In order to satisfy the County's General Plan 45 dBA L_{dn} interior noise level standard, minimum noise reductions of 15 dBA and 24 dBA would be required of the first- and upper floor building facades (respectively) of the residences constructed adjacent to Latrobe Road.

According to Table 3.10-20, future exterior Latrobe Road traffic noise levels are predicted to be approximately 68 dBA L_{dn} at a distance of 60 feet from the roadway centerline. Due to reduced ground absorption at elevated positions (ground level receivers would experience more attenuation from ground effects than upper levels), upper-level traffic noise levels from Latrobe Road would approach 70 dBA L_{dn}. In order to satisfy the County's General Plan 45 dBA L_{dn} interior noise level standard within all floors of residences located closest to Latrobe Road, a minimum noise reduction of at least 25 dBA would be required of the building facades.

Standard building construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior to interior noise reduction of approximately 25 dBA with windows closed and approximately 15 dBA with windows open. Therefore, standard construction would be adequate to reduce future Latrobe Road traffic noise levels within all floors of residences constructed adjacent to the roadway to 45 dBA L_{dn} or less. Nonetheless, mechanical ventilation (air conditioning) should be provided to allow the occupants to close doors and windows as desired for additional acoustical isolation.

Based on the information above, standard construction should be adequate to reduce future Latrobe Road traffic noise levels within all floors of residences constructed adjacent to the roadway, north of Village Park as shown in

Figure 3.10-5. However, future (cumulative 2040 plus project) traffic noise level exposure is calculated to be only 1 dB below the General Plan 45 dBA L_{dn} interior noise level standard.

Predicted future (cumulative 2040 plus project) Latrobe Road interior traffic noise levels within the single-family residences constructed at least 60 feet from the roadway centerline would satisfy the 45 dBA L_{dn} interior noise level standard. However, should residences within the single-family large lots be constructed within 60 feet from the centerline of Latrobe Road, future interior traffic noise levels from the roadway could exceed the General Plan 45 dBA L_{dn} interior noise level standard at the upper floors of those residences. The project applicant has agreed to implement mitigation measure NOI-5.

Mitigation Measures

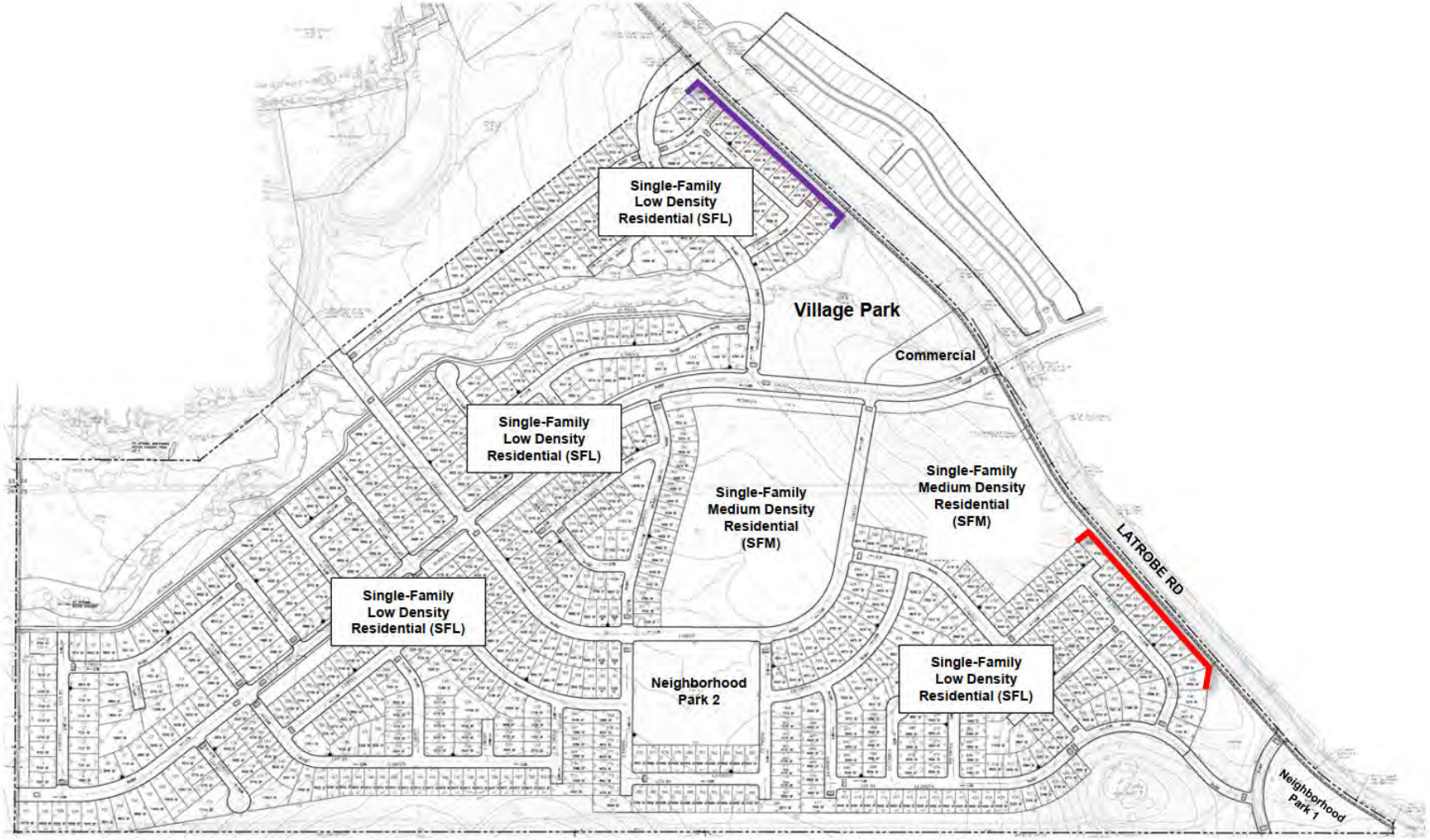
The project applicant has agreed to implement mitigation measures NOI-4, NOI-5 to ensure future development would comply with the County's General Plan 60 dBA L_{dn} exterior noise standard and 45 dBA L_{dn} interior noise standard at the single-family low and medium density residential outdoor activity areas proposed nearest to Latrobe Road. A conceptual cross section of the proposed noise barriers relative to Latrobe Road is shown in Figure 3.10-6.

Because age-restricted homes under the Active Adult option would be single story, second story windows with a minimum Sound Transmission Class Rate of 32 identified in mitigation measures NOI-5 would not be required for age-restricted homes but would still apply to conventional homes within the Active Adult option if developed along Latrobe Road.

NOI-4: Exterior Traffic Noise. The tentative map submitted for building and/or grading permits shall include an acoustical analysis (noise study) that verifies and demonstrates applicable County noise standards shall be met. The analysis shall be provided to the County's Planning and Building Department for review. To satisfy the General Plan 60 dBA L_{dn} exterior noise level standard at the backyards of the single-family residential lots proposed nearest to Latrobe Road (within 230 feet from the centerline of Latrobe Road), the construction of solid traffic noise barriers ranging from six to nine feet in height shall be required. Once site plans showing building pad elevations are available, a site-specific noise study shall be completed by a qualified noise consultant in order to determine the overall heights of barriers required at those locations.

It is recommended that the traffic noise barriers shall be either a masonry wall, earthen berm, or combination of the two. Other materials may be acceptable (i.e., wood or wood composite fence with overlapping slat construction) but shall be reviewed by a qualified acoustical consultant prior to receiving building permits.

NOI-5: Interior Traffic Noise. To achieve a greater margin of safety, the upper floor bedroom windows of the residential lots located north of Village Park adjacent to and visible from Latrobe Road or within 60 feet from the centerline of Latrobe Road and visible from Latrobe Road shall be upgraded to have a minimum Sound Transmission Class Rating of 32. Mechanical ventilation (air conditioning) shall also be provided for all residences to allow the occupants to close doors and windows to achieve compliance with the General Plan 45 dBA L_{dn} interior noise level standard.



SOURCE: Bollard Acoustical Consultants 2020

FIGURE 3.10-4

Proposed Noise Barriers Along Latrobe Road

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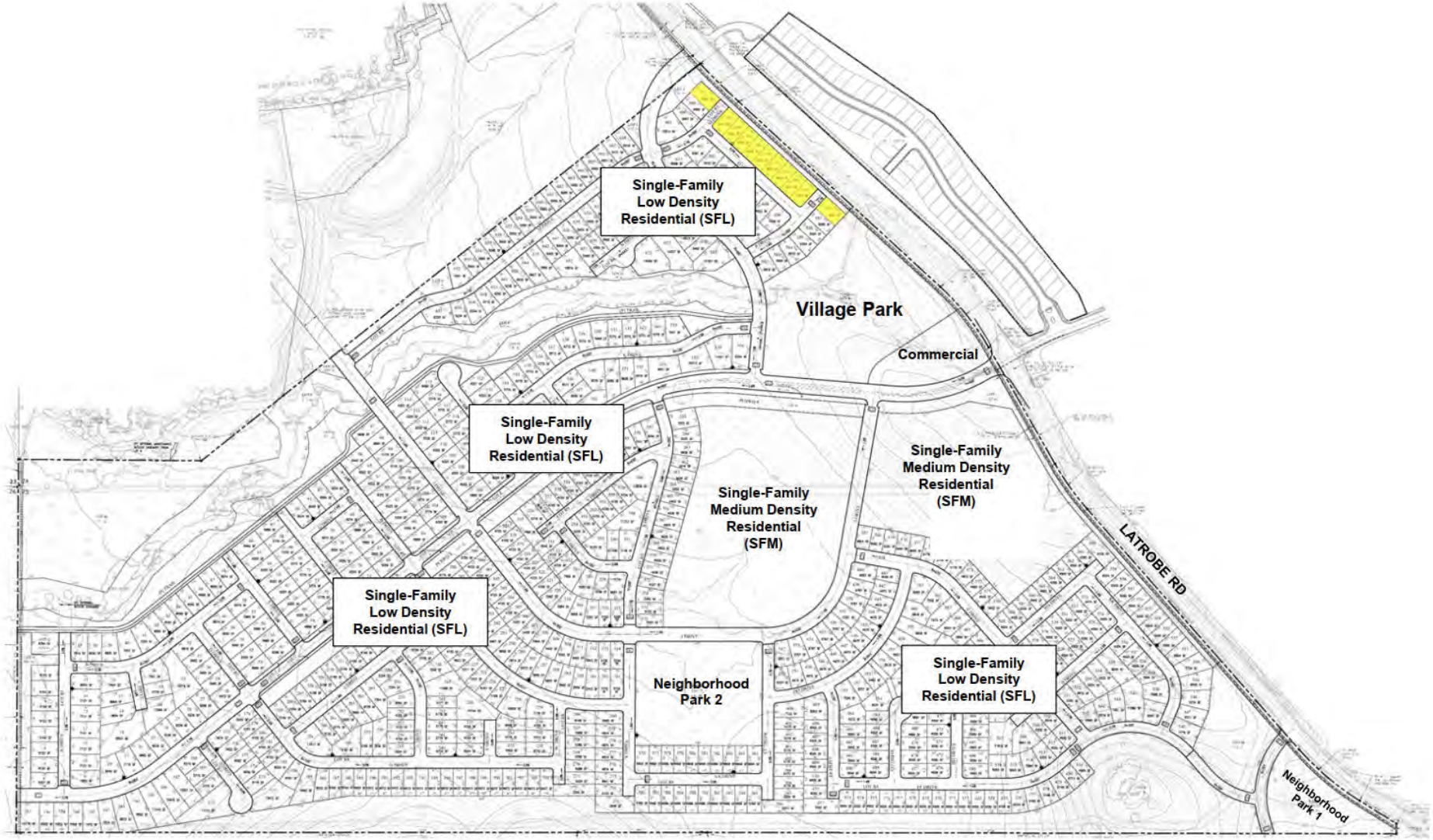

SOURCE: Bollard Acoustical Consultants 2020

FIGURE 3.10-5

Location of Residences Affected by Traffic Noise (Interior)

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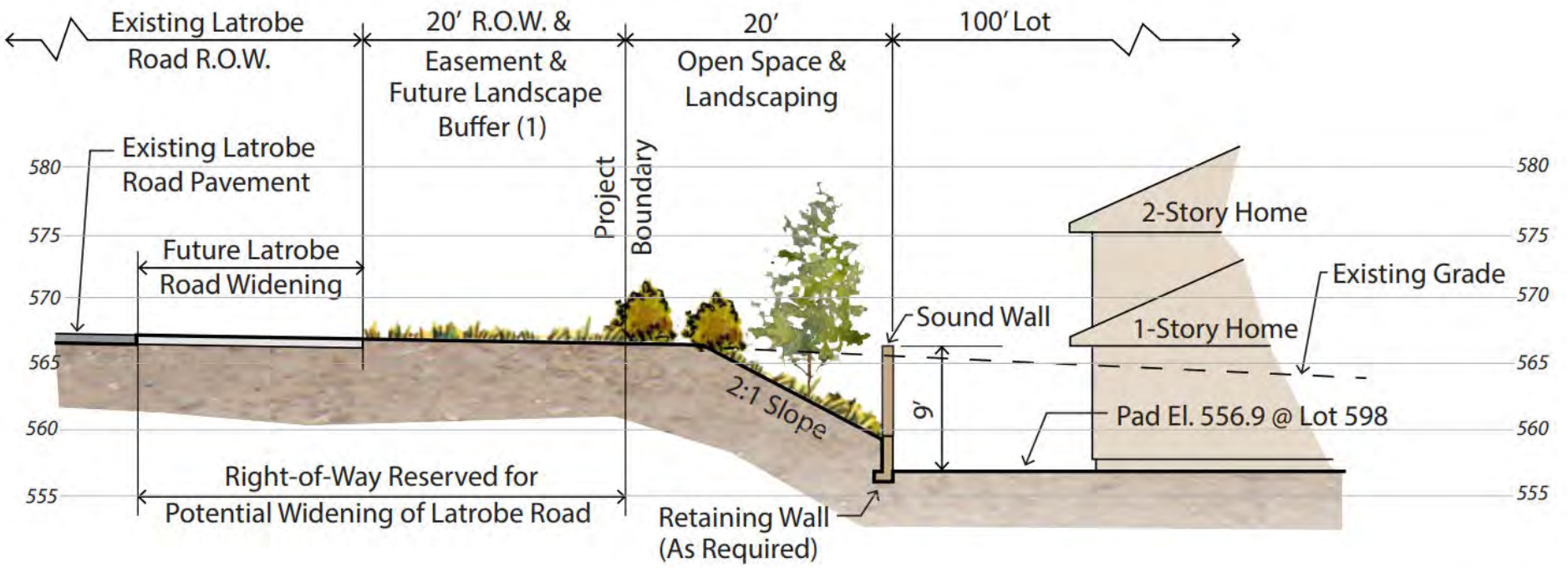

1. *Landscaping Shall be Consistent With Landscaping Standards as Described in Chapter 130.33 of the El Dorado County Code. Landscaping Shown Here for Conceptual Design Purposes Only.*

Conceptual Cross Section of Latrobe Road Adjacent to CVSP

Torrence Planning: 4-19-24

SOURCE: Torrence Planning 2024

FIGURE 3.10-6
Latrobe Road Cross Section

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3.10.6 References

Caltrans (California Department of Transportation). 2013a. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September.

Caltrans. 2020. *Transportation and Construction Vibration Guidance Manual*. Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, Paleontology Office. Sacramento, California. April.

FTA (Federal Transit Administration). 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. September.

LOUD Audio. 2021. *Mackie Thump Go Spec Sheet*.

The County of El Dorado. El Dorado County General Plan: Public Health, Safety, and Noise Element. August 2019. https://www.edcgov.us/government/planning/adoptedgeneralplan/documents/6_health-safety.pdf

The County of El Dorado. El Dorado County Code of Ordinances. December 2023. https://library.municode.com/ca/el_dorado_county/codes/code_of_ordinances

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3.11 Public Services and Recreation

The following describes the potential adverse physical impacts associated with the provision or need for new or physically altered governmental services (fire protection and emergency medical services, law enforcement, schools) or recreational facilities (parks) to meet acceptable response times, service ratios, or increase in usage of recreational facilities such that deterioration would occur from implementation of the Creekside Village Specific Plan (proposed project or CVSP).

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) included several comments related to funding of recreational facilities, capacity of existing schools, and impacts to public service levels. On September 26, 2023, a second scoping meeting was held to reintroduce the proposed project to the public and to receive any comments. A comment letter was received from the Latrobe School District requesting impacts to their schools be evaluated in the EIR. Comments received in response to the November 2020 NOP and the second scoping meeting are addressed in this section. Please see also the Executive Summary chapter for more information on what an EIR is required to evaluate specific to schools. Under CEQA, public service impacts relate to the environmental effects of providing expanded or new facilities which are required as a result of the project. A copy of the NOP and the second scoping meeting and comments received is included in Appendix A.

Sources reviewed to prepare this section include the El Dorado County General Plan, El Dorado County 2012 Parks and Trails Master Plan, El Dorado Hills Community Services District 2016 Park and Recreation Facilities Master Plan, Fire Safe Plan (Appendix J), and information from the County, the El Dorado Hills Fire Department, the County Sheriff's Office, Latrobe School District, and the El Dorado Union High School District.

3.11.1 Environmental Setting

Fire Protection and Emergency Medical Services

Fire protection services throughout El Dorado County (County) are provided by 13 separate fire districts, two city fire departments, the California Department of Forestry and Fire Protection (CAL FIRE), and the U.S. Forest Service (El Dorado County 2004b). The project site is within the service area of the El Dorado Hills Fire Department ("EDH Fire"). EDH Fire provides fire suppression, emergency medical services, special and technical rescue, hazardous materials mitigation, fire prevention, public education, disaster preparedness, and support to many programs. The EDH Fire service area is located near the eastern border of the County and encompasses nearly 78.8 square miles of the unincorporated community of El Dorado Hills, including the Latrobe area with a total population of approximately 52,500 residents (EDH Fire 2020). EDH Fire participates in joint dispatching with other fire districts in the County, in which the closest uncommitted unit responds to emergency calls, regardless of jurisdiction. Other fire districts surrounding EDH Fire include Cameron Park Fire Department, El Dorado County Fire District, and the Latrobe Fire Protection District. In addition, EDH Fire participates in the Master Mutual Aid System for the State of California, which provides staff and fire protection assistance throughout the state.

EDH Fire does not have adopted response times. The County's General Plan identifies minimum levels of service for fire districts (See Section 3.11.2). The service levels presented in the General Plan include an 8--minute response time to 80% of the population for Community Regions and a 15 to 45-minute response time for Rural Centers and Rural Regions (El Dorado County 2015).

EDH Fire serves the community from five stations (one housing the administration offices) with ten engines, one air/light support unit, two water tenders, one patrol, one ladder truck, one medic unit and one medic unit in reserve. EDH Fire is staffed with approximately 65 firefighters and paramedics and a total of approximately 83 personnel (including chief officers, fire prevention specialists, training officers, fleet maintenance personnel and administrative staff) and currently operates at a ratio of approximately 1.64 fire staff per 1,000 residents or approximately one fire station per 11,000 residents (Appendix J). In January 2008, the District's fourth fire station (Station 87), located at 4680 Golden Foothill Parkway in the El Dorado Hills Business Park, was opened. Station 87 is the closest station to the project site, located approximately 1.5 miles (driving distance) northeast. Station 87 houses a variety of equipment available for responses including two Type 1 engines, one Type 3 engine, one utility truck, one patrol truck, and a decontamination trailer (EDH Fire 2023).

EDF Fire also provides pre-hospital emergency medical and dispatch services in cooperation with the El Dorado County Regional Pre-Hospital Emergency Services Operations Authority, also known as West Slope Joint Powers Authority (JPA). EDH Fire provides emergency medical services including basic and advanced life support services at all five stations. EDH Fire has two medic units, both of which are housed at Station 85, approximately 4 miles north (driving distance) of the proposed project site. Likewise, the West Slope JPA owns a total of eight ambulances that are assigned to various districts or areas throughout the County and are relocated based on demand. The minimum level of service for emergency medical services for the urban region of the County is a 10-minute response time for 80% of the calls for service received and a 20-minute response time for 90% of the calls for service received in semirural and rural regions (El Dorado County 2004b). Calls for service generated by the proposed project would be subject to the standards for urban regions.

Law Enforcement

The El Dorado County Sheriff's Office ("County Sheriff") provides law enforcement services in the unincorporated county which includes 1,763 square miles (El Dorado County Sheriff's Office 2019). The County Sheriff has two offices in the county: one in Placerville and another in South Lake Tahoe. The County Sheriff Placerville location is considered the County Sheriff headquarters and is located at 200 Industrial Drive, approximately 20 miles east of the project site. In addition to these offices, the County Sheriff operates three substations located in El Dorado Hills, Georgetown, and Cameron Park, which recently opened in 2022. Out of the five County Sheriff locations, the nearest to the proposed project is the El Dorado Hills substation located at 4354 Town Center Drive approximately 3 miles from the project site. Although the County Sheriff has offices and jail facilities in the Town of Placerville and South Lake Tahoe, these incorporated cities each have their own independent police forces and facilities. As outlined in the County's General Plan EIR, the County Sheriff attempts to maintain a level of service standard of one deputy per 1,000 residents in the unincorporated areas of the County. The County Sheriff does not have an established countywide goal for response time for either rural or urban areas, because the ideal response time varies by priority and by the area of the call (El Dorado County 2004b).

Several Divisions, Units, or teams make up the County Sheriff including the Support Services Division, which includes many smaller units such as dispatch, information technologies, records, radio communications, and property, Training Unit, Coroner Services, Civil Unit, Concealed Carry Weapon Unit, Fiscal Division, Custody Division, Transportation Unit, and Operations Division. The County Sheriff also oversees two correctional facilities, the El Dorado County Jail - South Lake Tahoe Facility and the El Dorado County Jail - Placerville Facility.

The County Sheriff is also responsible for managing the County's Office of Emergency Services (OES), which is the emergency management agency for the County. OES provides services countywide, in cooperation with cities and special districts, such as the fire department and law enforcement agencies (El Dorado County OES 2018). The

County Sheriff also acts as the Public Safety Answering Point (PSAP) for the County and supports PSAP services for the Placerville and South Lake Tahoe Police offices if needed.

The Operations Division is the most visible to the public and consists of the Off-Highway Vehicle Unit, Canine Unit, Dive Team, Explosive Ordinance Disposal Unit, Gang Enforcement Unit, Homeless Outreach Team, SWAT Team, Psychiatric Emergency Response Team, Crisis Negotiation Team, Western El Dorado Narcotics Enforcement Team, Unmanned Aerial Systems Unit, County Sheriff Air Squadron, Search and Rescue, and Criminal Investigations.

The County Sheriff is currently staffed by 392 employees, 181 of which work in the Operations Division (El Dorado County 2021a). Patrol for the Operations Division is further divided into the West Slope and Lake Tahoe areas. The West Slope Patrol is responsible for the unincorporated area of the county from Strawberry west to the El Dorado/Sacramento County line and from the North Fork of the American River to the Highway 88/Consumes River border. The project site is located within the West Slope Patrol area. In 2019, the West Slope Patrol staff consisted of a total of 2 lieutenants, 9 sergeants, and 60 deputies (El Dorado County Sheriff's Office 2019). In 2022, the West Slope Patrol received over 82,000 calls for services, processed over 10,000 reports, and made over 2,500 arrests. Furthermore, over 2,171 traffic stops were conducted, and 365 arrests were made by the Criminal Investigations and Narcotics Enforcement Team in 2022 throughout the county.

Schools

The project site is located within the boundaries of the Latrobe School District (LSD) and the El Dorado Union High School District (EDUHSD). The LSD is a small, rural, K-8 school district that serves the southwest portion of the county. The LSD encompasses approximately 35 square miles and includes two schools: Latrobe Elementary School (grades TK-3) located at 7690 South Shingle Road and Miller's Hill School (grades 4-8) located at 7900 South Shingle Road (LSD 2023a). LSD had a total of 162 students during the 2022-2023 school year with 68 students at Latrobe Elementary School and 94 students at Miller's Hill School (LSD 2023b). There is no data available for projected enrollment or maximum capacity, but historical data shows that enrollment has ranged between 50 and 70 students at Latrobe Elementary School and between 75 and 100 at Miller's Hill School for the past 5 years (Ed-Data 2024). Latrobe Elementary School and Miller's Hill School are located approximately 5 miles south of the proposed project site.

The EDUHSD is located on the western slope of the county and encompasses approximately 1,250 square miles. EDUHSD serves the communities of Cameron Park, Camino, Diamond Springs, El Dorado, El Dorado Hills, Latrobe, Placerville, Pollock Pines, Rescue, Shingle Springs, Somerset, and many smaller rural areas in the County. The EDUHSD includes four comprehensive high schools, a continuation high school, and an alternative education high school. The EDUHSD serves grades 9 through 12 at the following schools: El Dorado High School, Oak Ridge High School, Ponderosa High School, Union Mine High School, The Virtual Academy at Shenandoah High School (Charter), and Independence Continuation High School. In addition, the Central Sierra Regional Occupation Program operates a variety of career/technical education courses on the EDUHSD's school sites, and the County Office of Education houses special education programs on some of the campuses (EDUHSD 2019). Students within the project site would attend Oak Ridge High School located at 1120 Harvard Way, approximately 4.5 miles north of the project site. During the 2022/23 school year, the enrollment at Oak Ridge High School was 2,517 students (EDUHSD 2022).

Students enter the EDUHSD from twelve feeder elementary school districts including the LSD. According to a Demographics and Enrollment Projections report published by EDUHSD in November 2022, the EDUHSD has experienced a generally stable enrollment over the past 10 years with an enrollment of 6,847 students during the 2013/14 school year and a current (2022-23) enrollment of 6,719 students (EDUHSD 2022). However, enrollment

within the district is projected to experience a 7.78% decline, or loss of 523 students within the next six years, with a projected enrollment of 6,196 students in the 2028/29 school year (EDUHSD 2022). See Table 3.11-1 for enrollment predictions by high schools throughout the District.

Table 3.11-1. EDUHSD Enrollment Predictions

School	School Year Enrollment						
	Current Enrollment (22/23)	23/24	24/25	25/26	26/27	27/28	28/29
El Dorado High	1224	1189	1159	1132	1169	1173	1188
Oak Ridge High	2517	2378	2276	2221	2118	2165	2143
Ponderosa High	1652	1655	1615	1616	1642	1637	1626
Union Mine High	1066	1067	1026	1029	1019	988	1001
Independence High	126	126	119	112	112	113	114
Pacific Crest Academy	99	97	92	90	90	91	92
Non-Public Schools	35	34	34	32	31	32	32
Totals	**6,719**	**6,546**	**6,321**	**6,323**	**6,181**	**6,199**	**6,196**

Source: EDUHSD 2022, pp. 15-26.

The Demographics and Enrollment Projections report notes that the information and projections presented have taken new housing development into consideration. In fact, City and County Planning Departments predicted that there would be a total of 1,702 new housing units developed out of the 11,665 planned units in the County over the next six years. This estimate assumed that a total of 72 housing units of the proposed project would be constructed in this six-year time frame. Based on the estimated construction rates, EDUHSD projects that planned new development within the EDUHSD service area would generate a total of 208 students in the next six years (EDUHSD 2022, p. 11). Table 3.11-2 below presents a breakdown of the distribution of new students to schools in the district.

Table 3.11-2. Projected EDUHSD Students due to New Development

School	Housing Units Per Year						Total (by school)
	23/24 (Year 1)	24/25 (Year 2)	25/26 (Year 3)	26/27 (Year 4)	27/28 (Year 5)	28/29 (Year 6)	
El Dorado High	2	2	87	87	51	62	291
Oak Ridge High	111	117	71	103	138	135	675
Ponderosa High	101	74	55	27	98	118	473
Union Mine High	0	0	58	59	42	104	263
Total (per year)	**214**	**193**	**271**	**276**	**329**	**419**	**1,702**

Source: EDUHSD 2022, page 11.

Calculations in the Demographics and Enrollment Projections report also concludes that based on current District loading standards and classroom space, EDUHSD has a net classroom capacity of 8,416 students, and a current

enrollment of 6,719 students. This represents a current utilization factor of 79.8% and a projected utilization factor of 73.6% in six years. At Oak Ridge High School specifically, there is a classroom capacity of 2,530 students. As previously stated, the student enrollment for Oak Ridge High School during the 2022/23 school year totaled 2,517 students, which leaves only 13 available seats. However, concurrent with the enrollment predictions District-wide, during the 2028/29 school year, Oak Ridge High school is projected to have an enrollment of 2,143, and 387 available seats. These estimates assume that loading standards remain constant, and no additional facilities are required to be constructed or removed.

In June 2008, EDUHSD voters approved Measure Q, a $66.3 million dollar school bond to improve student safety and the quality of education at every school by repairing, updating, constructing, furnishing, and equipping school facilities, including technology, job training, science and health facilities, roofs, electrical, plumbing, heating, and air conditioning systems (EDUHSD 2017).

Parks and Recreation Facilities

The El Dorado County Parks, Trails, and River Management Division plans, develops, and manages park and recreational facilities within the unincorporated county. Generally, community service districts (CSD) provide park and recreation services to more populated suburban communities within the county (El Dorado County 2012). The two largest CSDs are El Dorado Hills CSD and Cameron Park CSD. The El Dorado Hills CSD encompasses 28 square miles of the county, including 326 acres of developed park land and 81 acres of open space (El Dorado Hills CSD 2021). The Cameron Park CSD encompasses 8.3 square miles (Cameron Park CSD 2021). Rural community regions are served by the Rolling Hills CSD, Cosumnes River CSD, and Georgetown Divide Recreation District. The U.S. Forest Service, Bureau of Land Management, California Department of Parks and Recreation, California Tahoe Conservancy, and the El Dorado Irrigation District also owns and manages recreational opportunities within the county.

In 2012, the El Dorado County Parks, Trails, and River Management Division approved the El Dorado County Parks and Trails Master Plan (Master Plan) to provide guidance for County area parks and recreation, with consideration of existing and future parkland needs. The Master Plan contains a detailed inventory of all parklands within the county, assesses the condition of parks and recreation facilities, and determines community needs and potential opportunities for development projects. The Master Plan also outlines the variable population growth in the county between urban community regions and more rural areas and notes the distribution of park facilities should have some correlation to the population and needs of the residents intended to be served by the facilities (El Dorado County 2012).

The project site lies outside the boundaries, but within the sphere of influence, of the El Dorado Hills CSD. The closest public park to the project site is Valley View Sports Park owned by El Dorado Hills CSD, located approximately 1.5 miles northwest of the project site.

The County uses a standard of 1.5 acres per 1,000 residents for regional and community parks, and a standard of 2 acres per 1,000 residents for the acquisition and development of neighborhood parks and facilities.

Neighborhood Parks

Neighborhood parks provide recreation opportunities within a half mile of residential areas and typically include play fields, paved areas for court games (e.g., basketball), Americans with Disabilities (ADA) accessible walkways, sitting areas, and shaded picnic areas. According to the County General Plan, the desirable acreage for a

neighborhood park is approximately 2 to 10 acres in size and may include a playground, tot lot, turf areas, and picnic facilities. If adjacent to other parkland, natural areas, schools, or greenways, a smaller acreage may be acceptable. Bradford Park is the only County-operated neighborhood park and is located in Shingle Springs. However, El Dorado Hills CSD owns and operates 13 neighborhood parks in El Dorado Hills and has proposed an additional three new parks (El Dorado Hills CSD 2021).

Community Parks

Community parks provide opportunities for larger community-wide activities and facilities, with a balance between sports facilities/fields and community activity areas. They may include sports fields and courts, picnic facilities, play areas, a swimming pool, and a community center. Access to a community trail system is also desirable. According to the General Plan, the desirable acreage for a community park is between 10 and 44 or more acres. The County currently owns 99 acres of community park land but only 73 acres have been improved (El Dorado County 2012). However, the recently approved Diamond Springs Community Park Project will develop approximately 40 acres in the Diamond Springs area for a community park. El Dorado Hills CSD operates six community parks and has proposed one new community park, Valley View Specific Plan Community Park (El Dorado Hills CSD 2024).

Regional Parks

Regional parks and recreation facilities incorporate open space and typically have unique or special features that may attract visitation from outside of the county. Facilities may include all those found at neighborhood and community parks, as well as special use facilities such as amphitheaters, trails, campgrounds, and interpretive centers. The desirable acreage ranges from 30 to 10,000 acres with the preferred size being several hundred acres. There are 57 acres of developed regional parks in the county, and an additional 115 acres of undeveloped regional park land. El Dorado Hills CSD has an additional 207 acres of regional parks (El Dorado Hills CSD 2021). Notable regional parks within the vicinity of the project site include El Dorado Fairgrounds, Deer Creek Hills, Folsom Lake State Recreation Area, Bass Lake Regional Park, and El Dorado Hills Community Park.

Special Purpose Parks

Special purpose parks are intended to serve a more focused purpose or community need. These include festival areas, fairgrounds, dog parks, and horticulture centers. Because these parks vary greatly in service and nature, they do not have defined or ideal characteristics, and do not have an identified level of service.

3.11.2 Regulatory Setting

Federal Regulations

National Fire Protection Association

The National Fire Protection Association publishes a number of standards that are useful to the El Dorado County Fire Department and EDH Fire, including:

> **NFPA 1710:** Provides standards for response time; including a call processing time of 60 seconds; a personnel turnout time of 60 seconds for medical, and one minute twenty seconds for fires; and a travel time of 4 minutes (240 seconds). This equates to a 6 minute 20 second response time standard for fire calls.

State Regulations

There are no state law enforcement regulations or policies adopted by the County that would be applicable to the proposed project.

Fire Protection

Uniform Fire Code

The Uniform Fire Code (UFC) provides regulations relating to construction, maintenance, and use of buildings. Topics addressed in the UFC include fire department access, fire hydrants, automatic storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The code contains specialized technical regulations relation contains specialized technical regulations related to fire and life safety.

California Building Code

The State provides a minimum standard for building design through the California Building Code (CBC), which is in Part 2 of Title 24 of the California Code of Regulations. The CBC is based on the International Building Code but has been modified for California conditions. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan checked by local building officials for compliance with the CBC. Typical fire safety requirements of the CBC include the installation of sprinklers in all commercial and residential buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

California Fire Code

California Code of Regulations, Title 24, Part 9, incorporates adoption of the 2015 International Fire Code of the International Code Council with necessary California amendments. The California Fire Code and Office of the State Fire Marshal provides regulations and guidance for local agencies in the development and enforcement of fire safety standards. The California Fire Code also establishes minimum requirements that would provide a reasonable degree of safety from fire, panic, and explosion. The California Fire Code applies to construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure within the State of California. The California Fire Code includes a mandate for automatic sprinkler systems in new buildings and structures, including floors of buildings where the fire area exceeds 5,000 square feet, has an occupant load of 100 or more, or is located on a floor other than the level of exit discharge[1] (Cal. Code Regs. tit. 24 Part 9).

California Health and Safety Code

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code. This includes regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

[1] Exit discharge refers to the part of the exit route that leads directly outside.

California Residential Code

The California Residential Code (CRC) establishes minimum requirements to ensure the health, safety, and general welfare of the public. The CRC covers several aspects including structural strength, egress, stability, accessibility, lighting and ventilation, emergency response, and fire and hazard safety. Section R313.2 of the CRC specifically sets forth the requirement for automatic residential fire sprinkler systems in newly constructed one- and two-family dwellings. Development would be required to comply with CRC.

Emergency Response/Evacuation Plans

The state of California passed legislation authorizing the Office of Emergency Services (OES) to prepare a Standard Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS could result in the state withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster. The County has Evacuation Plans that are currently not available for public review.

California Occupational Safety and Health Administration

In accordance with California Code of Regulations, Title 8, Sections 1270 “Fire Prevention” and 6773 “Fire Protection and Fire Equipment,” the California Occupational Safety and Health Administration has established minimum standards for fire suppression and emergency medical services. The standards include guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance and use of all firefighting and emergency medical equipment.

Schools

Leroy F. Greene School Facilities Act (SB 50)

According to California Government Code, a qualified agency, such as a local school district, may impose fees on new residential and commercial construction to compensate for the impact that a project will have on existing school facilities or services. The California Legislature passed Senate Bill (SB) 50 in 1998 to insert new language into Government Code Sections 65995.5-65985.7, which authorized school districts to impose fees on new residential and commercial construction in excess of mitigation fees authorized by Government Code Section 66000. The passage of SB 50 eliminated the ability of cities and counties to require full mitigation of school impacts and replaced it with the ability for school districts to assess fees directly to offset the costs associated with increasing school capacity as a result of new development. The old “Stirling” fees were incorporated into SB 50 and are referred to as Level 1 fees. School districts must meet a list of specific criteria, including the completion and annual update of a School Facility Needs Analysis, in order to impose additional fees under the Government Code. Under the terms of this statute, payment of statutory fees is considered to mitigate in full for the purposes of CEQA for any impacts to school facilities associated with a qualifying project. SB 50 thus limits the type of impacts analyzed in an EIR and excuses consideration of or mitigation for any adverse physical changes to the school grounds and school buildings and “any school-related consideration relating to a school district's ability to accommodate enrollment.” These fees are currently capped at approximately $3.79 per square foot for new residential development and approximately $0.61 per square foot for commercial and industrial (nonresidential) development and age-restricted senior housing. Districts meeting certain criteria may collect Level 2 fees as an alternative to Level 1 fees.

Level 2 fees are calculated under a formula provided in SB 50. Level 3 fees are approximately double Level 2 fees and are implemented only when the State Allocation Board is not apportioning state bond funds. The passage of Proposition 1D on November 7, 2006, precludes the implementation of Level 3 fees for the foreseeable future. Although SB 50 states that payment of developer fees are "deemed to be complete and full mitigation" of the impacts of new development, fees and state funding do not necessarily fully fund new school facilities. Nonetheless, state law precludes imposition of mitigation to account for any actual or perceived shortfall. Both EDUHSD and LSD currently levy development impact fees on development within the district's boundaries consistent with SB 50. Currently, the fees collected by LSD are approximately $5.17 per square foot of residential space and $0.84 per square foot of commercial space (LSD 2024a). The EDUHSD fee is approximately $1.87 per square foot of residential and $0.30 per square foot of commercial (EDUHSD 2022).

Parks and Recreation

California Government Code Section 66477 (The Quimby Act)

Cities and counties have been authorized since the passage of the 1975 Quimby Act (California Government Code, Section 66477) to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. The goal of the Quimby Act is to require developers to help mitigate the impacts of property improvements. The Quimby Act preserves open space and parkland in urbanizing areas of the state by authorizing local governments to establish ordinances that require private developers of new subdivisions to dedicate land for parks, pay an in-lieu fee, or a combination of the two. Originally, the Quimby Act was designed to ensure "adequate" open space acreage in jurisdictions adopting Quimby Act standards (i.e., 3 to 5 acres per 1,000 residents). The Act requires that standards for recreational facilities be adopted in the local general plan recreation element if a parkland dedication/fee ordinance is to be enacted. The County has established through its General Plan a standard of 2 acres of neighborhood parkland, 1.5 acres of community parkland, and 1.5 acres of regional parks per 1,000 residents.

Local Regulations

El Dorado County Code

Chapter 8.08 (Fire Prevention) of the El Dorado County Code specifies limits on campfires, fireworks, smoking, and incinerators that would apply during project construction and operations. Chapter 8.09 (Vegetation Management and Defensible Space) of Title 8 of the County Code requires the removal or abatement of all hazardous vegetation and combustible material that constitutes a fire hazard which may endanger or damage neighboring property and describes the means of enforcement.

Sec. 8.09.070. - Duty to remove and abate hazardous vegetation and combustible material.

A. It shall be the duty of every owner, occupant, and person in control of any parcel of land or interest therein, which is located within the County to remove, or abate, all hazardous vegetation and combustible material, which constitutes a fire hazard and may endanger or damage neighboring property.
B. The owner, lessee or occupant of buildings, grounds, or lots within the County shall remove from such property and adjacent streets all waste, garbage, rubbish, weeds, hazardous vegetation or other combustible materials growing or accumulated thereon in accordance with the procedures and methods prescribed in this chapter and by the Enforcement Official.

D. Any home owners association (HOA), lighting and landscape district, subdivision development, special district, or other entity that has a developed and approved Wildland Fire Safe Plan in accordance with the County's General Plan requirement and CFC Chapter 49, shall be granted a reasonable amount of time to comply with this ordinance not to exceed five years from the date which this ordinance was approved and ratified by the Board of Supervisors (May 30, 2019).

E. Prior to the close of any real estate sales transaction within the County, the requirements for property owners to comply with the Vegetation Management Ordinance shall be disclosed to all potential property owners.

F. All improved parcels, shall comply with the following requirements including: the maintenance of defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line, minimization of erosion, written consent by adjacent landowners for clearance on adjacent property, removal of tree portions that extend within ten feet of chimney outlets or stovepipes, maintenance of trees, shrubs, or other plants adjacent to or overhanging a building free of dead or dying wood. Also stated is that a person is not required under this section to manage fuels on land if that person does not have the legal right to manage fuels and the public and entities should be aware of rare plants areas, riparian areas, and raptor nesting trees on the property and try to avoid these sites. Furthermore, cultivated and useful grasses and pastures shall not be considered a public nuisance. However, if the County's Enforcement Official determines it necessary to protect adjacent improved property from fire exposure, an adequate firebreak may be required.

El Dorado County General Plan

The following goals, objectives, and policies in the El Dorado County General Plan (last amended 2019) related to public services and parks and recreation are included in the Public Services and Utilities Element of the General Plan (El Dorado County 2019) and are applicable to the proposed project.

Goal 5.1: Provide and maintain a system of safe, adequate, and cost-effective public utilities and services; maintain an adequate level of service to existing development while allowing for additional growth in an efficient manner; and, ensure a safe and adequate water supply, wastewater disposal, and appropriate public services for rural areas.

Objective 5.1.2: Ensure through consultation with responsible service and utility purveyors that adequate public services and utilities, including water supply, wastewater treatment and disposal, solid waste disposal capacity, storm drainage, fire protection, police protection, and ambulance service are provided concurrent with discretionary development or through other mitigation measures provided, and ensure that adequate school facilities are provided concurrent with discretionary development to the maximum extent permitted by State law. It shall be the policy of the County to cooperate with responsible service and utility purveyors in ensuring the adequate provision of service. Absent evidence beyond a reasonable doubt, the County will rely on the information received from such purveyors and shall not substitute its judgment for that of the responsible purveyors on questions of capacity or levels of service.

Policy 5.1.2.1: Prior to the approval of any discretionary development, the approving authority shall make a determination of the adequacy of the public services and utilities to be impacted by that development. Where, according to the purveyor responsible for the service or utility as provided in Table 5-1 (renumbered as Table 3.11-3), demand is determined to exceed capacity, the approval of the development shall be conditioned to

require expansion of the impacted facility or service to be available concurrent with the demand, mitigated, or a finding made that a CIP project is funded and authorized which will increase service capacity.

Table 3.11-3. Minimum Levels of Service

	Community Region	Rural Center and Rural Region
Public water source	As determined by purveyor	As determined by purveyor, when applicable
Private wells	Environmental Management	Environmental Management
Public sewer treatment capacity	As determined by purveyor	As determined by purveyor
Public sewer treatment capacity	As determined by purveyor	As determined by purveyor
On-site sewage disposal	Environmental Management	Environmental Management
Storm Drainage	Department of Transportation	Department of Transportation
Solid Waste	Environmental Management	Environmental Management
County and State road circulation system	LOS E	LOS D
Schools	As determined appropriate by the school districts	As determined appropriate by the school districts
Parks	Specific plan for new communities or Quimby Fee/dedication program for tentative maps	Quimby Fee/dedication program for tentative maps
Fire district response	8-minute response to 80% of the population	15 to 45-minute response
Sheriff	8-minute response to 80% of the population	No standard
Ambulance	10-minute response to 80% of the population	20-minute response in Rural Regions and “as quickly as possible” in wilderness areas*

* In accordance with State standards

Policy 5.1.2.2: Provision of public services to new discretionary development shall not result in a reduction of service below minimum established standards to current users, pursuant to Table 5-1.

Policy 5.1.2.3: New development shall be required to pay its proportionate share of the costs of infrastructure improvements required to serve the project to the extent permitted by State law. Lack of available public or private services or adequate infrastructure to serve the project which cannot be satisfactorily mitigated shall be grounds for denial of any project or cause for the reduction of size, density, and/or intensity otherwise indicated on the General Plan land use map to the extent allowed by State law.

Policy 5.1.2.4: Service standards for public services and emergency services in Rural Centers and Rural Regions are different than in Community Regions based on lower intensity and density of land use.

Goal 5.7: Adequate and comprehensive emergency services, including fire protection, law enforcement, and emergency medical services.

Objective 5.7.1: Ensure sufficient emergency water supply, storage, and conveyance facilities are available, and that adequate access is provided for, concurrent with development.

Policy 5.7.1.1: Prior to approval of new development, the applicant will be required to demonstrate that adequate emergency water supply, storage, conveyance facilities, and access for fire protection either are or will be provided concurrent with development.

Objective 5.7.2: Sufficient emergency water supply, storage, and conveyance facilities for fire protection, together with adequate access are available, or are provided for, concurrent with development.

Policy 5.7.2.1: Prior to approval of new development, the responsible fire protection district shall be requested to review all applications to determine the ability of the district to provide protection services. The ability to provide fire protection to existing development shall not be reduced below acceptable levels as a consequence of new development. Recommendations such as the need for additional equipment, facilities, and adequate access may be incorporated as conditions of approval.

Objective 5.7.3: An adequate, comprehensive, coordinated law enforcement system consistent with the needs of the community.

Policy 5.7.3.1: Prior to approval of new development, the Sheriff's Department shall be requested to review all applications to determine the ability of the department to provide protection services. The ability to provide protection to existing development shall not be reduced below acceptable levels as a consequence of new development. Recommendations such as the need for additional equipment, facilities, and adequate access may be incorporated as conditions of approval.

Objective 5.7.4: Adequate medical emergency services available to serve existing and new development recognizing that levels of service may differ between Community Regions, and Rural Centers and Regions.

Policy 5.7.4.1: Prior to approval of new development, the applicant shall be required to demonstrate that adequate medical emergency services are available and that adequate emergency vehicle access will be provided concurrent with development.

Policy 5.7.4.2: Prior to approval of new development, the Emergency Medical Services Agency shall be requested to review all applications to determine the ability of the department to provide protection services. The ability to provide protection to existing development shall not be reduced below acceptable levels as a consequence of new development. Recommendations such as the need for additional equipment, facilities, and adequate access may be incorporated as conditions of approval.

Goal 9.1: Provide adequate recreation opportunities and facilities including developed regional and community parks, trails, and resource-based recreation areas for the health and welfare of all residents and visitors of El Dorado County.

Objective 9.1.1: The County shall assume primary responsibility for the acquisition and development of regional parks and assist in the acquisition and development of neighborhood and community parks to serve County residents and visitors.

Policy 9.1.1.1: The County shall assist in the development of regional, community, and neighborhood parks, ensure a diverse range of recreational opportunities at a regional, community, and neighborhood level, and provide park design guidelines and development standards for park development. The following national standards in the table below shall be used as guidelines for the acquisition and development of park facilities. The parkland dedication/in-lieu fees shall be directed towards the purchase and funding of neighborhood and community parks.

Policy 9.1.1.2: Neighborhood parks shall be primarily focused on serving walk-to or bike to recreation needs. When possible, neighborhood parks should be adjacent to schools. Neighborhood parks are generally 2 to 10 acres in size and may include a playground, tot lot, turf areas, and picnic facilities.

Policy 9.1.1.3: Community parks and recreation facilities shall provide a focal point and gathering place for the larger community. Community parks are generally 10 to 44 acres in size, are for use by all sectors and age groups, and may include multi-purpose fields, ball fields, group picnic areas, playground, tot lot, multi-purpose hardcourts, swimming pool, tennis courts, and a community center.

Policy 9.1.1.4: Regional parks and recreation facilities shall incorporate natural resources such as lakes and creeks and serve a region involving more than one community. Regional parks generally range in size from 30 to 10,000 acres with the preferred size being several hundred acres. Facilities may include multi-purpose fields, ball fields, group picnic areas, playgrounds, swimming facilities, amphitheaters, tennis courts, multi-purpose hardcourts, shooting sports facilities, concessionaire facilities, trails, nature interpretive centers, campgrounds, natural or historic points of interest, and community multi-purpose centers.

Policy 9.1.1.5: Parkland dedicated under the Quimby Act must be suitable for active recreation uses and:

a) Shall have a maximum average slope of 10 percent;
b) Shall have sufficient access for a community or neighborhood park; and
c) Shall not contain significant constraints that would render the site unsuitable for development.

Objective 9.1.2: Provide for a County-wide, non-motorized, multi-purpose trail system and trail linkages to existing and proposed local, State, and Federal trail systems. The County will actively seek to establish trail linkages between schools, parks, residential, commercial, and industrial uses and to coordinate this non-motorized system with the vehicular circulation system.

Policy 9.1.2.5: All discretionary applications may be conditioned to provide an irrevocable offer of a trail easement dedication and construction of trails as designated on the Trails Master Plan provided it can be shown that such trails will serve as loops and/or links to designated or existing trails, existing or proposed schools, public parks and open space areas, and existing or proposed public transit nodes (e.g., bus stops, park and ride lots). Parkland dedication credit shall be given where applicable for provision of land and trail improvements that aid in implementing the Trails Master Plan.

Objective 9.1.3: Incorporate parks and non-motorized trails into urban and rural areas to promote the scenic, economic, and social importance of recreation and open space areas.

Policy 9.1.3.3: Coordinate with Federal, State, other agencies, and private landholders to provide public access to recreational resources, including rivers, lakes, and public lands.

Objective 9.2.2: Land dedicated to the County under the Quimby Act and Quimby in-lieu fees shall continue to be used primarily to meet neighborhood park needs but may assist in meeting the community park standards as well.

El Dorado County School Impact Fees

The LSD and the EDUHSD collect development fees to mitigate the impact of new development on school facilities. The LSD fee is approximately $5.17 per square foot of residential and $0.84 per square foot of commercial (LSD 2024a). The EDUHSD fee is approximately $1.87 per square foot of residential and $0.30 per square foot of commercial (EDUHSD 2022).

El Dorado County Local Hazard Mitigation Plan

The El Dorado County Sheriff Office of Emergency Services develop the Local Hazard Mitigation Plan, which provides guidance and protocols for the County's response to extraordinary large-scale emergency situations, including wildland fire. Numerous local, state, and federal agencies, as well as private businesses and nonprofit organizations, would be involved in the response to wildland fires, including the local fire protection districts, CAL FIRE, U.S. Forest Service, and law enforcement agencies.

El Dorado Hills Fire Department Development Fees

EDH Fire collects development fees to mitigate the impact of new development on fire services and associated facility and equipment needs. This fee is approximately $1.18 per square foot of residential single family, $1.93 per square foot of residential multi-family, and $1.99 per square foot of retail/commercial building area (Resolution No. 171-2022; El Dorado County 2021b).

3.11.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or need for new or physically altered governmental facilities, the construction of which would cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
  - Fire protection
  - Police protection
  - Schools
  - Parks
  - Other Public Facilities
- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreation facilities which might have an adverse physical effect on the environment.

3.11.4 Impacts and Mitigation Measures

Methodology

Evaluation of potential impacts to public services and recreation are based on a review of studies pertaining to the project site and/or to specific services, including annual reports and current data from EDH Fire and the County Sheriff and the El Dorado County General Plan. The need for new or expanded public services or recreation facilities, and the potential for degradation of existing recreational resources, and the related physical impacts that could occur are analyzed qualitatively. The analysis also assumes that the proposed project would be consistent with the County's General Plan goals and policies, emergency evacuation plans, the California Fire Code, the Leroy F. Greene School Facilities Act, and other applicable regulations; therefore, compliance with policies and regulations would not specifically be identified as mitigation but are discussed in the impact analysis below.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1,8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. Where applicable, the impact analysis below indicates if a proposed option would result in a change in impact significance or require new mitigation. Under the Active Adult option there would be a reduction in the number of conventional homes which would reduce the number of students and need for parkland, as discussed below. It is anticipated impacts to other services would be the same or similar to the proposed project.

Schools

To determine the proposed project's impact on school facilities, student yield rates for TK through third grade and grades 4 through 8 were obtained from the LSD 2024 Student Generation Rate Analysis (LSD 2024b), high school students were obtained from the EDUHSD Demographic and Enrollment Projections report (2022-2023), shown in Table 3.11-4. Based on these generation rates and the proposed 918 residential units, this analysis estimates that the proposed project would generate approximately 191 elementary school students (TK-3), 295 middle school students (4-8), and 117 high school students (9-12) at full buildout (see Table 3.11-5). This would result in a total of 603 students. Under the Active Adult option this would be reduced to a total of 99 students.

Table 3.11-4. Student Yield/Generation Rates

School Level	Yield Rate Per Housing Unit
Elementary School (TK-3)	0.208
Junior High School (4-8)	0.321
EDUHSD (9-12)	0.1279

Source: EDUHSD 2022; LSD 2024b.
Note: The yield rate used for new construction eligibility determination in the state building program is 0.20 students per home for 9-12 districts. The yield rate in the El Dorado Union High School District is lower than the state average.

Table 3.11-5. Student Generation

School Level	Proposed Project Student Generation	Active Adult Student Generation
Elementary School (TK-3)	191	31
Junior High School (4-8)	295	48
High School (9-12)	117	19
Total	**603**	**99**

Source: Data compiled by Dudek in 2023.

Under SB 50, new residential development must pay fees toward school facilities, and the Legislature has mandated that payment of applicable development fees is adequate to result in a less-than-significant impact on schools, even if the collected fees are not adequate to fully fund school facilities.

Parks and Recreation

To determine potential impacts to parks, the County has established through its General Plan a standard of 5 acres of parkland per 1,000 residents, divided into 2 acres of neighborhood parks, 1.5 acres of community parks, and 1.5 acres of regional parks. El Dorado County Code Section 120.12.090 provides the population density of 2.8 persons per household (PPH) for determining the parkland dedication requirements. Using the 2.8 PPH established by the County, the project would include a total of 2,570 new residents at buildout applicable to land dedication. Using the County's ratio of 5 acres of parkland per 1,000 residents, the proposed project would require a total of 12.9 acres of parks.

Project Impacts

Impact 3.11-1. The proposed project would not result in impacts associated with the construction of new or expanded fire or police facilities.

Fire Protection

At full buildout it is estimated the proposed project would generate a population of approximately 2,314 people resulting in an increase in demand for fire protection services, including emergency medical services. No new fire protection facilities or emergency medical response services are proposed within the project site. The project site is served by EDH Fire and the nearest station, Fire Station 87, is within 1.5 miles of the project site. This station is staffed with 20 fire personnel and 7 pieces of equipment, including three engines, one utility truck, and one patrol truck. The General Plan includes Policy 5.1.2.1 which establishes a response time goal of responding to calls within 8 minutes. Due to the proximity of Fire Station 87 to the project site fire personnel would be able to access the site

within the 8-minute General Plan response time and 6-minute NFPA standard. In the event additional fire protection resources are required fire stations 85, 86 and 91 are within 6 miles of the project site. In addition, mutual aid agreements and shared service agreements are in place between the Fire Department and neighboring fire protection districts which would allow these districts to respond to calls within EDH Fire's service area, including the proposed project site. Although any fire protection district in the county is able to respond to calls for service in EDH Fire's service area, the neighboring Rescue Fire Protection District and the Latrobe Fire Protection District would be most likely to aid EDH Fire in the event their services are needed.

The proposed project would be designed in accordance to state and local fire and building requirements, which include site plan review by EDH Fire, payment of county development fees to mitigate fire facility and equipment impacts from new development, and state fire codes that require smoke detectors, sprinklers, building and emergency access, and hydrant sizing, pressure and siting. Fire protection services are funded through revenue from development fees and property taxes and the EDH Fire impact fees are adopted and the fees set to fund the construction or purchase of public facilities and equipment necessary to mitigate the impacts of development on EDH Fire's ability to provide public services (El Dorado County 2021b Resolution No. 171-2022; EDH Fire 2017).

Active Adult Option

While the Active Adult option would primarily have residents 55 years of age and older, it is unlikely the residents would have an increased need for emergency services as compared to more elderly, non-ambulatory residents unable to live independently. In contrast to an assisted living situation, the Active Adult option is anticipated to attract residents who are still working or in early retirement looking for an active, independent living community. Even assuming increased calls for emergency services may be required as the community residents age, as discussed in Section 3.9, Land Use, Population and Housing, the Active Adult option would result in approximately 33.5% fewer residents than the proposed project. The reduced population would likely correlate with a reduced demand for emergency, fire and police services and account for any perceived increase in services related to the age of the residents. Overall, the Active Adult option would have fewer residents than the proposed project and would not serve a non-ambulatory population that would be likely to require greater emergency services.

The proposed project as well as the Active Adult option would not require the expansion of Fire Station 87 or the need to construct a new fire station to serve the increase in demand for fire protection services because adequate fire personnel and equipment is available to serve the project. Should an emergency or large-scale fire event occur on the proposed project site that would require resources beyond what EDH Fire is able to provide, the shared service agreements maintained with neighboring fire protection districts would ensure that the site receives supplemental personnel and resources to assist. Thus, impacts would be **less than significant** related to adverse physical impacts associated with the need to construct new or physically altered fire protection facilities.

Law Enforcement

According to the State of California Department of Finance population estimates, approximately 74,357 residents lived within the unincorporated areas of the county in January 2023 (DOF 2023). In 2020-2021, the County Sheriff had a total of 392 staff members. As noted in the General Plan EIR, the County Sheriff attempts to maintain a staffing ratio of one deputy per 1,000 residents in the unincorporated areas of the county (El Dorado County 2004b). There are 181 sworn deputies in the Operations Division of the County Sheriff, thereby meeting a staffing goal of one deputy per 1,000 residents (El Dorado County 2021a). The El Dorado Hills substation, located 2.5 miles north, would serve the project site.

At project buildout, the proposed project would include approximately 2,314 new residents. This would be reduced to approximately 1,540 residents under the Active Adult option. According to the County's staffing goal of one deputy per 1,000 residents, the project would require 3 deputies to serve the project and 1.5 deputies under the Active Adult option. The County Sheriff staffing levels indicate that the County has a current ratio of 2.43 deputies per 1,000 residents. The addition of 2,314 new residences at project buildout would slightly lower the County ratio to 2.34 deputies per 1,000 residents. As such, the County Sheriff would not need to hire additional staff to maintain their staffing goal of one deputy per 1,000 residents. Staffing trends and facility needs are analyzed annually in the County Sheriff Annual Report and El Dorado County Recommended Budget and Workplan (El Dorado County 2021c). If necessary, construction of new facilities would be funded through impact fees and property taxes, subject to the provisions of the CBC and other regulations and would undergo CEQA review, if necessary, although construction of new facilities is not anticipated as necessary to serve the project. The revenues and taxes generated from project development would contribute to funding for future facilities and services identified by the County Sheriff as needed for services in the future. While additional patrols may be required to serve the project, it is anticipated that the existing Sheriff's Office facilities are sufficient to serve the proposed project as well as the Active Adult option and the project is not anticipated to require development of new or expanded facilities. Thus, impacts would be **less than significant** related to adverse physical impacts associated with the need to construct new or physically altered law enforcement facilities.

Mitigation Measures

No mitigation measures are required.

Impact 3.11-2. The proposed project would not result in impacts associated with construction of new or expanded schools.

The proposed project would provide for new housing, which would be occupied by families with school-age children. Full buildout of the proposed project is expected in 2030 or later and would include a total of 918 single-family residences. Based on the student generation rates, the proposed project would result in approximately 191 new elementary school students, 295 new middle school students, and 117 new high school students for a total of approximately 603 new students (see Table 3.11-5). Elementary, middle, and high school students generated by the proposed project would likely enroll in the schools incrementally in five phases, concurrent with project development. As shown in Table 3.11-5, the number of students would decrease to a total of approximately 99 under the Active Adult option.

The LSD currently has two schools and has a combined enrollment of 162 students (LSD 2023b). As of the 2022-2023 school year, enrollment in the LSD consisted of 68 students at Latrobe Elementary School and 94 students at Miller's Hill School. No specific information is currently available on the projected enrollment or maximum capacities of the two schools within the LSD. However, given the historical enrollment at these two schools and the LSD's written concerns, it is assumed that the two LSD schools would not be able to fully accommodate new elementary and middle school students from the proposed project, which would generate approximately 191 elementary school students and 295 middle school students upon full buildout. Assuming a 6-year buildout, the project would generate an average of 32 elementary school students and 49 middle school students per year.[2] The addition of 486 new elementary and middle school students would triple the current enrollment at LSD for

[2] The total number of project-generated elementary students and middle school students per year were rounded up (25.5 middle school students per year was rounded to 26 middle school students per year and 10.5 elementary students per year was rounded to 11 elementary school student per year). These totals do not coincide with the number of project-generated students estimated at full buildout.

the 2022-2023 school year. Therefore, it is anticipated that the proposed project would contribute to the need for new or expanded elementary and middle schools, the construction of which could result in impacts to the environment, and any such impacts would be analyzed at the time any such new or expanded elementary or middle school is planned.

Currently, EDUHSD has an enrollment of 6,719 high school students and a maximum capacity of 8,416 students across four comprehensive high schools, a continuation high school, an alternative education high school, and a regional occupation program (EDUHSD 2022). The project site is within the Oak Ridge High School service area which has a maximum capacity of 2,530 students. Oak Ridge High School enrolled 2,517 total students in the 2022-2023 school year. Based on the enrollment data of feeder schools, it is anticipated that enrollment at Oak Ridge High would decrease every year, resulting in 2,143 students by the 2028-2029 school year (EDUHSD 2022). This would result in 387 available classroom seats in the 2028-2029 school year. Thus, it is reasonably anticipated that the addition of 117 high school students from the project at full buildout by 2030 or later would not necessitate any new or expanded school facilities at either Oak Ridge High School or within the EDUHSD. As previously discussed, it is likely that students generated by the proposed project would enroll in schools incrementally as project phases are built out. Assuming a 6-year buildout, the project would generate an average of approximately 19 high school students per year. Given the estimate of 152 available classroom seats in the 2023-2024 school year and an increase in available seats each year thereafter, the incremental increase of high school students from the project would also not require new or expanded school facilities. The 2018 Facilities Master Plan notes that planning for a new high school should begin once the enrollment for the four comprehensive high schools reaches 7,000 students and additional growth is anticipated (EDUHSD 2018). The EDUHSD currently owns two future school sites in the western portion of the district, and one of those parcels is adjacent to the project site. Although the projections indicate a new high school is not needed in the next 10 years, the Master Plan recommends considering student enrollment, existing facilities, and operational costs to determine a feasible projected timeline for construction of the next high school based on current projections and assumptions (EDUHSD 2018).

School districts impose fees on new residential and commercial development to compensate for the impact that a project would have on existing school facilities or services. SB 50, known as the Leroy F. Greene School Facilities Act of 1998, revised Government Code Section 65996(a) to state:

> Notwithstanding Section 65858, or Division 13 (commencing with Section 21000) of the Public Resources Code, or any other provision of state or local law, the following provisions shall be the exclusive methods of considering and mitigating impacts on school facilities that occur or might occur as a result of any legislative or adjudicative act, or both, by any state or local agency involving, but not limited to, the planning, use, or development of real property or any change of governmental organization or reorganization, as defined in Section 56021 or 56073.

Pursuant to SB 50, the project applicant would be required to pay school impact fees, and the Legislature has mandated that payment of applicable development fees is adequate to result in a less-than-significant impact on schools, even if the collected fees are not adequate to fully fund school facilities. Currently, the school development fees are split between EDUHSD and the elementary school districts; 61% of the fees are allocated for elementary school needs and 39% go towards the EDUHSD (LSD 2023a). The district collects Level 1 fees on commercial/industrial projects, senior housing projects, and residential additions consisting of more than 500 square feet. The maximum fee is approximately $5.17 per square foot for residential development and new additions, and $0.84 per square foot of commercial/industrial development (LSD 2024a).

For purposes of CEQA, the proposed project and the Active Adult option would not have an impact associated with the construction of new or expanded school facilities based on Government Code section 65996(a). Nonetheless, the Active Adult option was added in response to capacity concerns from LSD even though those concerns do not constitute an environmental impact under CEQA. The Active Adult option would address LSD's non-CEQA capacity concerns and allow only up to 150 conventional homes to significantly reduce the number of students generated, as shown in Table 3.11-5. Payment of school impact fees would provide funding for new school construction, improvements, and expansion to existing schools. Therefore, even though the proposed project (and the Active Adult option) would contribute to the need for new or expanded elementary and middle schools, payment of the required school impact fees would ensure satisfaction of the Proposition 1A/SB 50 statutory requirements and the impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.11-3. The proposed project would not increase the use of existing neighborhood or regional parks, or other recreational facilities requiring the construction of new parks.

The County has a standard of 5 acres of parkland per 1,000 residents. However, as of the 2012 approval of the County's Parks and Trails Master Plan, County facilities alone did not meet the established parkland standards. The County owns a total of 274 acres of parkland; to meet the parkland standard, the County needs an additional 84 acres of parkland. The El Dorado County Parks and Trails Master Plan contains recommendations to meet existing and future parks/recreation needs, divided by neighborhood, community, and regional parks. However, the Master Plan also notes that a meaningful evaluation of park land deficits does not look just at acres, but also takes into account the location of existing parks, the types of facilities at each park, the area served by the park, and the recreation preferences of the residents who use the park (El Dorado County 2012). While the fact that existing conditions (i.e., existing park acreage) does not meet a Countywide parkland standard does not result in an environmental impact for a proposed project, it does indicate that additional park and recreation facilities may be needed throughout the County to meet the Countywide standard. The project site is also within the Sphere of Influence of the El Dorado Hills CSD. The El Dorado Hills CSD has a separate level of service requirement of 5.0 acres of parks per 1,000 residents. As of the 2021 Parks and Recreation Facilities Master Plan, the El Dorado Hills CSD provided 9.9 acres of parks per 1,000 residents, exceeding the level of service requirement (El Dorado Hills CSD 2021). While the County is below its level of service standard for parks, the area surrounding the project site exceeds the level of service for parks.

The project is providing sufficient parks to meet the County standard and will fulfill its Quimby parkland dedication requirements. Park acreage for the project is included within the project site and thus environmental impacts from development of this park acreage are analyzed in this document. Development projects are also required to pay development impact fees for park facilities on behalf of the County in order to fund the acquisition and development of parks and recreational facilities needed as a result of new development (General Plan Objective 9.2.2).

The proposed project would include 918 single family dwelling units and approximately 2,314 residents. The project includes 13.6 acres of village and neighborhood parks that would provide basic recreational facilities. The project also includes 9.1 acres of open space preserve with approximately 3 acres of public-access trails; and 35.7 acres of open space buffer throughout the project site. The project includes an option to redesignate the 1.8 acres in neighborhood commercial uses to parkland if the County decides neighborhood commercial is not appropriate for the CVSP. If that were to occur the amount of parkland would increase to 15.4 acres.

Based on the County parkland dedication requirements, the project's service population of 2,570 residents and the County's ratio of 5 acres of parkland per 1,000 residents, the project would require 12.9 acres of parks. The project includes 13.6 acres of parkland and 3 acres of publicly accessible trails, exceeding this standard. The total amount of parkland would increase to 15.4 acres if the neighborhood commercial use is not included. Thus, development of the proposed project would accommodate the project's demand for parks and recreational facilities and would not necessitate the construction of new or expanded parks within the County. As noted above, the area surrounding the project site is not deficient in parks even though the County is not meeting its level of service in other areas within the County.

Active Adult Option

With respect to park facilities, the El Dorado Hills CSD Park and Recreation Development Impact Fee Justification Study (EDHCSD 2017) recognizes that age-restricted developments have a reduced population and thus a corresponding reduction in the need for additional park facilities. If annexed into the El Dorado Hills CSD and the Active Adult option is developed, park impact fees would be determined based on the reduced resident-per-unit factor of 1.80 for age-restricted residential units as compared to 3.08 for conventional single family residential units and 2.88 for conventional multi-family residential units. County Code section 120.12.090(A)(9) establishes the population density used to calculate parkland dedication requirements. The County has not adopted a reduced population density to determine Quimby parkland dedication obligations for age-restricted projects and thus parkland dedication requirements would likely be the same as the proposed project if the Active Adult option is developed unless a reduced standard is adopted consistent with the El Dorado Hills CSD park impact fees.

The increase in population associated with the project (or the Active Adult option) would not create a significant impact on County parks outside of the project site such that there would be substantial deterioration or a need for new or expanded parks, as the new parks would be highly accessible for all project residents. With consideration of the above, impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

The cumulative context included in the scope of the cumulative analysis consists of buildout of El Dorado County as discussed in the County's General Plan (El Dorado County 2004) and other cumulative projects described in Chapter 3, Environmental Analysis. The cumulative impact to service providers is further analyzed within the geographic service areas of the Fire Department, County Sheriff, LSD, and EDUHSD. This includes the existing commitments made by service providers in conjunction with past, present, and reasonably foreseeable projects which could contribute to the impacts of the proposed project and create cumulative impacts.

Impact 3.11-4. The proposed project would not result in a cumulatively considerable increase in demand for fire services, police services, schools, or other public facilities resulting in the need to construct new facilities.

Fire Protection

The geographic context of this impact includes the service area boundary of EDH Fire. Cumulative growth within the service area boundaries could result in a need for additional fire protection services to serve new development. Future development in this portion of the county, such as commercial, residential, or industrial projects, would require fire protection services from EDH Fire. The General Plan EIR Impact 5.7-2 noted that in order to meet the response-time goals of fire protection and emergency medical agencies, new facilities would be required, which could result in potential incompatibilities with adjacent land uses (El Dorado County 2004b). However, with the implementation of Mitigation Measures 5.7-2(a) and 5.7-2(b), which restate General Plan policies for designing and locating new facilities in a manner that avoids land use incompatibilities, it was determined that impacts related to new fire facilities would be less than significant. In relation to this impact, Station 87 opened in 2008, which expanded fire protection within the service area. Since adoption of the General Plan, there have been a number of planned projects that would contribute to the need for fire services. As shown in Chapter 3, these additional cumulative projects would result in 5,107 residential units and 60 acres of commercial and industrial uses, which would require fire services. Some of these projects have not yet been approved by the County. Although these projects were not evaluated in the General Plan EIR, they would also be required to comply with General Plan policies, including Policies 2.2.5.21 and 2.2.5.22 restated in Mitigation Measures 5.7-2(a) and 5.7-2(b) to avoid any potential land use compatibilities. Additionally, in accordance with General Plan Policies 5.7.1.1, 5.7.3.1, and 5.7.4.1, the project applicant must obtain review and approval of development plans by emergency service providers to ensure adequate levels of service and access. It should also be noted that fire services are regional and the same stations that would serve the proposed project (Station 87) would not serve all other projects unless additional assistance is needed. Therefore, because all new development in the County must comply with the General Plan policies and because multiple existing facilities serve the existing and project population, there would be **no existing cumulative impact** to which the project could contribute. The project would comply with the applicable General Plan policies and no mitigation measures would be required.

Police Protection

The geographic context of this impact includes the service area boundary of the County Sheriff. Cumulative growth in the County Sheriff service area boundary from buildout of the General Plan and additional cumulative projects (see Chapter 3) would include new residential, commercial, or other projects requiring police protection services. This would incrementally increase the need for new police personnel and new or expanded facilities. The County's General Plan EIR concluded that there would be potential land use incompatibilities resulting from the construction of new police facilities required to serve buildout of the General Plan. However, with the implementation of Mitigation Measures 5.7-2(a) and 5.7-2(b), which restate General Plan policies for designing and locating new facilities in a manner that avoids land use incompatibilities, it was determined that impacts related to new police facilities would be less than significant. Since adoption of the General Plan, there have been a number of planned projects that would contribute to the need for police services. As previously discussed, although these projects were not evaluated in the General Plan EIR, they would also be required to comply with General Plan policies, including Policies 2.2.5.21 and 2.2.5.22 (restated in Mitigation Measures 5.7-2(a) and 5.7-2(b)) to avoid any potential land use compatibilities. Additionally, General Plan Policies 5.1.2.1 through 5.1.2.3 requires new development to contribute its fair share to the cost of police services, ensuring that adequate level of service would be maintained for the new developments. Police services also go through an annual budgeting process during which service levels, staffing trends, and facility needs are analyzed, and funding for additional law enforcement services are then provided through impact fees and property taxes (El Dorado County 2021c). Therefore, because it is assumed that all new projects (including the proposed project and those cumulative projects not included in the General Plan)

would be required to comply with General Plan policies and contribute a fair share to the cost of police services, there is **no existing cumulative impact** to which the project could contribute. The project would comply with the applicable General Plan policies and no mitigation measures would be required.

Schools

The geographic context of this impact includes the service area boundaries of LSD and EDUHSD. The General Plan EIR determined that the projected growth in population under the General Plan would generate the need for new and physically altered school facilities, which could result in a potential incompatibility with adjacent land uses from noise, traffic, access, and other issues, which cannot be fully addressed by General Plan policies. The General Plan EIR therefore concluded that there would be a significant and unavoidable impact resulting from the need for new and expanded schools. Additionally, since adoption of the General Plan there have been several planned projects which would contribute a total of 5,107 new dwelling units in the County. These projects would also contribute to the need for new and expanded schools. Therefore, there is an existing significant cumulative impact regarding the need for new school facilities and the environmental impacts of their construction.

As previously discussed, the project applicant would be required to pay school impact fees, which are considered to be adequate mitigation to address the need for new or expanded school facilities. However, these impact fees do not mitigate a project's indirect environmental impacts related to schools. This Draft EIR has evaluated indirect environmental effects of the proposed project in the various topical sections of Chapter 3. For example, Section 3.10 (Noise) addresses the potential for significant increases in ambient noise levels at existing outdoor areas of schools resulting from project traffic. Section 3.12 (Transportation) addresses project vehicle miles traveled (VMT), which incorporates VMT from new students' trips to and from schools. Therefore, it is assumed that the proposed project's contribution would be less than cumulatively considerable and would result in a **less-than-significant cumulative impact** associated with the provision of new or expanded schools.

Separate from this project, any significant expansion of school facilities or development of new school facilities may result in site-specific impacts (for example, fugitive dust or noise resulting from new school construction) but would be required to comply with applicable regulations, including limiting construction hours in accordance with General Plan Policy 6.5.1.11 and following air district rules for construction. New schools would also be required to comply with Policies 2.2.5.21 and 2.2.5.22 to avoid any potential land use compatibilities.

Mitigation Measures

No mitigation measures are required.

Impact 3.11-5. The proposed project would not result in a cumulatively considerable increase in the use of existing parks or recreational facilities such that substantial deterioration would occur or new/expanded facilities would be required.

The geographic context of this impact includes the County, which is served by the County Parks, Trails, and River Management Division and various CSDs. Cumulative growth in the County from buildout of the General Plan and additional cumulative projects (see Chapter 3) would include new residential developments and other growth-inducing projects that would be served by parks and recreational facilities in the County. This would incrementally increase the use of existing parks and facilities and the need for new or expanded parks and facilities to serve the population. The General Plan EIR determined that compliance with General Plan policies would ensure that the County is able to meet future recreational needs and there is no cumulative impact. The General Plan EIR includes

Mitigation Measure 5.7-5 which restates Policy 9.1.1.8 requiring the County to maintain a Parks Master Plan and Capital Improvement Program, Policy 9.2.2.2 requiring new development projects to provide mechanisms for park maintenance and new facilities, and Policy 9.2.2.5 establishing a development fee program to fund improvements and parkland acquisitions. Additionally, Mitigation Measures 5.7-6(a) and 5.7-6(b) (which restate Policies 2.2.5.21 and 2.2.5.22) would mitigate impacts relating to the potential for land use incompatibilities arising from new or expanded park or recreation facilities. Since adoption of the General Plan, there have been a number of planned projects that would contribute to the demand for parks and recreational facilities. As shown in Chapter 3, these additional cumulative projects would result in 5,107 new residential units which would be served by County parks and recreational facilities. Although these projects were not evaluated in the General Plan EIR, they would also be required to comply with applicable General Plan policies, such as through the payment of development fees. The proposed project includes 13.6 acres of new parks (or 15.4 acres if the 1.8 acres of neighborhood commercial is not adopted as part of the CVSP) which would be maintained by the homeowners' association in compliance with Policy 9.2.2.2, and the project applicant would pay development fees described in Policy 9.2.2.5. Therefore, there is **no existing cumulative impact** to which the project could contribute. The project would comply with the applicable General Plan policies and no mitigation measures would be required.

Mitigation Measures

No mitigation measures are required.

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3.12 Transportation

The following analysis identifies potential impacts related to transportation due to implementation of the proposed Creekside Village Specific Plan (proposed project or CVSP). This section describes the applicable federal, state, and local regulations and policies related to transportation and circulation; discusses the existing roadway network and transportation facilities in the project's study area; and analyzes the potential impacts from implementation of the project on transportation.

Public comments received in response to the November 6, 2020, Notice of Preparation (NOP) are regarding concerns with increased traffic compared to the capacity of Latrobe Road, White Rock Road, Town Center Road and other roadways in the vicinity of the project; a potential increase in school trips; an increase in cumulative traffic due to other projects; potential for an increase in traffic accidents; inadequate pedestrian facilities along Latrobe Road; and a comparison of the project's traffic from residential development to the traffic generation from the site's existing zoning. No additional comments were received at the second scoping meeting held on September 26, 2023. A copy of the NOP and comment letters received are included in Appendix A of this EIR.

The main sources referenced to prepare this section include the Transportation Impact Study (TIS) prepared by T. Kear Transportation Planning & Management, Inc. (February 22, 2024) and the Creekside Village Project Active Adult (Age-Restricted) Housing Option, CEQA VMT Addendum also prepared by T. Kear Transportation Planning & Management, Inc. (June 4, 2024) included as Appendix H. The analysis contained in the TIS was conducted consistent with the California Environmental Quality Act (CEQA) requirements per Senate Bill (SB) 743 and used the metric of vehicle miles traveled (VMT), while an operational or level of service (LOS) analysis was conducted per El Dorado County's (County) General Plan policy and consistency requirements. Other documents used in the preparation of the TIS include the Governor's Office of Planning and Research's[1] (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (2018), and the County's guidelines included in Resolution 141-2020 and 2014 El Dorado County Transportation Impact Study Guidelines (2014). The scope of work for the transportation analysis was prepared in consultation with the County's Public Works Department staff.

Pursuant to Public Resources Code (PRC) Section 21099(b)(2) and CEQA Guidelines Section 15064.3(a), a project's effect on automobile delay and traffic LOS is not considered a significant environmental impact, therefore, further discussion of LOS is not required. Consistency with General Plan policies adopted for the purpose of avoiding or mitigating an environmental effect pursuant to Appendix G of the CEQA Guidelines is required to be evaluated in CEQA documents. Because LOS is not considered an environmental impact under CEQA, consistency with General Plan policies that address LOS are not required to be evaluated. However, a detailed operational analysis of roadway facilities (roadway segments, intersections, and freeway segments) is included in the project's TIS (Appendix H) for informational purposes and General Plan consistency evaluated outside of CEQA.

3.12.1 Environmental Setting

This section provides a summary of the existing street network, including the major roadways serving the project site, the existing transit service, and bicycle and pedestrian facilities in the study area.

[1] Recently renamed to the Governor's Office of Land Use and Climate Innovation.

Vehicle Miles Traveled and Traffic Analysis Zone

CEQA Section 15064.3(a), Purpose, established VMT as the most appropriate measure of evaluating transportation impacts. Subdivision (a) defines VMT as "the amount and distance of automobile travel attributable to a project." The term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. The traffic analysis zones (TAZ) are the spatial unit (or geographical area) within which travel behavior and traffic generation are estimated in a travel demand model. The County uses the El Dorado County travel demand model (TDM). Figure 3.12-1 depicts the TAZs near the CVSP from the County's TDM that have been used in the VMT analysis of the project as discussed in the TIS and summarized below.

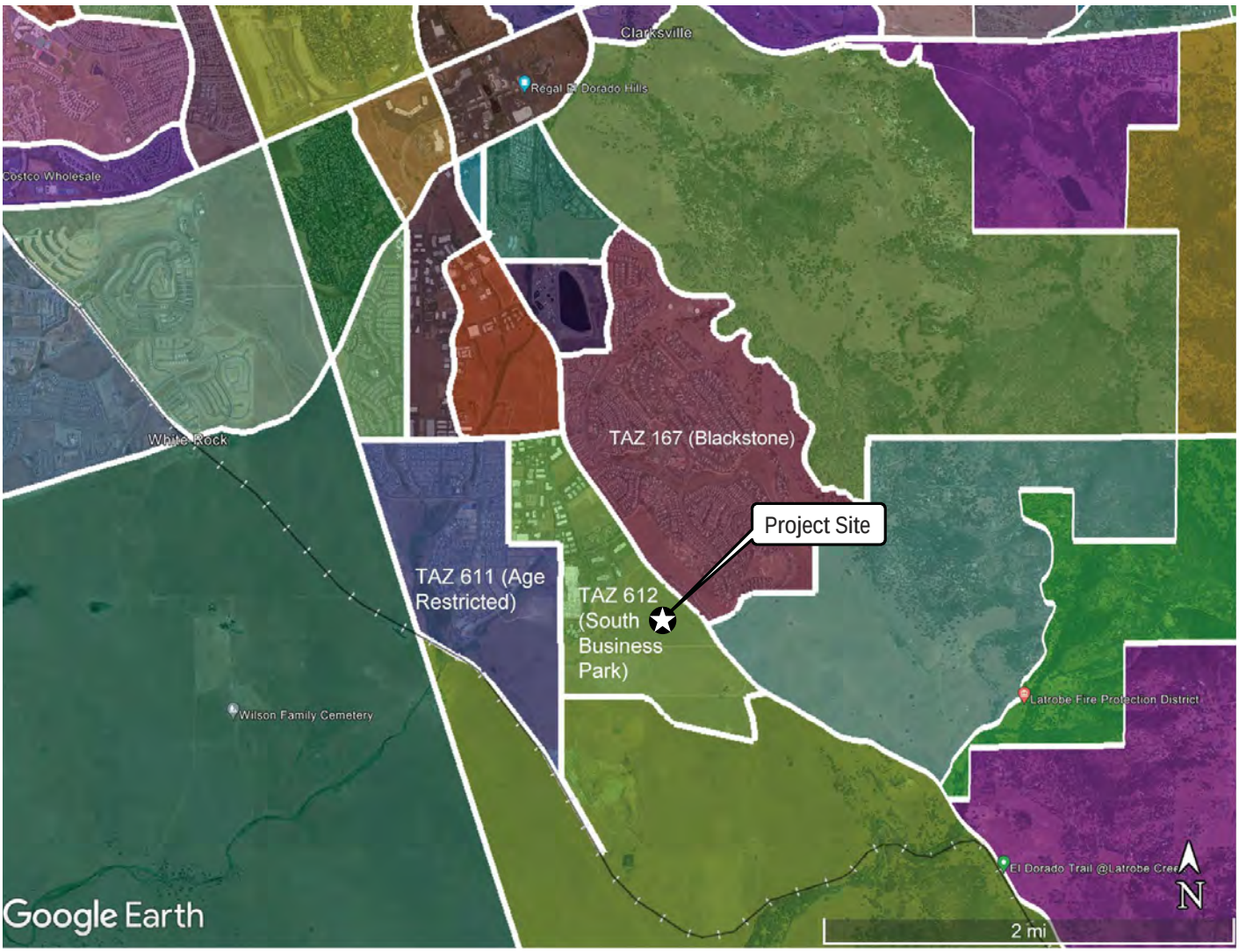
Roadway Network

Regional access to the proposed project would be via U.S. Highway 50 (Highway 50) which is the primary transportation corridor traveling in an east-west direction through the county and serves major population centers, including Sacramento, Folsom, El Dorado Hills, Placerville, and South Lake Tahoe. In the project vicinity, Highway 50 has three lanes in the westbound direction and four lanes in the eastbound with interchanges at El Dorado Boulevard and Silva Valley Parkway. The main arterial, collector, and local roadway network is described below. Figure 3.12-2 illustrates the roadway network and traffic study area analyzed in the project's TIS.

El Dorado Hills Boulevard is a north-south arterial roadway that extends from Green Valley Road on the north side of the town of El Dorado Hills to Highway 50 on the south where it continues as Latrobe Road. North of Green Valley Road it continues as Salmon Falls Road. Between Highway 50 and Saratoga Way, El Dorado Hills Boulevard is a six-lane urban arterial; between Saratoga Way and Serrano Parkway it is a five-lane urban arterial; north of Serrano Parkway it continues as a four-lane urban arterial until Governor Drive, where it transitions to a two-lane urban arterial northward to Green Valley Road. Just north of Highway 50, El Dorado Hills Boulevard carries approximately 28,000 vehicles per day.

Latrobe Road is a north-south arterial roadway that provides a primary connection to Highway 50 for western El Dorado County. It extends from Highway 50, where it continues as El Dorado Hills Boulevard, to State Route 16 (SR-16). Latrobe Road is a six-lane urban arterial road between Highway 50 and White Rock Road, and a four-lane urban arterial road between White Rock Road and Golden Foothill Parkway (south). From Golden Foothill Parkway (south) to Investment Boulevard, it is a two-lane urban road, and then a two-lane rural road south of Investment Boulevard. North of White Rock Road, Latrobe Road carries approximately 32,500 vehicles per day with three through travel lanes in the southbound direction and up to Town Center Boulevard, four northbound lanes in the northbound direction.

Silva Valley Parkway is a north-south roadway that generally runs parallel and to the east of El Dorado Hills Boulevard north of Highway 50. The El Dorado County General Plan identifies Silva Valley Parkway as a four-lane divided road. There is an interchange with Highway 50 at Silva Valley/White Rock Road where Silva Valley Parkway extends north of Highway 50 and White Rock Road extends south of Highway 50. The interchange is located east of Clarksville Road which is a two-lane undivided roadway with bike and pedestrian access. Silva Valley Parkway serves about 17,000 vehicles per day north of Highway 50.



SOURCE: T. Kear Inc. 2024

FIGURE 3.12-1

Traffic Analysis Zone Layout near CVSP

Creekside Village Specific Plan EIR

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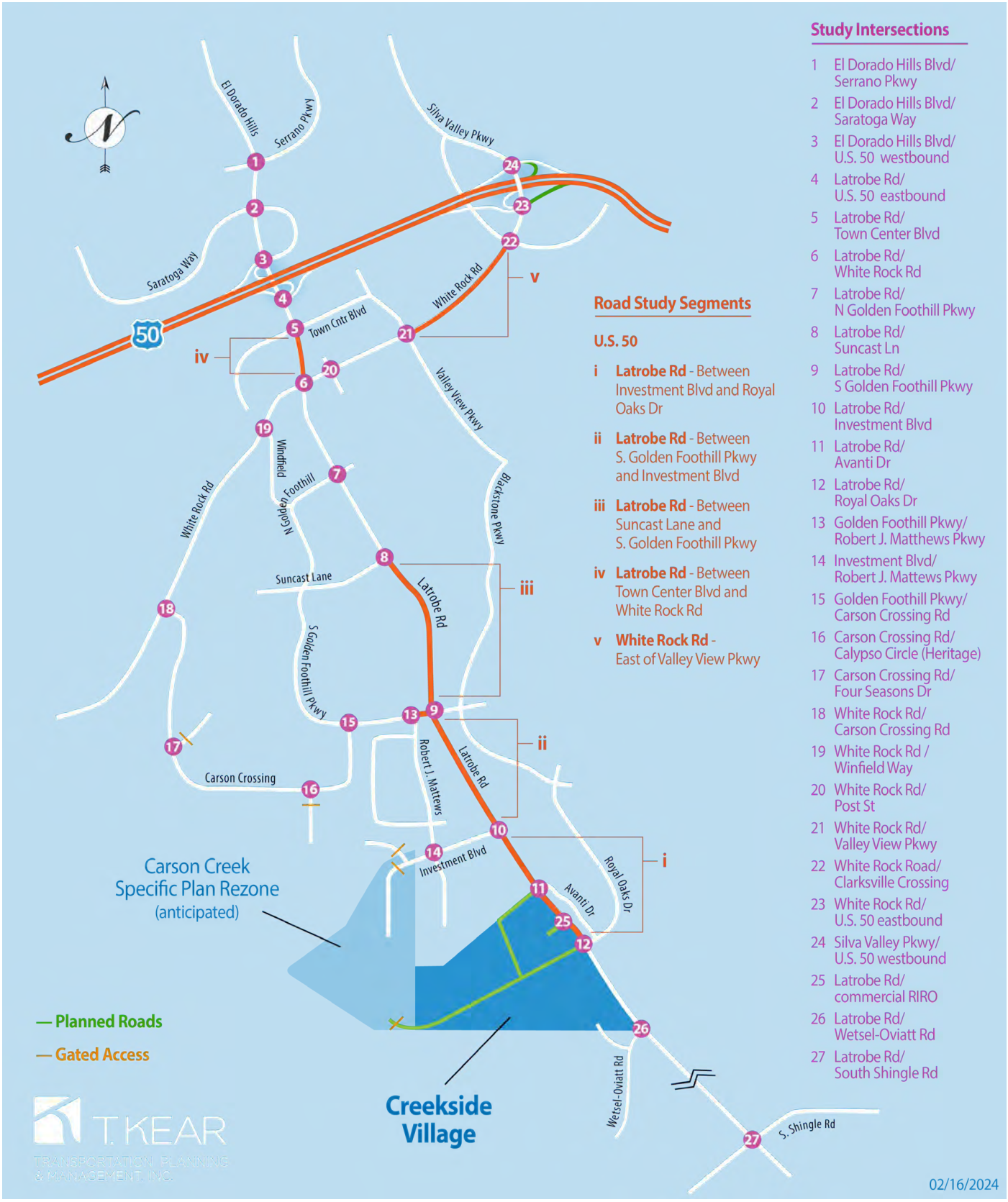

SOURCE: T. Kear Inc. 2024

FIGURE 3.12-2

Roadway Network near CVSP

Creekside Village Specific Plan EIR

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White Rock Road is an east-west arterial that extends through several jurisdictions from Silva Valley Parkway in the County to International Drive in Rancho Cordova. Within the County, it is a two-lane urban arterial road from the Sacramento County – El Dorado County line to Manchester Drive, a four-lane urban arterial between Manchester Drive and Post Street, and a two-lane urban arterial road between Post Street and Silva Valley Parkway. White Rock Road carries approximately 8,000 vehicles per day at the Sacramento County – El Dorado County line and 17,000 vehicles per day just west (south) of the Silva Valley Parkway Interchange.

Investment Boulevard is a two-lane local road, running east-west within the El Dorado Hills Business Park. It connects the eastern edge of the CVSP to Robert J. Mathews Parkway and Latrobe Road. Curb and gutter are provided. There are no bike lanes or sidewalks. Lane widths on Investment Boulevard within the business park are 25 feet.

Robert J. Mathews Parkway is a two-lane local road, running north-south within the El Dorado Hills Business Park. It connects Investment Boulevard to Golden Foothill Parkway on the north. Curb and gutter are provided. There are no bike lanes or sidewalks on either side of the roadway. Lane widths on Robert J. Mathews Parkway within the business park are also 25 feet. The project includes an access connecting to Robert J. Mathews Parkway, to encourage residents to walk and bike to the adjacent schools, gyms, service and retail businesses, employment opportunities, and to minimize local traffic from using Latrobe Road.

Royal Oaks Drive is a two-lane collector road within the Blackstone neighborhood of the Valley View Specific Plan. It provides the southernmost access for Blackstone to Latrobe Road. Royal Oaks Drive includes Class II bike lanes, curb and gutter, and sidewalks fronting developed parcels.

Transit Service

El Dorado Transit is the primary public transit service provider in the County and provides local transit services within and between community areas of the county including Placerville and Cameron Park. Near the proposed project site, El Dorado Transit provides commuter service connecting a park-and-ride lot, located at the intersection of Latrobe Road and White Rock Road, with downtown Sacramento employment centers, and several locations in Folsom including the Iron Point Light Rail Station, Ingersoll Way and Parker Drive, Intel, Kaiser Permanente, and Folsom Lake College. Dial-a-ride services are also provided within many portions of the county, including El Dorado Hills.

Bicycle and Pedestrian Facilities

As described in the El Dorado County Active Transportation Plan (ATP) (2020), the following classes are used to identify bicycle facilities per the California Department of Transportation (Caltrans):

Class I Shared Use Paths are hard-surface routes within an exclusive right-of-way physically separated from vehicular roadways and intended specifically for non-motorized use.

Class II Bike Lanes are marked bicycle lanes within roadways adjacent to the curb lane, delineated by appropriate striping and signage.

Class III Bike Routes are marked by a series of signs designating a preferred route between destinations such as residential neighborhoods and shopping areas. These routes share the right-of-way with on-road vehicles.

Class IV Separated Bikeways are on-street bicycle facilities that are physically separated from motor vehicle traffic by a vertical element or barrier such as a curb, bollards, or parking aisle. They can allow for one- or two-way bicycle travel on one or both sides of the roadway.

There are existing Class II bike lanes along White Rock Road, Silva Valley Parkway, Latrobe Road, Valley View Parkway, and Blackstone Parkway. A Class I bike trail fronts the east side of Latrobe Road within the Valley View Specific Plan area between Royal Oaks Drive and the El Dorado Irrigation water treatment plant (4625 Latrobe Road). A short section of a Class I trail also connects the Carson Crossing Specific Plan area to the El Dorado Hills Business Park.

Because of the rural nature of the county, pedestrian improvements (i.e., sidewalks) are focused near activity centers or in areas with higher volumes of pedestrian activity or within planned developments. Currently, there are no pedestrian facilities along Latrobe Road in the project vicinity with the exception of the Class I bike trail on the east side of the roadway.

Figure 3.12-2 illustrates the existing and proposed bike and pedestrian facilities near the project site.

Accident Summary

A review of collision data along Latrobe Road was performed to disclose the collision history in the vicinity of the project site in response to a concern raised in a NOP comment. Five years of data, from 2018 to 2023, was reviewed from the Statewide Integrated Traffic Records System (SWITRS) GIS Map available from the Transportation Injury Mapping System website. Five accidents were reported in this period near the project site along Latrobe Road between Larkstone Place and Wetsel-Oviatt Road which included vehicles but no pedestrians or bicyclists. The accidents caused non-fatal injuries due to head-on, sideswipe, or broadside collisions due to unsafe speeds and maneuvers.

3.12.2 Regulatory Setting

Federal

There are no federal regulations related to transportation that are directly applicable to the proposed project.

State

California Department of Transportation

Caltrans manages the state's highway facilities and is responsible for constructing, enhancing, and maintaining the state highway and interstate freeway systems. Any change to the state roadway system requires an encroachment permit from Caltrans.

Caltrans Transportation Impact Study Guide, May 20, 2020, provides that Caltrans' primary review focus is VMT, replacing LOS as the metric used in CEQA transportation analyses (Caltrans 2020a). Caltrans recommends use of OPR's recommended thresholds and guidance on methods of VMT assessment found in OPR's Technical Advisory (OPR 2018) for land use projects. In addition to VMT, the 2020 Transportation Impact Study Guide states that it may request a targeted operational and safety analysis to address a specific geometric or operational issue related to the state highway system and connections with the state highway system.

Senate Bill 743

On September 27, 2013, SB 743 was signed into law, which created a process to change the way transportation impacts are analyzed under CEQA. SB 743 required OPR to amend the CEQA Guidelines to provide an alternative to LOS as the metric for evaluating transportation/traffic impacts. Under the new transportation guidelines, LOS or vehicle delay is no longer considered an environmental impact under CEQA. Amendments to the CEQA Guidelines required under SB 743 were approved on December 28, 2018, and were implemented July 1, 2020, and Section 15064.3 was added to the CEQA Guidelines that identifies VMT as the most appropriate measure of analyzing transportation impacts under CEQA. Related legislation, SB 32 (2016) requires California to reduce greenhouse gas emissions 40% below 1990 levels by 2030. The California Air Resources Board has determined that it is not possible to achieve this goal without reducing VMT growth, and specifically, California needs to reduce per capita VMT across all economic sectors. SB 743 is primarily focused on passenger cars and the reduction in per capita VMT as it relates to individual trips.

The OPR Technical Advisory (OPR 2018) provides guidance and tools to properly carry out the principles within SB 743 and how to evaluate transportation impacts in CEQA. The County has adopted VMT thresholds as described in Section 3.12.3.

Local

El Dorado County Resolution 141-2020

In accordance with SB 743, the County Board of Supervisors adopted Resolution No 141-2020 which adopts thresholds of significance for land use projects for the purposes of analyzing transportation impacts under CEQA (El Dorado County 2020); the VMT analysis prepared for the project follows these guidelines for SB 743 compliance. Per the County's guidelines, projects shall analyze VMT metrics when exemption criteria are not met. The County's guidelines and accompanying thresholds are consistent with and rely on the assumptions made within the OPR Technical Advisory guidelines.

CEQA Guidelines Section 15064.3 (b)(1) Criteria for Analyzing Transportation Impacts includes presumptions that certain projects (including residential, retail, office, and mixed-use projects) proposed within one-half mile of an existing major transit stop or along a high-quality transit corridor will have a less-than-significant impact on VMT. If the specified presumption does not apply, VMT should be analyzed through a qualitative or quantitative analysis. The CEQA Guidelines are accompanied by the OPR Technical Advisory, which includes specifications for how to estimate and forecast VMT.

El Dorado County General Plan

The Transportation and Circulation Element of the County's General Plan provides the framework for decisions in the county concerning the countywide transportation system. The system includes facilities for various transportation modes, including roads, transit, non-motorized, rail, and aviation. The Transportation and Circulation Element reflects the urban and rural diversity of the unincorporated areas of the County and establishes standards that guide development of the transportation system, including access to the road and highway system required by new development (El Dorado County 2019). The following goals and policies relevant to the proposed project are identified below.

Transportation and Circulation Element

Goal TC-1: To plan for and provide a unified, coordinated, and cost-efficient countywide road and highway system that ensures the safe, orderly, and efficient movement of people and goods.

Policy TC-1p: The County shall encourage street designs for interior streets within new subdivisions that minimize the intrusion of through traffic on pedestrians and residential uses while providing efficient connections between neighborhoods and communities.

Policy TC-1w: New streets and improvements to existing rural roads necessitated by new development shall be designed to minimize visual impacts, preserve rural character, and ensure neighborhood quality to the extent possible consistent with the needs of emergency access, on street parking, and vehicular and pedestrian safety.

Goal TC-2: To promote a safe and efficient transit system that provides service to all residents, including senior citizens, youths, the disabled, and those without access to automobiles that also helps to reduce congestion, and improves the environment.

Policy TC-2b: The County shall promote transit services where population and employment densities are sufficient to support those transit services, particularly within the western portion of the county and along existing transit corridors in the rural areas.

Policy TC-3d: The County shall encourage new development within Community Regions and Rural Centers to provide appropriate on-site facilities that encourage employees to use alternative transportation modes. The type of facilities may include bicycle parking, shower and locker facilities, and convenient access to transit, depending on the development size and location.

Goal TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.

Policy TC-4a: The County shall implement a system of recreational, commuter, and inter-community bicycle routes in accordance with the County's Bicycle Transportation Plan. The plan should designate bikeways connecting residential areas to retail, entertainment, and employment centers and near major traffic generators such as recreational areas, parks of regional significance, schools, and other major public facilities, and along recreational routes.

Policy TC-4c: The County shall give priority to bikeways that will serve population centers and destinations of greatest demand and to bikeways that close gaps in the existing bikeway system.

Policy TC-4e: The County shall require that rights-of-way or easements be provided for bikeways or trails designated in adopted master plans, as a condition of land development when necessary to mitigate project impact.

Policy TC-4g: The County shall support development of facilities that help link bicycling with other modes of transportation.

Policy TC-4i: Within Community Regions and Rural Centers, all development shall include pedestrian/bike paths connecting to adjacent development and to schools, parks, commercial areas and other facilities where feasible. In Rural Regions, pedestrian/bike paths shall be considered as appropriate.

Goal TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

Policy TC-5a: Sidewalks and curbs shall be required throughout residential subdivisions, including land divisions created through the parcel map process, where any residential lot or parcel size is 10,000 square feet or less.

Policy TC-5c: Roads adjacent to schools or parks shall have curbs and sidewalks.

Goal TC-9: To support the development of complete streets where new or substantially improved roadways shall safely accommodate all users, including bicyclist, pedestrians, transit riders, children, older people, and disabled people, as well as motorist.

Policy TC-9a: Incorporate circulation concepts that accommodate all users in new developments as appropriate.

El Dorado County 2040 Regional Transportation Plan

The El Dorado County 2020-2040 Regional Transportation Plan (RTP) was developed under the direction of the El Dorado County Transportation Commission (EDCTC). The RTP is designed to be a guide for the systematic development of a balanced, comprehensive, multi-modal transportation system. This system includes but is not limited to highways, streets and interregional roadways, public transit, aviation, freight/goods movement, active transportation (bikeways and pedestrian facilities), transportation systems management, and intelligent transportation systems. The RTP is action-oriented and pragmatic, considering both the short-term (up to 10 years) and long-term (10 to 20 year) periods. The El Dorado County RTP also serves as the El Dorado County portion of the Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan (MTP) (EDCTC 2020a).

The goals of the RTP embody a general set of strategies by which EDCTC, working as part of a regional context comprised of the interests of public citizens, local governments, non-profit organizations, and the business community, help the region achieve the desired future. The RTP includes the following relevant goals to the proposed project:

Goal 1: Integrated Land Use, Air Quality, And Transportation Planning. Integrate local and regional land use, air quality, and transportation planning to create a transportation system which supports the needs of the system user, enhances the economy, preserves the environment, and protects the community character.

Goal 2: Sustainability. Encourage sustainable transportation options, embrace new technologies and develop climate adaptation and resiliency strategies.

Goal 3: Highways, Streets, And Regional/Inter-Regional Roadways. Optimize the existing local, interregional and regionally significant roadway system to support improved maintenance, increased throughput, improved safety and multi-modal mobility.

Goal 4: Public Transit. Promote a convenient, desirable, and reliable regional and interregional public transit system for residents and visitors travelling within, to, and beyond the County.

Goal 6: Active Transportation. Promote a safe, convenient, and efficient active transportation system for all users.

El Dorado County Active Transportation Plan

The El Dorado County Active Transportation Plan (ATP) was adopted by the County on February 6, 2020 (EDCTC 2020b). The plan serves as the update to the County's Bicycle Transportation Plan. The ATP outlines the existing conditions and proposed development of a bicycle transportation system in the county, as well as improvements to pedestrian facilities. Planned improvements in the project vicinity include a pedestrian overcrossing of Highway 50 connecting Class 1 bike and pedestrian trails through the Town Center shopping district with bike and pedestrian trails adjacent to the Raley's shopping center north of Highway 50. There are also plans for a Class 1 shared use path along the Placerville & Sacramento Valley Railroad rail line running to the southeast from the City of Folsom and skirting the southwestern edge of the Carson Creek Specific Plan area. The plan demonstrates compliance with the California Streets and Highway Code, enabling the County to be eligible for State Bicycle Transportation Account Funds.

El Dorado County Transportation Impact Fee (TIF) Program

The County uses its Capital Improvement Program (CIP) to identify and prioritize future transportation investments to meet the County's existing and future transportation needs. CIP projects can include roadways, intersections, sidewalks, bicycle lanes, traffic calming treatments, transit service improvement projects, and ongoing administrative costs for transportation monitoring programs, including traffic model update costs, traffic study guideline updates, and updates to the Transportation and Circulation Element to the County's General Plan. Funding for most CIP projects is provided from a variety of sources including state and/or federal grants, and the County's Traffic Impact Fee (TIF) Program. This program is required by General Plan Policy TC-Xb and General Plan policies addressing roadway capacity and levels of service, which are evaluated outside of CEQA. The TIF Program is used to fund needed improvements including roadway widening, new roadways, roadway intersection improvements, and transit to deal with future growth during a defined period of time.

Major updates to the CIP and TIF Program are made by the County at least every five years as required by state law and General Plan policies. The most recent major update to the Western Slope Roadway CIP and TIF Program was completed and certified by the County Board of Supervisors in 2020. The current TIF Program is based on 20 years of growth and TIF Program-funded improvements are part of the CIP. Annual updates have been approved by the Board of Supervisors since 2020 to address inflationary adjustments to project costs based on cost indices as published by the Engineering News Record.

3.12.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

- Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.

The programs, plans, ordinances, and policies listed in Section 3.12.2 are analyzed for their applicability to the proposed project under the first threshold.

VMT Impact Thresholds

The following are the County's thresholds of significance for use as part of the environmental review process under CEQA. Land use specific thresholds have been adopted as follows:

- Residential: 15% below baseline unincorporated countywide VMT per capita.
- Office: 15% below baseline unincorporated countywide VMT per capita.
- Regional Retail: no net increase in VMT.

As noted by the OPR Technical Advisory, adding local-serving retail into the urban fabric improves retail destination proximity. Local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies may presume such development creates a less-than-significant impact.

OPR advises lead agencies to evaluate each component of a mixed-use project independently and apply the significance threshold for each project type included (e.g., residential and retail). Alternatively, a lead agency may consider only the project's dominant use. In the analysis of each use, a project should take credit for internal capture. Combining different land uses and applying one threshold to those land uses may result in an inaccurate impact assessment.

For the proposed project, the residential portion is evaluated based on the 15% reduction from the countywide baseline threshold. The retail portion of the project is considered local-serving retail and presumed to have a less-than-significant impact on VMT.

Hazardous Features (Project Access and Caltrans Facilities Analysis)

Project Access

The project's effect on proposed site access points and on-site circulation is required to be analyzed as part of the CEQA analysis. The project would cause a significant impact if it adds demand to existing roadway facilities that do not meet applicable design standards and creates a potential for a hazardous condition to occur (i.e., impaired sight distance or vehicular queuing).

Caltrans Facilities

Caltrans' Traffic Safety Bulletin 20-02-R1: Interim Local Development Intergovernmental Review Safety Review Practitioners Guidance, December 2020, applies to proposed land use projects and plans affecting the state highway system (Caltrans 2020b). The intent of the Interim Safety Review is to provide an outline for when queuing should be reviewed for traffic safety impacts. A review does not necessitate the need for traffic safety mitigation

but evaluates whether a significant safety impact based on speed differential would occur, and then the significance of that traffic safety impact by the project must be determined on a case-by-case basis.

The Interim Safety Review Guidance realizes the fluid nature of freeway exit ramp queuing, and the difficulty in developing a nexus to any one project. Therefore, no methodology for fair share mitigation, as it relates to freeway exit ramp queuing is provided in the current guidelines.

Emergency Access

The emergency access analysis evaluates whether the project would comply with County's emergency access and/or evacuation requirements including those imposed by the local Fire Department.

Methodology

This section summarizes the methodologies used to perform the project's VMT analysis as required by CEQA. The methodologies described are consistent with OPRs Technical Advisory (OPR 2018), the County's guidelines included in Resolution 141-2020, and the El Dorado County Transportation Impact Study Guidelines (2014).

Project Trip Generation

The project is proposing 918 single family homes which would include 668 low-density residential units and 250 medium-density residential units, and 5,400 square feet of neighborhood commercial uses. The project is proposing 1.8 acres of neighborhood commercial, although there is an option to convert this land to park use as part of the adjacent proposed park if not adopted as part of the CVSP. For the purposes of the transportation analysis and because the neighborhood commercial component would generate greater traffic, development of neighborhood commercial is assumed unless noted. In addition, as described in Chapter 2, Project Description, the project includes a second option that proposes construction of up to 768 age-restricted units and 150 conventional homes. Traffic impacts associated with the Active Adult option were analyzed in the June 4, 2024, *Creekside Village Project Active Adult (Age-Restricted) Housing Option, CEQA VMT Addendum* ("Active Adult Addendum" provided in Appendix H). Where applicable, the impact analysis below indicates if this option would result in a change in impact significance or require new mitigation.

Project trip generation is based on Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021). Traffic generated by the project reflects both trips generated by the project itself, and, avoided trips[2] in 2033 and 2040 from the research and development land uses that the County's TDM assumes would take place on the project site. Avoided trips are additional peak hour trips that the TDM assumes in the future from growth within the project's TAZ.

[2] Avoided trips are additional peak hour trips that the TDM assumes in the future from growth within the project's TAZ. These avoided trips were estimated by running the TDM with and without assumed 2020 through 2040 employment growth for the affected portion of the project's transportation analysis zone (TAZ 612). The project replaces 62% of the available land in TAZ 612, therefore 62% of the employment growth was eliminated from TAZ 612 when estimating the number of avoided trips using the TDM.

Table 3.12-1. Project Trip Generation

Land Use	Quantity	Metric	Daily	AM Peak Hour			PM Peak Hour		
				Total	Inbound	Outbound	Total	Inbound	Outbound
Single Family Detached Housing (ITE Use 210)	918 DU[1]	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	9.43	0.75	26%	74%	0.99	64%	36%
		Trips	8657	689	179	510	909	580	327
Coffee/Donut Shop with Drive-Thru Window (ITE Use 937)	2.4 ksf[2]	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	9.43	0.75	26%	74%	0.99	64%	36%
		Trips	8657	689	179	510	909	580	327
		Pass-by[3]	0	-110	-55	-55	-70	-35	-35
Fast Casual Restaurant (ITE Use 930)	1.5 ksf[2]	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	97.14	5.71	63%	37%	18.57	62%	38%
		Trips	146	9	5	4	28	17	11
		Pass-by[4]	0	0	0	0	-12	-6	-6
High-Turnover (Sit-Down) Restaurant (ITE Use 932)	1.5 ksf[2]	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	107.2	13.68	57%	43%	16.35	51%	49%
		Trips	161	21	12	9	25	13	12
		Pass-by[4]	0	0	0	0	-10	-5	-5
Total Residential Trips			8657	689	179	510	909	582	327
Less 2% Internalization Based on Travel Demand Model			-173	-14	-4	-10	-18	-12	-7
Net New Residential Trips to Assign			*8484*	*675*	*175*	*500*	*891*	*570*	*321*
Total Commercial Trips			1588	163	84	79	66	36	30
Less 2% Internalization Based on Travel Demand Model			-32	-4	-2	-2	-2	-1	-1
Net New Commercial Trips to Assign			*1556*	*159*	*82*	*77*	*64*	*35*	*29*
Total New Project Trips			**10040**	**834**	**257**	**577**	**955**	**605**	**350**
Commercial Pass-by Trips from Latrobe Road (for assignment to commercial driveways)			*0*	*110*	*55*	*55*	*92*	*46*	*46*

Source: Appendix H.
Notes:
1 DU= Dwelling Unit
2 ksf = 1,000 square feet
3 Pass-by trips based on Land Use 934 (Fast Food with Drive-Thru) which has an average 45.4% pass-by rate in the AM and 68% in the PM.
4 Pass-by trips based on Land Use 932 (High-Turnover [Sit-Down] Restaurant) which has an average 43% pass-by rate.

Table 3.12-2. TDM Employment Assumptions and Avoided Trips

Employment	2020	2040 Without Project	2040 With Project	Notes
Retail	224	433	304	Creekside Village is 62% of remaining land in TAZ 612. Housing is assumed to replace 62% of employment growth. (With Project there are 2097 fewer employees.)
Non-Retail	2,115	5,355	3,387	
Total	2,339	5,788	3,691	

Trips	AM	PM	Daily
Avoided Trips			
In	526	311	4,735
Out	207	518	4,680
Total	733	829	9,415
Project Trips			
Total	834	955	10,040
Net New Trips (Project – Avoided)	**101**	**126**	**625**

Source: Appendix H.

As shown in Table 3.12-1, the project's 918 dwelling units and 5,400 square feet (SF) of neighborhood commercial space would generate 10,040 daily trips, 834 AM peak hour trips, and 955 PM peak hour trips. Those trips are largely offset by 2040 through buildout of the El Dorado Hills Business Park and project site with research and development uses consistent with the existing land use designation on the project site which the TDM anticipated would have generated 9,415 daily trips, 733 AM peak hour trips, and 829 PM peak hour trips. Therefore, the project would add 625 net new daily trips, 101 net new AM peak hour trips, and 126 net new PM peak hour trips, in addition to what was assumed in the TDM horizon year of 2040.

Under the Active Adult option age-restricted households generate fewer trips than traditional households. The number of vehicle trips under this option would be reduced to 6,186 daily trips, 526 AM peak hour trips, and 504 PM peak hour trips (Appendix H).

Vehicle Miles Traveled

CEQA Guidelines, Section 15064.3 states that "generally, vehicle miles traveled (VMT) is the most appropriate measure of transportation impacts" and defines VMT as "the amount and distance of automobile travel attributable to a project." "[A]utomobile" refers to on-road passenger vehicles, specifically cars and light trucks. OPR has clarified in the Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018) and recent informational presentations that heavy-duty truck VMT is not required to be included in the estimation of a project's VMT. Other relevant considerations may include the effects of the project on transit and non-motorized travel.

VMT Analysis Approach

Per the County's adopted VMT guidelines, the following projects can screen out of conducting a detailed VMT analysis and are presumed to result in a less-than-significant VMT impact:

A. Projects that generate or attract less than 100 trips per day, consistent with OPR's determination of projects that generate or attract fewer than 110 trips per day and further reduced to 100 to remain consistent with the existing threshold in General Plan Policy TC-Xe[3];
B. Projects that are within one-half mile of either a major transit stop, as defined in Public Resources Code Section 21064.3, or a high-quality transit corridor, as defined in PRC Section 21155; and
C. 100% affordable residential development, including moderate, low, and very low categories as defined in the Regional Housing Needs Assessment (RHNA), consistent with OPR's conclusions in its Technical Advisory.

For projects that do not screen out of conducting a detailed analysis, the County's TDM is used. The County uses the countywide VMT average as the measure of transportation impacts for CEQA compliance.

The project's residential use would not screen out; hence, the County's TDM is used to evaluate the project's VMT. Therefore, the project's VMT was analyzed based on extracting information from an unmodified version of the County's TDM. The TDM is a traditional trip based four-step travel demand model (trip generation, distribution, mode choice and assignment) with a 2018 base year and 2040 horizon year. Trip productions and attractions are estimated at the TAZ level. Within developed portions of the county, TAZs are roughly neighborhood size areas for which population socioeconomic data is tabulated.

There are 674 TAZs in the model and the project is located within TAZ 612. Figure 3.12-2 shows TAZs near the project site, with TAZ 612 (where the CVSP is located) and adjacent residential TAZs which are predominantly residential (i.e., TAZ 167 and TAZ 611). A three-step process for the baseline and cumulative analysis years was used to estimate the proposed project's per capita home based VMT. The details of modeling are included in the Appendix H.

Active Transportation and Transit Review

A review of active transportation and transit facilities was conducted to determine if the project would conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

[3] Policy TC-Xe: For the purposes of this Transportation and Circulation Element, "worsen" is defined as any of the following number of project trips using a road facility at the time of issuance of a use and occupancy permit for the development project:
A. 2 percent increase in traffic during the a.m. peak hour, p.m. peak hour, or daily, or
B. The addition of 100 or more daily trips, or
C. The addition of 10 or more trips during the a.m. peak hour or the p.m. peak hour.

3.12.4 Impacts and Mitigation Measures

Methodology

Project Impacts

Impact 3.12-1. The proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

General Plan Consistency

The project site is currently designated as Research and Development (R&D) in the County's General Plan and zoned accordingly. The project is proposing a General Plan Amendment and rezone to accommodate the proposed residential uses. Project development would be guided by the CVSP, and Section 3.9, Land use, Population and Housing, provides an evaluation of the project's consistency with the County's General Plan and notes that a specific plan must be consistent with the General Plan (Cal. Government Code Section 65454) and cannot be approved by the County if it is inconsistent with the General Plan.

A detailed analysis of roadway facilities (roadway segments, intersections, and freeway segments) is included in the traffic analysis provided in the project's TIS (Appendix H). The TIS provides an analysis of the project's potential effects relative to General Plan consistency with LOS standards (per General Plan Circulation Policies TC-Xd[4] and TC-Xf) used by the County per their Transportation Impact Study Guidelines. Pursuant to PRC Section 21099(b)(2) and CEQA Guidelines Section 15064.3(a), a project's effect on automobile delay is not considered a significant environmental effect; therefore, no further discussion is required or provided in this analysis, and information related to LOS is included in Appendix H for informational purposes only.

Bike, Pedestrian and Transit Facilities

The County's Active Transportation Plan calls for a pedestrian overcrossing of Highway 50 connecting Class I bike and pedestrian trails through the Town Center shopping district with the bike and pedestrian trails adjacent to the Raley's shopping center north of Highway 50. There are also plans for a Class I shared use path along the Placerville and Sacramento Valley Railroad rail line running to the southeast from the City of Folsom and skirting the southwestern edge of the Carson Creek Specific Plan area.

[4] Policy TC-Xd: Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions except as specified in Table TC-2 or, after December 31, 2008, Table TC-3. The volume to capacity ratio of the roadway segments listed in Tables TC-2 and TC-3 as applicable shall not exceed the ratio specified in that table. Level of Service will be as defined in the latest edition of the Highway Capacity Manual (Transportation Research Board, National Research Council) and calculated using the methodologies contained in that manual. Analysis periods shall be based on the professional judgment of the Department of Transportation which shall consider periods including, but not limited to, Weekday Average Daily Traffic (ADT), AM Peak Hour, and PM Peak hour traffic volumes.

The project would enhance bicycle and pedestrian access to the El Dorado Hills Business Park, as shown on Figure 3.12-3 and would not interfere with existing or planned bicycle and pedestrian facilities. The project includes a variety of bike and pedestrian amenities providing connections both within the planned community and externally to the existing bike and pedestrian facilities along Latrobe Road and Royal Oaks Drive, including the following:

- Project entrance would be constructed as the west leg of the Royal Oaks Drive and Latrobe Road intersection and would include Class II bike lanes from this intersection.
- Project features include a complete system of paved and unpaved trails located in the open space buffer areas and landscape corridors. The trails would be destination-oriented and link the various residential neighborhoods, parks, and the adjacent business park.
- The majority of CVSP streets would include attached or separated sidewalks on both sides of the street. All sidewalks would comply with Americans with Disabilities Act (ADA) standards and be a minimum of 4-feet in width.

The proposed bike lanes and routes within the project's internal streets would connect to the existing Class II bike lane along Latrobe Road and Royal Oaks Drive. The proposed Class I trail in the CVSP would connect to the existing Latrobe trail and the trail encircling the Heritage development and would also connect to the proposed El Dorado Trail. The project would add sidewalks to all internal streets which would connect to Latrobe Road and Royal Oaks Drive. By adding these facilities, the project would enhance bicycle and pedestrian access to roadway networks near the CVSP, to various parks and to the El Dorado Hills Business Park and would not interfere with existing or planned bicycle and pedestrian facilities. Therefore, the project would result in a less-than-significant impact on bicycle and pedestrian facilities.

There are no transit stops or routes in the immediate vicinity of the proposed project. Sacramento Commuter and Route 50X provides bus service from the park-and-ride lot at the intersection of Latrobe Road and White Rock Road and is located approximately three miles north of the proposed project. The project would not conflict with existing or proposed transit service and would result in a less-than-significant impact on transit.

Regional Transportation Plan

The project proposes residential land uses and a small neighborhood commercial site if is adopted as part of the CVSP, otherwise it would be converted to park uses. The neighborhood commercial site would improve housing and jobs balance in the community of El Dorado Hills. The project would optimize use of the existing regional and local roadway system as the project would use Highway 50, Latrobe Road, El Dorado Hills Boulevard and Silva Valley Parkway. As shown in the project's TIS, the project would support improved maintenance, increased throughput, and improved safety by constructing roadway improvements and/or paying the applicable fees per the County's TIF program. The project would also improve multi-modal mobility by constructing active transportation facilities along Royal Oaks Drive and internal project streets which would connect to existing and proposed facilities in the area, as described above. As such, the project would not conflict with the goals and policies of the County's Regional Transportation Plan.

Active Adult Option

The Active Adult option would not change the proposed project's site plan, only the type of residential units. Therefore, under this option there would be no change in the analysis of potential conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. The impact would be the same as the proposed project, less than significant.

Therefore, as shown in the proposed project's consistency analysis (see Appendix H) with all the applicable regional and local plans addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, the project's impact as well as the Active Adult option would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.12-2. The proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

The following discusses the proposed project's VMT screening, analysis and impact determination and its consistency with CEQA Guidelines Section 15064.3(b).

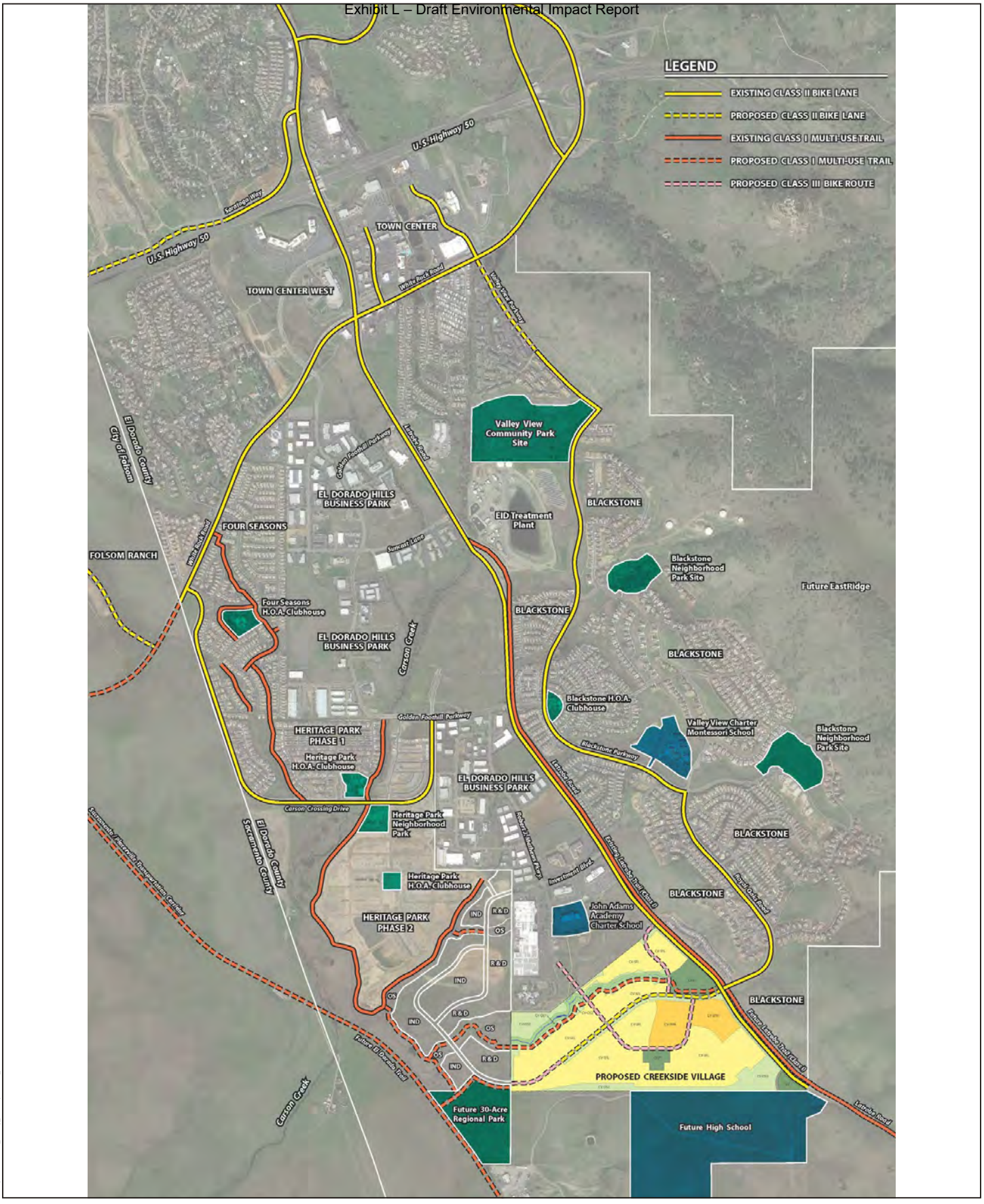
VMT Screening Analysis: Residential Component

The unincorporated countywide VMT per capita for determining the significance of residential projects is estimated using the County's TDM. For this analysis, the 2018 baseline model results were used as the baseline, and the 15% reduction threshold as adopted by the County in Resolution 141-2020. The project's VMT is shown in Table 3.12-3. The 2018 baseline VMT per capita for the County is 20.4. The significance threshold determined by this calculation is 17.3 VMT per capita (i.e., 15% below the existing countywide 20.4 VMT per capita). The residential component of the project is anticipated to generate 13.6 VMT per capita based on 2018 land uses included in the County's model. As explained above, under the Active Adult option vehicle trips would be reduced as compared to the proposed project which would correlate to a lower VMT per capita. Therefore, because the project's VMT per capita under Existing with Project (i.e., 13.6 VMT per capita) conditions would not exceed the existing Countywide per capita VMT threshold (i.e., 17.3 VMT per capita), the project as well as the Active Adult option would result in a less-than-significant VMT impact under existing conditions. As discussed under Impact 3.12-5, the project would also result in a less-than-significant VMT impact under cumulative (2040) conditions shown in Table 3.12-3.

Table 3.12-3. Project VMT Analysis – Residential Component

	El Dorado County		Project (Based on TAZ 167)	
	2018	2040	2018	2040
Home-based VMT	2,813,221	3,158,464	39,441	45,417
Population	137,989	162,164	2,904	3,478
VMT per Capita	20.4	19.5	13.6	13.1
VMT Threshold with 15% Reduction	17.3	n/a	n/a	n/a
		Potentially Significant Impact?	**No**	**No**

Source: Appendix H.



SOURCE: T. Kear Inc. 2024

FIGURE 3.12-3

Bike and Pedestrian Facilities

Creekside Village Specific Plan EIR

DUDEK

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VMT Screening Analysis: Local Serving Retail Component

The project includes 5,400 SF of neighborhood commercial/local serving retail, which could include a coffee shop and small café opportunities within walking distance of project residents and the neighboring Blackstone and Heritage communities, in addition to vehicles passing by on Latrobe Road. Per OPR guidance, retail projects of 50,000 SF or larger are generally regional rather than local serving. The proposed neighborhood commercial/local serving retail component is under the OPR threshold. Therefore, this component of the project (if adopted as part of the CVSP) can be presumed to result in a less-than-significant VMT impact.

If the neighborhood commercial component is not developed, it would be constructed as a park use as part of the proposed adjacent park, which would screen out of conducting a VMT analysis because parks are considered local-serving public uses.

Active Adult Option

As explained in the Active Adult Addendum (see Appendix H), there is limited information published on how travel characteristics of age-restricted housing and conventional housing differ. Available data, however, indicates that age-restricted households generate fewer trips, which correlates to a reduction in VMT. The Active Adult Addendum concludes that the Active Adult option would reduce daily project trips by approximately 38.4% (reduced from approximately 10,040 daily new residential trips with the proposed project to 6,186 daily new residential trips with the Active Adult option). The National Household Travel Survey also estimates Person Miles of Travel (PMT) and has concluded that individuals 65 years and older have a 19% less PMT which resulted in 5% fewer trips than a population as a whole, which also demonstrates that the Active Adult option would result in a lower VMT than the proposed project. Therefore, with implementation of the Active Adult option, traffic impacts would remain less than significant.

As shown above, per the County's VMT significance criteria for impact determination, the proposed project as well as the Active Adult option would have a less-than-significant VMT impact under existing and cumulative conditions. Therefore, the project would not conflict with CEQA Guidelines Section 15064.3(b) related to the VMT threshold and impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.12-3. The proposed project would not substantially increase hazards due to sharp curves or dangerous intersections or incompatible uses.

Project Access

The potential for increased hazards could result from a geometric design feature of the project and/or as a result of the addition of project traffic to a Caltrans facility. The proposed project's roadway network and design would remain the same under the Active Adult option; therefore, there would be no change from the proposed project under this option. Vehicular access to the project site would be provided by three roadways and a commercial driveway (see Figure 2-3 in Chapter 2, Project Description):

- Primary project access would be from Latrobe Road via an extension of Royal Oaks Drive. The intersection of Latrobe Road/Royal Oaks Drive is proposed to remain as full access. This intersection has an existing

two-way-stop-control, and a signal-control is recommended as an improvement to maintain an acceptable level-of-service.

- The first secondary access road from Latrobe Road is an extension of Avanti Drive. The intersection is proposed as full access with stop control on the side-street.
- The second secondary access is via a connection to Wetsel-Oviatt Road.
- A right-in/right-out (RIRO) commercial driveway is proposed providing the neighborhood commercial site with direct access to southbound Latrobe Road. The commercial driveway would be located just north of the existing Latrobe Road/Royal Oaks Drive intersection.
- An approximately 650-foot-long emergency access road would connect the project site to the adjacent business park, located northwest of the site. This emergency access road would be closed to through traffic with emergency access gates (approved by the Fire Department) that would be opened to traffic only during an emergency. The road would also function as a Class 1 bike path.

Sight distance at each internal project access would be reviewed with respect to County's sight distance standards at the time of preparation of final grading, landscape, and street improvement plans. The project would be subject to all applicable County road standards and all internal and external roadways would be improved or constructed consistent with all safety requirements pertaining to ingress and egress onto the overall circulation system, ensuring the project would not create sharp curves or dangerous intersections.

A level of service/queuing analysis was conducted to evaluate the ability of the project to accommodate the anticipated traffic levels at the study area intersections for Existing 2023, Existing Plus Approved Projects 2023 and cumulative 2040 conditions, which is evaluated for General Plan consistency outside of the CEQA context. In addition, a signal warrant analysis was conducted at unsignalized intersections to see if they would trigger the need for a traffic signal using the peak hour volumes per California Manual on Uniform Traffic Control Devices (CA MUTCD) methodology. General Plan LOS and queue length findings and recommended improvements such as roadway widening, intersection storage capacity and signalization have been included in Section 13.3 of Appendix H, which would ensure the roadways and intersections in the area do not present a danger or hazard related to intersection geometry and operations. The General Plan LOS consistency analysis is not required to be addressed in an EIR; therefore, it is included in Appendix H for informational purposes only.

Caltrans Facilities

The proposed project would add trips to Highway 50 and its ramp intersections at El Dorado Boulevard and Silva Valley Parkway; therefore, an evaluation of the project's potential impacts on queuing at Caltrans intersections was prepared in the project's TIS (Appendix H) in order to determine if the project would cause, or contribute towards, slowing or stopped traffic on freeway mainline travel lanes, off-ramps, and state highway lanes that could result in unsafe speed differentials between adjacent lanes.

For Caltrans facilities, vehicle LOS is provided for informational purposes only and queues were assessed at the Highway 50 ramps at El Dorado Boulevard and Silva Valley Boulevard intersections.

- El Dorado Hills Blvd/Highway 50 Westbound Ramps (Intersection No. 3)
- El Dorado Hills Blvd/Highway 50 Eastbound Ramps (Intersection No. 4)
- Silva Valley Parkway/Highway 50 Eastbound Ramps (Intersection No. 23)
- Silva Valley Parkway/Highway 50 Westbound Ramps (Intersection No. 24)

Additionally, freeway facility density and LOS analysis is provided for informational purposes only was conducted for westbound and eastbound Highway 50 freeway segments between Bass Lake Road and the county line.

As shown in the project's TIS (Appendix H), analysis of Caltrans facilities under Existing and Existing Plus Approved Projects, the project would not contribute to operational deficiency at any Caltrans facility except at the El Dorado Hills Boulevard/Highway 50 Westbound Ramps intersection. The project would be responsible for payment of its fair share of signal timing adjustment at this intersection and would be required to pay applicable fees under the County's TIF program.

The project as well as the Active Adult option would not add incompatible uses to the project site and based on the analysis would not increase hazards due to a geometric design feature or incompatible uses and the impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.12-4. The proposed project would not result in inadequate emergency access.

The project proposes development which would require construction of internal roadways, as well as improvements to existing intersections. All internal roadways would be built to meet all minimum fire apparatus access requirements of the El Dorado Hills Fire Department and California Fire Code. Consistent with the County's Engineering Standards, the project's roadways would be required to meet all access requirements such as roadway widths, all-weather surface requirements, length of streets, turning requirements, grade restrictions, maintenance requirements, and parking restrictions. Specific fire and safety requirements would be addressed at the building permit phase when architectural plans are submitted for County review and approval. Adequate emergency access and compliance with emergency access and design standards would be ensured through this review by the County and responsible emergency service agencies throughout project implementation. There are four other fire stations that serve the community, with Station 87 being the closest fire station to the project site located approximately 1.5 miles to the northeast. As mentioned in Section 3.15, Wildfire, Latrobe Road is an existing two-lane arterial road that provides direct regional access from Highway 50 south past the project site to SR-16, which could serve as a potential evacuation route to access larger roadways. New roads constructed within the CVSP would connect to Latrobe Road at its intersection with Royal Oaks Drive and Avanti Drive in addition to Wetsel-Oviatt Road. As mentioned above, the project includes an emergency access road that would connect the project site to the adjacent business park, located northwest of the site. This emergency access road would be closed to through traffic with emergency access gates (approved by the Fire Department) that would be opened to traffic only during an emergency. The road would also function as a Class 1 bike path. Emergency access would remain the same as the project under the Active Adult option.

Any project construction activities that could potentially impact Latrobe Road, and thereby interfere with emergency access, would be subject to the County's Department of Transportation permit requirements for encroachment permits and temporary road closures. These requirements address applicable temporary traffic controls for all construction activities within the public rights-of-way. This would include compliance with the latest California MUTCD and compliance with the requirement that emergency access to all nearby properties be maintained at all times. Compliance with the County's requirements would ensure adequate emergency access is maintained throughout project construction.

Therefore, construction and operation of the project as well as the Active Adult option would not result in inadequate emergency access and the impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

Where a lead agency concludes that the cumulative effects of a project, taken together with the impacts of other closely related past, present, and reasonably foreseeable future projects are significant, the lead agency then must determine whether the project's incremental contribution to such significant cumulative impact is "cumulatively considerable" (and thus significant in and of itself).

The project's TIS evaluated the cumulative scenario using cumulative projects in the area and the socio-economic data included in the County's TDM. The cumulative analysis considers the year 2040 conditions. The year 2040 conditions include development per the County's General Plan and land use forecasts and therefore includes probable future projects.

Impacts related to hazards due to a geometric design feature, inadequate emergency access and conflicts with transit, bicycle or pedestrian transportation would not be considered additive and would be identical to Impacts 3.12-1 and 3.12-3, 3.12-4, above, and would remain less than significant.

Impact 3.12-5. The proposed project would not conflict or be inconsistent with CEQA Guidelines section 15064.3(b) under cumulative conditions.

As discussed under Impact 3.12-2, the project's VMT analysis was conducted for the residential component only. The neighborhood commercial component of the project would screen out of conducting a VMT analysis because of its local serving nature and therefore would not have the potential to contribute to a cumulative VMT impact. Per the County's TDM and as shown in Table 3.12-3, the baseline VMT per capita under cumulative conditions is 19.4 VMT per capita in 2040. The significance threshold is 17.3 VMT per capita (i.e., 15% below the existing countywide 20.4 VMT per capita). The residential component of the project is anticipated to generate 13.1 VMT per capita by 2040 and would be less under the Active Adult option. Because the project's VMT per capita under Cumulative with Project (i.e., 13.1 VMT per capita) conditions would not exceed the existing countywide per capita VMT threshold (i.e., 17.3 VMT per capita), the project, as well as the Active Adult option would result in a **less-than-significant VMT impact under cumulative conditions**.

Mitigation Measures

No mitigation measures are required.

3.12.5 References

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3.13 Tribal Cultural Resources

This section assesses potential effects on tribal cultural resources (TCRs) that may be impacted as a result of development of the Creekside Village Specific Plan (CVSP or proposed project). This section generally describes the existing TCR conditions of the project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project while respecting the confidentiality of TCRs. TCRs are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that is listed or determined to be eligible for listing in the national or state register of historical resources or listed in a local register of historic resources.

One public comment related to TCRs was received in response to the to the November 6, 2020, Notice of Preparation (NOP). The Native American Heritage Commission (NAHC) submitted a letter regarding Assembly Bill (AB) 52 and Senate Bill (SB) 18 consultation methods and consistency. This is a standard letter submitted by the NAHC and does not raise any site-specific concerns. No additional comments were received at the second scoping meeting held on September 26, 2023. A copy of the NOP and comments received is included in Appendix A.

The primary sources used to assess the potential effects on TCRs are the record of tribal consultation and confidential appendix for the proposed project. The appendix containing such information is confidential because the California Environmental Quality Act (CEQA) and CEQA Guidelines prohibit lead agencies from including any information from a California Native American tribe about TCRs (e.g., the location) in the environmental document or otherwise disclosing it without prior consent from the tribe that provided the information (Public Resources Code [PRC] Section 21082.3[c] and CEQA Guidelines Section 15120[d]). The California Public Records Act authorizes agencies to exclude from public disclosure archaeological site information; records of Native American graves, cemeteries, and sacred places; and records of Native American places, features, and objects (California Government Code Sections 7927.000 and 7927.005.). In addition, California's open meeting laws (the Brown Act, California Government Code Section 54950 et seq.) protect the confidentiality of Native American cultural place information. During the consultation process with Native American tribes described in more detail below, Native American tribal governments also requested the confidential treatment of TCRs.

As described in Section 3.13.1, El Dorado County (County) staff and the project applicant have attended two on-site meetings with representatives from the Wilton Rancheria and the United Auburn Indian Community (UAIC) tribes, one in-office meeting with Wilton Rancheria, and are engaged in ongoing consultation pursuant to AB 52 and SB 18 requirements. Furthermore, County staff and UAIC has had one direct Government-to-Government meeting regarding the project. The confidential appendix includes the May 2019 Cultural Resources Inventory and Evaluation, the January 2021 Creekside Village Determination of Site Boundaries, and the March 2021 Off-site Utilities Cultural Resources Assessment all prepared by Windmiller Consulting. In addition, a follow up records search from the North Central Information Center (NCIC) was requested in August 2023 with the results documented in a Memorandum prepared by Environmental Science Associates (also included in the confidential appendix). Additional sources include the El Dorado County General Plan Conservation and Open Space Element (El Dorado County 2017) and Google Earth aerial imagery.

3.13.1 Environmental Setting

A detailed overview of the precontact, ethnohistoric, and historic contexts are provided in Section 3.4, Cultural Resources of this draft environmental impact report (EIR) starting on page 3.4-1. Therefore, this information is not repeated in this section.

While historic context is important, UAIC has explained that some archaeologists focus on past Native American culture while current Native American culture can often be overlooked. This approach is not sufficient to provide a context or set of values maintained by the current Native American community related to their history and the landscape. Tribes view themselves as contemporary stewards of their culture and the landscape, representing a continuum from the past to the present. They are resilient, vibrant, and active in the community. Tribes maintain their connection to their history and ongoing culture by practicing traditional ceremonies, engaging in traditional practices (e.g., basketry), and conducting public education and interpretation. The acknowledgment of Native American history and the persistence of tribes cannot be overlooked and should be recognized.

Defining TCRs thus involves the knowledge and expertise of living California Native Americans. As the embodiment of a continuous connection between tribal history and the landscape, they are uniquely qualified to act as the interpreters and stewards of their culture, including the ability to define the significance of the material remains and landscapes of their ancestor's lifeways.

The project site is located on land traditionally culturally associated with the Nisenan (Maidu) and Miwok. Boundaries defining areas of indigenous use and tribal cultural value have varied over time and were often fluid and overlapping. Many descendants of Nisenan and Miwok tribes still reside on lands once inhabited by their ancestors or on lands set aside for tribal communities by the federal government in California which may or may not be traditionally inhabited by their ancestors. Contemporary Californian Native American tribes with ancestral connections to the project area and Valley Nisenan heritage include the United Auburn Indian Community (UAIC), Shingle Springs Band of Miwok Indians (SSBMI), Ione Band of Miwok, and Wilton Rancheria.

These tribes today maintain connection to their history and culture in a multitude of ways, including through ceremony, language and traditional knowledge instruction, community service, and tribal governance. For example, it has been explained by UAIC that a "Big Time" is typically celebrated every September to mark the start of autumn and acorn gathering time at Chaw'se Grinding Rock State Park in Pine Grove. This celebration includes serving traditional foods, traditional dancing, healing rituals, and worship in the roundhouse. Language and traditional skill classes are offered by most of the tribes, including by the SSBMI which has a Traditional Ecological Knowledge (TEK) department to assist members with learning about respectful and traditional uses of plants and animals, and the UAIC which has a pre-K through 8th grade school where key aspects of Indian culture and critical thinking are taught to prepare tribal members to face future challenges.

Governance on tribal lands is typically outlined by tribally prepared constitutions, codes and/or ordinances, and are carried out by tribal departments which are in turn typically overseen by the tribal council. This includes the office of Tribal Historic Preservation Officer. Because tribes retain inherent sovereign powers over their members and territory, SSBMI and the Wilton Rancheria also have tribal Courts which serve as culturally-sensitive, independent judicial forums where tribal cultural values are held at the forefront of dispute resolutions. It should be noted that UAIC, Wilton Rancheria, SSBMI, and Ione Band of Miwok are all also federally recognized Tribes. The tribes have deep spiritual, cultural, and physical ties to their ancestral land and are contemporary stewards of their culture and landscapes.

Project Region

The proposed project is located in the western portion of unincorporated County in the community of El Dorado Hills. Two miles north of the project is the historic town of Clarksville. Three miles southeast lies the historic town of Latrobe. As described above, the proposed project is located on land traditionally inhabited by or otherwise traditionally culturally associated with the Nisenan and Miwok Tribes.

Project Site

The proposed project is a specific plan featuring a mix of single-family homes, parks, open space, and neighborhood commercial located on the west side of Latrobe Road approximately two miles south of the Latrobe Road and White Rock Road intersection and approximately two and a half miles southeast of Highway 50. The project site currently consists of undeveloped rolling grasslands.

Resources Identified within the Project Site APE

In addition to the information about TCRs gained from tribal consultation summarized below, a confidential Cultural Resources Inventory and Evaluation report (Cultural report) prepared for the project in May 2019 used a geographic area of potential effects (APE) of 240 acres including areas bordering the El Dorado Hills Business Park to the north. The proposed project site consists of 208 acres not including the 32 acres of land bordering the El Dorado Hills Business Park that is not part of the proposed project.

Since 2021, some of the off-site transportation required improvements have changed; however, the Cultural report evaluates those areas that have not been previously evaluated including construction of an emergency access road and extensions of water and sewer lines outside of the project boundaries. The APE for these off-site improvements is included in Figure 2-9, Off-site Improvements, provided in Chapter 2, Project Description.

Within the project APE, which includes the project site and the offsite area there are a number of precontact and historic-period archaeological resources that have been identified as part of numerous surveys conducted. The Cultural report identified 12 previously recorded cultural resources within the project's APE. These included five precontact resources (four sites and one isolate) and seven historic resources. Of these resources, the three precontact archeological resources (P-09-006004; P-09-006011; P-09-006012) were recommended eligible to be listed on the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR). While one precontact resource identified in the Cultural report was not initially relocated, Tribal Government Representatives were aware of this resource as it had previously been surveyed (P-09-000157). In September 2023, an updated records request was completed and stated that there have been no newly recorded resources or updated resources identified since the May 2019 report. Consulting Tribes, UAIC and Wilton Rancheria, consider the precontact resources to be TCRs and the County agreed to recognize the resources as TCRs. While one precontact resource identified in the Cultural report was not initially relocated, Tribal Government Representatives were able to locate it on a second site visit (P-09-000157).

Resources Identified with the Off-site Improvements APE

As described in Chapter 2, Project Description, the project requires extending water and sewer lines as well as connections to electric and natural gas services, roadway improvements, and construction of an additional emergency access road. All of the utility work would be within the existing right-of-way along Latrobe Road. An approximately 650-foot-long access road that would be also used as a class 1 bike path would connect the project site to the adjacent business park, located northwest of the site (see Figure 2-9 in Chapter 2, Project Description). A cultural resources assessment of the off-site improvements APE was conducted by Windmiller Consulting in 2021.

The March 2021, Creekside Village Off-Site Utilities Cultural Resources Assessment identified one precontact resource (P-09-000168). The precontact component of this resource was recommended as eligible at one time for the NRHP under Criterion D and the CRHR under Criterion 4. The historic component including the dredging remnants and other features have not been determined eligible.

Native American Consultation

Pre-Project Coordination Methods and Results

Pre-project coordination with Native American tribes was carried out by the County in anticipation of consultation. While this coordination did not constitute compliance with SB 18 or AB 52, it was necessary to inform the TCR inventory.

On October 8, 2018, the NAHC responded to a request for a sacred lands file search and list of Native American Contacts for the proposed project. Sacred and ceremonial sites are places that may be considered sacred due to their role in oral traditions, spiritual practices, or historical events and may not include tangible elements.

The NAHC's response to the request for a sacred lands file search was negative; having no documented resources on file within search area. The NAHC recommended contacting each of the nine traditionally culturally affiliated contacts listed below:

- Pamela Cubbler, Treasurer, Colfax-Todds Valley Consolidated Tribe;
- Clyde Prout Chairman, Colfax-Todds Valley Consolidated Tribe.
- Sara Dutschke Setchwaelo, Chairperson, Ione Band of Miwok Indians;
- Cosme A. Valdez, Chairperson, Nashville Enterprise Miwok-Maidu Nishinam Tribe;
- Regina Cuellar Chairperson Shingle Springs Band of Miwok Indians;
- Grayson Coney, Cultural Director Tsi-Akim Maidu;
- Don Ryberg, Chairperson Tsi-Akim Maidu;
- Gene Whitehouse, Chairperson, United Auburn Indian Community (UAIC) of the Auburn Rancheria;
- Darrel Cruz, Cultural Resource Department, THPO, Washoe Tribe of Nevada and California.

A letter dated October 11, 2018, along with a location map was mailed to each of the above contacts. The letter described the project and asked for volunteered information on the location of any sacred or other sites of importance to Native American tribal groups.

In a letter dated November 8, 2018, Mr. Gene Whitehouse, Chairman, UAIC of the Auburn Rancheria responded to the request. The response made the following requests: copies of any archaeological reports completed for the project; copies of environmental documents; request that UAIC tribal representatives observe and participate in all cultural resource surveys; set up a meeting or site visit and begin consulting on the project. The letter also recommended the presence of a tribal monitor during any ground disturbing activities.

Senate Bill 18 Consultation

On August 18, 2020, the County requested a Tribal Consultation List Request from the NAHC and a Sacred Lands File search in compliance with SB 18. On August 25, 2020, the County received the SB 18 consultation list for tribes with traditional lands or cultural places located within the county and the NAHC provided a negative result to the Sacred Lands File conducted.

Following the response from the NAHC, the County prepared letters including the results of the Sacred Lands File check from the NAHC, purpose of the letters, a project description, entitlements being requested, detailed map of the project and location, contact information and a deadline to respond. On December 2, 2020, the County sent

these formal consultation request letters to the tribes listed below. The tribes had 90 days to respond to request consultation. The response window closed on March 2, 2021.

- United Auburn Indian Community of the Auburn Rancheria
- Tsi Akim Maidu
- Shingle Springs Band of Miwok Indians
- Colfax-Todds Valley Consolidated Tribe

On October 26, 2021, the project applicant requested the County place the processing of the CVSP project on hold. Then on July 19, 2023, the project applicant formally requested the CVSP project be re-initiated with the County.

On August 22, 2023, the County sent out formal consultation request letters notifying the tribes that the CVSP project was being re-instated and processed by the County. These letters were sent to the tribes listed below. The tribes had 90 days to respond to request consultation. The response window closed on November 20, 2023.

- United Auburn Indian Community of the Auburn Rancheria
- Tsi Akim Maidu
- Shingle Springs Band of Miwok Indians
- Colfax-Todds Valley Consolidated Tribe
- Chicken Ranch Rancheria of Me-Wuk Indians
- Wilton Rancheria
- Washoe Tribe of Nevada & California
- Ione Band of Miwok Indians
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe

Assembly Bill 52 Consultation

On December 2, 2020, the County sent formal consultation request letters including a project description, project location map, contact information and a deadline to respond to the following tribes below. The list of tribes was provided by the NAHC. The tribes had 30 days to respond to request consultation. The response window closed on January 1, 2021.

- United Auburn Indian Community of the Auburn Rancheria
- Tsi Akim Maidu
- Shingle Springs Band of Miwok Indians
- Colfax-Todds Valley Consolidated Tribe
- Washoe Tribe of Nevada & California
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- Ione Band of Miwok Indians

On October 26, 2021, the project applicant requested the County place the processing of the CVSP on hold. On July 19, 2023, the project applicant formally requested the CVSP project be re-initiated with the County.

On August 22, 2023, the County sent out formal consultation request letters[1] notifying the tribes that the CVSP project was being re-instated and processed by the County. These letters were sent to the tribes listed below. The tribes had 30 days to respond to request consultation. The response window closed on September 21, 2023.

- United Auburn Indian Community of the Auburn Rancheria
- Tsi Akim Maidu
- Shingle Springs Band of Miwok Indians
- Washoe Tribe of Nevada & California
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- Ione Band of Miwok Indians
- Wilton Rancheria

Consultation Results under SB 18 and AB 52

Following is a summary of the tribal consultation between the County and consulting Tribes under SB 18 and AB 52. Confidential information provided by the Tribes has been excluded from this EIR.

United Auburn Indian Community of the Auburn Rancheria

On January 22, 2021, the County received a formal consultation request from the UAIC.

On September 11, 2023, after the project resumed, the project applicant provided the County with an updated site plan that proposed avoiding certain resources at the project site. This updated site plan was shared with UAIC.

September 25, 2023, UAIC requested to officially consult under AB 52 and SB 18 after receiving formal notification from the County. UAIC stated that they had identified the project area as sensitive for TCRs, with known culturally significant sites and Tribal Cultural Landscape present. During consultation UAIC requested that the resources be officially recognized by the County as TCRs. In consultation with UAIC, as well as other consulting tribes, the County recognizes the resources (P-09-006004, P-09-006011, P-09-006012, and P-09-000157) on the site as TCRs.

On November 9, 2023, the County contacted the UAIC regarding a change in project managers for the County and provided new contact information with an invitation to a future project site visit. UAIC declined a site visit but requested the resources be completely avoided and protected. UAIC also requested to review the project site plan.

On December 22, 2023, the County contacted UAIC regarding meeting with the Tribe to discuss the project and potential alternatives or mitigation to reduce impacts to TCRs. The UAIC requested a meeting in early January and requested a revised site plan that completely avoided all TCRs including a buffer of at least 100 feet.

On February 9, 2024, UAIC requested a meeting with the County regarding resources at the project site.

On March 15, 2024, the County, project applicant, and members of UAIC met at the project site to walk the property, visit the known TCRs, and discuss the project.

[1] The Colfax-Todds Valley Consolidated Tribe did not request consultation when AB 52 letters were sent in 2020; therefore, the County did not send a notification letter in 2023.

On March 21, 2024, UAIC sent a consultation letter to the County requesting a project redesign alternative that avoids and protects all resources onsite and also requested a no project alternative be provided.

On May 31, 2024, the project applicant submitted a cultural avoidance alternative that avoided a majority of the TCRs onsite with the exception of the proposed relocation of one resource, as requested by UAIC and the County.

On July 18, 2024, the County and members of UAIC met at the offices of UAIC to discuss the project proposal.

While outside of formal consultation, the project applicant met with representatives from UAIC to discuss the cultural avoidance alternative, including a visit to the project site on December 6, 2024, and made revisions as a result of those discussions that led to the Reduced Impact Alternative analyzed in Chapter 5, Project Alternatives.

Tsi Akim Maidu

The Tsi Akim Maidu did not request consultation under SB 18 or AB 52. Therefore, the County had no further obligations and considered consultation efforts with the Tribe concluded pursuant to Section 21082.3(d)(3) of the California PRC and the implementing procedures for SB 18 in the 2005 Tribal Consultation Guidelines: Supplement to General Plan Guidelines.

Shingle Springs Band of Miwok Indians

On January 13, 2021, the County received a formal consultation request from the Shingle Springs Band of Miwok Indians. Shingle Springs was contacted by County staff regarding the re-initiation of the CVSP project with the letter dated August 22, 2023. The County invited Shingle Springs Band of Miwok Indians to attend the December 1, 2023, site visit, but never received a response. The County invited Shingle Springs Band of Miwok Indians to attend the March 15, 2024, site visit, but Shingle Springs was not able to attend. No further communications from Shingle Springs Bank of Miwok Indians has been received as of this writing.

Washoe Tribe of Nevada and California

The Washoe Tribe of Nevada and California did not request consultation under SB 18 or AB 52. Therefore, the County had no further obligations and considered consultation efforts with the Tribe concluded pursuant to Section 21082.3(d)(3) of the California PRC and the implementing procedures for SB 18 in the 2005 Tribal Consultation Guidelines: Supplement to General Plan Guidelines.

Nashville Enterprise Miwok-Maidu-Nishinam Tribe

The Nashville Enterprise Miwok-Maidu-Nishinam Tribe did not request consultation under SB 18 or AB 52. Therefore, the County had no further obligations and considered consultation efforts with the Tribe concluded pursuant to Section 21082.3(d)(3) of the California PRC and the implementing procedures for SB 18 in the 2005 Tribal Consultation Guidelines: Supplement to General Plan Guidelines.

Ione Band of Miwok Indians

The Ione Band of Miwok Indians did not request consultation under SB 18 or AB 52. Therefore, the County had no further obligations and considered consultation efforts with the Tribe concluded pursuant to Section 21082.3(d)(3) of the California PRC and the implementing procedures for SB 18 in the 2005 Tribal Consultation Guidelines: Supplement to General Plan Guidelines.

Wilton Rancheria

On September 8, 2023, the County received a formal consultation request from the Wilton Rancheria for the project.

On September 11, 2023, the project applicant provided the County with an updated site plan that proposed avoiding certain resources at the project site. The updated site plan was shared with the Tribe.

On October 18, 2023, the County informed the project applicant that Wilton Rancheria requested a site visit to tour the site.

On December 1, 2023, the County, project applicant, and members of Wilton Rancheria met at the project site to walk the site and discuss the project.

On December 19, 2023, the County received a formal comment letter from the Tribe proposing recommendations for the project and potential mitigation measures.

On February 9, 2024, the County, project applicant, and members of the Tribe participated in a call to discuss the project and potential mitigation measures.

On March 15, 2024, the County, project applicant, and members of the Wilton Rancheria met at the project site to walk the property and discuss the project.

On April 4, 2024, the County received comments from the Tribe requesting a project redesign alternative of the project that avoids impacts to all resources and also requested a no project alternative be provided.

While outside of formal consultation, the project applicant met with representatives from Wilton Rancheria to discuss the cultural avoidance alternative, including a site visit to the project site on December 6, 2024, and made revisions as a result of those discussions that led to the Reduced Impact Alternative analyzed in Chapter 5, Project Alternatives.

Colfax-Todds Valley Consolidated Tribe

The Colfax-Todds Valley Consolidated Tribe did not request consultation under SB 18 or AB 52. Therefore, the County had no further obligations and considered consultation efforts with the Tribe concluded pursuant to Section 21082.3(d)(3) of the California PRC and the implementing procedures for SB 18 in the 2005 Tribal Consultation Guidelines: Supplement to General Plan Guidelines.

Chicken Ranch Rancheria of Me-wuk Indians

The Chicken Ranch Rancheria of Me-wuk Indians did not request consultation under SB 18. Therefore, the County had no further obligations and considered consultation efforts with the Tribe concluded pursuant to Section 21082.3(d)(3) of the California PRC and the implementing procedures for SB 18 in the 2005 Tribal Consultation Guidelines: Supplement to General Plan Guidelines.

3.13.2 Regulatory Setting

Federal, state, and local governments have developed laws and regulations designed to protect and preserve significant cultural resources that may be affected by actions that they undertake or regulate. The National Historic

Preservation Act (NHPA) and CEQA are the basic federal and state laws governing the preservation of TCRs of national, regional, state, and/or local or tribal significance within the state.

Federal

American Indian Religious Freedom Act

The American Indian Religious Freedom Act recognizes that Native American religious practices, sacred sites, and sacred objects have not been properly protected under other statutes. It establishes as national policy that traditional practices and beliefs, sites (including right of access), and the use of sacred objects shall be protected and preserved.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) requires federal agencies and institutions that receive federal funds, including museums, universities, state agencies, and local governments, to repatriate or transfer Native American human remains and other cultural items to the appropriate parties upon request of a culturally affiliated lineal descendant, Indian tribe, or Native Hawaiian organization (43 Code of Federal Regulations [CFR] Section 10.10). Federal NAGPRA regulations (43 CFR Part 10) provide the process for determining the rights of culturally affiliated lineal descendants, Native American tribes, and Native Hawaiian organizations to certain Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony, which are indigenous to Alaska, Hawaii, and the continental United States but not to territories of the United States, that are (i) in federal possession or control, (ii) in the possession or control of any institution or state or local government receiving federal funds, or (iii) excavated intentionally or discovered inadvertently on federal or tribal lands.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) established the National Register of Historic Places (NRHP) and the President's Advisory Council on Historic Preservation (ACHP), and provided that states may establish State Historic Preservation Officers to carry out some of the functions of the NHPA. The NRHP is the United States' official list of districts, sites, buildings, structures, and objects worthy of preservation. Overseen by the National Park Service, under the U.S. Department of the Interior, the NRHP was authorized under the National Historic Preservation Act, as amended. Its listings encompass all National Historic Landmarks, as well as historic areas administered by the National Park Service.

The NHPA (54 U.S.C. Section 300101 et seq.) created the NRHP and the list of National Historic Landmarks. Section 106 of the NHPA requires federal agencies to consider the impact of their actions on historic and archeological properties and provide the Advisory Council on Historic Preservation with an opportunity to comment on projects before implementation (Section 306108). The NRHP and federal guidelines related to the treatment of traditional cultural properties are relevant for the purposes of determining whether significant TCRs, as defined under CEQA, are present and guiding the treatment of such resources.

NRHP guidelines for the evaluation of historic significance were developed to be flexible and to recognize the accomplishments of all who have made significant contributions to the nation's history and heritage. Its criteria are designed to guide state and local governments, federal agencies, and others in evaluating potential entries in the NRHP.

Most significantly for federal agencies responsible for managing cultural resources, Section 106 of the NHPA directs the following:

> [t]he head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP.

Title 36 of the Code of Federal Regulations, Part 800 (36 CFR 800) implements Section 106 of the NHPA. It defines the steps necessary to identify historic properties (those cultural resources listed in or eligible for listing in the NRHP), including consultation with federally recognized Native American tribes to identify resources with important cultural values; to determine whether they may be adversely affected by a proposed undertaking; and the process for eliminating, reducing, or mitigating the adverse effects.

The content of Title 36 of the Code of Federal Regulations, Section 60.4, defines criteria for determining eligibility for listing in the NRHP. The significance of cultural resources identified during an inventory must be formally evaluated for historic significance in consultation with the ACHP and the California State Historic Preservation Officer to determine if the resources are eligible for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Regarding criteria A through D of Section 106, the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
B. That are associated with the lives of persons significant in our past; or
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That have yielded, or may be likely to yield, information important in prehistory or history.

Integrity is defined in NRHP guidance, How to Apply the National Register Criteria, as “the ability of a property to convey its significance. To be listed in the NRHP, a property must not only be shown to be significant under the NRHP criteria, but it also must have integrity” (NPS 1997). NRHP guidance further asserts that properties be completed at least 50 years ago to be considered for eligibility. Properties completed fewer than 50 years before evaluation must be proven to be “exceptionally important” (consideration criteria G) to be considered for listing.

A historic property is defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the NRHP criteria” (Title 36 Code of Federal Regulations Sections 800.16[i][1]).

State

Native American Historic Resource Protection Act (AB 52)

The Native American Historic Resource Protection Act (AB 52), which went into effect July 1, 2015, establishes that TCRs must be considered under CEQA and defines a lead agency's requirements for notification and consultation with California Native American tribes.

PRC Section 21074 states:

a) "Tribal cultural resources" are either of the following:
   1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
      A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
      B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
   2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

c) A historical resource described in PRC Section 21084.1, a unique archaeological resource as defined in subdivision (g) of PRC Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of PRC Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Tribes often characterize a Tribal Cultural Landscape as a geographic area (including both cultural and natural resources, and the wildlife therein), associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values. Unanticipated Native American human remains could also be considered a TCR.

Under AB 52, lead agencies must notify all California Native American tribes that are traditionally and culturally affiliated with the project area and that have requested formal notification. The notification requirement extends to tribes that are not federally recognized, and notification must occur when a project application is considered complete or the lead agency decides to undertake a project. After notification, tribes may request to engage in consultation with the lead agency. If it is determined that a substantial adverse change to a TCR would result from a project, the tribal consultation can include development of mitigation measures and/or project alternatives that could reduce or avoid those impacts.

Senate Bill 18

SB 18 (Government Code, Sections 65352.3, 65352.4) requires that, prior to the adoption or amendment of a general plan or specific plan proposed on or after March 1, 2005, a city or county must consult with Native American tribes with respect to the possible preservation of, or the mitigation of impacts to, specified Native American places, features, and objects located within that jurisdiction. The County has complied with this requirement, as described earlier.

Senate Bill 297

SB 297 addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction; and establishes the NAHC to resolve disputes regarding the disposition of such remains. The provisions of SB 297 have been incorporated into Section 15064.5(e) of the CEQA Guidelines.

California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act of 2001, as amended, requires all state agencies and state-funded museums that have possession or control over collections of California Native American human remains or cultural items to provide a process for the identification, inventory, and repatriation of these items to the appropriate tribes. Lineal descendants of human remains or cultural items may file a claim for the return of the materials by demonstrating the relationship between the lineal descendent and the materials

California Environmental Quality Act

As discussed above, the Native American Historic Resource Protection Act amended CEQA to require public agencies to consider the effects of their actions on TCRs. CEQA also requires that public agencies avoid damaging effects to any TCR, when feasible. If the lead agency determines that a project may cause a substantial adverse change in a TCR, and measures are not otherwise identified in the consultation process, state law provides mitigation measures that may be considered to avoid or minimize the significant adverse impacts. These include:

- Avoidance and preservation in place, including incorporation of the resource into open spaces, parks, or green spaces;
- Treating the resource with appropriate dignity, including protecting the cultural character and integrity of the resource, protecting the traditional use of the resource, and protecting the confidentiality of the resource;
- Establishing conservation easements or other interests in real property with culturally appropriate management criteria for purposes of preserving or utilizing the resource in place; or
- Otherwise protecting the resource.

CEQA Guidelines Section 15064.5(e), requires that excavation activities be stopped whenever human remains are uncovered, and the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the NAHC must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as identified in a timely manner by the NAHC. Section 15064.5 of the CEQA Guidelines directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

State Laws Pertaining to Human Remains

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the county coroner has examined the remains and determined whether they are subject to the coroner's authority. If the human remains are determined to be of Native American origin, the county coroner must contact the California NAHC within 24 hours of this identification. An NAHC representative will then identify a Native

American Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. In addition, PRC Section 5097.98 and CEQA Guidelines Section 15064.5 specify the procedures to be followed in case of the discovery of human remains on non-federal land. The disposition of Native American burials falls within the jurisdiction of the NAHC.

Local

El Dorado County General Plan

The County General Plan contains the following goals, objectives, and policies related to TCRs in the Conservation and Open Space Element that are relevant to the proposed project. Note, the County has not yet adopted a Cultural Resources Ordinance identified under Policy 7.5.1.1.

Goal 7.5: Cultural Resources: Ensure the preservation of the County's important cultural resources.

Objective 7.5.1: Protection of Cultural Heritage: Creation of an identification and preservation program for the County's cultural resources.

Policy 7.5.1.1: The County shall establish a Cultural Resources Ordinance. This ordinance shall provide a broad regulatory framework for the mitigation of impacts on cultural resources (including historic, prehistoric and paleontological resources) by discretionary projects. This Ordinance should include (but not be limited to) and provide for the following:

A. Appropriate (as per guidance from the Native American Heritage Commission) Native American monitors to be notified regarding projects involving significant ground-disturbing activities that could affect significant resources.
B. A 100-foot development setback in sensitive areas as a study threshold when deemed appropriate.
C. Identification of appropriate buffers, given the nature of the resources within which ground-disturbing activities should be limited.
D. A definition of cultural resources that are significant to the County. This definition shall conform to (but not necessarily be limited to) the significance criteria used for the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) and Society of Vertebrate Paleontology.
E. Formulation of project review guidelines for all development projects.
F. Development of a cultural resources sensitivity map of the County.

3.13.3 Thresholds of Significance and Methodology

Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
  - Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).
  - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Methodology

For the identification of TCRs in the project area, in additional to Tribal surveys, UAIC conducted background research which included a review of pertinent literature, historic maps, and a records search using UAIC's Tribal Historic Information System (THRIS). UAIC's THRIS database is composed of UAIC's areas of oral history, ethnographic history, and places of cultural and religious significance, including UAIC's Sacred Lands that are submitted to the NAHC. The THRIS resources shown in this region also include previously recorded indigenous resources identified through the California Historic Resources Information System Center (CHRIS) as well as historic resources and survey data. This data is obtained from the THPO Access Agreement with the National Park Service, which allows THPO Tribes to access all manner of cultural resource data housed at the regional Information Centers (ICs) of the CHRIS.

Following the background research, Tribal surveys were conducted by Wilton Rancheria representatives on December 1, 2023, and UAIC and Wilton Rancheria on March 15, 2024. No new TCRs were identified, and four TCRs were relocated and assessed for tribal significance. All four sites are considered TCRs and are therefore eligible for the California Register of Historical Resources.

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1.8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. The potential impacts to TCRs and/or precontact archaeological resources are not expected to be different with implementation of either option because the development footprint, intensity, and disturbed area would remain the same as under the proposed project. Therefore, the impact analysis below would be the same under both options as the proposed project.

3.13.4 Impacts Analysis

Project Impacts

Impact 3.13-1. The proposed project could cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources or is a resource determined by the County to be significant.

As previously noted, a TCR is defined under Native American Historic Resource Protection Act (AB 52) as a site, feature, sacred place, cultural landscape that is geographically defined in terms of size and scope, or object with cultural value to a California Native American tribe that are either included or eligible for inclusion in the CRHR or included in a local register of historical resources, or if the County, acting as the lead agency, supported by substantial evidence, chooses at its discretion to treat the resource as a TCR.

Development of the proposed project could cause substantial adverse changes in the significance of a TCR (site, feature, place, cultural landscape, sacred place, or object) with cultural value to a California Native American tribe. A review of the NAHC Sacred Lands File was conducted in October 2018 as part of the cultural survey conducted for the project and the search "failed to indicate the presence of Native American cultural resources in the immediate project area." The proposed project is also subject to compliance with AB 52 to ensure that consultation with tribes is conducted by the lead agency and tribes are allowed the opportunity to provide comments, monitor, and preserve any known TCRs, or any found during construction. As discussed above, in compliance with AB 52, the County provided formal notification of the proposed project to all tribes listed on the NAHC official SB 18 California Tribal Consultation List that have requested notification of projects subject to CEQA review. The County provided notification to these tribes in March 2020 and stated that tribes had 30 days to request consultation, in accordance with the timelines established in AB 52 and SB 18. The County did not receive any responses to the AB 52 notifications from the tribes notified in 2020. The NAHC submitted a letter in response to the NOP regarding AB 52 and SB 18 consultation methods and consistency. This is a standard letter submitted by the NAHC and does not raise any site-specific concerns. As described under "Native American Consultation" the project was temporarily put on hold in 2021 and restarted in 2023. At that time, the County sent new notification letters to those interested tribes. Wilton Rancheria and UAIC have subsequently contacted the County and requested to be included in consultation for this project

As summarized above under "Native American Consultation," the County has met with representatives of Wilton Rancheria and UAIC on December 1, 2023, January 29, 2024, and March 15, 2024. After a joint site visit with UAIC, Wilton Rancheria, County staff, and the project applicant representatives in March 2024, Wilton Rancheria submitted a written response to County staff with recommendations on April 4, 2024, and UAIC submitted a written response with recommendations on March 21, 2024. In addition to the on-site meetings with the Tribes the County has also participated in phone calls with Tribal representatives. UAIC and Wilton Rancheria have indicated the previously recorded precontact archaeological resources are TCRs and that the site may contain additional unknown TCRs that could be impacted by the project.

Government to government consultation initiated by the County, acting in good faith and after a reasonable effort, has resulted in the identification of TCRs within the project site. Based on this information, the County has determined that the project would cause a substantial adverse change in the significance of a TCR with cultural value to a California Native American tribe that was determined by the County, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. Further,

archaeological studies resulted in the identification of three precontact archaeological sites (P-09-006004; P-09-006011; P-09-006012) within the project APE, all of which have been recommended eligible for NRHP/CRHR listing. A fourth precontact archeological resource (P-09-000157) identified in the Cultural report was not initially relocated, but Tribal Government Representatives located the resource during their tribal survey.

The potential impacts to TCRs vary based on if the proposed project or an alternative to the proposed project is selected. Because of the significant impacts associated with the proposed project, the Reduced Impact Alternative (RIA) was developed and is evaluated and further analyzed in Chapter 5, Alternatives. As designed, the proposed project would avoid P-09-006004 and is proposing to relocate P-09-006011 and P-09-006012 to the open space preserve in the same vicinity as P-09-006004. The proposed project would not avoid P-09-000157. Therefore, in addition to impacts to the integrity of the site, including location, setting, feeling, and association, the project would impact a TCR resulting in a **significant impact**.

If the proposed project is approved by the County, then the project would not avoid P-09-000157, P-09-006011, and P-09-006012. These three TCRs would experience direct, indirect, and cumulative impacts that would cause substantial adverse changes to their significance. As stated below, these impacts would be significant and potentially unavoidable even with mitigation provided. If the proposed project is selected rather than the RIA, then mitigation measure TCR-6 identifies and describes the process to ensure impacts to TCRs are addressed to avoid, minimize, reduce, and compensate for these impacts.

Based on analysis completed at this time, County staff intends to recommend the RIA for approval because it avoids impacts to TCRs, reduces other environmental impacts, and is the land use plan preferred by the Tribes. The project applicant has committed to the Tribes, County staff, and members of the community that it will support approval of the RIA because it is environmentally superior and addresses the concerns of numerous stakeholders.

Off-site Improvements

The March 2021, Creekside Village Off-Site Utilities Cultural Resources Assessment identified one precontact resource (P-09-000168). The precontact component of this resource was recommended as eligible at one time for NRHP listing. Based on information provided by the Tribes, a known TCR has been identified within an area proposed for off-site improvements that would be impacted by the proposed project and the area is considered to have the potential to contain unanticipated TCRs. As analyzed here, P-09-000168 would be directly impacted by the project. Therefore, the project would impact a significant archaeological resource and known TCRs and, as such, the impact is **significant**.

Mitigation Measures

Mitigation measure TCR-1 requires all construction crew members, consultants, and other personnel involved in project implementation to receive project-specific TCR awareness training prior to initiating construction. in the event potential TCRs are discovered. Mitigation measure TCR-2 requires tribal monitoring during ground disturbing activities and Mitigation measure TCR-3 sets forth the protocol to follow in the event unanticipated TCRs are identified. Mitigation measure TCR-4 includes protocol to follow if human remains are discovered during ground-disturbing construction work. Mitigation measure TCR-5 requires all TCRs within an area of potential ground disturbance be subject to appropriate archaeological and Tribal documentation and relocated to a location with identified TCRs that shall not be impacted by grading or other site disturbing activities. This includes preparing a TCR Relocation Plan and testing plan prior to relocation. However, there is a risk that the TCRs could be impacted during relocation and the relocation would alter the location of the TCRs as they exist today. The Tribes have expressed the

importance of certain TCRs remaining in their current location, but the grading plan for the project would not allow those TCRs to remain in the current location or be buried in place. Mitigation measure TCR-6 requires the County to continue to consult with the UAIC to avoid impacting TCRs. Therefore, because TCRs would be relocated even though they would be preserved in a new location, even with incorporation of mitigation measures TCR-1 through TCR-5, and consultation for avoiding impacts to TCRs under mitigation measure TCR-6 would be ongoing, impacts remain **significant and unavoidable**.

TCR-1: Tribal Cultural Resource (TCR) Awareness Training. The following language shall be noted on project Improvement Plans subject to review and approval by the El Dorado County Planning and Building Department: Prior to the initiation of construction, all construction crew members, consultants, and other personnel involved in project implementation shall receive project-specific Tribal Cultural Resource (TCR) Awareness Training. The training may be conducted in coordination with qualified cultural resource specialists and representatives from culturally affiliated Native American Tribes. The training shall emphasize the requirement for confidentiality and culturally appropriate, respectful treatment of any finds of significance to culturally affiliated Native American Tribes. All personnel required to receive the training shall also be required to sign a form that acknowledges receipt of the training, which shall be submitted to the El Dorado County Planning and Building Department. As a component of the training, a brochure shall be distributed to all personnel associated with the project implementation. At a minimum the brochure shall discuss the following topics in clear and straightforward language:

- Field indicators of potential archaeological or tribal cultural resources (i.e., what to look for, for example: archaeological artifacts, exotic or non-native rock, unusually large amounts of shell or bone, significant soil color variations, etc.).
- Regulations governing archeological resources and tribal cultural resources.
- Consequences of disregarding or violating laws protecting archeological or tribal cultural resources.
- Steps to take if a worker encounters a possible resource. The training shall include project specific guidance for on-site personnel including protocols for resource avoidance, when to stop work, and who to contact if potential archeological or TCRs are identified. The training shall also address the stoppage of work if potentially significant cultural resources are discovered during ground disturbing activities, and in the case of possible human remains the proper course of action requiring immediate contact with the County Coroner and the Native American Heritage Commission.

TCR-2: Tribal Monitoring. The project applicant or their construction contractor shall comply with the following measure to assist with identification of any unknown tribal cultural resources (TCRs) at the earliest possible time during project-related earthmoving activities. These measures shall be included as notes on the project improvements plans prior to their approval by the County.

- The project applicant shall contact the United Auburn Indian Community (UAIC) Tribal Historic Preservation Officer (THPO) (thpo@auburnrancheria.com) at least two weeks prior to project ground-disturbing activities within the areas identified for monitoring in the confidential Creekside Village Sites and Creek Monitoring Map prepared by UAIC and within 200 feet of P-09-000168 (collectively, "Monitoring Area") to retain the services of a UAIC Certified Tribal Monitor ("Tribal Monitor"). The duration of the construction schedule and Tribal Monitoring shall be determined at this time.

- A contracted Tribal Monitor shall monitor the vegetation grubbing, stripping, grading, trenching, and other ground disturbing activities within the Monitoring Area. All ground-disturbing activities within such areas shall be subject to Tribal Monitoring unless otherwise determined unnecessary by UAIC. A contracted UAIC certified Tribal Monitor shall spot check up to 16 hours per month the ground-disturbing activities within all other areas of the project site.
- The Tribal Monitor or UAIC Tribal Representatives shall have the authority to direct that work be temporarily paused, diverted, or slowed within 100 feet of the immediate impact area if sites, cultural soils, or objects of potential significance are identified. The temporary pause/diversion shall provide up to 48 hours for UAIC Tribal Government Representatives to examine the resource.
- If unanticipated TCRs (i.e., sites, features, or artifacts) are exposed during construction activities, Mitigation Measure TCR-3 shall be implemented.
- To track the implementation of this measure, the Tribal Monitor shall document field-monitoring activities on a Tribal Monitor log.
- The Tribal Monitor shall wear the appropriate safety equipment while on the construction site.
- The Tribal Monitor, in consultation with the UAIC THPO and the project applicant, shall determine a mutual end or reduction to the on-site monitoring if/when construction activities have a low potential for impacting TCRs.
- In the event the Tribal Monitor does not report to the job site at the scheduled time after receiving 24-hour business day notice, construction activities may proceed without Tribal Monitoring. At no time, regardless or absence of a Tribal Monitor, shall suspected TCRs be mishandled or disrespected.

TCR-3: Unanticipated Discovery of a Tribal Cultural Resource (TCR). If unanticipated TCRs (i.e., sites, features, or artifacts including but not limited to cultural features, midden/cultural soils, artifacts, exotic rock [non-native], shell, bone, shaped stones, or ash/charcoal) are exposed during construction activities, all construction work occurring within 100 feet of the find shall immediately stop to provide up to 48 hours for the Tribal Monitor and/or United Auburn Indian Community (UAIC) Tribal Government Representatives to evaluate the significance of the find and determine whether or not additional study is warranted. Temporary flagging or staking shall be required around the resource to avoid any disturbance from construction equipment if the Tribal Monitor determines that temporary flagging is necessary to protect the resource. The work exclusion buffer may be reduced based on the recommendation of the Tribal Monitor. If the unanticipated TCRs appear to be human remains, Mitigation Measure TCR-4 shall be implemented.

If the Tribal Monitor or UAIC Tribal Government Representatives determine that the potential resource appears to be a TCR (as defined by Public Resources Code Section 21074), treatment shall be consistent with the following:

- If the TCR is within an Open Space area that was not approved for grading or other disturbance, preservation in place shall occur, if recommended by the Tribal Representative. Alternatively, the Tribal Historic Preservation Officer (THPO) may determine that one of the other treatment strategies identified below is preferred for the particular TCR, in which case that treatment strategy shall be implemented.
- If the TCR is within an area planned for residential lots, road and infrastructure improvements, grading, park improvements, or other development activity approved as part of the project, the

THPO and/or UAIC Tribal Government Representative shall direct whether the treatment of the TCR is one or more of the following: (1) recordation of the resource; (2) recovery and reburial in or relocation to an Open Space preserve area within the Specific Plan, in which case the UAIC Tribal Government Representatives shall identify the placement of the reburial or relocated area; (3) preservation in place through burial if feasible given the final elevation of the area and intended development; or (4) removal and provided to UAIC. Prior to the relocation, burial, or removal of a TCR, UAIC shall record the resources according to UAIC Preservation Department Recommendations for Respectful and Accurate Recordation of Tribal Cultural Resources (TCR) and Cultural Significance/Integrity on Department of Recreation Form (DPR) 523 Forms.

- The applicant shall document the TCR through pictures that remain confidential and are provided to the Tribal Government Representatives. The photographs and management strategies recommended by the Tribal Government Representatives or THPO and carried out by the Tribal Monitor shall remain confidential and be provided to the County in writing and approved by the El Dorado County Director of Planning and Building. The project contractor shall adhere to the management strategies approved by the Tribal Government Representatives or THPO and County. Ground-disturbing activities may resume once the management strategies have been implemented to the satisfaction of the Tribal Monitor and County's Director of Planning and Building.
- The construction contractor(s) shall provide secure, on-site storage for culturally sensitive soils or objects that are components of TCRs that are found or recovered during construction. Only Tribal Government Representatives, THPO, and Tribal Monitors shall have access to the storage. Storage size shall be determined by the nature of the TCR and can range from a small lock box to a conex box (shipping container). A secure (locked), fenced area can also provide adequate on-site storage if larger amounts of material must be stored.

TCR-4: Discovery of Native American Human Remains. If human remains are discovered during ground-disturbing construction work, all construction within 100 feet of the remains shall be halted immediately, and the El Dorado County coroner shall be notified immediately. If the remains are found to be non-Native American or the result of a crime scene, then the procedures in state law and Mitigation Measure CUL-1 shall be followed.

If the remains are determined by the County coroner to be Native American, the Native American Heritage Commission (NAHC), United Auburn Indian Community (UAIC), and Wilton Rancheria shall be notified within 24 hours, and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. Development activity within the buffer area shall not resume until the landowner has discussed and conferred, as prescribed in Section 5097.98 of the Public Resources Code, with the most likely descendants regarding their recommendations as provided for in Section 5097.98 to ensure that the remains are treated with appropriate dignity. As provided for in subsection 5097.98(a), the descendants shall complete their inspection and make their recommendation within 48 hours of being granted access to the site. If no likely descendants are located or recommendations are not made, the applicant shall comply with Section 5097.98, including but not limited to Section 5097.98(e).

The County shall be responsible for confirming compliance with Section 5097.98 and CEQA Guidelines Section 15064.5(e) and the resumption of ground-disturbing activities within 100 feet

of the boundaries of the sensitive area defined by the investigation where the remains were discovered shall not occur until compliance with those standards is demonstrated in writing.

TCR-5: Documentation and Relocation of TCRs. All tribal cultural resources (TCRs) within an area of potential ground disturbance as determined by the grading plan for the proposed project shall be subject to appropriate archaeological and Tribal documentation prior to ground disturbing activity and relocated to a location with identified TCRs that shall not be impacted by grading or other site disturbing activities.

The project applicant shall do the following:

- Obtain written United Auburn Indian Community (UAIC) Tribal Historic Preservation Officer (THPO) approval prior to flagging any TCRs for relocation. Approval shall include any restrictions or requirements related to the relocation, such as type of equipment to use, orientation of the TCR, location for the TCR to be moved to, etc.
- Send a Tribal notification and confirm the details for relocation at least 48 hours prior to any relocation work.
- Update the Tribal Monitoring map to identify any TCRs that are scheduled for relocation.
- Provide financial and logistical support for the protection, intact transport, and relocation of bedrock features or other elements of the TCR.
- Update the California Historic Resources Information System Center (CHRIS) Department of Parks and Recreation (DPR) forms to reflect the relocation work. Updates shall be consistent with Tribal preference for documenting TCRs. Tribes shall have final review authority on the DPR form(s) and shall be copied on submission to the CHRIS. DPR forms shall be prepared for Tribal review within two weeks of relocation work being completed and shall be submitted to the CHRIS within two weeks of Tribal approval.

TCR-6: If the Reduced Impact Alternative (RIA) is not Selected the Following is Required. Mitigation measures TCR-1 through TCR-5 are applicable to the proposed project and the project alternatives, including the RIA and Zoning Consistent Alternative. If the RIA is not selected, project approval shall be contingent upon revisions to the Mitigation Monitoring and Reporting Program (MMRP) to address impacts to TCRs associated with the proposed project through continued tribal consultation. The contingent project approval shall return to the Board of Supervisors for final approval in conjunction with adoption of the revised MMRP. Consideration of TCR avoidance, minimization, rectification, reduction, and compensation shall be based on Tribal consultation. Further measures may include redesign of the site plan to remove lots, capping (or covering) TCRs in place, or providing compensation for the loss of TCRs to avoid or minimize impacts.

Cumulative Impacts

Cumulative impacts on TCRs consider whether impacts of the proposed project together with other projects in the County and the larger region, when taken as a whole, substantially diminish the number of such resources within the same or similar context or type. The cumulative impact to these non-renewable resources is generally considered in terms of their cultural and/or informational value based on their resource type, context and relationships to the surrounding landscape and/or tribal histories.

Impact 3.13-2. The proposed project, in combination with past, present and reasonably foreseeable development, could make a cumulatively considerable contribution to a significant cumulative impact related to tribal cultural resources, including Native American human remains.

As discussed previously, known TCRs, including Native American human remains have either been identified on the project site and the area is considered to be of high potential to contain unanticipated TCRs as well as Native American human remains. The project as presently designed would directly impact a known TCR. Given past, present and future development in the County and because all significant TCRs are unique and non-renewable, all adverse effects or negative impacts contribute to a dwindling resource base, this is considered a significant cumulative impact.

As discussed in the regulatory setting, numerous laws, regulations, and statutes, on both the federal and state levels, seek to protect TCRs and the unanticipated discovery of Native American human remains. Future projects within the region would also be subject to the same requirements as the proposed project. Technical studies and consultation would be required as part of the due diligence process and would result in the documentation and appropriate consideration of any resources that may be present. Regulations in the region for management of TCRs would apply to development within the County. Cumulative projects may require extensive excavation in culturally sensitive areas and thus may result in adverse effects to known or previously unknown, inadvertently discovered TCRs or Native American human remains. There is the potential for accidental discovery of other TCRs by the proposed project as well as by cumulative projects.

The project's incremental contribution to the cumulative loss of TCRs is considerable. Compliance with existing laws and implementation of project-level mitigation measures TCR-1 through TCR-4, would require investigation and handling by a qualified archaeologist in the event that an unknown resource is encountered. However, because a known TCR would be directly impacted by the project and compliance with mitigation would not reduce the significance of the impact it would be significant and unavoidable. The proposed project would contribute to an existing cumulative impact to TCRs and Native American human remains and the project's cumulative contribution would be considerable resulting in a **significant cumulative contribution**.

Mitigation Measures

See Mitigation Measures TCR-1, TCR-2, TCR-3, and TCR-4. Compliance with these mitigation measures would ensure cumulative impacts to TCRs and Native American human remains would be reduced; however, because TCRs would be relocated even though they would be preserved in a new location, even with incorporation of mitigation measures impacts to TCRs would remain **significant and unavoidable cumulative impact**.

TCR-7: Implement mitigation measures TCR-1 through TCR-4.

3.13.5 References

El Dorado County. 2017. *El Dorado County General Plan Conservation and Open Space Element*. Adopted July 19, 2004, amended October 2017. Available online at: https://edcgov.us/government/planning/adoptedgeneralplan/documents/7_conservation.pdf

ESA. 2024. Alternatives and Recommendations for P-09-006011 (CA-ELD-3109) and P-09-006012 (CA-ELD-3110) *Confidential* Memorandum for the Creekside Village Project, El Dorado County, California. January 2024.

ESA. 2025. Off-site Improvements – Supplemental Records Search. *Confidential* Memorandum for the Creekside Village Project, El Dorado County, California. January 2025.

Windmiller Consulting. 2019. Cultural Resources Inventory and Evaluation Report for the Creekside Village Project *(Confidential)*, El Dorado County, California. May 2019.

Windmiller Consulting. 2021. Off-Site Utilities Cultural Resources Assessment for the Creekside Village Project *(Confidential)*, El Dorado County, California. January 2021.

Windmiller Consulting. 2021. Determination of Site Boundaries for the Creekside Village Project *(Confidential),* El Dorado County, California. March 2021.

3.14 Utilities and Service Systems

The following analysis identifies potential impacts due to the utilities and service systems required to serve the proposed Creekside Village Specific Plan (CVSP or proposed project). These utilities include water supply, treatment, and conveyance; wastewater treatment and conveyance; electricity and natural gas services; telecommunication utilities; and solid waste disposal. This section summarizes relevant federal, state, and regional regulatory considerations; and evaluates the potential impacts of the project related to these utilities.

Public comments related to utilities and service systems received in response to the November 6, 2020, Notice of Preparation (NOP) included letters from community members that raised concerns about possible impacts relating to utility demands and specifically, utility usage at schools. No additional comments were received at the second scoping meeting held on September 26, 2023. A copy of the NOP and comments received is included in Appendix A.

Main sources referenced in this section include the 2020 El Dorado Irrigation District (EID) Urban Water Management Plan (EID 2021a), the 2021 EID Sewer System Management Plan (EID 2021b), the EID Integrated Water Resources Master Plan (EID 2013a), the EID Wastewater Facilities Master Plan (EID 2013b), the 2012 El Dorado County Solid Waste Management Plan (El Dorado County 2012), the El Dorado County General Plan (El Dorado County 2004), and the Water Supply Assessment prepared for the project (Appendix I).

3.14.1 Environmental Setting

Water Supply

The EID or the "District" is the largest of five water purveyors in El Dorado County (County) and provides water services to the communities of Bass Lake, El Dorado Hills (including the project area), Lotus/Coloma, Cameron Park, Shingle Springs, Logtown, El Dorado and Diamond Springs, Swansboro, Camino and Fruitridge, Pleasant Valley, Sly Park, Pollock Pines, Outingdale, Strawberry, North Placerville, and South Placerville, all of which are located in unincorporated El Dorado County (County). EID was originally formed to supply farming irrigation water but has become more urbanized over time as a result of population growth and demand. The EID service area has grown to cover approximately 220 square miles and provides both municipal and agricultural services to approximately 110,00 people. Within EID's 2020 Urban Water Management Plan (UWMP), communities are organized into 16 district service zones. The project site is located within the El Dorado Hills Region service zone 2 (EID 2021a).

EID's primary water supply is derived from natural rainfall and snowpack that falls upon the Sierra Nevada mountains. More specifically, the water supply system draws its water from Jenkinson Lake, the upper South Fork American River, and the Folsom Reservoir. EID does not use groundwater as a supply but does capture and treat wastewater from several of the local communities to produce recycled water for irrigation and supplement potable supplies (EID 2021a).

There are three main water treatment plants (WTP) in the EID system: Reservoir 1 WTP, Reservoir A WTP, and the El Dorado Hills WTP. The El Dorado Hills WTP serves the project area and treated an average of 6.1 million gallons per day (mgd) in 2008 with a maximum production capacity of 26 mgd as of 2013 (EID 2013a). Water treated at the El Dorado Hills WTP is pumped and distributed via transmission mains which convey water to tanks and to customers throughout the El Dorado Hills area (EID 2013a). The EID 2013 Integrated Water Resources Master Plan indicates that the El Dorado Hills WTP would have a capacity deficit of 45 mgd in 2030 and 51 mgd upon full

buildout of the County General Plan and adopted specific plans (Bass Lake Hills, Carson Creek, El Dorado Hills, Northwest El Dorado Hills, Promontory and Valley View) known at the time of document preparation. At the time of preparation of the Integrated Water Resources Master Plan, the proposed project was not anticipated, but buildout of the General Plan assumed buildout of the El Dorado Hills Business Park, including the project site.

According to the 2020 UWMP, EID has historically received water supplies that are more than sufficient to support water demands throughout the service area (EID 2021a). As of 2020, the total water demand within the EID service area was 26,240 acre-feet (EID 2021a). Table 3.13-1 below shows EID's current and planned water supplies in normal, dry, and multiple dry years. In normal years, EID's water supply assets total 70,794 acre-feet per year. In a single dry year, water supplies secured by the District total 63,379 acre-feet per year. Water supply is further reduced to 55,328 acre-feet per year by the fifth multi-year drought. The UWMP notes that the planned Central Valley Project Fazio Water assets[1] are anticipated to be available for use by EID in 2035. Although this addition to the EID's assets is not needed to meet demands in any scenario that is examined in the UWMP, it will further improve supply reliability above existing levels.

Table 3.14-1. Water Supply Summary 2020-2045 (values in acre-feet)

Supply Sources	Maximum Water Assets Available	Normal Year	Single Dry Year	Multiple Dry Years				
				Year 1	Year 2	Year 3	Year 4	Year 5
Surface Water	77,694	67,294	59,879	59,879	55,868	51,828	51,828	51,828
Recycled Water	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Ground Water	—	0	0	0	0	0	0	0
Subtotal Existing Supplies	*81,194*	*70,794*	*63,379*	*63,379*	*59,368*	*55,328*	*55,328*	*55,328*
Planned Supplies (Central Valley Project Fazio Water entitlement)	7,500	7,500	3,750	3,750	3,750	1,235	1,235	1,235
Totals	**88,694**	**78,294**	**67,129**	**67,129**	**63,118**	**56,563**	**56,563**	**56,563**

Source: EID 2021a, Table 3-5.

Wastewater

Wastewater treatment and collection for the project site is provided by EID. EID uses two types of systems to treat wastewater, including Wastewater Treatment Plants (WWTPs) and onsite wastewater treatment systems (OWTS). WWTPs connect to a collection system consisting of pipelines and lift stations, whereas OWTS connect to individual residences or nonresidential buildings for areas not served by the EID collection system. Areas that use OWTS rely on septic tanks or onsite disposal by way of underground leach field and other soil absorption systems.

EID has four permitted wastewater collection systems and WWTPs: El Dorado Hills, Deer Creek, Camino Heights, and Gold Ridge Forest. The project site is served by the El Dorado Hills collection system and WWTP. The collection

[1] The Fazio Central Valley Project water supply is an identified planned water supply that could be pursued by EID in the future. The 2020 UWMP notes that in 2019, the El Dorado Water Agency executed a contract with the United States Bureau of Reclamation for up to 15,000 acre-feet of CVP water, of which at least 7,500 acre-feet would be made available to EID by subcontracts with El Dorado Water Agency. Diversions by the EID would occur at its existing intake in Folsom Reservoir, conveyed to the El Dorado Hills Water Treatment Plant, and delivered to a specific place of use location in El Dorado Hills and Cameron Park areas (EID 2021a).

system is comprised of 34 lift stations and 285 miles of pipeline ranging between 2- and 36-inches in diameter. Through 2012, there were approximately 12,000 sewer connections within the system. Based on a 10-year, 24-hour design storm event, the EID Wastewater Facilities Master Plan recommends replacement of 5,000 linear feet of pipelines and two lift station pumps to reduce the potential for sanitary sewer overflows. These projects were included in the EID 2014-2018 Capital Improvement Plan (CIP) and are assumed to be completed (no information is available online regarding the status of these projects). The El Dorado Hills collection system conveys wastewater to the El Dorado Hills WWTP which has an existing capacity of 4.0 mgd (EID 2013b). Treated effluent is discharged to Carson Creek or recycled for beneficial use in the District's recycled water system (EID 2013b). Currently, the average dry weather flow (ADWF) at El Dorado Hills WWTP is 2.65 mgd. Table 3.14-2 displays the future flow projections during an average dry weather flow year based on buildout of the 2004 County General Plan and development of specific plans known at the time of preparation of the 2013 Wastewater Facilities Master Plan (EID 2013b). The El Dorado Hills WWTP is expected to reach its current rated capacity in 2025. To accommodate future growth, the EID Wastewater Facilities Master Plan recommends that the El Dorado Hills WWTP expands to 5.45 mgd by 2026 (EID 2013b).

Table 3.14-2. Future Flow Projections

	El Dorado Hills WWTP (mgd)
Existing ADWF[1]	2.65
Future Unplanned Density ADWF[2]	0.88
Future Planned Density[2]	1.92
Total Projected ADWF	**5.45**

Source: EID 2013b, Table 4-6.
Notes:
1 Equal to arithmetic average of 2006 through 2009 ADWFs.
2 The 2013 Wastewater Facilities Master Plan defines future planned density as the planned connections associated with specific plan developments that were known at the time of the preparation. The specific plans identified include: the communities of Bass Lake Hills, Carson Creek, El Dorado Hills, Northwest El Dorado Hills, Promontory and Valley View. Future unplanned density is based on the County's General Plan Land Use designations that were combined with the District's wastewater generation rates to project future flows.

Existing wastewater infrastructure surrounding the project site consists of local sewer pressurized mains, sewer gravity mains, an existing EID lift station (Business Park No. 1), and directly northeast of the project site is the El Dorado Hills WWTP. The nearby pressurized mains border the western portion of the project site, and the sewer gravity mains are directly south of the project site (EID 2021b).

Stormwater

There is no existing storm drain infrastructure on or within the project site. Refer to Section 3.8, Hydrology and Water Quality, for information regarding stormwater drainage.

Energy Supply

Electricity and Natural Gas

Pioneer Community Energy and Pacific Gas & Electric (PG&E) provide electricity services in the incorporated county. PG&E also provides natural gas service. PG&E provides electric services to 5.5 million customers, including 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines over a 70,000-square-mile service area in northern and central California (PG&E 2024a). Existing overhead

electrical lines are located along the eastern boundary of the project site adjacent to Latrobe Road. There are no existing overhead lines that traverse the project site. To reduce the risk of wildfires, in 2023 PG&E began operations to underground approximately 350 miles of distribution lines across their service areas within the county. Approximately 16 miles of line were forecasted to be undergrounded in 2023, with an additional 13 miles in 2024 and 276 miles in 2025-2026 (PG&E 2023).

Pioneer Community Energy began providing electricity to most of the unincorporated county in 2022 and currently serves 166,000 customers and provides 100% renewable energy to its customers, if requested (Pioneer Energy 2024).

PG&E also provides natural gas to numerous counties in northern and central California, including the county. Within their entire service area, PG&E maintains approximately 6,500 miles of gas transmission pipelines and 42,000 distribution pipelines (PG&E 2024a). PG&E also owns and operates three underground storage fields and 116 wells (PG&E 2024b). Electrical services and gas services, if included, to the project site would be conveyed via underground facilities as determined necessary by PG&E.

Telecommunications

There are several telecommunications services in the project area such as telephone, cable television, and Internet services within the county. There is no current telecommunication infrastructure on the project site.

Solid Waste

The project site is located within the El Dorado Disposal service area. El Dorado Disposal provides residential and commercial trash, recycling, and organics collection services, as well as construction and demolition debris collection and recycling for the cities and unincorporated communities within the county (El Dorado County 2012). As previously described, the project site consists of vacant, undeveloped land. Thus, there are no existing solid waste services provided to the site.

The County prepared a Countywide Integrated Waste Management Plan (CIWMP) in 1995, in accordance with Assembly Bill 939. In 2012, the County also adopted the El Dorado County Solid Waste Management Plan, which supports the goals presented in the CIWMP. The 2012 Solid Waste Management Plan notes that there are three Material Recovery Facilities (MRFs) that serve customers in the county, the Western El Dorado Recovery Systems MRF, South Tahoe Refuse Transfer Station, and Eastern Regional Transfer Station in Placer County (El Dorado County 2012). The Western El Dorado MRF serves the project area and is located approximately 19 miles northeast of the project site. The Western El Dorado MRF works to fulfill waste diversion goals set forth by the County through the implementation of source reduction, composting, and recycling programs.

As of 2009, the unincorporated areas of the county were disposing 100,150 tons into landfills per year (El Dorado County 2012). Waste is first brought to the Western El Dorado MRF to sort out recyclable materials from the waste stream and then the remaining waste is then transferred to the Potrero Hills Landfill in Solano County. The Potrero Hills Landfill accepts a variety of wastes including industrial, mixed municipal, construction and demolition, agricultural, ash, sludge, and tires. The Potrero Hills landfill accepts a maximum of 4,330 cubic yards of disposal material per day. As displayed in Table 3.14-3, the permitted capacity of the landfill is 83.1 million cubic yards. As of 2006, there was a remaining capacity of 13.9 million cubic yards, which is 16.7% of the landfill's overall capacity (CalRecycle 2019a). The Potrero landfill is expected to cease operations in 2048 (CalRecycle 2019a).

Table 3.14-3. Potrero Hills Landfill Capacities

Facility	Daily Permitted Capacity (cubic yards)	Maximum Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)
Potrero Hills Landfill	4,330	83,100,000	13,900,000

Source: CalRecycle 2019a.

3.14.2 Regulatory Setting

Federal Regulations

Clean Water Act

The federal Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. The CWA made it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit was obtained under its provisions. The CWA assists in the development and implementation of waste treatment management plans and practices by requiring provisions for treatment of waste using best management practices (BMP) technology before there is any discharge of pollutants into receiving waters, as well as the confined disposal of pollution, so that it will not migrate to cause water or other environmental pollution. Additionally, CWA funds the construction of sewage treatment plants under the construction grants program.

National Pollutant Discharge Elimination System

The Water Permits Division within the U.S. EPA Office of Wastewater Management leads and manages the National Pollutant Discharge Elimination System (NPDES) permit program. As authorized by the federal CWA, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. The NPDES permit program oversees stormwater management and sewer and sanitary sewer overflows.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (40 CFR 268, Subpart D), contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs that include federal landfill criteria. The federal regulations address the location, operation, design, and closure of landfills, as well as groundwater monitoring requirements.

State Regulations

Urban Water Management Planning Act

The Urban Water Management Planning Act was established in Division 6, Part 2.6 of the California Water Code. The act was developed due to concerns for potential water supply shortages throughout the state. It requires information on water supply reliability and water use efficiency measures. Urban water suppliers are required as part of the act to develop and implement UWMPs to describe their efforts to promote efficient use and management of water resources. UWMPs are required to be updated every five years. EID has complied with the Urban Water Management Planning Act through the adoption of its 2020 UWMP.

Senate Bill 610

Senate Bill (SB) 610, enacted in 2001, amended the California Public Resources Code (PRC) and the Water Code to expand requirements for documentation of available water supply in connection with land development approvals. Specifically, SB 610 requires land use agencies with authority over large development projects to document the availability of an adequate supply of potable water and to include this documentation in the California Environmental Quality Act (CEQA) document required for a project. The required documentation is a Water Supply Assessment (WSA), which is to be prepared by the "public water system" that would serve the project area (or, where there is no such public water system separate from the city or county lead agency that provides its own water service). The WSA evaluates the adequacy of the total projected water supplies of the public water system, including existing water supplies and future planned water supplies, to meet the existing and projected future water demands, including future water demands associated with a project. This evaluation is conducted under three hydrologic conditions: a normal precipitation year, a single dry year, and multiple dry years. The WSA requirements apply to projects involving more than 500 residential units (or an amount that is equivalent to a 500 residential unit development), commercial projects employing more than 1,000 persons or having more than 500,000 square feet of floor area, and industrial projects employing more than 1,000 persons, occupying more than 40 acres of land or having more than 650,000 square feet of floor area. The proposed project meets the criteria and has prepared a WSA (Appendix I).

California Water Code Sections 10910-10915 requires that the land use agency request preparation of the WSA from the responsible public water system. WSAs may rely on relevant information from approved UWMPs. For the proposed project, a WSA was prepared by Tully and Young and can be found in Appendix I.

General Waste Discharge Requirements for Sanitary Sewer Systems

The General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems were adopted by the State Water Resources Control Board (SWRCB) in May 2006. These WDRs require local jurisdictions to develop a sewer system management plan (SSMP) that addresses the necessary operation and emergency response plans to reduce sanitary sewer overflows (SWRCB 2006). The WDRs require that the local jurisdiction approve the SSMP. The most recent SSMP for the County was adopted in 2019 and then audited in 2021.

California Green Building Standards Code

The state's current 2022 Green Building Standards Code applies to all newly constructed structures. The code addresses the five divisions of building construction: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality in order to improve public health, safety, and general welfare.

California Waste Management Act

The California Waste Management Act of 1989 requires state, county, and local governments to substantially decrease the volume of waste disposed at landfills by the year 2000 and beyond. The act requires each County to submit an Integrated Waste Management Plan to the California Integrated Waste Management Board that includes an adopted Source Reduction and Recycling Element from each of its cities as well as a County-prepared Source Reeducation and Recycling Element for unincorporated areas. The element identifies existing and future quantities and types of solid waste, an inventory of existing disposal sites, a determination of the plan's economic feasibility, enforcement programs, and implementation schedule.

In addition to reduction and recycling elements to reduce solid waste, the act also requires a County's Integrated Waste Management Plan to estimate and plan for the County's solid waste capacity needs for a minimum of 15 years, including "[t]he identification of an area or areas for the location of new solid waste transformation or disposal facilities, or the expansion of existing facilities, that are consistent with the applicable city or county general plan, if the county determines that existing capacity will be exhausted within 15 years or additional capacity is desired." (PRC Sections 41750, 41701, subd. (d).) An Integrated Waste Management Plan is reviewed and approved by the Department of Resources Recycling and Recovery.

Solid Waste Regulations

The California Integrated Waste Management Act (AB 939), enacted in 1989 and subsequently amended, required local jurisdictions to divert at least 50% of their solid waste from landfills by 2000. More recent legislation, AB 341, increased the recycling requirement to 75% of solid waste by 2020. Beginning April 1, 2016, the state's Mandatory Organic Waste Recycling law (AB 1826) phased in requirements for including multifamily properties of five (5) or more units, based on the amount and type of waste the business produces weekly, with full implementation in 2019.

Senate Bill 1383

SB 1383 requires all businesses, residents, and multifamily properties to separate organic materials (such as plant debris, food waste, food soiled papers, untreated wood waste) and recyclable materials from refuse, and either subscribe to the required collection services or self-haul to an appropriate facility for diversion. The law mandates that every jurisdiction provide organic waste collection services to all residents and businesses. Organic waste includes food, green material, landscape and pruning waste, organic textiles and carpets, lumber, wood, paper products, printing and writing paper, manure, biosolids, digestate, and sludges. Jurisdictions can select from a variety of organic waste collection services to match their unique communities and local infrastructure and must educate all residents and businesses about collection requirements, including what materials to put in curbside bins. Organic waste collection serves are available in the county.

Local Regulations

El Dorado County Construction and Demolition Debris Recycling Ordinance

Chapter 8.43 of the El Dorado County Code (Construction and Demolition Debris Recycling within the County) establishes a program for the recycling and salvage of construction and demolition debris. The ordinance requires at least 50% of the debris from construction and demolition projects with structure footprints exceeding 5,000 square feet to be diverted from landfills through recycling practices. Before the issuance of a permit, the project applicant must file a Debris Recycling Acknowledgment (DRA) with the County's Environmental Management Division. A Debris Recycling Report (demonstrating compliance with the 50% diversion goal) must be filed within 60 days after final and/or occupancy approval.

El Dorado County Integrated Waste Management Pan

The El Dorado County Integrated Waste Management Plan was prepared pursuant to the California Integrated Waste Management Act (AB 939), which requires counties to prepare a Countywide Integrated Waste Management Plan. The El Dorado County Integrated Waste Management Plan was last adopted in 1995 and includes an overview of solid waste management practices and presents goals and objectives to ensure an integrated waste management system throughout the county. Goals presented in the Plan are primarily focused on the

implementation of source reduction, recycling, and composting, as well as safe and effective household hazardous waste disposal.

El Dorado County Solid Waste Management Plan

The El Dorado County Solid Waste Management Plan was adopted on January 31, 2012. The Plan is designed to assist the County in reaching a future 75% landfill diversion goal in the most cost-effective, systematic, cohesive, and strategic manner. The Plan provides a strategic roadmap to use in planning for: coordinated, countywide, and jurisdiction cooperation and initiating near, intermediate and long-term program and infrastructure strategies. The Plan includes the estimated potential diversion gains for each strategy and methods to track strategy progress. The Plan also includes estimated costs and funding methods for the program and infrastructure strategies. The Plan also analyzes potential avenues to ensure adequate landfill and disposal capacity and the potential for in-County facilities to reduce the County's "dependence on out-of-County landfills."

El Dorado County General Plan

The following goals, objectives, and policies in the El Dorado County General Plan (last amended 2019) related to utilities and service systems are included in the Public Services and Utilities Element of the General Plan (El Dorado County 2019) and are applicable to the proposed project.

Public Services and Utilities Element

Goal 5.1: Provide and maintain a system of safe, adequate, and cost-effective public utilities and services; maintain an adequate level of service to existing development while allowing for additional growth in an efficient manner; and ensure a safe and adequate water supply, wastewater disposal, and appropriate public services for rural areas.

Objective 5.1.2: Ensure through consultation with responsible service and utility purveyors that adequate public services and utilities, including water supply, wastewater treatment and disposal, solid waste disposal capacity, storm drainage, fire protection, police protection, and ambulance service are provided concurrent with discretionary development or through other mitigation measures provided, and ensure that adequate school facilities are provided concurrent with discretionary development to the maximum extent permitted by State law. It shall be the policy of the County to cooperate with responsible service and utility purveyors in ensuring the adequate provision of service. Absent evidence beyond a reasonable doubt, the County will rely on the information received from such purveyors and shall not substitute its judgment for that of the responsible purveyors on questions of capacity or levels of service.

Policy 5.1.2.3: New development shall be required to pay its proportionate share of the costs of infrastructure improvements required to serve the project to the extent permitted by State law. Lack of available public or private services or adequate infrastructure to serve the project which cannot be satisfactorily mitigated shall be grounds for denial of any project or cause for the reduction of size, density, and/or intensity otherwise indicated on the General Plan land use map to the extent allowed by State law.

Goal 5.2: The development or acquisition of an adequate water supply consistent with the geographical distribution or location of future land uses and planned developments.

Policy 5.2.1.2: An adequate quantity and quality of water for all uses, including fire protection, shall be provided for with discretionary development.

Policy 5.2.1.10: The County shall support water conservation and recycling programs and projects that can reduce future water demand consistent with the policies of the general plan. The County will develop and implement a water use efficiency program for existing and new residential, commercial/industrial, and agricultural uses. The County will also work with each of the County's water purveyors to develop a list of the type of uses that must utilize reclaimed water if feasible. The feasibility of using reclaimed water will be defined with specific criteria developed with public input and with the assistance of EID and will be coordinated with their ongoing reclaimed water (also referred to as recycled water) planning and implementation process. The County shall encourage all water purveyors to implement the water conservation-related Best Management Practices already implemented by EID and in compliance with the related criteria established by U.S. Bureau of Reclamation.

Policy 5.2.1.11: The County shall direct new development to areas where public water service already exists. In Community Regions, all new development shall connect to a public water system. In Rural Centers, all new development shall connect either to a public water system or to an approved private water system.

Goal 5.3: An adequate and safe system of wastewater collection, treatment, and disposal to serve current and future County residents.

Policy 5.3.1.1: High-density and multifamily residential, commercial, and industrial projects shall be required to connect to public wastewater collection facilities as a condition of approval except in Rural Centers and areas designated as Platted Lands (- PL). In the Community Region of Camino/Pollock Pines, the long-term development of public sewer service shall be encouraged; however, development projects will not be required to connect to wastewater collection facilities where such connection is infeasible, based on the scale of the project. (Res. No. 298-98; 12/8/98)

Policy 5.3.1.7: In Community Regions, all new development shall connect to public wastewater treatment facilities. In Community Regions where public wastewater collection facilities do not exist, project applicants must demonstrate that the proposed wastewater disposal system can accommodate the highest possible demand of the project.

Goal 5.5: A safe, effective and efficient system for the collection and processing of recyclable and transformable materials and for the disposal of residual solid wastes which cannot otherwise be recycled or transformed.

Objective 5.5.2: Ensure that there is adequate capacity for solid waste processing, recycling, transformation, and disposal to serve existing and future users in the County.

Policy 5.5.2.1: Concurrent with the approval of new development, evidence will be required that capacity exists within the solid waste system for the processing, recycling, transformation, and disposal of solid waste.

Goal 5.6: Sufficient utility service availability consistent with the needs of a growing community.

Policy 5.6.1.1: Promote and coordinate efforts with utilities for the undergrounding of existing and new utility distribution lines in accordance with current rules and regulations of the California Public Utility Commission and existing overhead power lines within scenic areas and existing Community Regions and Rural Centers.

Policy 5.6.1.2: Reserve adequate rights-of-way to facilitate expansion of services in a timely manner.

3.14.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
- Not have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
- Not comply with federal, state, and local management and reduction statues and regulations related to solid waste.

Significance Threshold Criteria Not Applicable to the Proposed Project

Stormwater runoff and proposed drainage infrastructure is addressed in Section 3.8, Hydrology, and Water Quality. Please refer to this section for a discussion on impacts associated with stormwater.

3.14.4 Impacts and Mitigation Measures

Methodology

Potential project impacts on water, wastewater, solid waste disposal and electric power, natural gas, or telecommunications facilities were evaluated based on the adequacy of existing and planned infrastructure and the capacity to meet additional demand for these services resulting from project implementation. Sources reviewed to prepare the analysis include the County's General Plan (El Dorado County 2004), the 2020 EID UWMP (EID 2021a), the 2021 EID Sewer System Management Plan (EID 2021b), and the project's WSA (Appendix I).

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1.8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. Where applicable, the impact analysis below indicates if a proposed option would result in a change in impact significance or require new mitigation.

Water

A WSA was prepared for the proposed project by Tully & Young in January 2021 (Appendix I). The WSA estimates the proposed project's water demand through build-out, presents and discusses the availability of water sources identified to meet that demand, and assesses whether expected water sources and supplies would be sufficient to meet the projected water demand of the project during normal, single dry, and multiple dry year conditions. The WSA was prepared prior to several minor changes made to the project description but still adequately evaluates the project's increase in water demand. The changes to the project description include a decrease of 8 housing units, a new land use designation (Neighborhood Commercial) of 1.8 acres, a decrease in park acreage (13.6 acres proposed compared to 14.4 acres analyzed in the WSA), and analysis of the two options. These project changes are reflected in the analysis provided herein. The calculations presented in this section may differ slightly than those presented in the WSA (Appendix I). However, the same methodologies described in the WSA were used to create updated calculations for the project, as presented in Table 3.14-4.

The project's estimated water demand represents the total demand from all of the land uses proposed on site. The WSA (Appendix I) for the project defines project land uses by residential, non-residential, and other miscellaneous uses to estimate water demand. The Neighborhood Commercial land use has been added to this list of land uses proposed by the project. The 918 proposed housing units were further divided by densities: low density residential (668 units) and medium density residential (250 units). Non-residential uses consist of park uses and roadway landscaping and other miscellaneous uses including short-term increase in construction water. Table 3.14-4 displays the project's anticipated water demands by land use including any distribution system losses. Although distribution system losses from newly constructed infrastructure would be expected to be minimal, it is conservatively assumed the proposed project would be consistent with the estimated system losses identified in the 2020 UWMP (17.6%). The total annual water demand at buildout in 2035 would be 481 AFY. This assumes development of the 918 residential units and Neighborhood Commercial if adopted as part of the CVSP. Otherwise, the 1.8-acres of Neighborhood Commercial would be used as a park which may slightly increase the project's water demand by approximately 6 AFY for a total of 487 AFY. The reduction in the total number of residential units to 768 age-restricted units and 150 conventional homes under the Active Adult option would further reduce the project's water demand. Age-restricted units generate approximately 40% less demand for utilities and services due to fewer persons per household. However, for the purposes of the analysis buildout of 918 conventional units is assumed to capture the maximum water demand.

EID also reviewed the project's water demand and issued a Facilities Improvement Letter that indicates that, as of January 1, 2022, there were approximately 16,910 equivalent dwelling units (EDUs) of water supply available in the El Dorado Hills Water Supply Region and the project as proposed would require 968 EDUs of water supply (EID 2024).

As discussed in Chapter 2, Project Description, the plan area would be developed in five phases with full build-out expected in 2030 or later. For the purposes of this analysis, it is assumed that the proposed project is anticipated to reach build-out by 2035.

Table 3.14-4. Proposed Project's Annual Water Demand

Category	Dwelling Units or Acres					Demand Factor[1] (af/du or af/ac)		Acre-feet per Year[2]				
	2025	2030	2035	2040	2045			2025	2030	2035	2040	2045
Residential												
Low Density Residential (du)	81	165	668	668	668	0.18	(indoor)	15	30	120	120	120
						0.25	(outdoor)	20	41	167	167	167
Medium Density Residential (du)	0	0	250	250	250	0.18	(indoor)	0	0	45	45	45
						0.08	(outdoor)	0	0	20	20	20
DU Total	**81**	**165**	**918**	**918**	**918**							
						Indoor Subtotal		*15*	*30*	*165*	*165*	*165*
						Outdoor Subtotal		*20*	*41*	*187*	*187*	*187*
Neighborhood Commercial[1]												
Commercial/Industrial (ac)	0	0	1.68	1.68	1.68	1.0	(indoor and outdoor)	0	0	2	2	2
Commercial Landscape (ac)			0.12	0.12	0.12							
Non-Residential												
Park	4	7	13.6	13.6	13.6	3.70		15	26	50	50	50
Roadway Landscaping	5	11.1	11.1	11.1	11.1	0.45		2	5	5	5	5
						Subtotal		*17*	*31*	*55*	*55*	*55*
Other Miscellaneous Uses												
Construction Water	1	1	0	0	0	5.0		5	5	0	0	0
						Total		**57**	**107**	**409**	**409**	**409**
						Outdoor Non-revenue water		**10**	**19**	**72**	**72**	**72**
						Total Project Demand		**67**	**126**	**481**	**481**	**481**

Source: (Appendix I; EID 2016, EID 2021a).
Notes: The average system loss was updated from 13% in the 2015 UWMP to 17.6% in the 2020 UWMP.
1 Since the WSA was prepared prior to the circulation of the EID 2020 UWMP, the WSA uses the demand factors from EID's 2015 UWMP. The demand factors used are based on EID's 2015 UWMP demand factor rates, with the exception of the Neighborhood Commercial land use demand factor(s), which are identified in the 2020 UWMP (Appendix I; EID 2016; EID 2021a). Commercial/Industrial and Commercial Landscape acreage was estimated based on the maximum floor area ratio of 0.69 specified in the CVSP.
2 Totals are rounded to the nearest whole number.

Wastewater

The analysis of impacts to wastewater treatment services is based on wastewater treatment demand generated by the project compared to the thresholds of significance listed below. Wastewater demand for the proposed project was quantified based on the following assumptions: (1) a single-family low-density residential unit produces 34 gallons per dwelling unit (DU) per day of wastewater, (2) a single-family medium-density residential unit produces 120 gallons per DU per day of wastewater, and (3) neighborhood commercial land uses produce 500 gallons of wastewater per acre (EID 2013b). The project's total wastewater generation is calculated in Table 3.14-5, below. There would be no change in the number of single-family low density and single-family medium density units under the Active Adult option. The only change would be in the type of housing; 758 age-restricted and 150 conventional housing units. As noted above, age-restricted units generate approximately 40% less demand for utilities due to fewer persons per household. Therefore, under the Active Adult option approximately 34,567 gpd or 0.035 mgd would be generated.

Table 3.14-5. Summary of Estimated Annual Project Wastewater Generation

Land Use[1]	Unit	Wastewater Generation Rate	Wastewater Generation
Proposed Project			
Residential: Single Family Low Density	668 du	34 gpd/du	22,712 gpd
Residential: Single Family Medium Density	250 du	120 gpd/du	30,000 gpd
Neighborhood Commercial	1.8 acres	500 gpd/acre	900 gpd
		Total (gpd)	**53,612**
		Total (mgd)	**0.054**

Source: EID 2013b.
Notes:
1 Parks and open space land uses would not generate wastewater, as such the land uses are not included.
gpd= gallons per day; du = dwelling units; mgd = million gallons per day

As shown in Table 3.14-5, the project's total wastewater generation would be 53,612 gpd or approximately 0.054 mgd average dry weather flows (ADWF). If Neighborhood Commercial is not adopted as part of the CVSP, this land would be developed as parkland which would slightly reduce the project's overall demand for wastewater services. The Active Adult option would reduce the amount wastewater generated to approximately 32,168 gpd/acre or 0.032 mgd.

Solid Waste

The analysis of impacts to landfill capacity is based on the amount of solid waste that would be generated by operation of the proposed project compared to the thresholds of significance listed below. The project's total solid waste generation is calculated in Table 3.14-6 below. At the project buildout an estimated 2,064 cubic yards of operational solid waste would be generated prior to recycling. If Neighborhood Commercial is not adopted as part of the CVSP this land would be developed as parkland which would slightly reduce the project's overall generation of solid waste. The same as above, there would be no change in the number of single-family low density and single-family medium density units under the Active Adult option. The only change would be in the type of housing; 758 age-restricted and 150 conventional housing units. Because age-restricted units generate approximately 40% less demand for utilities due to fewer persons per household. The amount of solid waste generated under the Active Adult option would be reduced to 1,238 cubic yards/year.

Table 3.14-6. Operational Solid Waste Generation

Land Use	Units	Waste Generation Rate	Waste Generation (tons/year)	Waste Generation (cubic yards/year)
Proposed Project				
Residential: Single Family Low Density	668 DU	10 lbs/du/day	1,219	1,707
Residential: Single Family Medium Density	250 DU	4 lbs/du/day	183	256
Neighborhood Commercial	1.8 acres	5 lbs/1000 sf/day	72	101
		Total Peak Amount	**1,474**	**2,064**

Source: CalRecycle 2019b.
Notes: 1 ton= 2,000 pounds and 1.4 cubic yards
1 acre = 43,560 square feet

Project Impacts

Impact 3.14-1. The proposed project would not result in environmental impacts from the construction of new water, wastewater treatment, electric power, natural gas, or telecommunications facilities.

Water Supply and Treatment

The provision of expanded water service to the project site would require the expansion and development of new water infrastructure that would connect to EID's existing water infrastructure. The proposed water system includes a connection to two existing off-site water transmission mains located in Latrobe Road and one water transmission main located near John Adams Academy, just north of the project site. The project, including both options, would construct 12- and 8-inch on-site distribution mains creating a looped system to provide water to serve new onsite land uses. New water infrastructure proposed by the project was designed in accordance with EID's Design and Construction Standards (1999) to ensure adequate water conveyance to the site. The direct and indirect impacts associated with the construction of water infrastructure to serve the proposed project including air emissions associated with construction equipment, potential loss of biological and cultural resources, for example, are evaluated in other sections of this Draft EIR. Project construction would occur in accordance with all applicable state and local regulatory requirements.

As discussed in the Environmental Setting above, the El Dorado Hills WTP has identified future capacity deficits in existing water treatment infrastructure as new projects requiring water service are developed in the area. While the proposed project was not known in 2013 when EID prepared the Integrated Water Resources Master Plan (EID 2013a), the General Plan assumed buildout of the El Dorado Hills Business Park, including buildout of the Business Park at the project site. It is likely that R&D uses would generally require less water treatment use than residential uses, therefore, the project's water demand is additive to the identified future water service deficits related to water treatment. EID reviewed the project and notes as of January 1, 2022, there were approximately 16,910 EDUs of water supply available and the project would require 968 EDUs (EID 2024). The project, including either option, is not anticipated to require the construction of new or expanded water infrastructure besides those improvements already identified as part of the project.

The proposed project would comply with General Plan Policy 5.1.2.3 requiring new developments to pay a proportionate share of the costs of infrastructure improvements needed to serve a project. EID identifies necessary infrastructure improvements in a CIP which is updated annually. As a public agency, EID is required to comply with

CEQA when approving projects that may have a physical effect on the environment. Many EID projects are also subject to federal agency approval and must conduct National Environmental Policy Act (NEPA) review as well. Future environmental review would identify, and mitigate to the extent feasible, any significant adverse effects on the environment resulting from new infrastructure improvement projects. While the project would be required to pay fees that may be used on a future EID CIP project, there are no new or expanded water treatment facilities required to ensure water is provided to serve the project.

Additionally, Objective 5.1.2 in the County General Plan states the County's policy to cooperate with utility purveyors to ensure that adequate services are provided concurrent with discretionary development. The project is anticipated to be built out in several phases and therefore the need for water services would occur incrementally. As such, impacts associated with the relocation or construction of new or expanded water infrastructure would be **less than significant.**

Wastewater

The proposed project would require the expansion and development of new on-site wastewater infrastructure that would connect to EID's existing wastewater infrastructure. The project's proposed wastewater system, including either option, would consist of gravity sewer mains, localized collector lines, and individual laterals. Due to the topography of the project site, wastewater would generally flow from east to west through gravity mains to a proposed lift station to be located at the western end of the site. The proposed lift station would pump wastewater through a proposed new force main placed in or adjacent to Latrobe Road that would connect to the El Dorado Hills WWTP. Wastewater would flow to the El Dorado Hills WWTP for treatment and disposal. The proposed on-site wastewater infrastructure was designed in accordance with EID's Design and Construction Standards and was sized to accommodate peak wet weather flows under build-out conditions within the area.

Based on available information from 2013, the El Dorado Hills WWP had an ADWF of 2.65 mgd with a maximum capacity of 4 mgd. As outlined in Table 3.14-5, the project's total wastewater demand would be 53,613 gpd or approximately 0.054 mgd ADWF (if the Neighborhood Commercial component is not developed, this would decrease by 900 gpd to approximately 0.053 mgd). The addition of 0.054 mgd would represent an approximate 2.04% increase from average daily flows in 2013. However, the project's increase in demand for wastewater treatment would not exceed the 4 mgd capacity of the El Dorado Hills WWTP and would not necessitate expansion of the El Dorado Hills WWTP beyond what is already planned. The Active Adult option would result in a reduction in residents per unit resulting in a corresponding reduction in wastewater demand. It is estimated the amount of wastewater generated would be approximately 34,567 gpd or 0.035 mgd, this would further reduce average daily flows. As noted above, the direct and indirect impacts associated with the construction of infrastructure to serve the project are evaluated in other sections of this Draft EIR. Therefore, buildout of the proposed project or the Active Adult option would not require the construction of new infrastructure beyond what has been identified and evaluated in this Draft EIR. Impacts regarding the relocation or construction of new or expanded wastewater facilities would be **less than significant.**

Electric Power, Natural Gas, and Telecommunications

The project site does not include any existing natural gas or electric utilities or telecommunications infrastructure. Natural gas and electricity would be provided by PG&E. PG&E is required by the California Public Utilities Commission (CPUC) to update its existing systems to meet any additional demand (CPUC 2021). Per CPUC Rule 20, additional electrical and natural gas infrastructure and facilities added on site would be co-located with other utilities underground within roadway rights-of-way as phases of the project are developed (CPUC 2021).

Several existing natural gas distribution and transmission facilities are located north, west, and east of the project site and would be extended to provide natural gas service to the project, if used. If provided for the project, natural gas would be distributed to the project site by a network of 8-inch, 6-inch and 4-inch feeder mains. Distribution lines and services would be extended off the feeder mains and would be sized based upon the anticipated gas loads to the various parcels. Residential neighborhoods would likely be sized with 2-inch distribution mains. The infrastructure related to electrical power would be designed in accordance with Title 24, California's Energy Efficiency Standards for Residential and Nonresidential Buildings. As noted above, the direct and indirect impacts associated with the construction of infrastructure to serve the project, including under either option are evaluated in other sections of this Draft EIR. Impacts related to the expansion of electrical and natural gas infrastructure would be **less than significant.**

There are several purveyors providing telecommunications services such as telephone service, cable television, and Internet services within the county that would serve the project site. AT&T would be the primary provider of telephone service to the project site. Mobile communication service providers would provide project residents with wireless communications service. These telecommunications services have the capacity to increase demand and the construction of telecommunications infrastructure would be installed in conjunction with other utilities. Project construction would occur in accordance with all applicable state and local regulatory requirements. As such, impacts associated with the relocation or construction of new or expanded telecommunications infrastructure would be **less than significant.**

Offsite Improvements

The proposed project, including both options, would involve off-site infrastructure improvements that would be required to implement the CVSP. This includes connection to dry utilities, off-site water connections, and construction of a new force sewer main. The CVSP proposes connection to electric and natural gas as well as telephone and cable television within joint trenches (within existing roadway rights-of-way), three points of connection to EID for potable water, and connection to EID for wastewater services via a new force main along Latrobe Road. Impacts associated with the construction of both on-site and off-site infrastructure are evaluated throughout the technical sections of this Draft EIR. Other off-site improvements, including intersection improvements on local roadways, would not result in additional demands on utilities services. In addition to this, the project applicant would coordinate with the County and secure any necessary permits prior to ground disturbance activities to reduce the potential of damaging or rerouting existing utilities infrastructure. Given these precautions and the project design, impacts related to utilities infrastructure and service as a result of the project would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.14-2. The proposed project would be adequately served by available water supply during normal, dry, and multiple dry years.

EID maintains and operates water systems in the county and would serve the proposed project site. As noted in the Environmental Setting, the total average water demand for EID's service area in 2020 was 26,240 acre-feet. As shown in Table 3.14-4, the annual water demand at buildout of the project would be 481 AFY. The 2020 UWMP notes that the project's water needs were included in the water system reliability assessment, included as Chapter 5 to the 2020 UWMP (EID 2021a). The UWMP anticipated 928 Equivalent Dwelling Units (EDU), which represents

the number of residential dwelling units that the project would reflect, regardless of whether the project includes residential or non-residential land uses. The UWMP forecasts water use based on the addition of more EDUs than represented by proposed developments so that they are adequately included in the representations of water service reliability. A more accurate calculation of the proposed project's water demands is provided in Table 3.14-4. The project's water demand would be approximately 481 AFY without the Neighborhood Commercial component or 487 AFY with the Neighborhood Commercial component, approximately 1.8-1.9% of the water demand within the EID service area. EID also issued a Facilities Improvement Letter for the project on January 8, 2024, that indicates that, as of January 1, 2022, there were approximately 16,910 EDUs of water supply available in the El Dorado Hills Water Supply Region and the project proposed would require 968 EDUs of water supply (EID 2024).

Additionally, the project would comply with existing regulations that would further reduce water demand. For example, water usage for landscaping would also be reduced with the requirement to comply with the County's Water Conservation in Landscaping Act: Model Water Efficient Landscape ("MWELO") Ordinance, including the requirement of a Water Efficient Landscape Plan in compliance with the Landscaping and Irrigation Standards. (Code Section 130.33.010 to 130.33.020.)

The conclusions made in the 2020 UWMP indicate that EID has sufficient water supplies to meet future demands of the project during normal, dry, and multiple dry years. More specifically, EID concludes sufficient water supplies are available through 2045 for all existing and planned uses, including the proposed project. This is consistent with the conclusions in the project's WSA (Appendix I). Given this determination, it is anticipated that EID would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. Impacts related to water supplies would be **less than significant**.

Active Adult Option

In 2021, EID compared two years of data from an age-restricted development with a similarly sized conventional development within the county and determined that the conventional units used approximately 40% more water than the age-restricted units (email from M, Brink [EID] to B. Mueller [Lennar] February 23, 2021). The reduced residents per dwelling unit is likely the primary factor resulting in reduced water usage. Therefore, if the Active Adult option is developed, it is likely that water use would be reduced by approximately 40% per age-restricted unit. While a private clubhouse for an active adult community would require water services, the Specific Plan allows private clubhouse facilities with the proposed project as well; therefore, the use is not expected to change with the Active Adult option. Therefore, development of the Active Adult option would likely reduce demand for water as compared to the proposed project and the impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.14-3. The proposed project would not generate an increase in wastewater demand that exceeds the capacity of the treatment plant.

The El Dorado Hills WWTP would provide wastewater treatment to serve buildout of the proposed project. As previously discussed in Impact 3.14-1, the project's increase in demand for wastewater treatment, including the Active Adult option, would not exceed the 4 mgd capacity of the El Dorado Hills WWTP and would not necessitate expansion of the El Dorado Hills WWTP beyond what is already planned. As such, impacts relating to wastewater treatment capacity would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.14-4. The proposed project would not generate solid waste in excess of standards, or capacity of local infrastructure, or impair the attainment of solid waste reduction goals.

The Potrero Hills Landfill has a permitted capacity of approximately 83.1 million cubic yards and a remaining capacity of 13.9 million cubic yards (CalRecycle 2019a). The project site is undeveloped; therefore, the project would not generate demolition debris associated with removal of any buildings. The project would generate construction waste during buildout of the site but would be required to comply with Chapter 8.43 of the El Dorado County Code, which requires at least 50% of debris from construction be diverted from landfills through recycling practices. This would help reduce the project's construction waste and contribution to the landfill.

Operation of the proposed project would generate an estimated 2,064 cubic yards per year of solid waste associated with residential and neighborhood commercial uses, as shown in Table 3.14-7. If the Neighborhood Commercial is not approved by the County this 1.8-acre parcel would be developed as a park further reducing the generation of solid waste. The project's estimated operational waste generation represents 0.015% of the available capacity at the Potrero Hills Landfill. The values displayed in the table are not adjusted for recycling and waste reduction activities that would divert waste from the landfill, such as efforts to reach a 75% landfill diversion goal specified in the County Solid Waste Management Plan. Even taking this into consideration, adequate landfill capacity is available to meet the needs of the project at full buildout, and the County is required to continue to estimate and plan for solid waste capacity in its Integrated Waste Management Plan well in advance of the Potrero Hills Landfill reaching capacity in approximately 24 years.

The Active Adult option would generate fewer residents as discussed above that would correlate to a reduction in the amount of solid waste generated. The amount generated would be approximately 1,238 cubic yards per year of solid waste, or 825 cubic yards less than the proposed project.

Construction and operation of the proposed project would be required to comply with all applicable County and state solid waste diversion, reduction, and recycling mandates, including Chapter 8.43 of the County Code. Therefore, project impacts would be **less than significant.**

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

The geographic context for cumulative utilities impacts includes buildout of the specific service area for each utility. This includes projected buildout of the County's General Plan and additional approved and reasonably foreseeable developments (see Chapter 3) within the boundaries of the EID service area for water and wastewater, the El Dorado Disposal service area for solid waste, and the PG&E service area for energy and natural gas. Implementation of either of the options would result in impacts similar to the proposed project; therefore, the analysis of cumulative impacts below would not change if one of the options were adopted.

Impact 3.14-5. The proposed project would not result in cumulatively considerable impacts related to construction of water, wastewater, or solid waste facilities or exceed water supply.

Water Treatment

The geographic context includes the service area boundary of EID. As discussed under Impact 3.14-1, the El Dorado Hills WTP has identified future water treatment capacity deficits as new projects requiring water service are developed in the area. EID's 2013 Integrated Water Resources Master Plan only evaluated buildout of the General Plan including the specific plans approved under the General Plan. While this would have included buildout of the El Dorado Hills Business Park, R&D uses can generally be assumed to require less water treatment than residential uses. Even without considering the projects identified since adoption of the General Plan (including the proposed project), there is an existing significant cumulative impact related to water treatment capacity. The service demands from the cumulative projects identified since adoption of the General Plan assuming development of the proposed project would all contribute to the need for EID infrastructure improvements that have not been identified in current plans.

The primary issue, as it relates to CEQA, is whether the construction of new or expanded facilities or infrastructure would be needed to serve new development that would cause a significant adverse physical environmental effect. The additional service demands from the project in combination with the cumulative projects would indirectly require EID to construct new or expanded facilities to ensure adequate water treatment capacity, and the project would contribute its fair share to those facilities with payment of fees. As previously discussed, EID is a public agency that is required to comply with CEQA (and NEPA if subject to federal agency approval) when approving projects that may have an adverse effect on the environment. Future environmental review of EID projects would identify, and mitigate to the extent feasible, any significant adverse effects of the environment resulting from new infrastructure improvement projects. Therefore, it is assumed that the proposed project's contribution would be less than cumulatively considerable and would result in a **less-than-significant cumulative impact** associated with the environmental effects of new or expanded facilities construction.

Water Supply

The geographic context for water supply includes the service area boundary of EID. EID's 2020 UWMP provides current and projected water demands for the County through 2045 based on the buildout of the General Plan as well as larger development projects known at the time of preparation. This list of additional development projects assumed in the 2020 UWMP totals 5,961 EDUs, which is similar to the cumulative scenario identified for this EIR (5,107 units approved since adoption of the General Plan in conjunction with the 918 units from the proposed project). It should be noted that the 2020 UWMP assumed development of 1,000 units for the Central El Dorado Hills Specific Plan, but that project has since been withdrawn and part of the previously proposed planned area transferred to the EDH CSD. The 2020 UWMP also includes a supply and drought risk assessment to evaluate

projected growth with available water supplies through normal and 5-year drought periods. The assessment demonstrates that EID does not expect any water supply shortages in future years, even in a drought and a five consecutive dry year period (EID 2021a). Therefore, there is **no existing cumulative impact** related to water supply to which the project would contribute.

Wastewater

The geographic context for wastewater treatment and conveyance includes the service area boundary of EID. The 2013 EID Wastewater Facilities Master Plan determined that at full buildout of the General Plan, the ADWF at the El Dorado Hills WWTP is estimated to be 5.45 mgd, which would exceed the current capacity of 4 mgd. EID has plans to expand the capacity of El Dorado Hills WWTP from 4.0 mgd to 5.45 mgd by 2026 and proposes additional improvements to collection systems to accommodate projected growth. This projected growth only includes buildout of the General Plan including the specific plans approved under the General Plan. Therefore, the service demands from projects identified since adoption of the General Plan as well as from the proposed project would contribute to the need for EID wastewater infrastructure improvements above what is currently planned, causing a significant cumulative impact.

As previously discussed, EID is required to comply with CEQA (and NEPA if subject to federal agency approval) when approving projects that may have an adverse effect on the environment. Future environmental review of EID projects would identify, and mitigate to the extent feasible, any significant adverse effects of the environment resulting from new infrastructure improvement projects. Therefore, it is assumed that the proposed project's contribution would be less than cumulatively considerable and would result in a **less-than-significant cumulative impact** associated with the environmental effects of new or expanded facilities construction.

Solid Waste

The geographic context includes the area served by El Dorado Disposal. The County General Plan EIR determined that there would be adequate landfill capacity to serve projected buildout under the General Plan and therefore concluded that impacts would be less than significant with no mitigation required. Since adoption of the General Plan there have been several planned projects which would contribute a total of 5,107 new dwelling units in the County. The construction and operation of these projects as well as the proposed project would generate solid waste that was not included within the General Plan EIR analysis. As previously stated, El Dorado Disposal would provide solid waste collection, disposal, and recycling services for the proposed project. Solid waste is first hauled to the Western El Dorado Recovery Systems MRF, which is currently permitted to receive up to 400 tons per day. Following processing of solid waste and recyclable material, non-recyclable materials are sent to the Potrero Hills Landfill, which has an estimated remaining capacity of approximately 13.9 million cubic yards and is estimated to remain in operation until 2048. As it has been described, both the Western El Dorado Recovery Systems MRF Transfer Station and Potrero Hills Landfill are accepting waste significantly below their available capacity level. Therefore, the addition of solid waste from the project and additional cumulative projects is not anticipated to result in exceedances of solid waste capacity facilities and there is no cumulative impact. All projects would also be subject to comply with applicable County and state solid waste diversion, reduction, and recycling mandates. Therefore, there is **no existing cumulative impact** that the project could contribute to.

Energy and Natural Gas

Future development would increase the demand for electricity within PG&E's service area. Typically, upgrades to electric utility networks fall under the jurisdiction of CPUC and would be subject to environmental review as electrical

projects are proposed. As a result of this process and long-term planning efforts by PG&E, there would be adequate electrical service to the County with anticipated future growth.

Given the nature of telecommunication and gas lines (which are not typically subject to the constraints of existing facilities), beyond local connections to existing infrastructure, no additional telecommunication or gas line construction is anticipated to be required for most cumulative construction. Additionally, cumulative development would be subject to review on a case-by-case basis. Should the applicable service provider determine that upgrades or extensions of infrastructure would be required, any such upgrades would be included within each project's environmental review. Therefore, there is **no existing cumulative impact** that the project could contribute to.

Mitigation Measures

No mitigation measures are required.

3.14.5 References

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3.15 Wildfire

This section describes the existing wildfire setting on and near the proposed Creekside Village Specific Plan (proposed project or CVSP) project site; discusses the relevant federal, state, and regional regulatory considerations; evaluates wildfire impacts resulting from construction and operation of the proposed project; and identifies mitigation measures related to implementation of the proposed project. Fire protection services are addressed in Section 3.11, Public Services and Recreation, of this Draft EIR.

In response to the Notice of Preparation (NOP) issued on November 6, 2020, one comment raised concerns that wildfire evacuation would be challenging with the additional number of cars from the project site attempting to evacuate using Latrobe Road, which is the main access road for the project site. While an increased number of people and vehicles presents a potential evacuation concern, the Fire Safe Plan included as Appendix J illustrates which emergency vehicle access and public roads may serve the project site in the event of an emergency. No additional comments were received concerning wildfire at the follow up second scoping meeting held on September 26, 2023. A copy of the NOP and comments received is included in Appendix A.

The primary sources referenced to prepare this section include the Fire Safe Plan (April 2025) prepared for the project (Appendix J), as well as publicly accessible data sources from the California Department of Forestry and Fire Protection (CAL FIRE) and El Dorado County (County). The Fire Safe Plan has been reviewed and approved by CAL FIRE and the El Dorado Hills County Water District (El Dorado Hills Fire Department) ("EDH Fire").

3.15.1 Environmental Setting

Local Wildfire Hazard

Fire environments are dynamic systems and are influenced by many types of environmental factors and site characteristics. Fires can occur in any environment where conditions are conducive to ignition and fire movement. The three major components of fire environments are vegetation (fuels), climate, and topography. The state of each of these components and their interactions with each other determines the potential characteristics and behavior of a wildfire. In addition, the type, location, and intensity of a wildfire can affect wildlife, vegetation, air quality, water quality, and slope stability to varying degrees, as discussed below.

A wildfire is a nonstructural fire that can occur in undeveloped areas and spread to urban areas where the landscape and buildings are receptive to ignition. Understanding the fire environment on and adjacent to the proposed project site is necessary to understand the potential for fire within and around the project site. The Wildland Urban Interface Area (WUI) is a zone of transition between wildland (undeveloped/unoccupied/"natural" land) and urban development. Communities in or adjacent to WUI areas are at a higher risk for wildfire occurrence. The project site is within a designated WUI area, identified by the federal government as being at risk from a large wildfire (Appendix J). The Fire Safe Plan prepared for the project determined the project site has a low wildfire risk (Appendix J).

Fire Hazard Severity Zones

The California Board of Forestry identifies those lands where the California Department of Forestry and Fire Protection (CAL FIRE) has mapped areas of significant fire hazards in the state through its Fire and Resources Assessment Program (FRAP). The CAL FIRE FRAP mapbs classify land into fire hazard severity zones (FHSZ) of

Moderate, High, and Very High. The FHSZ are based on a hazard scoring system using subjective criteria for fuels, fire history, terrain influences, housing density, and occurrence of severe fire weather. The FHSZ designations can be attributed to a variety of factors including highly flammable, dense, drought-adapted vegetation; seasonal, strong winds; and a Mediterranean climate that results in vegetation drying during the summer and fall months. CAL FIRE also maps and ranks areas of fire threat, which indicates the level of risk based on the potential fire behavior (fuel rank) and expected fire frequency (fire rotation) at a given location (CAL FIRE 2005).

Areas where CAL FIRE is responsible for wildland fire protection include lands owned or managed by the state or where the state is financially responsible for the prevention and suppression of wildfires, classified as a State Responsibility Area (SRA). A SRA is defined in Public Resources Code (PRC) Section 4102 as "areas of the state in which the financial responsibility of preventing and suppressing fires has been determined by the board pursuant to Section 4125, to be primarily the responsibility of the state" and is thus based on responsibility, not fire risk. In areas where local fire protection agencies are responsible for wildfire protection, the land is classified as a Local Responsibility Area (LRA), and federal agencies are responsible for wildfire protection in land classified as Federal Responsibility Areas (FRA).

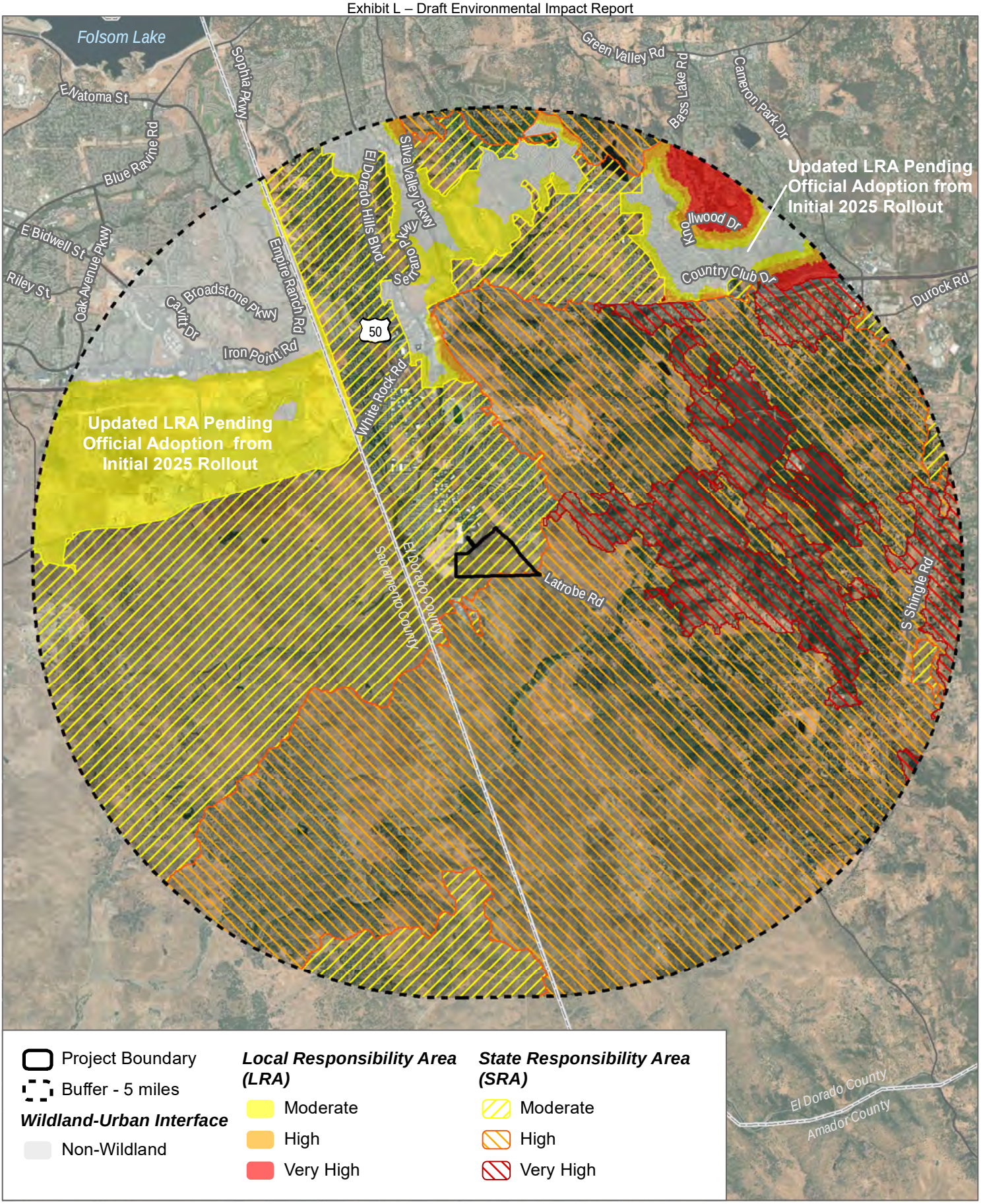
As shown in Figure 3.15-1, Fire Hazard Severity Zones, the project site has been identified as a Moderate FHSZ, with a small area located in the southeast portion of the project site designated as a High FHSZ. Areas designated as High FHSZ within the SRA extend to the south, and a Very High FHSZ is located approximately 0.50 miles to the east adjacent to and southeast of the existing Blackstone community (CAL FIRE 2024). The nearest LRA FHSZ areas are mapped in Figure 3.15-1, and are approximately 4-5 miles northeast of the project site. The initial rollout for updated LRA FHSZ data was released from February to March 2025, and are pending official adoption from local agencies after 120 days per California Government Code 51179 (a). The nearest FRA lands are located over 5 miles to the northeast and over 8 miles to the northwest (CAL FIRE 2023).

Ignition Sources

Existing potential sources of ignition in the project area include vehicles, human activity, and powerlines along Latrobe Road and within nearby developed areas. There are no overhead electrical transmission lines present within the project site, but overhead electrical lines are located along Latrobe Road. The project site consists primarily of grassland, including areas near existing powerlines. Damaged or downed power lines or equipment may come into contact with combustible materials, such as vegetation, as a result of high wind events or other damaging events.

Vegetation/Fuels

Variations in vegetative cover type and species composition have a direct effect on fire behavior. Some plant communities and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf size, branching patterns), and overall fuel loading. For example, grass-dominated plant communities become seasonally prone to ignition and produce lower intensity, higher spread rate fires. The County General Plan EIR explains that while grasslands have the lightest fire fuel load and can burn easily, this fuel source is the easiest to control (General Plan EIR p. 5.8-108). As described in Chapter 2, Project Description, and Section 3.3, Biological Resources, the vegetation on the project site primarily consists of annual grasslands. Vegetation communities and land covers found on the project site include annual grasslands (201.6 acres), aquatic habitats (5.23 acres), blue oak woodland (0.75 acres) and developed (0.54 acres). Table 1 in the Fire Safe Plan (Appendix J) and Table 3-2 in Section 3.3 provides further details regarding species, vegetation communities, and land covers found on the project site.



SOURCE: ESRI Imagery 2023; CalFire 2025; Open Street Map 2019

DUDEK

0 0.75 1.5 Miles

FIGURE 3.15-1

Fire Hazard Severity Zones

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Climate and Weather

Climate change is expected to influence existing fire-related hazards and vulnerabilities. Consequences of a changing climate include changing precipitation patterns, reduced water supply, and increased hazards such as heat waves and wildfire. According to the Center for Climate and Energy Solutions, drier vegetation and drought conditions have contributed to a doubling of large fires in the western states between 1984 and 2015, with projections indicating that a 1 degree increase in temperature could result in a substantial increase in fires due to warmer temperatures and drier conditions that help fires spread and make them harder to extinguish (CES 2020).

Predominant local weather patterns in the project area are characterized by warm, dry summers and cool, wet winters. Dry conditions traditionally begin around the beginning of May and last into late October. An average summer day is 95°- 105° Fahrenheit, with prevailing winds blowing from the southwest at 0 to 10 miles per hour (mph), and relative humidity levels in the 15-25% range. Summer lightning storms are infrequent in the area.

Within the larger region, the average hourly wind speed in the El Dorado Hills area experiences mild seasonal variation over the course of the year. The windier part of the year occurs from November to April, with average wind speeds of more than 5.8 mph. The windiest month of the year is typically February, with an average hourly wind speed of 6.4 mph. The calmer time of year lasts for 7.5 months, from April to November. The calmest month of the year is typically October, with an average hourly wind speed of 5.3 mph (Weather Spark 2023).

While average winds in the El Dorado Hills area do not present extreme fire weather, winds exceeding 20 mph throughout the local fire season period are frequent (Appendix J). Fire weather in the county is typically dominated by three general weather phenomena: the Delta push influence[1], north wind events[2], and east foehn winds[3] caused by high pressure development in the Great Basin (CAL FIRE 2023a). All three weather conditions cause potential increases in fire intensity and size. The Delta influence is the most common and occurs frequently throughout the summer. The summer months present hot and dry conditions over much of the region. As these systems develop, they tend to originate near the Delta and Sacramento areas bringing the marine influence to the area. This is generally considered a beneficial condition for fire behavior due to slightly cooler afternoon temperatures and increases in relative humidity. However, the downside is the strong winds that typically accompany these patterns, which can override any benefit that may come from cool, moist marine air. This type of wind generally subsides after sundown causing fire behavior to drop off dramatically.

The other critical wind patterns that are difficult to predict for the county are the northerly and easterly winds. They are relatively rare, and often are forecasted only the day before. Northerly or easterly winds are typically warmer and drier than most other wind patterns due to air compression. These conditions provide the perfect environment for increased fire intensity and large fire growth.

1 The Delta push influence refers to a meteorological effect related to the Sacramento-San Joaquin Delta in California. When high-pressure systems develop over the Great Basin (east of the Sierra Nevada), they push air westward toward the coast. As this air encounters the coastal mountain ranges, including the Sierra Nevada, it gets funneled through gaps and canyons. This process, known as the Delta push, leads to increased winds and can influence local weather patterns, especially in areas near the delta.

2 North wind events, also called Diablo winds, are hot, dry downslope winds that originate from the northeast and typically affect parts of California's coastal ranges and the western slopes of Sierra Nevada. North wind events can contribute to wildfire risk, especially in the coastal mountains north and east of San Francisco and along the western slopes of the Sierra Nevada (LA Times 2019).

3 East Foehn Winds, also known as Föhn winds, are dry, relatively warm, downslope winds that occur in the lee (downwind side) of a mountain range. The descending air becomes warmer and can raise temperatures significantly in a matter of hours (Elvidge et. al. 2016).

Fire growth is typically wind driven, however as these winds subside, fire immediately returns to fuel/topography driven in opposing directions to the wind driven direction. This type of wind event is commonly referred to as a Foehn wind in the Sierra/Cascade Region (Appendix J).

Topography

Topography influences fire risk by affecting fire spread rates. Typically, steep terrain results in faster fire spread up slope and slower spread down slope. Terrain that forms a funneling effect—such as chimneys, chutes, or saddles—on the landscape can result in especially intense fire behavior, including faster spread and higher intensity. Conversely, flat terrain tends to have little effect on fire spread, resulting in fires that are driven by vegetation and wind.

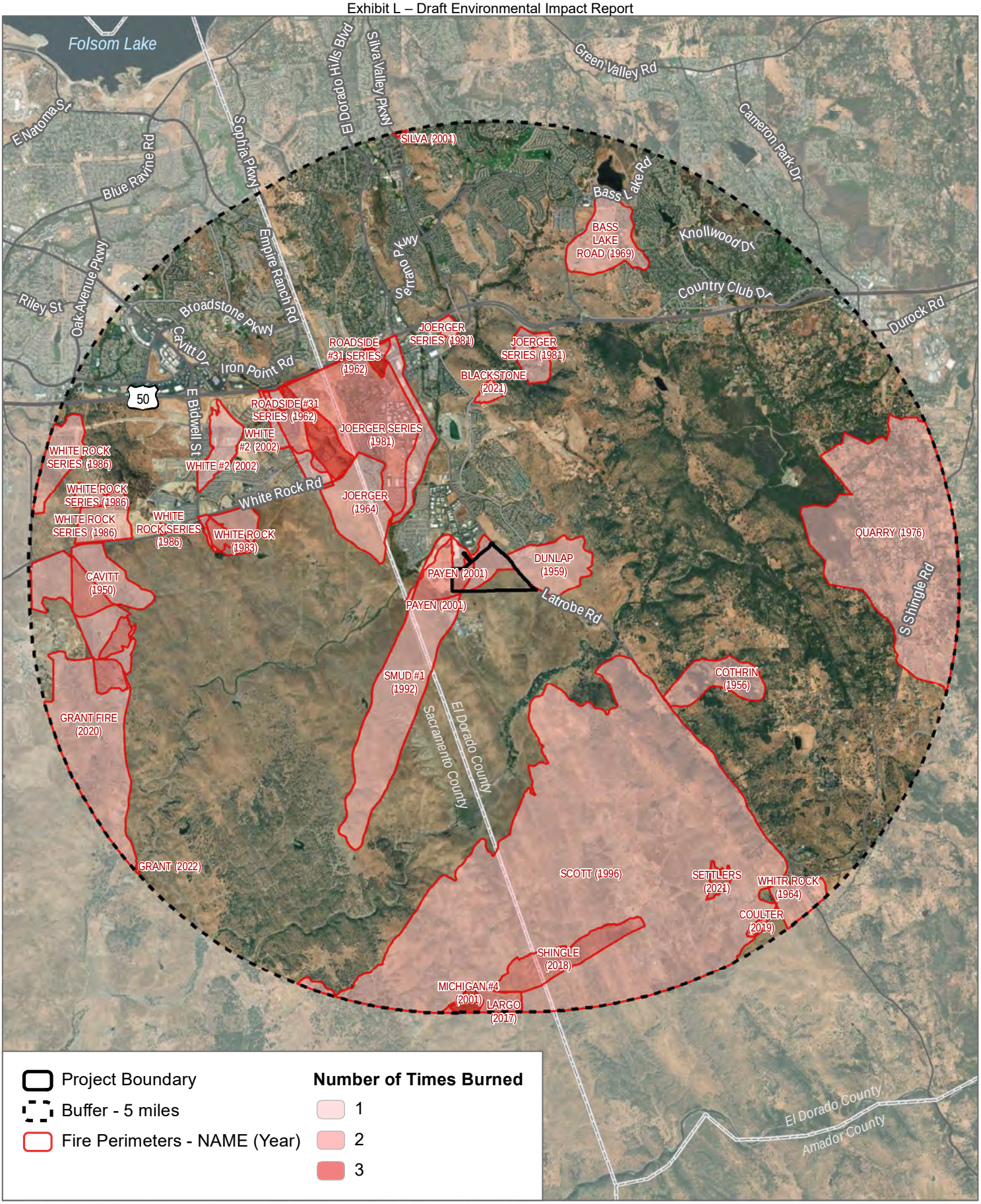
The project site is located in the western foothills of the Sierra Nevada Mountain Range. The project site and surrounding areas are characterized as gently sloping or rolling hills with broad valleys. Elevations at the project site range from approximately 470 feet above mean sea level along the western boundary of the site to 640 feet above mean sea level along the southeastern corner. As described in Section 3.6, Geology, Soils and Paleontology, approximately 80% of the project site contains slopes of less than 10%; 16% of the project site contains slopes of between 11% and 20%; 3% are slopes of between 21% and 29%; and the remaining 1% contains slopes of 30% or greater (CTA Engineering & Surveying Undated). An isolated 100-foot hillside is located within the southeast corner and rises above the project site (Appendix J).

Fire History

Fire history data can provide an understanding of fire frequency, fire type, burn severity, significant ignition sources, and other information relevant to understanding the fire and fuels environment in an area. There have been numerous recorded wildfires in the western portion of the county. Fire history data was obtained from the CAL FIRE FRAP. FRAP summarizes fire perimeter data dating as far back as the late 1800s, but this data is incomplete because it includes only fires over 10 acres in size, and has incomplete perimeter data, especially for the first half of the 20th century (Syphard and Keeley 2016). The FRAP map of fire perimeters from fires that occurred between 1950 and 2018 shows that 30 recorded fires have occurred within 5 miles of the project site since the 1950s, which indicates that wildfires are also likely to occur in the future (CAL FIRE 2018). Figure 3.15-2, Fire History and Burn Frequency, shows a map of wildfires that have occurred within 5 miles of the project site, including fires in both El Dorado County and Sacramento County. Three fires have burned onto portions of the project site: 1959 Dunlap Fire (299 acres, unknown cause); 1992 SMUD #1 Fire (1,178 acres, caused by a downed powerline); and 2001 Payen Fire (302 acres, unknown cause).

Adjacent Land Uses

Adjacent land uses include the existing El Dorado Hills Business Park and the John Adams Academy Charter school approximately 950 feet to the north, separated by undeveloped land immediately north of the project site; the Blackstone residential community within the Valley View Specific Plan to the east across Latrobe Road; undeveloped land designated for rural residential, a vacant site owned by the El Dorado Union High School District immediately to the south, and industrial uses approximately 0.3-mile to the south; and land designated for residential, open space and park uses within the Carson Creek Specific Plan immediately to the west, as shown on Figure 2-2 in Chapter 2, Project Description.



SOURCE: ESRI Imagery 2023; CalFire 2023; Open Street Map 2019

DUDEK

0 0.75 1.5 Miles

FIGURE 3.15-2

Fire History and Burn Frequency

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Fire Protection

In addition to CAL FIRE and the U.S. Fire Service, 13 local fire protection districts serve the county. There are mutual aid agreements between most of the agencies to ensure that adequate manpower and equipment can be provided when a fire occurs (El Dorado County 2003). The project site is within the service area of EDH Fire (L. Hobert, pers. comms. 2023). EDH Fire provides fire suppression, emergency medical services, special and technical rescue, hazardous materials mitigation, fire prevention, public education, disaster preparedness, and support to many programs within the communities of El Dorado Hills, Rescue, and Latrobe. In addition to these areas, EDH Fire has a shared service agreement with the Rescue Fire Protection District. This equates to a total of 112.2 square miles and a population of 49,000 protected by EDH Fire (EDHFD 2022). EDH Fire participates in the Master Mutual Aid System for the State of California, which provides staff and mechanical assistance throughout the state when needed.

EDH Fire does not have adopted response times. The County General Plan identifies minimum levels of service for fire districts (see Section 3.11.2). The service levels presented in the General Plan include an 8-minute response time to 80% of the population for Community Regions and a 15 to 45-minute response time for Rural Centers and Rural Regions (El Dorado County 2015). The project site is located within a Community Region and is designated for Research & Development (R&D) in the County's General Plan (El Dorado County 2015). A review of historical Google Earth aerial imagery indicates that the project site has never been developed. The area surrounding the project site consists of a mix of single-family subdivisions, research and development business park, and vacant land. Surrounding zoning and General Plan land use designations include land zoned and designated R&D for the El Dorado Hills Business Park to the north; land zoned for the Valley View Specific Plan and designated Adopted Plan (AP) for the Blackstone residential community to the east; land zoned Carson Creek Specific Plan and designated AP to the west; land zoned Estate Residential (RE-10) and designated Rural Residential (RR) for land uses to the southwest; and land zoned and designated Industrial to the south (El Dorado County 2015).

EDH Fire serves the community from five stations (one housing the administration offices) with ten engines, one air/light support unit, two water tenders, one ladder truck, and two medic units. EDH Fire is staffed with approximately 65 firefighters and paramedics and a total of approximately 83 personnel (including chief officers, fire prevention specialists, training officers, fleet maintenance personnel and administrative staff) and currently operates at a ratio of approximately 1.64 fire staff per 1,000 residents or approximately one fire station per 11,000 residents (Appendix J). In January 2008, EDH Fire opened its fourth fire station (Station 87) located at 4680 Golden Foothill Parkway in the El Dorado Hills Business Park (Winn Communities 2023). Station 87 is the closest fire station to the project site and would likely be the first to respond in the event of an emergency. The project site is located approximately 1.5 miles southeast of Station 87 and is within the response area of Station 87. The next closest fire station is Station 85 (1050 Wilson Blvd), located approximately 4 miles north of the project site. All fire stations, including Station 87, are staffed with firefighter / paramedic personnel 24 hours a day, 7 days a week. Station 87 houses a variety of equipment available for responses including two Type 1 engines, one Type 3 engine, one utility truck, one patrol truck, and a decontamination trailer (EDHFD 2023).

The EDH Fire service area is located near the western border of the county and encompasses nearly 78.8 square miles of the unincorporated community of El Dorado Hills, including the Latrobe area, with a total population of approximately 52,500 residents (EDHFD 2020).

3.15.2 Regulatory Setting

Federal Regulations

National Fire Protection Association Codes, Standards, Practices, and Guides

National Fire Protection Association (NFPA) codes, standards, recommended practices, and guides ("NFPA Documents") are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together professionals representing varied viewpoints and interests to achieve consensus on fire and other safety issues. NFPA standards are recommended guidelines and nationally accepted good practices in fire protection but are not law or "codes" unless adopted as such or referenced as such by the California Fire Code or the Local Fire Agency.

The 2022 California Code has adopted specific NFPA codes; therefore, the County follows state codes (see below) unless otherwise specified as an exclusion.

International Fire Code

The International Fire Code (IFC) addresses a wide array of conditions hazardous to life and property including fire, explosions, and hazardous materials handling or usage (although not a federal regulation, but rather the product of the International Code Council). The IFC places an emphasis on prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every 3 years, the IFC uses a hazards classification system to determine the appropriate measures to be incorporated in order to protect life and property (often times these measures include construction standards and specialized equipment). The IFC uses a permit system (based on hazard classification) to ensure that required measures are instituted. The current version of the IFC is 2021.

State Regulations

California Government Code

California Government Code Sections 51175 through 51189 provide guidance for classifying lands in California as fire hazard areas and requirements for management of property within those lands. CAL FIRE is responsible for classifying FHSZs based on statewide criteria and makes the information available for public review. Local agencies must designate, by ordinance, Very High FHSZs within their jurisdiction based on the recommendations of CAL FIRE.

Section 51182 sets forth requirements for maintaining property within fire hazard areas, such as defensible space, vegetative fuels management, building materials and standards. Defensible space consisting of 100 feet of fuel modification on all sides of a structure, but not beyond the property line (unless findings conclude that additional fuel modification is necessary to reduce risk) is required for all habitable structures in an SRA or Very High FHSZs. Clearance on adjacent property shall only be conducted following written consent by the adjacent owner. Further, trees must be trimmed from within 10 feet of the outlet of a chimney or stovepipe, vegetation near buildings must be maintained, and roofs of structures must be cleared of vegetative materials. Exemptions may apply for buildings with an exterior constructed entirely of nonflammable materials.

California Code of Regulations

Title 14, Division 1.5, Chapter 7, Subchapter 3, Fire Hazard, in the California Code of Regulations (CCR) also sets forth requirements for defensible space if the distances specified above cannot be met. For example, options that have similar practical effects include noncombustible block walls or fences, 5 feet of noncombustible material horizontally around the structure, installing hardscape landscaping or reducing exposed windows on the side of the structure with a less-than-30-foot setback, or additional structure hardening such as those required in the California Building Code (CBC), CCR Title 24, Part 2, Chapter 7A.

California Building Code

The CBC is contained within Title 24, Parts 1-12 of the CCR. Chapter 7A of the CBC applies to building materials, systems and/or assemblies used in the exterior design and construction of new buildings located within a FHSZ or WUI area. The purpose of this chapter is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any FHSZ within the SRA or any WUI area to resist the intrusion of flames or burning embers projected by a vegetation fire to help reduce loss of property. New buildings located in such areas shall comply with the ignition-resistant construction standards outlined in Chapter 7A, which include 704A Ignition-Resistant Construction, 705A Roofing, 706A Vents, 707A Exterior Covering, 708A Exterior Windows, Skylights and Doors, 709A Decking, and 710A Accessory Structures.

California Fire Code

The California Fire Code (CFC) is contained within Title 24, Chapter 9 of the CCR. Based on the IFC, the CFC establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety and general welfare from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to provide safety and assistance to fire fighters and emergency responders during emergency operations. Chapter 9 specifies where fire protection and life safety systems are required and shall apply to the design, installation, inspection, operation, testing and maintenance of all fire protection and life safety systems.

EDH Fire has adopted the 2022 CFC with several local amendments which are more restrictive than those described in the CFC.

SRA/VHFHSZ Fire Safe Regulations

The CCR, Title 14, Division 1.5, Chapter 7, Subchapter 2 “SRA/VHFHSZ Fire Safe Regulations” establishes 1) state minimum wildfire protection standards in conjunction with building, construction, and development in the SRA, and, after July 1, 2021, the Very High FHSZs, as defined in Government Code Section 51177(i), and 2) the future design and construction of structures, subdivisions and developments in the SRA and, after July 1, 2021, the Very High FHSZ shall provide for basic emergency access and perimeter wildfire protection measures as specified in the following articles. These standards shall provide for emergency access; signage and building numbering; private water supply reserves for emergency fire use; vegetation modification, fuel breaks, greenbelts, and measures to preserve undeveloped ridgelines. Subchapter 2 specifies the minimums for such measures.

The standards in this title shall apply to the proposed project, as the project site is located within an SRA in a WUI area.

California Public Resources Code

The California PRC also provides standards that address wildfire. Specifically, the PRC includes:

- PRC Section 4290 requires minimum fire safety standards related to defensible space that are applicable to state responsibility area lands and lands classified and designated as Very High FHSZs.
- PRC Section 4291 requires a reduction of fire hazards around buildings, requiring 100 feet of vegetation management around all buildings, and is the primary mechanism for conducting fire prevention activities on private property within CAL FIRE jurisdiction.

Fire Hazard Severity Zoning

CAL FIRE has mapped FHSZs in the county based on fuel loading, slope, fire weather, and other relevant factors as directed by PRC Sections 4201–4204, CCR Title 14, Section 1280, and Government Code Sections 51175–51189. FHSZs are ranked from moderate to very high and are categorized for fire protection within a FRA, SRA, or LRA under the jurisdiction of a federal agency, CAL FIRE, or local agency, respectively. The project site is located within SRA and is mapped as a Moderate FHSZ with a small area located in the southeast portion of the project site designated as a High FHSZ.

CAL FIRE Wildland Fire Management

The Office of the State Fire Marshal and CAL FIRE administer state policies regarding wildland fire safety. Construction contractors must comply with the following requirements stated in the PRC during construction activities at any sites with forest-, brush-, or grass-covered land:

- Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (PRC Section 4442).
- Appropriate fire-suppression equipment must be maintained from April 1 to December 1, the highest-danger period for fires (PRC Section 4428).
- On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire suppression equipment (PRC Section 4427).
- On days when a burning permit is required, portable tools powered by gasoline fueled internal combustion engines must not be used within 25 feet of any flammable materials (PRC Section 4431).

California Strategic Fire Plan

The 2018 Strategic Fire Plan (Fire Plan) for California is a cooperative effort between the State Board of Forestry and Fire Protection and the California Department of Forestry and Fire Protection. By placing the emphasis on what needs to be done long before a fire starts, the Fire Plan looks to reduce firefighting costs and property losses, increase firefighter safety, and to contribute to ecosystem health. The Fire Plan reflects CAL FIRE's focus on (1) fire prevention and suppression activities to protect lives, property, and ecosystem services, and (2) natural resource management to maintain the state's forests as a resilient carbon sink to meet California's climate change goals and to serve as important habitat for adaptation and mitigation. It describes a vision for a natural environment that is more fire resilient; buildings and infrastructure that are more fire resistant; and a society that is more aware of

and responsive to the benefits and threats of wildland fire; all achieved through local, state, federal, tribal, and private partnerships (CAL FIRE 2018b). Fire Plan goals include the following:

1. Identify and evaluate wildland fire hazards and recognize life, property and natural resource assets at risk, including watershed, habitat, social and other values of functioning ecosystems. Facilitate the collaborative development and sharing of all analyses and data collection across all ownerships for consistency in type and kind.
2. Promote and support local land use planning processes as they relate to: (a) protection of life, property, and natural resources from risks associated with wildland fire, and (b) individual landowner objectives and responsibilities.
3. Support and participate in the collaborative development and implementation of local, county and regional plans that address fire protection and landowner objectives.
4. Increase fire prevention awareness, knowledge and actions implemented by individuals and communities to reduce human loss, property damage and impacts to natural resources from wildland fires.
5. Integrate fire and fuels management practices with landowner/land manager priorities across jurisdictions.
6. Determine the level of resources necessary to effectively identify, plan and implement fire prevention using adaptive management strategies.
7. Determine the level of fire suppression resources necessary to protect the values and assets at risk identified during planning processes.
8. Implement post-fire assessments and programs for the protection of life, property, and natural resource recovery.

Senate Bill 1241

In 2012, SB 1241 added Section 66474.02 to Title 7 Division 2 of the California Government Code, commonly known as the Subdivision Map Act. The statute prohibits subdivision of parcels designated very high fire hazard, or that are in an SRA, unless certain findings are made prior to approval of the tentative map. The statute requires that a county legislative body make three findings regarding fire hazard safety before approving a subdivision proposal. The three findings include: (1) the design and location of the subdivision and of lots are consistent with defensible space regulations found in PRC Section 4290-91, (2) structural fire protection services will be available for the subdivision through a publicly funded entity, and (3) ingress and egress road standards for fire equipment are met per any applicable local ordinance and PRC Section 4290. The project site is currently within a SRA.

Senate Bill 99 (Section 65302 of the Government Code)

State Planning and Zoning law requires that each city or county adopt a comprehensive general plan that includes a safety element to address hazards such as flooding and wildfire risks. It also requires the development of emergency and evacuation routes, and review on a specific schedule of not less than 8 years with updates, if necessary. SB 99 requires all cities and counties, upon revision of the housing element on or after January 1, 2020, to review and update the safety element to include information identifying residential developments in hazard areas that do not have at least two emergency evacuation routes.

Electric Tariff Rule 20

The California Public Utilities Commission (CPUC) instituted the current utilities undergrounding program in 1967. It consists of two parts. The first part, under Tariff Rules 15 and 16, requires new subdivisions (and those that were already undergrounded) to provide underground service for all new connections. The second part of the program, under Tariff Rule 20, governs both when and where a utility may convert overhead lines to underground facilities, and who shall bear the cost of the conversion (CPUC 2020a).

Local Regulations

El Dorado County General Plan

The El Dorado County General Plan was adopted in 2004; the last amendment to the General Plan was December 10, 2019 (El Dorado County 2019). The following goals, objectives, and policies related to wildfire risk are included in the Public Services and Utilities Element and Public Health, Safety, and Noise Element and would be applicable to the proposed project.

Goals and policies related to emergency response are listed in Section 4.13, Public Services and Recreation.

Public Services and Utilities Element

Goal 5.1: Provide and maintain a system of safe, adequate, and cost-effective public utilities and services; maintain an adequate level of service to existing development while allowing for additional growth in an efficient manner; and, ensure a safe and adequate water supply, wastewater disposal, and appropriate public services for rural areas.

Objective 5.1.2: Ensure through consultation with responsible service and utility purveyors that adequate public services and utilities, including water supply, wastewater treatment and disposal, solid waste disposal capacity, storm drainage, fire protection, police protection, and ambulance service are provided concurrent with discretionary development or through other mitigation measures provided, and ensure that adequate school facilities are provided concurrent with discretionary development to the maximum extent permitted by State law. It shall be the policy of the County to cooperate with responsible service and utility purveyors in ensuring the adequate El Dorado County General Plan Public Services and Utilities Element July 2004 (Amended December 2015) Page 91 provision of service. Absent evidence beyond a reasonable doubt, the County will rely on the information received from such purveyors and shall not substitute its judgment for that of the responsible purveyors on questions of capacity or levels of service.

Policy 5.1.2.1: Prior to the approval of any discretionary development, the approving authority shall make a determination of the adequacy of the public services and utilities to be impacted by that development. Where, according to the purveyor responsible for the service or utility as provided in Table 5-1, demand is determined to exceed capacity, the approval of the development shall be conditioned to require expansion of the impacted facility or service to be available concurrent with the demand, mitigated, or a finding made that a CIP project is funded and authorized which will increase service capacity.

Policy 5.1.2.2: Provision of public services to new discretionary development shall not result in a reduction of service below minimum established standards to current users, pursuant to Table 5-1. The following Levels of Service shall apply to the review of discretionary projects.

Table 5-1. Minimum Levels of Service[4]

	Community Region	Rural Center and Rural Region
Fire district response	8-minute response to 80% of the population	15 to 45-minute response

Goal 5.7: Adequate and comprehensive emergency services, including fire protection, law enforcement, and emergency medical services.

Objective 5.7.1: Ensure sufficient emergency water supply, storage, and conveyance facilities are available, and that adequate access is provided for, concurrent with development.

Policy 5.7.1.1: Prior to approval of new development, the applicant will be required to demonstrate that adequate emergency water supply, storage, conveyance facilities, and access for fire protection either are or will be provided concurrent with development.

Public Health, Safety, and Noise Element

Goal 6.1: A coordinated approach to hazard and disaster response planning.

Objective 6.1.1: The El Dorado County Multi-Jurisdictional Hazard Mitigation Plan shall serve as the implementation program for this Goal.

Policy 6.1.1.1: The El Dorado County MJHMP shall serve as the implementation program for the coordination hazard planning and disaster response efforts within the County and is incorporated by reference to this Element. The County will ensure that the MJHMP is regularly to keep pace with the growing population.

Objective 6.1.2: Expand community resilience to support effective emergency response and recovery during and after emergency events.

Policy 6.1.2.1: Support an emergency mass evacuation and sheltering plan that prioritizes the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities, access and functional needs, and other special needs by providing meaningful opportunities in emergency planning efforts.

Goal 6.2: Minimize fire hazards and risks in both wildland and developed areas.

Objective 6.2.1: All existing and new development and structures shall meet “defensible space” requirements to minimize wildland fire hazards.

4 Table 5-1 from the El Dorado County General Plan has been modified to omit rows unrelated to wildfire.

Policy 6.2.1.1: Implement Fire Safe ordinance to attain and maintain defensible space through conditioning of tentative maps and in new development at the final map and/or building permit stage.

Policy 6.2.1.2: Coordinate with the local Fire Safe Councils, California Department of Forestry and Fire Protection (CAL FIRE), and federal and state agencies having land use jurisdiction in El Dorado County in the development of a countywide fuels management strategy.

Policy 6.2.1.3: Require all existing and new residential development in State Responsibility Areas (SRAs) and/or very high Fire Hazard Severity Zones (VHFHSZs) to enforce fire-resistant landscaping and defensible space requirements that meet or exceed Title 14, Code of California Regulations (CCR), Division 1.5, Chapter 7, Subchapter 2, Articles 1-5 (commencing with Section 1270) (State Minimum Fire Safe regulations) and Subchapter 3, Article 3 (commencing with Section 1299.01) (Fire Hazard Reduction around Buildings and Structures Regulations). Adequate compliance with these requirements shall be determined by the local Fire Protection Districts (FPDs) or other local fire agencies, as appropriate.

Policy 6.2.1.4: Require consistency with fire code and development standards that ensure adequate defensible space clearance around all existing and new structures in compliance with the California Fire Code, Public Resources Code Section 4291 (ember-resistant zone), Government Code Section 51175- 51188, CCR Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299.03, and in the County Code of Ordinances Chapter 8.09.

Objective 6.2.2: Regulate development in areas of high and very high fire hazard as designated by the California Department of Forestry and Fire Protection Fire Hazard Severity Zone (FHSZ) Maps.

Policy 6.2.2.1: FHSZ Maps shall be consulted in the review of all projects so that standards and mitigation measures appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated as high or very high fire hazard.

Policy 6.2.2.2: The County shall preclude development, including public facilities and essential services (see definition in the Background Information Report in Appendix B), in areas of high and very high wildland fire hazard or in areas identified as wildland-urban interface (WUI) communities within the vicinity of Federal lands that are a high risk for wildfire, as listed in the Federal Register Executive Order 13728 of May 18, 2016, unless such development can be adequately protected from wildland fire hazard, as demonstrated in a WUI Fire Safe Plan prepared by a qualified professional as approved by the El Dorado County Fire Prevention Officers Association. The WUI Fire Safe Plan shall be approved by the local FPD having jurisdiction and/or CAL FIRE. (Resolution 124- 2019, August 6, 2019)

Objective 6.2.3: Application of uniform fire protection standards to development projects by fire districts.

Policy 6.2.3.1: As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible FPD that, concurrent with development, adequate emergency and peak load water supply, water flow, fire access,

and firefighting personnel and equipment will be available in accordance with applicable State and local fire district standards to support fire suppression efforts.

Policy 6.2.3.2: As a requirement of new development, the applicant must demonstrate that adequate access exists, or can be provided to ensure that emergency vehicles can access the site and private vehicles can evacuate the area.

Policy 6.2.3.4: All new development and public works projects shall be consistent with applicable State Wildland Fire Standards and other relevant State and federal fire requirements.

Policy 6.2.3.5: Identify actions to ensure noncompliant development meets current fire safe standards and road standards as defined in Title 14 CCR, Division 1.5, Chapter 7 Fire Protection, Subchapter 2, Articles 1-5, SRA Fire Safe Regulations through the WUI Fire Safe Plan review process and through collaboration with the FPDs and local fire agencies when reviewing Fire Protection Plans and provisions for new development.

Policy 6.2.3.6: All new development within an SRA or very high (VHFHSZs) shall prepare a Fire Protection Plan that complies with established fire safety standards. Ingress and egress to the new development will be constructed utilizing the most current State Fire Safe Regulations, Fire Code, and/or County Code that meets these minimum requirements. Key components of a Fire Protection Plan include:

1. risk analysis;
2. fire response capabilities;
3. fire safety requirements – defensible space, infrastructure, and building ignition resistance;
4. mitigation measures and design considerations for non-conforming fuel modification;
5. wildfire education, maintenance, and limitations; and
6. evacuation planning.

Existing development within an SRA or VHFHSZ can meet these requirements through retro-fitting and home hardening.

Policy 6.2.3.7: Enforce the most recent California Uniform Building Code Fire Code to safeguard life and property from the hazards of fires and explosions; dangerous conditions arising from the storage, handling, and use of hazardous materials and devices; and hazardous conditions in the use or occupancy of building or premises.

Objective 6.2.4: Reduce fire hazard through cooperative fuel management activities.

Policy 6.2.4.1: Discretionary development within high and very high fire hazard areas shall be conditioned to designate fuel break zones that comply with fire safe requirements to benefit the new and, where possible, existing development.

Policy 6.2.4.2: The County shall cooperate with CAL FIRE and local FPDs to identify opportunities for fuel breaks in zones of high and very high fire hazard either prior to or as a component

of project review and will support the FPDs in tracking grants to fund fire breaks and their long-term maintenance.

Policy 6.2.4.3: Require fuel modification around homes and subdivision developments in SRAs or VHFHSZs by assisting the local FPDs and other local fire agencies.

El Dorado County Code of Ordinances

Chapter 8.08 (Fire Prevention) of the County Code of Ordinances ("County Code") specifies limits on campfires, fireworks, smoking, and incinerators for all discretionary and ministerial developments.

Chapter 8.09 (Vegetation Management and Defensible Space) requires the removal of hazardous vegetation and combustible materials situated in the unincorporated areas of the county so as to reduce the potential for fire and to promote the safety and welfare of the community.

Section 8.09.070. - Duty to remove and abate hazardous vegetation and combustible material.

A. It shall be the duty of every owner, occupant, and person in control of any parcel of land or interest therein, which is located within the County to remove, or abate, all hazardous vegetation and combustible material, which constitutes a fire hazard and may endanger or damage neighboring property.
B. The owner, lessee or occupant of buildings, grounds, or lots within the County shall remove from such property and adjacent streets all waste, garbage, rubbish, weeds, hazardous vegetation or other combustible materials growing or accumulated thereon in accordance with the procedures and methods prescribed in this chapter and by the Enforcement Official.
C. Any home owners association (HOA), lighting and landscape district, subdivision development, special district, or other entity that has a developed and approved Wildland Fire Safe Plan in accordance with the County's General Plan requirement and CFC Chapter 49, shall be granted a reasonable amount of time to comply with this ordinance not to exceed five years from the date which this ordinance was approved and ratified by the Board of Supervisors (May 30, 2019).
D. Prior to the close of any real estate sales transaction within the County, the requirements for property owners to comply with the Vegetation Management Ordinance shall be disclosed to all potential property owners.
E. All improved parcels, shall comply with the following requirements:
    1. Maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line except as provided in Paragraph 11. The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location, and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation.
    2. Consistent with fuels management treatment objectives, steps should be taken to minimize erosion. For the purposes of this paragraph, "fuel" means any combustible material, including petroleum-based products and wildland fuels.
    3. A greater distance than that required under Paragraph 1 may be required by State law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the State law, local

ordinance, rule, or regulation includes findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure.

4. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner.
5. Remove that portion of a tree that extends within ten feet of the outlet of a chimney or stovepipe.
6. Maintain trees, shrubs, or other plants adjacent to or overhanging a building free of dead or dying wood.
7. Maintain the roof of a structure free of leaves, needles, or other vegetative materials.
8. A person is not required under this section to manage fuels on land if that person does not have the legal right to manage fuels, nor is a person required to enter upon or to alter property that is owned by any other person without the written consent of the owner of the property.
9. Cultivated and useful grasses and pastures shall not be considered a public nuisance. However, if the County's Enforcement Official determines it necessary to protect adjacent improved property from fire exposure, an adequate firebreak may be required.
10. The public and entities should be aware of rare plants areas, riparian areas, and raptor nesting trees on the property and try to avoid these sites.
11. Good neighbor and neighborhood protection policy including unimproved parcels. A 100-foot-wide strip of land around structure(s) located on an adjacent improved parcel (some or all of this clearance may be required on the adjacent improved parcel or the adjacent unimproved parcel depending upon the location of the structure on the improved parcel). For example, a structure could be within 70 feet of its property line. The adjacent property owner shall assist its neighbor by completing fuels management on another 30 feet to create a 100-foot strip of treated land.
12. Improved and unimproved parcels adjacent to all roadways that have been designated by the County Enforcement Official (or designee) to be necessary for the safe ingress and egress to the area served by the roadway or fire access easement and the current condition of fuels on the improved or unimproved parcel is assessed by the County Enforcement Official as an extra hazardous fire condition which must be treated or abated.

El Dorado Hills County Water District Ordinance 2022-01 (Fire Code)

EDH Fire has adopted the 2022 CFC with several local amendments which are more restrictive than those described in the CFC. EDH Fire updates its local fire code ordinance in conjunction with the triennial update to the CBC. Specific local amendments contained within the ordinance that may impact the project include the following:

- Fire apparatus access road design criteria (Section 503.2.1);
- Dead end roads and driveways (Section 503.2.5);
- Fire lane marking requirements (Section 503.3.1);
- Security gate design criteria (Section 503.6);
- Address identification criteria (Section 505.1);
- LP-Gas storage tank limits (Section 6104.2);
- Residential fire sprinkler system installation requirements (Chapter 80);
- Fire-Flow requirements for buildings (Appendix B);
- Fire Apparatus access road design criteria (Appendix D).

El Dorado Hills County Water District Ordinance 2023-01 (Unimproved Parcel Maintenance)

EDH Fire has adopted local regulations related to hazardous vegetation management on unimproved parcels located throughout the District. Specific provisions contained within the ordinance that may impact the project include the following:

- Hazardous vegetation maintenance on unimproved parcels that are one (1.0) acre in size or smaller;
- Hazardous vegetation maintenance on unimproved parcels over one-acre (1.01) in size or larger;
- Unimproved parcels known to contain, or that the property owner believes, may contain habitat for rare, threatened, or endangered plant or animal species;
- Duty of property owner to abate fire hazards on their property;
- Acceptable methods of clearance of hazardous vegetation and combustible materials;
- Reoccurring fire hazards;
- Penalties for violating the ordinance.

In addition, the County Fire Chiefs Association has created several fire protection standards, as permitted by the CFC, to clarify certain provisions of the code and their application locally (El Dorado County Fire Chiefs Association 2024).

The following fire protection standards may apply to this project:

- Standard B-001; Addressing of Buildings
- Standard B-002; Automatic & Manual Gates on Fire Access Roadways and Driveways
- Standard B-003; Emergency Apparatus Access Ways
- Standard D-003; Water Supplies for Suburban and Rural Firefighting
- Standard G-001; Fire Department Access & Clearances During Construction
- Standard H-005; Solar Photovoltaic Standard
- Standard R-001; Construction of Residential Buildings (EDH Fire-specific)

El Dorado County Design and Improvement Standards Manual

The County Design and Improvement Standards Manual (1990) discusses fire-related standards in Volume II: Design Standard for Subdivisions, Section 2: General Information and Criteria, Section 3: Streets, and Section 6: Fire Protection Requirements. The following standards are applicable to the proposed project:

i. Volume II: Design Standard for Subdivisions, Section 2: General Information and Criteria, Lands Subject to Hazards:
   a. Land subject to extreme wildfire hazards shall be modified by such corrective measures as may be required by the Planning Division, Planning Commission and/or the Board of Supervisors, from recommendations made by the California Department of Forestry, United States Forest Service, and structural fire protection districts.

ii. Volume II: Design Standards for Subdivisions, Section 3: Streets
   b. Fuel modification (thinning) may be required up to 100 feet from the edge of the roadway (on- site) by the Planning Director upon favorable recommendation from the fire protection agencies, based on the following criteria:

Fire Rating	When Length of Road is to Exceed
Extreme	500 feet
High	800 feet
Moderate	1,000 feet

iii. Volume II: Design Standard for Subdivisions, Section 6: Fire Protection Requirements

c. The following are considered minimum fire protection requirements and may be modified by the Planning Director with a favorable recommendation from the fire protection district. Such modification may include the increase or decrease of the minimum fire protection requirement standards dependent upon the unique needs of the servicing fire district.

i. Fire Protection Required

1. When division of land (minor or major) is proposed and is within a fire protection district, the minimum fire protection requirements must be met, unless modified by agreement between the subdivider and structural fire protection district and wildland fire protection agencies.
2. When a major subdivision (no matter the size of the lots) is proposed, it shall be within a structural fire protection district.

ii. Water Supply and Source Requirements for Fire Protection (Major and Minor Land Divisions, Five (5) or more parcels)

1. The supply system and source shall provide a minimum of 60,000 usable gallons of storage for 5 to 50 lots; 120,000 gallons for 51 to 100 lots; and 180,000 gallons for 100 or more lots. The water supply system and source shall be located at the direction of the Planning Director and based on comments received from the structural fire protection district,
    a. Where water distribution systems are not available, the following will be considered by the structural fire protection district:
        i. tanks;
        ii. reservoirs;
        iii. canals; and
        iv. other systems as may be approved by the structural fire protection district.
    b. Any of the above water supplies, or combinations thereof, may be required by the Planning Director with a favorable recommendation from the structural fire protection agency having the responsibility in that area.
    c. A facility for refilling fire trucks shall be provided for taking of water from the water supplies and shall conform to the standard drawings. The standard drawings may be modified by the fire protection district having the responsibility in that area where structural conditions require it.
    d. Fire hydrant locations shall be approved by the Fire Chief of the district providing the service, under Article 10, Section 10.301 of UFC.

El Dorado County Local Hazard Mitigation Plan

The County Local Hazard Mitigation Plan (LHMP) updates the County Multi-Hazard Mitigation Plan (El Dorado County 2018). The purpose of the LHMP is to guide hazard mitigation planning to better protect the people and property of

the County from the effects of hazard events. The LHMP serves as a tool to help decision makers direct mitigation activities and resources. It provides risk and vulnerability assessments for potential hazards (i.e., avalanche, dam failure, drought, earthquake, erosion, flood, seiche, severe weather/extreme temperatures, severe weather/ thunderstorms, wildfire, and subsidence) and develops mitigation strategies to reduce potential hazards.

The LHMP notes that wildfires may occur in all areas of the county, including the most populated areas of El Dorado Hills, Cameron Park/Shingle Springs, Placerville, Camino/Pollock Pines, and South Lake Tahoe. The county also has a large area of National Forest Service land that is also vulnerable to wildfire. The LHMP includes a general wildfire vulnerability assessment for the County, stating that wildfire is a priority hazard because wildfire disaster events have impacted the County on numerous occasions, and that the likelihood of future wildfire occurrence is highly likely. Due to its high fuel load and long, dry summers, most of the county continues to be at risk from wildfire. Mitigation strategies for wildfire that may be applicable to the project include strategies for fuel reduction, since fire itself, weather, and topography cannot be mitigated. The LHMP recommends that development in areas identified as high wildfire risk areas should be planned appropriately, given previous occurrences of fire and fire behavior in the state, and that planning for evacuation routes should be considered with any new developments.

El Dorado County Emergency Operations Plan

The El Dorado County Office of Emergency Services (OES) updates and maintains the County's Emergency Operations Plan (EOP). The EOP is the principal guide for the County and other local government entities to prevent, prepare, respond, and recover from emergencies and disasters affecting the county. Secondarily, this plan is intended to facilitate multi-agency and multi-jurisdictional coordination, particularly between local, state, and federal agencies in emergency operations. The Standardized Emergency Management System (SEMS) is the organizational framework for emergency response and operations in the County, and the EOP complies with the National Incident Management System (NIMS) and the National Response Framework (NRF). The plan is also integrated with the State Emergency Response Plan, and California's mutual aid system.

The EOP establishes the policies, responsibilities, and procedures necessary to protect public health and safety, property, infrastructure, and the environment from the effects of emergencies and disasters. The EOP also establishes the operational concepts and procedures associated with both field responses and Emergency Operations Center (EOC) activities. Project residents would be required to follow the evacuation warnings or orders issued by OES. The protocol for evacuating a specific area is usually a joint effort between the County Sheriff and another authority such as CAL FIRE during a wildfire response. Evacuation warnings or orders issued by the OES will route through the EOC Operations Section, Law Branch, or OES Duty Officer if the EOC is not activated.

Creekside Village Specific Plan

If the project is approved and the CVSP is adopted, project design elements outlined in the CVSP would apply (CVSP 2023). The CVSP includes its own unique site development standards that customize the requirements contained in the County's Design and Improvements Standards Manual. It should be noted that where conflicts exist between the CVSP and the County Ordinances and Design Standards, the CVSP standards shall govern. None of the CVSP standards are less restrictive than the state and local standards identified herein. The CVSP does not contain specific policies related to wildfire, emergency response or evacuation. As such, County and state regulations discussed above would apply.

As required by the General Plan, a Fire Safe Plan has been prepared for the project that has been reviewed and approved by CAL FIRE and the EDH Fire. The plan demonstrates that development can be adequately protected from wildfire fire hazards (Appendix J).

3.15.3 Thresholds of Significance

Thresholds of significance are used to determine the significance of a project's environmental effects. Per Section 15064.7 of the CEQA Guidelines, a threshold is an identifiable quantitative, qualitative or performance level of particular environmental effect, non-compliance with which means the effect will normally be determined to be significant and compliance with normally means the effect will be determined to be less than significant. A significant impact would occur if development of the proposed project would do any of the following:

- Substantially impair an adopted emergency response plan or emergency evacuation plan.
- Exacerbate wildfire risks due to slope, prevailing winds, and other factors thereby exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or changes in drainage.

3.15.4 Impacts and Mitigation Measures

Methodology

Maps and reports prepared by CAL FIRE and for the proposed CVSP were reviewed to determine the project's potential risk related to wildfire. The potential for the project to be impacted by wildfire was determined qualitatively by comparing the existing conditions present on the site. In determining the level of significance, this analysis assumes the proposed project would comply with relevant state and local ordinances and regulations, as well as the County General Plan policies presented above. Note that, under CEQA, the effects of the existing environment upon a proposed project are generally not a project impact. A project impact occurs when direct or indirect changes to the environment would occur as a result of implementation of the project.

This section is based primarily on a review of applicable fire planning documents prepared for the proposed project and publicly available data, including but not limited to: CAL FIRE Mapping Data for Fire History and Fire Hazard Severity Zones (CAL FIRE 2018; CAL FIRE 2022), and the Fire Safe Plan (included as Appendix J).

As described in Chapter 2, Project Description, the project includes two development options. The first option would be to convert the 1,8-acres of neighborhood commercial to park uses if neighborhood commercial is not adopted as part of the Specific Plan. The second option proposes construction of up to 768 age-restricted units and 150 conventional homes. Where applicable, the impact analysis below indicates if a proposed option would result in a change in impact significance or require new mitigation.

Project Impacts

Impact 3.15-1. The proposed project would not impair an adopted emergency response plan or emergency evacuation plan.

The CVSP is proposing to develop 918 residential units, parks and a small 1.8-acre neighborhood commercial use that could be converted to park if not approved as part of the project on a site that is undeveloped grasslands within an area designated as a Moderate FHSZ within an SRA.

Emergency Response

The project would add population and structures to EDH Fire's responsibility area, which would increase demand for emergency response and related services. The project would result in a maximum of 918 new residential units, for a total of approximately 2,314 new residents at buildout (see Chapter 2, Project Description). This would result in an increase in demand for fire protection services to serve the project site. The nearest station to the project site is Fire Station 87, approximately 1.5 miles to the southeast. EDH Fires strives to obtain an initial response time of 6 minutes or less 90% of the time in urban/suburban areas (Citygate 2016). The County General Plan Policy 5.1.2.1 sets a minimum level of service for fire response at 8-minutes to 80% of the population, and 15-to-45-minute response time to rural centers and rural regions (El Dorado County 2019a). Emergency response from Fire Station 87 would be anticipated to be approximately between 3.2 minutes and 5 minutes, which is within the response time goal for Station 87 and the minimum level of service set by the County.

Additionally, consistent with General Plan Policy 5.1.2.3, the project would be required to pay development impact fees to cover the costs of facilities and equipment necessary to mitigate the impacts of new development and to ensure that existing service levels are not compromised (El Dorado County 2024; EDHFD 2013). Potential impacts to fire protection services and emergency response are further discussed in Section 3.11, Public Services and Recreation.

Evacuation

As previously discussed, the project site is located within the County EOP area (El Dorado County 2023). The EOP discusses evacuation, and notes that the protocol for evacuating a specific area is usually a joint effort between the Sheriff and another authority such as CAL FIRE during a wildfire response. Evacuation warnings or orders issued by the County's OES would be routed through the County's EOC Operations Section, Law Branch, or OES Duty Officer if the EOC is not activated. Project residents and surrounding areas could be subject to evacuation orders issued by the OES in the event of a wildfire emergency. The County does not publicly distribute established evacuation routes or its community evacuation plans, and the appropriate evacuation routes would be indicated on a case-by-case basis in the event of a wildfire emergency depending on the location, current conditions, and other factors. There are not established evacuation timeframe thresholds set by the County or the state that must be met to ensure the project would not impair an adopted emergency response plan or evacuation plan, thus evacuation has been evaluated qualitatively.

[5] When applying the nationally recognized RAND Corporation formula used by the Insurance Services Office (ISO) Public Protection Classification Program's Response Time Standard: (T=0.65 + 1.7(D), where T=time and D=distance). Travel distance is derived from Google Maps data. The response travel time formula discounts speed for intersections, vehicle deceleration and acceleration, and does not include turnout time.

Although the County does not publish established evacuation routes, Latrobe Road is an existing two-lane arterial road that provides direct regional access to Highway 50 to the north and from U.S. Highway 50 south past the project site to Highway 16, which could serve as a potential evacuation route to access larger roadways. As evaluated in the project's Fire Safe Plan, the proposed project is not expected to impair evacuation procedures along Latrobe Road, as there are no modifications proposed that would impede access or evacuation (Appendix J). The eastern boundary of the project site is located adjacent to Latrobe Road, south of the El Dorado Hills Business Park and approximately 3 miles south of U.S. Highway 50. As shown in Figure 11 in the Fire Safe Plan (Appendix J), the project includes five emergency access points that would provide evacuation access in the event of a wildfire: access points A, B, and C to the east providing access to Latrobe Road, access point D to the west providing access to the Heritage Master Plan Community, and access point E to the northwest connecting to the Business Park located to the northwest (Appendix J). Access point E is an Emergency Vehicle access road that would be constructed as part of the project, as described in Chapter 2, Project Description and shown on Figure 2-9. All improvements would be constructed in accordance with applicable County Code requirements regarding egress and ingress. Additionally, three potential Temporary Areas of Refuge may be available within the project at the village and neighborhood parks if OES determines that evacuating from the area is not possible (see Figure 11 of the Fire Safe Plan for an area map with the available evacuation routes and temporary refuge areas for the project). The project would adhere to emergency access requirements specified in the CVSP and required by EDH Fire standards. Adequate road design for emergency vehicle access and private vehicle evacuation would be provided, as required under General Plan Policy 6.2.3.2 and Fire Department Standard #B-003. Additionally, Class I bike paths and enhanced trails would include design features that allow fire and emergency vehicle access. Per the CVSP, access features such as the use of gates or bollards require review and approval by EDH Fire. The project has been designed to meet EDH Fire restrictions and approval considerations noted in the Fire Safe Plan to ensure adequate emergency response and evacuation procedures, or on-site shelter areas are in place in the event of a wildfire. The Fire Safe Plan thus concludes that, based on the multiple potential evacuation routes in different directions from the project site, road capacity, limited project size, and mitigation measures the project would not impair evacuation. Additionally, the project would not block, limit, alter, or impact routes utilized for evacuation.

Active Adult Option

As explained in Section 3.9, Land Use, Population and Housing, the Active Adult option is assumed to have an approximately 33.5% reduction in future residents, which would reduce the number of residents having to evacuate in the event of a wildfire. With active adult units, the project would not be expected to pose unique evacuation concerns that might be present for other types of age-restricted developments, such as an assisted-living facility with a substantial non-ambulatory portion of the population. Therefore, because the Active Adult option would slightly reduce the number of residents needing to evacuate in the event of an emergency and would not introduce new impacts, the impacts would generally be expected to be reduced as compared to the proposed project and remain less than significant.

Because the proposed project would be within the response area of EDH Fire, would not result in any road closures, and would be designed in accordance to state and local fire and emergency access requirements, which includes site plan review by EDH Fire and payment of County development fees, ensuring that the project would not impair an adopted emergency response plan or evacuation procedures in the project area, impacts would be **less than significant**.

Impact 3.15-2. The proposed project could exacerbate wildfire risks exposing future residents to potential wildfire hazards.

Wildfire Risk

The project site is located within a WUI, which is identified as a zone of transition between wildland (undeveloped/unoccupied/"natural" land) and urban development. A WUI presents an area of concentrated human-environmental conflicts and risks, including the loss of property and lives to wildfire. The number of wildfires in the WUI has increased over the past few decades due to both the increase in development and human activity in the WUI as well as changes in climatic conditions (Schug 2023). The proposed project would develop residential and a small commercial use within a Moderate and High FHSZ in a WUI area where approximately 30 recorded wildfires have occurred within a 5-mile radius, and wildfires burned onto the project site in 1959, 1992, and 2001 (CAL FIRE 2018). Construction and operation of the project within the WUI would increase human activities and potential ignition sources, which may increase the chances of a wildfire and spread of wildfire which could exacerbate wildfire risks by increasing the number of people and structures exposed to risk of loss, injury, or death due to wildfire.

The project includes the development of up to 918 dwelling units, parks, open space, neighborhood commercial, and roadway infrastructure on undeveloped land in an SRA area mostly within a Moderate FHSZ (the southeastern edge of the project site is located in a High FHSZ). The project site is surrounded by land with Moderate, High, and Very High FHSZ classifications, with a High FHSZ located adjacent to the south, and the nearest Very High FHSZs located approximately 0.5 miles to the east (Figure 3.15-1, Fire Hazard Severity Zones) (CAL FIRE 2024). Although the project site is located within a Moderate and High FHSZ within a WUI area, based on a review of site and local conditions the Fire Safe Plan prepared for the project determined the project site has a low wildfire risk (Appendix J). The proposed project also includes installation of a fire hydrant network, per the County's Fire Safe Regulations.

Existing potential ignition sources near the project site include surrounding roadways and vehicles, overhead transmission lines, off-site commercial areas, off-site residential neighborhoods, and other arson-related ignitions. Construction and operation of the project would introduce new potential sources of ignition to the project site, including increased human activity and additional vehicles traveling on internal and external roads.

Slopes

Topography and slope variations can influence surface winds, which impact wildfire behavior. Topography that is typically associated with creating unusual weather conditions and influencing wildfire behavior includes steep slopes, chutes, chimneys, or saddles. As discussed in Section 3.15.1, the project site is located in the western foothills of the Sierra Nevada Mountain Range with relatively flat to moderately sloped terrain. While the topography of the project site is variable, the majority of the site includes slope gradients of less 20% slopes (Appendix J), with the steepest slopes located along the side-slopes of some of the drainages and an isolated hill within the southeastern corner of the project site.

While there are steeper slopes present on site, these areas would remain undeveloped and maintained as park or open space areas. Additionally, slopes areas along intermittent drainages, seasonal wetlands, vernal pools and ponds within proposed open space are largely associated with wetland and riparian habitat which presents less flammable vegetation due to high moisture content. Wildfires typically burn up slopes faster and more intensely than along flat ground and steeper slopes result in a faster moving fire. Moderate or steep slopes greater than 20%, are considered a higher risk for wildfires. Fires also travel in the direction of the ambient wind, which usually flows uphill. Development is proposed within the flatter areas of the site and site grading would remove some of the steeper slopes.

Weather/Wind

As discussed in Section 3.15.1, the project area is subject to seasonal variations and weather conditions that may be favorable to wildfire spread. However, the project would not create new slopes that would affect wind speeds or otherwise alter or exacerbate wildfire behavior.

Vegetation/Other Factors

Variations in vegetative cover type and species composition have a direct effect on fire behavior. The project site is currently undeveloped, and the vegetation community is dominated by annual grasslands, which present an existing fuel source and readily ignitable fuels during the dry season. While the project would convert readily ignitable fuels to buildings and maintained landscaped areas, the project site would be exposed to large areas of naturally vegetated open space to the south and east.

Overhead electrical transmission lines are located along Latrobe Road, as described in Section 3.15.1. Faulty power lines have been known to result in igniting wildfires. Although the project's electrical infrastructure would be placed underground and would not have the potential to ignite a wildfire, the project would place new residential structures in an area with existing overhead transmission lines; however, CEQA does not consider how existing hazards or conditions might impact a project's users or residents, unless the project might exacerbate existing environmental hazards. The project would not exacerbate any risk from existing overhead transmission lines.

As noted above, a majority of the proposed development would be located within the flatter areas of the project site and would replace existing grassland with irrigated landscape and buildings constructed to current state and local building and fire codes to further minimize the loss of structures in the event of a wildfire. However, the project site is located within an area mapped by CAL FIRE as within a Moderate and High FHSZ and based on the history of wildfires in the area, approximately 30 recorded fires have occurred within 5 miles of the project site since the 1950s, and three fires have burned portions of the site: the 1959 Dunlap Fire, the 1992 SMUD #1 Fire, and the 2001 Payen Fire (CAL FIRE 2018). Due to the increasing threat of wildfires and loss of property and human lives associated, in part, with development within the WUI, the project including the Active Adult option could exacerbate wildfire risk and expose future residents to potential wildfire hazards by adding increased population and human activities within a WUI area designated primarily as Moderate with a small portion designated as a High FHSZ. Although, the Active Adult option is assumed to have an approximately 33.5% reduction in future residents, which would reduce the number of residents that could be exposed to wildlife hazards. The proposed project would develop residential uses within an area designed as Moderate with a small portion designated as a High FHSZ in a WUI Area where wildfires have occurred. Given the introduction of these land uses into an undeveloped area that has experienced wildfire and is considered to have an existing fire risk, there is the potential for the project including the Active Adult option to exacerbate fire risks through an accidental ignition resulting in the exposure of future residents to the risk of wildfire hazards. Therefore, impacts would be **potentially significant.**

Construction

Construction activities could also exacerbate wildfire risks due to the use of flammable materials, tools, and equipment capable of generating a spark and igniting a wildfire. During construction activities, heat or sparks from construction equipment and vehicles have the potential to ignite vegetation and start a fire. Construction sites also store and use of flammable hazardous materials. The risk of wildfire would be especially high during weather events

that include low humidity and high wind speeds. The following construction-related equipment has the potential to generate heat or sparks that could result in wildfire ignition:

- Earth-moving and excavating equipment (i.e., tractors, graders, mowers, bulldozers, backhoes, cranes, excavators, trucks, and vehicles) – heated exhaust or sparks in contact with vegetation may result in ignition.
- Chainsaws and other small gas-powered equipment/tools – may result in vegetation ignition from overheating, sparks, fuel leak, etc.
- Welders – open heat source may result in metallic sparks coming into contact with vegetation.
- Wood chippers – include flammable fuels and hydraulic fluid that may overheat and spray onto vegetation with a hose failure.
- Grinders – sparks from grinding metal components may land on a receptive fuel bed.
- Torches – heat source, open flame, and resulting heated metal shards may come in contact with vegetation.

The potential risk of wildfire ignition and spread associated with construction activities can be managed so that the potential for vegetation ignition is reduced. In addition, pre-planning and construction personnel fire awareness, reporting, and suppression training can lower the probability of ignition, and increase the probability that fire can be controlled and extinguished in its early stages. Data indicates that 95% of all wildfire ignitions are controlled during an initial attack (Smalley 2008). The project would be required to comply with County, state and EDH Fire requirements for construction activities in hazardous fire areas, including fire safety practices, to reduce the possibility of fires during construction activities. To reduce the risk of wildfires spreading to nearby buildings, EDH Fire requires all unimproved properties to comply with Ordinance 2023-01, which requires the abatement of accumulated weeds, grasses, shrubs, and other hazardous vegetation and combustible materials.

Additionally, measures that would help reduce construction-related wildfire impacts include having adequate water available to service construction activities, implementing a construction-phase fire prevention plan, providing proper wildfire awareness, reporting, and suppression training to construction personnel, and requiring that all construction-phase components of the fuel modification be fulfilled prior to delivery of combustible materials/lumber to the project site. Even with adherence to the required construction best management practices and County requirements, construction activities require the use of equipment that could spark a fire, especially during windy days and the hot, dry summer and fall months (fire season). Because construction activities associated with the installation of infrastructure for the project including the Active Adult option may exacerbate fire risk in the project area, the impact is considered **potentially significant**.

Operation/Maintenance

While the project is located mostly in a Moderate FHSZ, due to its location within an SRA and a WUI, the project is required to be designed, constructed, and maintained in compliance with applicable local, regional, state, and federal regulations (see Section 3.15.2) related to fire safety, emergency access, and evacuation, as well as building materials, setbacks, and defensible space requirements for development in fire hazard areas. The CVSP does not include specific wildfire safety or risk reduction policies, requirements or development standards that address building requirements or fuel management requirements. Instead, the project would be required to adhere to federal, state and local requirements. These rules, regulations, and policies included in Section 3.15.2 outline

strategies for development in the WUI and fire hazard areas to reduce the risk of wildfire damage and losses, including but not limited to:

- Proposed structures would be required to be built to the standards of Chapter 7A of the CBC, which applies to building materials, systems and/or assemblies used in the exterior design and construction of new buildings located within a FHSZ or WUI area. New buildings located in such areas shall comply with ignition-resistant construction standards, including 704A Ignition-Resistant Construction, 705A Roofing, 706A Vents, 707A Exterior Covering, 708A Exterior Windows, Skylights and Doors, 709A Decking, and 710A Accessory Structures.
- All roads serving the project shall meet the emergency vehicle access requirements of the California Code of Regulations Title 24 – Part 9 (California Fire Code).
- The County General Plan and County Code require that a Fire Safe Plan prepared by a qualified professional be prepared for the project and shall be approved by EDH Fire. The Fire Safe Plan shall demonstrate that the development can be adequately protected from wildland fire hazard, including requirements for adequate emergency water flow, emergency access, and firefighting personnel and equipment will be available. The Fire Safe Plan prepared for the project has been included as Appendix J and explains how the project is consistent with the County fire safety policies and regulations and has been reviewed and approved by CAL FIRE and EDH Fire.
- Vegetation management requirements associated with the provision of defensible space and hazard abatement shall be implemented in accordance with California Government Code Section 51182 and California Fire Code Section 4903, County Code Chapter 8.09 (Vegetation Management and Defensible Space), County Ordinance 2023-01 (Unimproved Parcel Maintenance). The project shall include adequate defensible space within 100 feet of all buildings and the establishment of a Wildfire Fuel Reduction Zone (WFRZ) for all lands located within the Open Space Buffer (CV-OS2). Offsite fuel modification southwest of the project site would be the responsibility of neighboring property owner(s), per County ordinance 2023-01. Maintenance of defensible space and the WFRZ shall be the responsibility of the landowner and the Homeowner's Association (HOA) or Community Service District (CSD) established for the project and in accordance with CAL FIRE, EDH Fire, and El Dorado County requirements. The WFRZ shall extend from the property line of the adjacent residential or commercial lot out 85-feet, or to the boundary with CV-OS1, whichever is less, to ensure that adequate defensible space is provided for the building. The WFRZ shall be established and accepted by EDH Fire prior to the issuance of the first building construction permit issued by the County. Maintenance of the WFRZ shall be the responsibility of the landowner prior to the transfer of the obligation to the HOA/CSD and shall be completed prior to May 1st each year unless otherwise ordered to complete this work earlier by EDH Fire due to drought or other fire conditions being present. (See Figure 14 and Section 6.4 of the Fire Safe Plan for additional details [Appendix J]).

While development of the site would introduce new potential ignition sources to the project site, the site would be largely converted from readily ignitable fuels to structures, paved roads, and landscaped areas, consisting of ignition resistant building materials and an ignition-resistant plant palette. The CVSP does not include a landscaping plan, so the types of trees and other plantings are not known. It is anticipated that all construction activities, building materials, access, and vegetation maintenance activities would be conducted as prescribed by federal, state, and local requirements. This would minimize the potential for wildfire ignition and spread. As specified in the Fire Safe Plan, the HOA would coordinate annual visitation and inspection with EDH Fire, enforce compliance with requirements and protocols, maintain fire breaks and fuel reduction zones along the WUI, and disseminate information to residents regarding all required fire safety practices. Compliance with these regulations and annual practices would help minimize the risk of fire. A detailed description of these features can be found in Appendix J.

These ignition-resistant features would form a redundant system of protection to minimize the likelihood of exposing residents and visitors, as well as structures, to the uncontrolled spread of a wildfire. This same fire protection system would provide protections from an on-site fire spreading to off-site vegetation. As such, accidental fires within the maintained landscape or structures in the project would have limited ability to spread. Further, research indicates that communities that are informed about wildfire risk reduction can reduce risk of wildfire ignition and spread (CAL FIRE 2019). It should be noted that while these standards would provide a high level of protection to structures for the proposed project, there is no guarantee that compliance with these standards would prevent damage or destruction of structures by fire in all cases. Therefore, due to periodic weather conditions, use of vehicles and equipment with the potential to ignite a fire, and availability of fuel sources, operations and maintenance activities which would be the same under the Active Adult option could result in a **potentially significant impact** associated with exacerbating wildfire risk.

Mitigation Measures

Implementation of mitigation measures WF-1 (construction) and WF-2 through WF-4 (operation) would ensure the proper guidelines are followed during project construction and operation to reduce the risk of fire and ensure all feasible steps are taken to minimize the potential for wildfires to expose future residents to hazards. The project shall prepare a construction fire prevention plan (mitigation measure WF-1), implement recommendations of the Fire Safe Plan (mitigation measure WF-2), implement an emergency and evacuation preparedness education and program for project occupants (mitigation measure WF-3), and include a fire-resistant landscape plant palette (mitigation measure WF-4).

Implementation of MM-WF-1 through MM-WF-4, combined with regulatory requirements, would reduce potential impacts related to exacerbating wildfire risks and exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire to **less than significant**.

WF-1: Construction Fire Prevention Plan. Prior to any ground-disturbing activities, including site clearing, grading or trenching, the project applicant(s) shall work with the El Dorado Hills Fire Department to prepare a Construction Fire Prevention Plan to be provided to all future developers. The plan shall address training of construction personnel and provide details of fire-suppression procedures and equipment to be used during construction. Information contained in the plan shall be included as part of project-related environmental awareness training to occur prior to any ground disturbance. At a minimum, the plan shall be consistent with the requirements in California Building Code Chapter 33 and California Fire Code Chapter 33 and shall include the following:

- Procedures for minimizing potential ignition, including, but not limited to, vegetation clearing, parking requirements/restrictions, idling restrictions, smoking restrictions, proper use of gas-powered equipment, use of spark arrestors, and hot work restrictions;
- Work restrictions during Red Flag Warnings and High to Extreme Fire Danger days;
- Specifications for adequate water supply to service construction activities;
- On-site fire awareness coordinator role and responsibility;
- Construction worker training for fire prevention, initial attack firefighting, and fire reporting;
- Emergency communication, response, and reporting procedures;
- Coordination with local fire agencies to facilitate access through the project site;

- Implement all construction-phase fuel modification components prior to combustible building materials being delivered to the site;
- Emergency contact information; and
- Demonstrate compliance with applicable plans and policies established by state and local agencies.

WF-2: Fire Safe Plan Recommendations. The Fire Safe Plan (FSP) provides customized measures that address potential fire hazards on the site. The measures are independently established but shall work together to result in reduced fire threat and heightened fire protection. These measures shall be established and accepted by the El Dorado Hills Fire Department prior to the issuance of the first building construction permit issued by the County. The following measures identified in Section 7.3 of the FSP shall be implemented and shall be included as notes on any Final Map, grading plans, and construction plans:

- Fencing materials used within 5-feet of all buildings shall be constructed of non-combustible materials.
- Fencing materials adjacent to non-irrigated open space areas shall be constructed of non-combustible materials.
- Combustible sheds and other outbuildings shall be kept at least 30 feet from residential dwellings and other buildings on each parcel.
- The following specific alternative material and construction methods, exceeding the minimum criteria described in CBC Chapter 7A, shall be implemented within the project to meet the "Practical Effect" principles (described in CCR Title 14 – section 1276.01) when buildings are located within 30-feet of property lines to reduce the potential for building-to-building fire spread may include, but are not limited to the following provisions:
  - All spaces between roof decking and the Class A roof covering shall be blocked to prevent embers from catching and igniting the building; and Eaves shall be boxed in (soffit-eave design) and protected with ignition resistant or non-combustible materials; and
  - Ignition resistant building materials, such as stucco, fiber cement wall siding, fire retardant treated wood, or other approved materials shall be used when neighboring buildings are within 30-feet; and
  - WUI ember and flame-resistant vents, conforming with the requirements of ASTM E2886, shall be used to protect exterior wall openings when the wall is located within 30-feet of another building or faces the Wildland Fuel Reduction Zone areas; and
  - The size and number of windows to bedroom rescue window openings and other essential location shall be limited when the exterior wall is located within 30-feet of another building. Windows on all sides of buildings shall be constructed of multi-pane glazing with a minimum of one tempered pane on the exterior side; and
  - Exterior doors of buildings shall be constructed of non-combustible or ignition-resistant material, or shall be constructed of solid core wood compliant with California Residential Code Section R327.8.3 when located within 30-feet of another building; and
  - Combustible decks that are cantilevered over the natural slope shall be enclosed to reduce the accumulation of debris and combustible storage items that may be ignited by fire

brands. The construction of combustible decks shall comply with the building construction requirements found in CBC Section R337; and

- A minimum non-combustible area of 6 vertical inches, measured from the ground up (at grade) and from any attached horizontal surface like a deck, shall be provided on the exterior walls of all buildings. Non-combustible materials include brick, stone, fiber-cement siding, or concrete; and
- Address numbers on each residential building shall be either internally or externally illuminated.

- Wildfire fuel reduction management and defensible space practices for the project shall follow the requirements identified in Chapter 6 of the FSP.
- A Restrictive Covenant shall be filed with the final subdivision map which stipulates that a Fire Safe Plan has been prepared and wildfire mitigation measures shall be implemented.
- "No Smoking" signs shall be posted at all trail entrances.
- At all trail intersections with the roads that have vehicle access there shall be a knock down bollard or gate with a Knox® padlock, or other approved lock, to allow for the passage of emergency equipment onto the trail.
- A 5-foot defensible space ember-resistant zone (Zone 0) shall be maintained around all buildings (including fencing within 5 feet).
- A Homeowners Association (HOA), or other acceptable entity, shall be responsible for maintaining all private emergency vehicle access roads and wildfire fuel reduction zone provisions described in Chapter 6 of the FSP.
- A HOA, or other acceptable entity, shall be responsible for enforcing compliance with all applicable federal, state and County regulations related to defensible space and vegetation management.
- Reliable on-going sources of funding shall be established and acceptable to the El Dorado Hills Fire Department prior to the recording of the final map for the project.

WF-3: Emergency Preparedness and Evacuation Preparedness. The following measures identified in Section 7.4 of the Fire Safe Plan (FSP) shall be implemented. The Homeowner's Association shall be responsible for providing the following information to project occupants in consultation with the El Dorado Hills Fire Department.

- CAL FIRE Ready-Set-Go education materials shall be made available to all new residents of the project for their use in preparing for an evacuation. Fire Department and CAL FIRE shall be encouraged to visit the neighborhood annually to discuss this material and answer questions by the homeowners. See Fire Safe Plan Chapter 8 – Appendix J for additional details.
- El Dorado County Office of Emergency Services education materials on the "RAVE" program shall be made available to all new residents of the project for use in receiving timely notification information regarding the need to evacuate. See Fire Safe Plan Chapter 8 – Appendix L for additional details.

WF-4: Prohibited Plants. A landscape plan shall be submitted to the El Dorado Hills Fire Department for review and approval prior to the issuance of building permits. The landscape plan shall include a fire-resistant plant palette consistent with Appendix I of the Fire Safe Plan and shall not include

tress and vegetation identified by the El Dorado Hills Fire Department on its current list of Highly Flammable Trees & Vegetation, which are plant communities and their associated plant species known to have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf size, branching patterns), and overall fuel loading, shall be prohibited in the CVSP proposed landscape plan. The proposed landscape plan shall be consistent with the El Dorado Hills Fire Department Defensible Space guidelines, the El Dorado County Weed Abatement guidelines, and the El Dorado County Fire Safe Council. This mitigation measure shall be included as a note on any Final Map, grading plans, and construction plans.

Impact 3.15-3. The proposed project could exacerbate fire risk associated with the installation and maintenance of project-related infrastructure.

Roads and Utilities

The proposed project would require installation and maintenance of infrastructure to support the proposed residential, neighborhood commercial, and park uses. Internal roads would be constructed to provide access throughout the plan area. Utilities necessary to serve the proposed project include water, wastewater and storm drainage, as well as dry utilities such as natural gas, electricity, and telecommunications. The installation and maintenance of roads and utilities would introduce new potential sources of ignition as a result of construction activities. Construction of roads and utilities associated with the project which would be the same under the Active Adult option is discussed above under Impact 3.15-1. Additionally, the Fire Safe Plan prepared for this project details that all electrical power distribution lines serving the project would be buried underground, reducing the wildfire risk (Appendix J). All new roads and driveways would be designed, constructed and maintained in accordance with EDH Fire and CAL FIRE requirements as well as the County Code (Appendix J – see Chapter 8 – Appendix D and G of the Fire Safe Plan for additional details). Nonetheless, as discussed in Impact 3.15-2, construction associated with installing on-site roads and utilities and ongoing maintenance of this infrastructure could increase the potential for wildfire due to the use of a variety of heavy and light duty equipment that could result in sparks potentially igniting a fire. This is considered a **potentially significant impact** for the project as well as the Active Adult option.

Fuels/Vegetation Management

To ensure wildfire risks associated with the open space areas are minimized, the project includes a WFRZ that identifies defensible space requirements in accordance with CAL FIRE, EDH Fire and County requirements which would be the same under the Active Adult option. The WFRZ would extend from the property line of the adjacent residential or commercial lot to the boundary with areas designated open space, whichever is less, to ensure that adequate defensible space is provided for the building. The WFRZ would be reviewed and accepted by EDH Fire prior to the issuance of the first building. Maintenance of the WFRZ would be the responsibility of the landowner prior to the transfer of the obligation to the HOA/CSD. All defensible space and WFRZs shall be annually maintained by May 1. Specific WFRZ and defensible space criteria for the project is detailed in Chapter 6 of the Fire Safe Plan (Appendix J). Defensible space shall also be installed adjacent to all lots that border open space. The proposed vegetation management activities would reduce the fire risk by thinning or removing combustible vegetation and implementing a landscape plan with more adequately spaced, drought-tolerant, low-fuel-volume plants (in accordance with mitigation measure WF-4) in order to provide a reasonable level of protection to structures from wildland fire. Installation and ongoing maintenance of defensible space areas would not result in additional temporary or permanent impacts related to exacerbating wildfire risk beyond those identified in Impact 4.14-2.

Given that the activities involved with installation or maintenance of associated infrastructure would require ground disturbance and the use of heavy machinery associated with trenching, grading, site work, and other construction and maintenance activities, the installation of related infrastructure could potentially result in temporary or ongoing impacts to the environment or exacerbate wildfire risks. However, the installation and maintenance of proposed roads, underground utilities, stormwater features, fuel modification zones, and other associated infrastructure are part of the project analyzed herein and would occur in accordance with the requirements of the Construction General Permit, which would include best management practices. As such, any potential temporary or ongoing environmental impacts related to these components of the proposed project have been accounted for and analyzed in this Draft EIR as part of the impact assessment conducted for the entirety of the project. Additionally, the project would be required to comply with all regulatory requirements and mitigation measures outlined within this EIR for the purposes of mitigating impacts associated with trenching, grading, site work, and the use of heavy machinery. No adverse physical effects beyond those already disclosed in this EIR would occur as a result of implementation of the project's associated infrastructure. Nonetheless, construction associated with installing on-site infrastructure and ongoing maintenance of this infrastructure could increase the potential for wildfire due to the use of a variety of heavy and light duty equipment that could result in sparks potentially igniting a fire. This is considered a **potentially significant impact** for the project as well as the Active Adult option.

Mitigation Measures

Implementation of mitigation measure WF-1 and WF-4. Compliance with these mitigation measures would ensure the proper guidelines are followed during construction to reduce the risk of an accidental fire to **less than significant**.

WF-5: Implement mitigation measures WF-1 and WF-4.

Impact 3.15-4. The proposed project could expose future residents or structures to hazards associated with post-fire runoff.

Wildfires can greatly reduce the amount of vegetation within a burned area. Plant roots stabilize the soil and above-ground plant parts slow water, allowing it to percolate into the soil. Removal of surface vegetation resulting from a wildfire reduces the ability of the soil surface to absorb rainwater and can allow for increased runoff that may include large amounts of debris. If water-resistant soil conditions exist post-fire, the rate of surface water runoff is increased as water percolation into the soil is reduced (Moench and Fusaro 2012). The potential for surface runoff and debris flows therefore increases significantly for areas recently burned by large wildfires (Moench and Fusaro 2012). Figure 3.15-2, Fire History and Burn Frequency, shows the fires that have burned on site and within a 5-mile radius of the project site. Three fires have burned portions of the project site in 1959, 1992, and in 2001. The most recent fires that have burned in proximity to the project site is the Blackstone Fire in 2021, 1.66 miles north of the project site, and the Latrobe Fire in 2022, 2.37 miles northwest of the project site. It is anticipated that vegetation on or near the project site has rebounded since the most recent wildfire occurrence, and vegetation growth has restabilized nearby soils and slopes.

There are three seasonal drainages that cross the project site and merge at the western boundary to form one intermittent drainage that drains offsite. The proposed project's drainage improvements would follow the recommendations provided by the Carson Creek Regional Drainage Study, detailed more in Section 3.8, Hydrology and Water Quality. As described in Chapter 2, Project Description, the project's on-site storm drain system includes low impact development (LID), flow duration control basins and in-stream approaches. Stormwater runoff would be directed, via surface flow and drainage pipes, to the existing drainage channel and a new hydromodification pond. A water quality swale would be constructed adjacent to the primary roadway that bisects the plan area. The system

is designed consistent with the County's hydromodification standards in order to avoid adverse impacts to Carson Creek and its tributaries. Post development stormwater runoff would not exceed pre-development runoff rates to ensure flooding would not occur downstream of the project. With this system in place, the proposed project would not expose people or structures to risks posed by runoff.

Slope failure can occur as either rapid movement of large masses of soil (landslide) or slow, continuous movement (creep) on slopes of varying steepness. Areas susceptible to landslides are characterized by steep slopes and downslope creep of surface materials. The project site, as well as surrounding areas, are characterized by gently rolling hills with broad valleys. The Fire Safe Plan notes that slopes within the project are generally less than 20% with approximately 3% of the site with slopes greater than 21% and the remaining 1% with slopes of 30% or greater. As discussed in Section 3.6, Geology, Soils, and Paleontology, the Geotechnical Study noted that existing slopes on the project site are shallow, vegetated, and show no indication of slope instability such as tension cracks, slump blocks, seeps or springs. The Geotechnical Study concludes that the potential for slope instability to occur in the plan area is negligible (Appendix D). It is unlikely that there would be substantial adverse effects involving landslides to residences located downslope under post-fire conditions. As such, the proposed project including the Active Adult option would not expose people or structures to risks posed by slope instability.

The occurrence of wildfire could damage proposed LID drainage systems or vegetation in open space areas. Due to the proposed WFRS and defensible space, and ignition resistant construction, it is anticipated that a wildfire occurring in the project area would be unlikely to burn through the site uncontrolled, and topographical and developed drainage features would be unaffected under post-fire conditions and would result in a minimum increase in the risk of post-fire flooding and increased runoff. However, in the event of a wildfire as project build-out is occurring there could be areas not yet developed where post-fire conditions could result in substantial erosion which could affect developed areas exposing people or structures to significant risks. Therefore, project impacts including the Active Adult option would be considered **potentially significant**.

Mitigation Measures

Implementation of mitigation measure WF-6 would ensure potential impacts associated with post-fire flooding, runoff, or slope instability are evaluated and addressed through the use of erosion control techniques, reseeding grasses, and tree removal, if required, to ensure any potential impacts would be reduced to **less than significant**.

WF-6: Post Fire Activities. Following any on-site wildfire during project build-out in areas where development may be affected by post-fire risks, a post-fire field assessment shall be conducted by an engineering geologist or civil engineer, in coordination with the El Dorado Hills Fire Department, to identify any areas that may be subject to increased risk of post-fire flooding, landslide or erosion. Any recommendations identified by the geologist to mitigate such risk shall be provided to the County, El Dorado Hills Fire Department, and the County Emergency Operations Center for consideration of the work necessary to allow safe re-entry and/or re-occupation of the affected area.

Cumulative Impacts

This section provides an analysis of cumulative impacts from construction and operation of the proposed project in combination with other past, present, and reasonably foreseeable future projects within the County and areas adjacent to the County, see Chapter 3 for a list of other cumulative projects that have been approved since the adoption of the General Plan. The geographic context for the cumulative analysis as it relates to wildfire is the surrounding fire hazard areas within the western foothills of the Sierra Nevada Mountain Range. Because post-fire

hazards are site-specific these concerns would not combine with other development resulting in a cumulative effect. Therefore, post-fire hazards are not addressed on a cumulative level.

Impact 3.15-5. Implementation of the proposed project could contribute to cumulative impacts on emergency response and evacuation efforts or plans.

Emergency Response

The project site and vicinity is vulnerable to several hazards, including but not limited to wildfire, that could result in the need for emergency response procedures outlined in an adopted Emergency Response Plan or Evacuation Plan. The County's General Plan EIR determined that new and expanded fire protection and emergency facilities would be constructed in response to population growth. The project, and other cumulative projects located in the SRA or fire hazard areas, would similarly be constructed to current design standards and building codes, which include emergency access requirements.

Adherence to the CFC and CBC would ensure that proposed project along with the cumulative projects would be designed with adequate emergency access, and roads for all proposed projects are required to meet minimum widths, have all-weather surface, and be capable of supporting the imposed loads of responding emergency apparatus. General Plan Policies LU-7a, HS-2d, PS-1a through PS-1e, PS-7a, and PS-7c would ensure that the County would cooperate with the fire protection districts in developing level-of-service standards and capital improvement plans (e.g., facility master plans). These policies would also require new discretionary developments to contribute fair-share funding to fire protection districts in order to maintain an adequate level of service for fire protection and emergency medical services. While this does not address ministerial actions, Policy HS-2d requires application of fire protection standards for discretionary actions and building permits (ministerial actions), and Policies PS-7a and PS-7c more generally address demands created by ministerial actions. Given these policies, it is expected that additional and expanded fire protection and emergency medical facilities would be constructed in response to population growth as funding allows. The General Plan EIR determined that build out of the General Plan would not result in cumulative impacts associated with the provisioning of fire and emergency response and facilities. However, the additional projects have the potential to contribute approximately 5,107 new dwelling units within the western portion of the County, as well as 918 units from the proposed project, which could create a potentially significant cumulative impact to emergency response.

Per the County's General Plan, compliance with existing standards and requirements would avoid cumulative impacts associated with fire protection and emergency response services. As development continues in the area, the increased population could warrant improvements to the EDHFD facilities and/or acquisition of new equipment and new staff and EDH Fire has planned for such needs through adoption of Fire Impact Fees that the project applicant and all future development must pay. It could also warrant increased responses from neighboring fire districts, such as CAL FIRE or Rescue Fire Department.

The proposed project would include fire access and circulation throughout the project site including emergency access and on-site shelter-in-place areas. Implementation of the CVSP, in conjunction with other cumulative projects, would not impair or interfere with the County's ability to prevent, prepare for, or respond to and recover from the identified hazards because existing codes are designed to minimize hazards and protect public health and safety. As such, the project's contribution is not considerable and would not impair emergency response and evacuation plans and the cumulative impact would be **less than significant**.

Evacuation

To date, there is no evacuation quantitative threshold that projects must meet in order to avoid a CEQA impact or to be consistent with codes, regulations or policies and thus evacuation impacts have been qualitatively evaluated. The proposed project, combined with other development in the County, would contribute to an increase in population which could affect the ability to safely evacuate the area. The County does not publicly distribute established evacuation routes and does not identify an existing cumulative impact related to emergency evacuation.

As previously discussed, the project in combination with the cumulative projects would be required to be designed with adequate emergency access, which would allow for safe evacuation of the project site and cumulative project sites. Development of CVSP would provide new roadway access and emergency access into the project site, as well as offsite road improvements and on-site shelter-in-place areas, which would ensure adequate emergency vehicle access and evacuation routes are available to serve the project site and surrounding areas. The project's contribution to the potential to impair emergency evacuation would not be considerable based on the multiple potential evacuation routes in different directions from the project site, road capacity, limited project size, and the fact the project would not block, limit, alter, or impact routes used for evacuation. If determined appropriate by OES based on the conditions of a particular emergency, the project also includes on-site locations to safely shelter in place and adheres to all state building codes for emergency ingress and egress. Adherence to the CFC and CBC would ensure that every project approved for construction includes adequate emergency access. Roads for all proposed projects are required to meet minimum widths, have all-weather surface, and be capable of supporting the imposed loads of responding emergency apparatus. Therefore, the project's contribution to the potential to impair emergency evacuation would not be considerable because the project includes on-site locations to safely shelter in place (if necessary) and adheres to all state building codes to minimize the spread of a wildfire. As discussed above under Impact 3.15-1, the Active Adult option is assumed to have an approximately 33.5% reduction in future residents, which would reduce the number of residents having to evacuate in the event of a wildfire and would not introduce new impacts, the impacts would generally be expected to be reduced as compared to the proposed project. Therefore, the project's contribution including the Active Adult option is not considerable and would not impair the County's emergency evacuation plan and the cumulative impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.15-6. Implementation of the proposed project could exacerbate wildfire risk to onsite residents resulting in a cumulative contribution.

As described above, the project site is located in a Moderate and High FHSZ within the SRA. The project, combined with other projects in the surrounding SRA or fire hazard areas, would increase the population and/or activities in these areas, which would introduce new potential ignition sources in the area. This could increase the potential for a wildfire and increase the number of people and structures exposed to wildfire risks. As discussed above under Impact 3.15-1, the Active Adult option is assumed to have an approximately 33.5% reduction in future residents, which would reduce the number of residents potentially exposed to wildfire risks. The County has not identified an existing cumulative impact related to wildfire risk.

Cumulative projects located within the County would be required to comply with applicable County fire and building codes, which have been increasingly strengthened as a result of severe wildfires that have occurred in the last two decades. Additionally, cumulative projects may be subject to preparation of a project-specific Fire Safe Plan (per

Chapter 8 of the El Dorado County Code and Policy 6.2.2.2 of the El Dorado County General Plan), which would assess the project to demonstrate that development can be adequately protected from wildland fire hazards. These regulations include fire prevention and protection features that reduce the likelihood of a fire igniting in a specific project and spreading to off-site vegetated areas. These codes also protect projects from wildfires that may occur in the area through implementation of brush management and fuel management zones, ensuring adequate water supply, preparation of Fire Safe Plans, and other measures.

Placing new residential projects in WUI areas could increase the risk of fire ignition, however, available research on fire ignition and spread suggests otherwise. According to the available evidence, wildfires have not historically started within a master-planned, ignition-resistant subdivision or neighborhood. Ignition sources are typically associated with lower-density housing, not higher-density housing within master planned communities such as that proposed in the project (Syphard and Keeley 2015). Other cumulatively considerable projects located in Very High FHSZs or the SRA would be required to comply with local and state vegetation clearance requirements and building codes requiring ignition resistant construction. These codes, along with project-specific needs assessments and Fire Safe Plan requirements, would also ensure that every project approved for construction includes adequate emergency access and fire-resistant structures and landscaping. As mentioned, updated building codes for fire resistant construction are increasingly stringent and have proven successful at reducing the risk of structural ignition. The project and all cumulative projects in the service area would be subject to discretionary review by EDH Fire and would be required to comply with the local and state code requirements and regulations related to fire safety, building construction, access, fire flow, and fuel modification. As discussed in Impacts 4.14-1 through 4.14-4, the proposed project aims to both reduce the risk of accidental fire ignition through compliance with existing requirements and the CBC and CFC. While there is the potential for the project to result in a wildfire that could affect surrounding areas, it is not possible to determine to what extent the proposed project would exacerbate the likelihood of accidental ignition. Based on the history of wildfires in the area, the increasing threat of wildfires is due to an increase in human activity within the grassland and forested area to be left undeveloped, as well as proximity to undeveloped lands. Buildout of the project's future commercial and residential areas within the WUI would increase human activities and potential ignition sources, which may increase the chances of a wildfire and spread of wildfire and increase the number of people and structures exposed to risk of loss, injury, or death. When considered in combination with other projects within the County within WUI areas, the project's contribution, including the Active Adult option, to wildfire risk could be cumulatively considerable but would be reduced to **less-than cumulatively considerable with mitigation.**

Project landscapes would be managed and maintained to remove exotic fuels that may become established over time. Further, mitigation measure WF-1 (Construction Fire Prevention Plan) would ensure all feasible steps are taken to minimize the potential for a fire to ignite during project construction. The plant palette restrictions included in mitigation measure WF-4, combined with HOA maintenance and code-exceeding fire safety measures and fire-resistant building materials (mitigation measure WF-2), would minimize the ability for fire to move through the project site. Additionally, implementation of an emergency and evacuation preparedness education and program by the project HOA for project occupants (mitigation measure WF-3) would ensure the community is educated about wildfire risks and residents would take individual steps to reduce risk.

Mitigation Measures

Implement mitigation measures WF-1 through WF-4. Compliance with these mitigation measures would ensure requirements are followed to minimize the potential for wildfires to spread creating hazards to future residents. The impact would be reduced to **less than significant**.

WF-7: Implement mitigation measures WF-1 through WF-4.

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4 Other CEQA Considerations

Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, this environmental impact report (EIR) also identifies (1) significant environmental effects of the Creekside Village Specific Plan (CVSP or proposed project), (2) significant environmental effects that cannot be avoided if the proposed project is implemented, (3) significant irreversible environmental changes that would result from implementation of the proposed project, (4) growth-inducing impacts of the proposed project, and (5) alternatives to the proposed project (evaluated in Chapter 5, Project Alternatives).

This chapter summarizes the significant environmental effects that cannot be avoided if the proposed project is implemented (i.e., significant and unavoidable impacts). It also addresses the significant irreversible environmental changes and growth-inducing impacts of the project. An evaluation of the significant environmental effects of the proposed project, applicable mitigation measures, the level of impact significance before and after mitigation, and evaluation of cumulative impacts, is provided in Chapter 3, Environmental Analysis. As discussed in Chapter 5, Alternatives, the Reduced Impact Alternative (RIA) is analyzed at the project-level and could be recommended for approval by staff and the Planning Commission and approved by the Board of Supervisors. This Chapter notes any differences in the other CEQA considerations discussed herein for the RIA as compared to the proposed project.

4.1 Significant Environmental Effects

As discussed throughout Chapter 3, Environmental Analysis, Sections 3.1 through 3.15 of this Draft EIR provide a comprehensive overview of the proposed project's significant environmental effects, including the level of significance both before and after mitigation.

4.2 Significant and Unavoidable Environmental Impacts

Pursuant to CEQA Guidelines Section 15126.2(c), an EIR must address any significant environmental impacts, including those that can be mitigated but not reduced to less than significant as a result of implementation of a project. Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The project level and cumulative environmental effects of the proposed project are discussed in detail in Chapter 3 of this Draft EIR. The project would result in significant and unavoidable impacts related to Aesthetics, Air Quality, and Tribal Cultural Resources. For all other environmental issue areas, the project would result in either less-than-significant impacts, in some instances with mitigation or no impact. The significant and unavoidable impacts are as follows:

Aesthetics

Impact 3.1-1. The proposed project would cause a substantial adverse effect on a scenic vista.

Impact 3.1-2. The proposed project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.

Impact 3.1-4. The proposed project would contribute to a significant cumulative impact related to scenic vistas.

Impact 3.1-5. The proposed project would contribute to a significant cumulative impact related to visual character and quality of public views.

Air Quality

Impact 3.2-1. The proposed project would conflict with or obstruct implementation of the applicable air quality plan.

Impact 3.2-2. The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Impact 3.2-3. The proposed project would expose sensitive receptors to substantial pollutant concentrations.

Impact 3.2-5. The proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).

Tribal Cultural Resources

Impact 3.13-1. The proposed project could cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources or is a resource determined by the County to be significant.

Impact 3.13-2. The proposed project, in combination with past, present and reasonably foreseeable development, could make a cumulatively considerable contribution to a significant cumulative impact related to tribal cultural resources, including Native American human remains.

4.3 Significant Irreversible Environmental Changes

Section 15126.2(d) of the CEQA Guidelines requires a discussion of any significant irreversible environmental change that would be caused by the proposed project. However, Section 15127 limits the discussion of irreversible changes to EIRs prepared in connection with any of the following activities:

a. The adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency;
b. The adoption by a Local Agency Formation Commission of a resolution making determinations; or
c. A project which will be subject to the requirement for preparing an environmental impact statement pursuant to the requirements of the National Environmental Policy Act of 1969.

The proposed project is an adoption of a Specific Plan; therefore, a discussion of significant irreversible environmental changes is provided.

Generally, a project would result in significant irreversible changes if:

- The primary and secondary impacts would generally commit future generations to similar uses (such as highway improvement that provides access to a previously inaccessible area);
- The project would involve a large commitment of nonrenewable resources (CEQA Guidelines Section 15126.2(c));
- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project;
- The project would involve a large commitment of nonrenewable resources; or
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Implementation of the proposed project would result in the long-term commitment of resources of the project site to urban land use. The development of the proposed project would likely result in or contribute to the following irreversible environmental changes:

- Conversion of approximately 208 acres of undeveloped land to urban uses, thus precluding other alternate land uses in the future.
- Irreversible consumption of energy and natural resources associated with the future use of the site.

Development of the proposed project would result in the commitment of the project site to urban development, thereby precluding other uses for the lifespan of the project. Restoration of the site to pre-developed conditions would not be feasible given the degree of disturbance, the urbanization of the area, and the level of capital investment. These impacts would be the same under the RIA.

Resources that would be permanently and continually consumed by project implementation, including the proposed project and RIA, include water, electricity, natural gas, and fossil fuels. Wood products, asphalt, and concrete would be used in construction along with gas and diesel fuel. With respect to operational activities, compliance with all applicable state and local building codes, as well as mitigation measures, general plan policies, and standard conservation features, would ensure that resources are conserved to the maximum extent possible. The project would incorporate a number of sustainable practices that reduce the consumption of energy. Nonetheless, construction activities related to the proposed project would result in irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels, natural gas, and gasoline and diesel for automobiles and construction equipment.

The CEQA Guidelines Sections 15127 and 15126.2(d) require a discussion of the potential for irreversible environmental damage caused by environmental accidents associated with a project. While the project would result in the use, transport, storage, and disposal of minor amounts of hazardous materials during project construction and operation, as described in the Executive Summary, all such activities would comply with applicable local, state and federal laws related to the use, storage and transport of hazardous materials, which significantly reduces the likelihood and severity of accidents that could result in irreversible environmental damage. The project itself does not include any uniquely hazardous uses that would require any special handling or storage. Further, the project does not contain any industrial uses that would use or store acutely hazardous materials. Compliance with applicable local, state and federal laws would serve to protect against significant and irreversible change resulting from the accidental release of hazardous materials. Although irreversible environmental changes would result from the project, such changes are

determined to be less than significant, and the limited use of nonrenewable resources that would be required by project construction and operation is justified. This would be the same for the RIA.

To ensure that energy consumption is considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (Public Resources Code [PRC] Section 21100[b][3]). Energy conservation implies that a project's cost-effectiveness be reviewed not only in dollars, but also in terms of energy requirements. For many projects, cost-effectiveness may be determined more by energy efficiency than by initial dollar costs. A lead agency may consider the extent to which an energy source serving a project has already undergone environmental review that adequately analyzed and mitigated the effects of energy production.

Consistent with PRC Section 211009(b)(3), CEQA Guidelines Appendix G, and a ruling set forth by the court in *California Clean Energy Committee v. City of Woodland*, potentially significant energy implications of a project must be considered in an EIR to the extent relevant and applicable to that project. Accordingly, based on the energy consumption thresholds set forth in both Appendix F and Appendix G of the CEQA Guidelines, the project's estimated energy demands (both short-term construction and long-term operational demands) were evaluated (see Section 3.5, Energy, of this EIR). The overall purpose of the analysis is to evaluate whether the project would result in the wasteful, inefficient, or unnecessary consumption of energy.

As documented in Section 3.5, Energy, new development, such as that proposed by the project, is required to comply with California Title 24 energy efficiency requirements which is considered demonstrable evidence of efficient use of energy. The project would provide for and promote energy efficiencies beyond those required under other applicable federal and state standards and regulations, and in doing so would meet or exceed all Title 24 standards. On this basis, the proposed project and RIA would not result in the inefficient, wasteful, or unnecessary consumption of energy.

Implementation of the proposed project would result in the long-term commitment of resources to urban development. The most notable significant irreversible impacts include the use of non-renewable and/or slowly renewable natural and energy resources, such as lumber and other forest products and water resources during construction activities. Operations associated with future uses would also consume natural gas and electricity. These irreversible impacts, which are unavoidable consequences of urban growth, are described in detail in the appropriate sections of this Draft EIR (see Chapter 3 and Chapter 5 for the RIA).

4.4 Growth-Inducing Impacts

As required by Section 15126.2(e) of the CEQA Guidelines, an EIR must discuss ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also, the EIR must discuss the characteristics of the project that could encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Growth can be induced in a number of ways, such as through the elimination of obstacles to growth, the stimulation of economic activity within the region, or the establishment of policies or other precedents that directly or indirectly encourage additional growth. Under CEQA, this growth is not to be considered necessarily detrimental, beneficial, or of significant consequence. Induced growth would be considered a significant impact if it can be demonstrated that the potential growth, directly or indirectly, significantly affects the environment.

The project would require a temporary construction workforce and would provide new residences consistent with growth projected to occur in this area of the county. The temporary construction workforce would be needed to build the project and associated improvements. The number of construction workers needed during any given period would largely depend on the specific stage of construction but would likely range from a dozen to several dozen workers on a daily basis. It is assumed these construction workers would either live in the county or in nearby areas.

These circumstances are further described below.

- **Elimination of Obstacles to Growth:** This refers to the extent to which a project removes infrastructure limitations or provides infrastructure capacity or removes regulatory constraints that could result in growth unforeseen at the time of project approval (e.g., a major expansion of a wastewater treatment facility that allows for more construction in the service area).
- **Economic Effects:** This refers to the extent to which a project could cause increased activity in the local or regional economy. Economic effects can include such effects as the "multiplier effect." A "multiplier" is an economic term used to describe interrelationships among various sectors of the economy. The multiplier effect provides a quantitative description of the direct employment effect of a project, as well as indirect and induced employment growth. The multiplier effect acknowledges that the on-site employment and population growth of each project is not the complete picture of growth caused by the project.

Elimination of Obstacles to Growth

The elimination of either physical or regulatory obstacles to growth is considered to be a growth-inducing effect, though not necessarily a significant one. A physical obstacle to growth typically involves the lack of public service infrastructure. The extension of public service infrastructure, including roadways, water mains, and sewer lines into areas that are not currently provided with these services would be expected to support new development. Similarly, the elimination or change to a regulatory obstacle, including existing growth and development policies, could result in new growth.

Projects that physically remove obstacles to growth, or projects that indirectly induce growth, are those that may provide a catalyst for future unrelated development in the area. The project would involve installation of new water and sanitary sewer lines, as well as storm drainage infrastructure and roadways, within the project site that would connect to existing utilities and roadways. The project site is located in a developing area of the county where existing utility infrastructure is available and the new residences would tie into the existing infrastructure. The purpose of the installation of new utilities and internal roads is solely to serve the needs of the project, and not to provide capacity for future projects or growth. In addition, since the surrounding project area is already served by existing roads as well as wet and dry utilities, the project would not expand water lines, sanitary sewer or stormwater drainage infrastructure into areas not previously served by such utilities.

Further, given that the surrounding project area is already served by existing roads and utilities, it is unlikely that the project would create demand for existing community service facilities that would require construction or expansion of regional-scale facilities. Thus, the project would not result in indirect population growth by providing vehicular access to an area presently lacking such access or extending utilities into an area not currently served by such utilities. This conclusion would be the same for the RIA.

Economic Effects

The proposed project would affect the local economy by the construction of up to 918 new homes. Construction of the project would also require temporary construction workers that would contribute to the local economy. A portion of these temporary construction workers may already be living in the area and contributing to the local economy. Other temporary construction workers may come from outside the area on a temporary basis, and these workers would represent net new contributions to the local economy.

Additional local employment can be generated through the multiplier effect, as discussed above. The multiplier effect tends to be greater in regions with larger, diverse economies due to a decrease in the requirement to import goods and services from outside the region.

Two different types of additional employment are tracked through the multiplier effect. *Indirect* employment includes those additional jobs that are generated through the expenditure patterns of direct employment associated with a project. Indirect jobs tend to be in relatively close proximity to the places of employment and residence.

The multiplier effect also calculates *induced* employment. Induced employment follows the economic effect beyond the expenditures of the residents within the project area to include jobs created by the stream of goods and services necessary to support residences within the proposed project. When a manufacturer buys or sells products, the employment associated with those inputs or outputs are considered *induced* employment.

For example, when a resident of the project goes out to lunch, the person who serves the resident lunch holds a job that is *indirectly* related to the proposed project. When the server then goes out and spends money in the economy, the jobs generated by this third-tier effect are considered induced employment.

The multiplier effect also considers the secondary effect of employee expenditures. Thus, it includes the economic effect of the dollars spent by those residents of the project.

Increased future employment generated by resident spending ultimately results in physical development of space to accommodate those employees. It is the characteristics of this physical space and its specific location that determine the type and magnitude of environmental impacts of this additional economic activity. Although the economic effect can be predicted, the actual environmental implications of this type of economic growth are too speculative to predict or evaluate, since they can be spread throughout the county and the larger region. However, growth within the western portion of the county is primarily focused on development of single-family homes. The Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) provides housing unit projections for El Dorado County (not including the Tahoe Basin area, as this area is not included within the SACOG boundary). According to the 2020 MTP/SCS projections, the number of housing units within the county is expected to grow from 63,780 in 2016 to 72,280 in 2040, a growth of 13.3% (SACOG 2019a).

In conclusion, the project could cause population growth through providing new homes. However, this growth falls well within regional growth projections for population and housing in the county. The Project would not remove obstacles to population growth and would not cause an increase in population such that new community facilities or infrastructure would be required outside of the project site. Lastly, the project is not expected to encourage or facilitate other activities that could significantly affect the environment, as explained above. For these reasons, the project is not considered to be significantly growth inducing. These conclusions would be the same for the RIA.

4.5 Cumulative Impacts

CEQA requires that an EIR contain an assessment of the cumulative impacts that could be associated with the proposed project. This assessment involves examining project-related effects on the environment in the context of similar effects that have been caused by past or existing projects, and the anticipated effects of future projects. As indicated in the CEQA Guidelines, the discussion of cumulative impacts need not provide the same level of detail as project-related impacts. The discussion should be guided by "standards of practicality and reasonableness" (CEQA Guidelines Section 15130(b)). Although project-related impacts can be individually minor, the cumulative effects of these impacts, in combination with the impacts of other projects, could be significant under CEQA and must be addressed (Section 15130(a)). Where a lead agency concludes that the cumulative effects of a project, taken together with the impacts of other closely related past, present, and reasonably foreseeable probable future projects are significant, the lead agency then must determine whether the project's incremental contribution to such significant cumulative impact is "cumulatively considerable" (and thus significant in and of itself).

Each technical section included in Chapter 3 provides an evaluation of the project's contribution to any significant cumulative impact.

Cumulative Context

To ensure an adequate discussion of cumulative impacts is included in an EIR, CEQA allows the lead agency to use either a list of past, present, and probable future projects (including those projects outside of the control of the lead agency), or projections included in an adopted local, regional, or statewide plan like a general plan (CEQA Guidelines Section 15130(b)(1)). This EIR uses a "hybrid" approach in which potential cumulative impacts of the project are assessed in combination with buildout projections included in the County's 2004 General Plan, as modified by a list of projects that have been approved for development since the adoption of the General Plan, as described in detail in Chapter 3, Environmental Analysis.

The cumulative analysis in each of the technical sections evaluates the proposed project's contribution to the cumulative scenario. The technical sections in Chapter 3 evaluate the project's cumulative impacts at the end of the impacts analysis including a description of the cumulative context for each issue area evaluated. Cumulative analysis is included in Chapter 5 for the RIA.

4.6 Other Considerations

CEQA provides that economic or social effects are not considered significant effects on the environment unless the social and/or economic changes are connected to physical environmental effects. A social or economic change related to a physical change may be considered in determining whether the physical change is significant (CEQA Guidelines Section 15382). The guidance for assessing economic and social effects is set forth in Section 15131(a) of the CEQA Guidelines:

> Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on physical changes.

The project's direct and indirect physical environmental effects associated with construction and operation of the project, such as associated increases in air pollutant emissions and discovery of unanticipated cultural resources are all addressed in Chapter 3 of this Draft EIR and Chapter 5 for the RIA. The County has not identified any chain of cause and effect by which any economic or social changes resulting from the project would foreseeably result in additional physical consequences beyond those addressed in Chapter 3 and Chapter 5.

5 Alternatives

The purpose of the alternatives evaluation in an Environmental Impact Report (EIR), as stated in Section 15126.6(c) of the California Environmental Quality Act (CEQA) Guidelines, is to ensure that "[t]he range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects" identified under the proposed project. Pursuant to Section 15126.6, an analysis of alternatives to the proposed project is presented in this Draft EIR to provide the public and decision makers with a range of possible alternatives to consider. The CEQA Guidelines state that an EIR shall describe a reasonable range of alternatives that would avoid or substantially lessen any significant effects of the project but need not consider every conceivable alternative. The CEQA Guidelines further state that "the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly" (Section 15126.6(b)). Therefore, an EIR must describe a range of reasonable alternatives to the proposed project (or to its location) that could feasibly attain most of the basic objectives of the project.

Alternatives in an EIR must be potentially feasible (CEQA Guidelines Section 15126.6(a)). The feasibility of an alternative may be determined based on a variety of factors, including, but not limited to, site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and site accessibility and control (CEQA Guidelines Section 15126.6(f)(1)). Agency decision makers ultimately decide what is "actually feasible." (*California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal. App. 4th 957, 981 (CNPS).) The concept of "feasibility" also encompasses the question of whether a particular alternative or mitigation measure promotes the underlying goals and objectives of a project. (*Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490, 1506-1509; CNPS, supra, 177 Cal. App. 4th at p. 1001; *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1165, 1166.) Moreover, "'feasibility' under CEQA encompasses 'desirability' to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, legal, and technological factors." (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 410, 417.) When, as occurred for this project, "'new and unforeseen insights [] emerge during investigation, evoking revision of the original proposal, . . . the action approved need not be a blanket approval of the entire project initially described in the EIR'" and "'[d]ecisionmakers should have the flexibility to implement that portion of a project which satisfies their environmental concerns.'" (*South of Market Community Action Network v. City and County of San Francisco* (2019) 33 Cal.App.5th 321, 336.)

An EIR need not evaluate the environmental effects of alternatives in the same level of detail as a proposed project, but must include enough information to allow meaningful evaluation, analysis, and comparison with the proposed project. The alternatives discussion is intended to focus on alternatives to a proposed project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if the alternatives would impede to some degree the attainment of the project objectives. In this instance, El Dorado County (County) has requested that the Reduced Impact Alternative (RIA) be analyzed at more detailed, project-specific level because the land use plan avoids impacts to tribal cultural resources and reduces additional environmental impacts and is anticipated to be the land use plan recommended by County staff as the approved project. It is also the land use plan preferred by the United Auburn Indian Community (UAIC) and the Wilton Rancheria. The County is consulting with both Tribes pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18, which requires lead agencies to consult with Native American tribes traditionally and culturally affiliated with the geographic area with respect to the possible preservation of, or the mitigation of impacts to, specified Native American places, features, and objects, including

tribal cultural resources. The Reduced Impact Alternative is therefore studied at the project-specific level and could be recommended for approval by County staff and the Planning Commission and ultimately approved by the Board of Supervisors.

This chapter identifies the project objectives for the Creekside Village Specific Plan project (proposed project), describes the project alternatives, and evaluates the comparative effects of the alternatives relative to the proposed project. As required under Section 15126.6(e) of the CEQA Guidelines, the environmentally superior alternative is identified and included at the end of this chapter.

5.1 Project Objectives

In determining what alternatives should be considered in the Draft EIR, the objectives of the project are considered, since attainment of a majority of the objectives is one of the bases for whether an alternative is considered feasible.

The project objectives are described in Chapter 2, Project Description, and also provided below.

1. Create a residential community with a variety of new single-family homes designed for a range of buyers of all ages in a desirable location with access to community amenities, employment opportunities, schools, and entertainment.
2. Provide multi-modal connectivity and trails between the adjacent residential communities to the east and west and allow for development of land uses more compatible with the surrounding residential communities.
3. Include a range of housing types that will allow current and future El Dorado Hills employers to attract and retain employees.
4. Provide housing near existing retail business and services within the El Dorado Hills Business Park that will generate new customers to support existing retailers and businesses while keeping tax revenues in El Dorado County.
5. Create a community with a linked system of complete streets, bike paths, sidewalks and trails that promotes walkability and neighbor interaction.
6. Create a pedestrian network that connects residents to employment and commercial centers, schools, and recreational facilities inside and outside the new community.
7. Create a community identity by preserving existing natural features (i.e., oak trees and drainage elements) and integrating those features into the development in a way that enhances the aesthetic and natural character of the community.
8. Provide parks, open space, and trails as a focal point for the proposed community with a full range of active and passive recreational uses.
9. Allow minor flexibility in the development and implementation of the Specific Plan to adjust to current and future conditions and market demands, including potential reductions in density to allow for a variety of housing types and potential inclusion of age-restricted housing to reduce student generation if the elementary and middle school district lacks capacity to accommodate students and reduce traffic generated by the project.

5.2 Summary of Significant Environmental Impacts

The proposed project would result in significant and unavoidable impacts to Aesthetics, Air Quality, and Tribal Cultural Resources on both a project level and cumulatively. There is no feasible mitigation available to reduce these impacts to less than significant. All other project and cumulative impacts can be mitigated to a less-than-significant level.

Aesthetics

Impact 3.1-1. The proposed project would cause a substantial adverse effect on a scenic vista.

Impact 3.1-2. The proposed project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.

Impact 3.1-4. The proposed project would contribute to a significant cumulative impact related to scenic vistas.

Impact 3.1-5. The proposed project would contribute to a significant cumulative impact related to visual character and quality of public views.

The proposed project would result in a significant and unavoidable impact regarding scenic vistas, visual character, and quality of public views. Compared to the existing undeveloped property, the project would permanently affect the aesthetic value of a portion of the scenic vista as seen from Latrobe Road. Despite adherence to all relevant plans and policies regarding visual resources and site design, including General Plan policies, the project would alter the existing undisturbed and undeveloped visual character and quality of public views of the site. While design measures would partially mitigate the magnitude of this change, the alterations to the project site would be permanent, and views would no longer feature undeveloped land. It should be noted, however, that while the Draft EIR concludes that development would impact views of the existing undeveloped land, the project site has been anticipated for development since the 1980s and was not anticipated to be preserved as open space. Accordingly, any alternatives designed to meet the project objectives would also transform the site from undeveloped land to a developed community, resulting in a significant and unavoidable aesthetic impact. Thus, the proposed alternatives (apart from the required No Project/No Development Alternative) do not aim to avoid aesthetic impacts.

Air Quality

Impact 3.2-1. The proposed project would conflict with or obstruct implementation of the applicable air quality plan.

Impact 3.2-2. The proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Impact 3.2-3. The proposed project would expose sensitive receptors to substantial pollutant concentrations.

Impact 3.2-5. The proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under an applicable federal

or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors).

The proposed project would result in significant and unavoidable impacts to air quality because operational emissions of reactive organic gases (ROG) would remain above established significance criteria, even after mitigation forbidding the use of architectural coatings containing volatile organic compounds (VOCs). The majority of reactive organic gas (ROG) emissions would be generated by mobile sources (e.g., vehicles) and consumer products (e.g., deodorants, cleaning products, spray paint, etc.). The analysis in this chapter compares emissions between the proposed project and alternatives to the project and discusses whether impacts could be mitigated to less-than-significant levels, or remain significant and unavoidable.

Tribal Cultural Resources

Impact 3.13-1. The proposed project could cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources or is a resource determined by the County to be significant.

Impact 3.13-2. The proposed project, in combination with past, present and reasonably foreseeable development, could make a cumulatively considerable contribution to a significant cumulative impact related to tribal cultural resources, including Native American human remains.

Lastly, the proposed project was determined to result in significant and unavoidable impacts to tribal cultural resources (TCRs) because there are several recorded TCRs within the project's area of potential effect, which includes the project site and off-site transportation improvements. The analysis in this chapter compares TCR impacts between the proposed project and alternatives to the project and discusses whether impacts would be avoided or remain significant and unavoidable.

The project alternatives identified herein also address the potentially significant impacts (before mitigation) identified for the proposed project including greenhouse gas emissions, biological resources, cultural, energy, hydrology and water quality, noise, public services and utilities, transportation, and wildfire. In some instances, the impacts are virtually identical to the proposed project and are described as such.

5.3 Alternatives Considered but Dismissed

As described above, CEQA Guidelines Section 15126.6(c) requires that the range of potential alternatives for a proposed project include those that could feasibly accomplish most of the basic objectives of the project and avoid or substantially lessen one or more of the significant effects. Alternatives that fail to meet the fundamental project purpose need not be addressed in detail in an EIR.

In determining what alternatives should be considered in the EIR, it is important to acknowledge the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by lead agency decision-maker(s). (See Pub. Resources Code, Section 21081(a)(3)). When the project goes before the decision-maker(s) for review, they may consider evidence beyond that found in this EIR in addressing such determinations. The decision-maker(s), for example, may conclude that a

particular alternative is infeasible (i.e., undesirable) from a policy standpoint, and may reject an alternative on that basis provided that the decision-maker(s) adopts a finding, supported by substantial evidence, to that effect, and provided that such a finding reflects a reasonable balancing of the relevant economic, environmental, social, and other considerations supported by substantial evidence.

The EIR should also identify any alternatives that were considered by the lead agency but were rejected during the planning or scoping process and briefly explain the reasons underlying the lead agency's determination. The following alternatives were considered but are not evaluated further in this Draft EIR.

- An alternative location to the project site was not considered because the applicant has ownership of the project site and does not own a similar site within the County.
- A prior warehouse and distribution development proposal was submitted for the project site that proposed approximately 4.8 million square feet of warehouse and distribution uses with one building reaching approximately 110 feet tall, which exceeded the 50-foot height limit allowed by right in the Research and Development (R&D) zone. Consideration was given whether to study this prior application as an alternative, and the County ultimately determined to study an R&D alternative with buildings similar in height and layout to the adjacent EDH Business Park.
- A reduced development/reduced housing units alternative that more generically considered the impacts of less development/units was considered, but not ultimately studied given that the Reduced Impact Alternative provides for less development/units and thus also serves as a reduced development/reduced housing units alternative.
- Consideration was also given to a zoning consistent R&D alternative that developed the entire 240-acre site, but the County determined that the R&D zoning consistent alternative would be limited to the project area.
- Consideration was also given to a reduced impact alternative with all or primarily conventional units but a separate analysis in addition to the proposed Reduced Impact Alternative with a maximum of 150 conventional units was not analyzed because the Reduced Impact Alternative would achieve more substantial reductions with reduced future residents and VMT, including reductions to greenhouse gas emissions and air quality. The analysis for the proposed project with an age-restricted option also quantifies and discloses the reductions in environmental impacts achieved with age-restricted housing attributable to the reduced future residents and daily traffic.

5.4 Project Alternatives

This section provides a description of the alternatives to the proposed project analyzed in this Draft EIR and evaluates how specific impacts differ in severity from those associated with the proposed project. For purposes of this analysis, the potentially significant impacts identified under the alternatives analysis are assumed to be fully mitigated through compliance with mitigation measures identified in Sections 3.1 through 3.15 included in Chapter 3, which contains the environmental analysis of the proposed project.

The alternatives to the proposed project analyzed below include a "No Project" Alternative. A "No Project" Alternative is required under Section 15126.6(e)(1) to allow decision makers to compare the impacts of a proposed project with the impacts of not approving the project. Each alternative is analyzed against the significance thresholds included in Chapter 3, Environmental Evaluation. This chapter assesses whether the impacts of the alternatives would be greater than, less than, equal to, or similar to those of the proposed project.

This section presents an evaluation of three alternatives to the proposed project and include:

- **Alternative 1: No Project/No Development Alternative.** This alternative assumes no development would occur, and the site would remain in its current undeveloped condition.
- **Alternative 2: Zoning Consistent Alternative.** This alternative assumes development would occur consistent with the land use designation and zoning included in the County's General Plan for this site.
- **Alternative 3: Reduced Impact Alternative.** This alternative would develop fewer residential units and shift development to other areas within the project site leaving more areas in open space.

For each alternative, a brief description is presented, followed by a discussion of the basis for selection of the alternative, the degree to which the alternative would meet project objectives, and the ways in which the alternative would avoid or reduce significant impacts of the project, or may cause other new or increased impacts.

Table 5-13 compares the alternatives to the project in terms of their ability to reduce or avoid potentially significant impacts.

5.4.1 Alternative 1: No Project/No Development Alternative

Description

As required by the CEQA Guidelines, an EIR's alternatives analysis must include consideration of the No Project Alternative. The No Project/No Development Alternative allows decision-makers to compare the impacts of the proposed project to maintaining the existing conditions of the site. The No Project/No Development Alternative describes the environmental conditions that exist at the time that the environmental analysis commenced (CEQA Guidelines Section 15126.6 (e)(2)).

For this analysis, the No Project/No Development Alternative considers the effects of forgoing the project entirely, and leaving the project site in its current, undeveloped condition. Under the No Project/No Development Alternative, the proposed project would not be adopted. The development of up to 918 residential units, 1.8 acres of commercial, 13.6 acres of parks (or 15.4 acres under the no commercial option), and 44.8 acres of open space would not be provided. This alternative would also not meet any of the project objectives.

Impact Analysis

The No Project/No Development Alternative would produce no changes on the project site because the site would remain in its current condition, effectively eliminating those project- and cumulative-level impacts discussed in this Draft EIR. Under the No Project/No Development Alternative, the project site would not be rezoned and it would retain its existing R&D land use designation and zoning. There would be no air emissions associated with project construction or operation. There would be no land disturbance and therefore no change in visual character or impacts to biological resources, cultural or tribal cultural resources, geology and soils, or hydrology and water quality. There would be no increase in vehicle miles traveled (VMT) or an increase in vehicles on area roadways that would generate an increase in noise. No mitigation measures would be required.

Relationship to Project Objectives

The No Project/No Development Alternative would not achieve any of the project objectives.

5.4.2 Alternative 2: Zoning Consistent Alternative

Description

The Zoning Consistent Alternative assumes development of the site that adheres to the current zoning designation of R&D. This alternative assumes no zoning change requests and that land uses would align with the allowable uses within the R&D zone. Allowable uses in the R&D zone include light manufacturing, research and laboratory services, warehouses, corporate offices, and other similar uses. Under this alternative it is assumed a total of over two million square feet (sf) of warehouse and office uses would be developed on approximately 176 acres. The Zoning Consistent Alternative anticipates approximately half of the building square footage than a prior warehouse project proposed for the site, which the County determined reflects the height of existing buildings in the adjacent El Dorado Hills Business Park. The remaining approximately 32 acres would be developed with internal roads or left in open space.

It should be noted that, under the existing R&D zoning, certain uses are allowed "by right" and thus would not require discretionary approval triggering CEQA review. These uses are identified as permitted in Table 130.23.020 of the County Zoning Code and include, for example, light manufacturing, research and laboratory services, wholesale storage and distribution, and professional and medical offices. For the purposes of the analysis below, it is assumed CEQA review could be required and CEQA mitigation measures could be imposed. If the site was developed with by-right uses, however, then only ministerial approvals would be required (e.g., grading permits and building permits) which may be exempt from further CEQA review.

To assess the impacts of this alternative, a conceptual land use plan and acreage tabulation were developed, illustrating a potential build-out scenario under the existing zoning regulations. The plan envisions the site being subdivided into multiple parcels, functioning as a "business park" rather than a unified development under a single entity. Figure 5-1 presents the conceptual land use plan, while Table 5-1 provides details on the site area, building area, floor area ratio, and provided parking under this land use plan.

Table 5-1. Zoning Consistent Alternative (R&D) Summary

Warehouse/Office Site Area (acres)[1]	Average Floor Area Ratio	Total Office Building Area (sf)	Total Warehouse Building Area (sf)	Total Standard Parking Spaces	Total Trailer Parking Spaces
176	0.352	80,000	2,618,500	2,460	502

Source: HPA Architecture 2023.
Note:
[1] The total area of the project site is approximately 208 acres. The remaining area would consist of open space and roadways.

Impact Analysis

Aesthetics

This alternative would alter the existing undisturbed and undeveloped visual character and quality of public views of the site. Alterations to the project site would be permanent, and views would no longer feature undeveloped land. The R&D land use would be a more intense use with parking lot lighting and safety lighting associated with larger buildings and non-residential uses. Thus, project-level and cumulative-level impacts would continue to be **significant and unavoidable**, the same as the proposed project.

Air Quality

As previously discussed in Section 3.2 of this Draft EIR, the proposed project would exceed the El Dorado County Air Quality Management District's thresholds for ROG during operation but not construction. This alternative assumes that the project site would be developed with nearly 2.7 million sf of warehouse and office uses. Compared to residential uses, the operation of warehouse and office space would result in more air quality impacts due to greater emissions of criteria air pollutants such as ROG from increased truck traffic, commuter traffic, operation of machinery, and involvement or use of chemicals/other substances that can affect air quality. This alternative may also require greater intensity of construction or use of heavier equipment than the proposed project. However, given that construction emissions would have to increase by approximately 32 pounds per day (lbs/day) for ROG to exceed the significance threshold of 82 lbs/day, it is unlikely that emissions under this alternative would increase to an extent that emission thresholds would also be exceeded during construction. The impact would be similar to the proposed project.

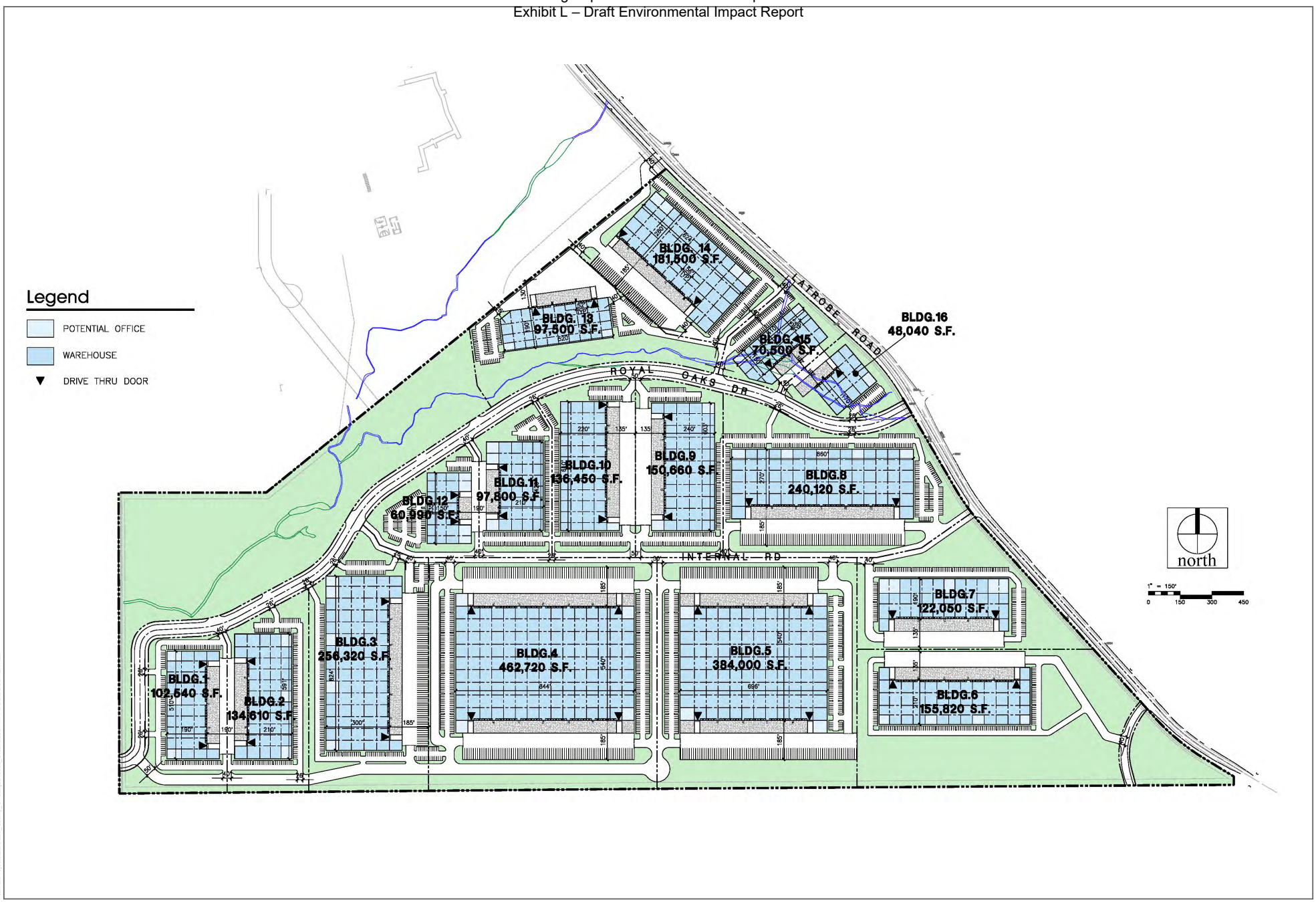
Because this alternative would result in operational ROG emissions exceeding the significance threshold, mitigation measure AQ-2 would be required. This would reduce ROG emissions by ensuring that only VOC-free paints be used on-site. Nonetheless, even with implementation of mitigation measure AQ-2, ROG emissions would still be greater than that of the proposed project and would exceed the significance threshold. The project-level and cumulative-level impacts would remain **significant and unavoidable**.

Biological Resources

Development of the proposed project would result in potentially significant impacts to several special-status plant and wildlife species as well as protected aquatic resources. As shown in the conceptual land use plan, this alternative generally proposes development in the same areas as the proposed project, which would affect suitable habitat for plant species and northwestern pond turtle, foraging and nesting area for species such as burrowing owl, tricolored blackbird, and other nesting and migratory birds and birds of prey, and areas with protected aquatic resources. This alternative may further exacerbate impacts to biological resources since the construction and operation of warehouse and office uses rather than residential may result in higher levels of air and water pollutants. Therefore, this alternative would result in potentially significant impacts related to biological resources and implementation of mitigation measures BIO-1 through BIO-9 (with minor modifications specific to this alternative) would be required to reduce impacts. Under this, alternative impacts to biological resources would be similar to the proposed project but could be slightly more intense. Nonetheless, project-level and cumulative-level impacts would be reduced to **less-than-significant with mitigation**.

Cultural Resources

Seven historic-period archaeological resources were identified on the project site and four within the offsite improvements area, but all were either ineligible for the National Register of Historic Places or California Register of Historical Resources or were not evaluated for eligibility. Although the project site contains no identified historic-period archaeological resources eligible under the National Register of Historic Places or California Register of Historical Resources, the presence of resources on the site suggests that development may have the potential to unearth additional unknown historic-period archeological resources resulting in a substantial adverse change in the significance of the resource. As shown in the conceptual land use plan in Figure 5-1, this alternative generally proposes development in the same areas as the proposed project. Therefore, this alternative would have similar impacts to the proposed project and would require implementation of mitigation measures CUL-1 and CUL-2 to reduce project-level and cumulative-level cultural resources impacts to **less-than-significant with mitigation**.



SOURCE: HGA 2024

FIGURE 5-1

Zoning Consistent (R&D) Conceptual Site Plan

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Energy

Warehouses and offices generally have higher energy demands compared to residential uses due to lighting, operational equipment, vehicle fueling, and other energy-intensive needs. Therefore, this alternative would result in a greater impact than that of the proposed project. However, it is presumed that all local, state, and federal laws would be followed, specifically CALGreen and Title 24 building standards. Therefore, this alternative would not be wasteful or energy-inefficient nor would it conflict with state or local plans for renewable energy or energy efficiency the same as the proposed project. Project-level and cumulative-level impacts are presumed to be slightly greater than the proposed project, but still at a level that is considered **less than significant**.

Geology and Soils

Geologic risks such as rupture of faults, ground shaking, liquefaction, and landslides would remain the same as the proposed project because those risks are dependent on location. However, this alternative could result in a greater impact regarding soil erosion due to the intensity of construction required for warehouse projects, and potential for more water runoff from parking areas and roofs of large-scale warehouse buildings. Nevertheless, it is presumed that applicable erosion control measures would be implemented, including preparation of an Erosion and Sediment Control Plan and Stormwater Pollution Protection Plan (SWPPP). Therefore, while soil erosion impacts may be slightly greater than the proposed project, compliance with local and state regulations would ensure that impacts would remain **less than significant,** the same as the proposed project. Additionally, this alternative would not contribute to a potential cumulative effect, the same as the proposed project, because geologic and soil conditions typically do not combine to create a significant cumulative impact.

Greenhouse Gas Emissions

The construction and operation of warehouses and offices instead of residential uses would result in higher GHG emissions due to increased energy consumption, increased truck and vehicle emissions from deliveries and employees commuting, use of cargo handling equipment such as forklifts and yard trucks, and other operations that would release GHGs. Therefore, this alternative would result in a greater impact than that of the proposed project. As discussed in Section 3.7 of this Draft EIR, the proposed project would exceed the operational GHG emissions threshold and mitigation measure GHG-1 would be required. The mitigation measure would also be required for this alternative. Although the alternative would result in greater impacts than the proposed project, this mitigation measure could require potentially all-electric design, if feasible based on the type of project and equipment, construction of electric vehicle (EV) ready parking spaces, and purchase of significantly more carbon offset credits than the proposed project, which would reduce project-level and cumulative-level impacts from this alternative to a level that is **less-than-significant with mitigation**.

Hydrology and Water Quality

As previously discussed, this alternative could result in more soil erosion than the proposed project due to the intensity of construction required for warehouse projects, and potential for more water runoff from parking areas and roofs of large-scale warehouse buildings. Therefore, this alternative may result in a greater impact than that of the proposed project. Although not outlined in the conceptual land use plan, it is presumed that this alternative would include hydromodification ponds similar to the proposed project for water quality and detention purposes, and that required applicable water quality and erosion control measures would be implemented. This would include preparation of an Erosion and Sediment Control Plan and SWPPP in accordance with the requirements of the Stormwater Construction General Plan (see Section 4.9 of this Draft EIR for further detail). Therefore,

although impacts may be slightly greater than the proposed project, compliance with applicable regulatory requirements would ensure that project-level and cumulative-level impacts remain **less than significant,** the same as the proposed project.

Land Use, Population and Housing

This alternative would be consistent with the current zoning of the project site and therefore would avoid conflict with the County's land use plans. This alternative would create jobs which could indirectly influence population growth, but it is anticipated overall population growth would be less than the proposed project because this alternative would not construct new houses. Therefore, this alternative would result in fewer impacts than the proposed project, but impacts would remain **less than significant**, the same as the proposed project. There would also be no contribution to a significant cumulative impact, the same as the proposed project.

Noise

As discussed in Section 3.10 of this Draft EIR, construction and operation of the proposed project could result in noise levels in excess of County standards, and mitigation measures NOI-1 through NOI-3 would be required to reduce the impacts to less than significant. The project applicant has also agreed to implement mitigation measures NOI-4 and NOI-5 to address exterior and interior traffic noise at the project's residential lots, although this is not within the scope of CEQA review.

Generally, warehouse and office uses generate higher noise levels than residential due to use of machinery, truck traffic, and operational activities. Therefore, noise impacts would likely be greater than that of the proposed project. Mitigation measure NOI-1 to address construction noise would still apply. However, mitigation measures NOI-2 and NOI-3 would not apply because these are related to park activity noise and use of live or amplified music. Mitigation measures NOI-4 and NOI-5 would not apply because they are related to noise mitigation at residential lots. Depending on the operational activities and components proposed under this alternative, it is possible that operational and traffic noise levels could exceed County standards. Therefore, project-level and cumulative-level impacts would be considered **potentially significant** and new mitigation may be required to address these operational and traffic noise impacts.

Public Services and Recreation

As previously discussed, this alternative could indirectly influence population growth through creation of jobs, but overall it is anticipated population growth would be less than the proposed project because no new residential uses would be developed. The development of warehouse and office uses would result in less growth inducement and therefore less demand for public services like schools, police/fire services, and parks and recreational facilities. Accordingly, no new or expanded facilities would need to be built in order to maintain acceptable service ratios or other performance objectives. Project-level and cumulative-level Impacts would be less than that of the proposed project and would remain **less than significant**, the same as the proposed project.

Transportation

The development of warehouse and office uses rather than residential may increase overall VMT due to long-distance truck trips for shipments and loading. However, because transportation impacts under CEQA are based on passenger-car trips rather than truck trips, this alternative may have a lower impact on VMT as compared to the proposed project. Under the proposed project, transportation impacts were less than significant. Based on the

Institute of Transportation Engineer's trip generation rate of 1.71 daily trips per thousand square feet for warehouse uses, this alternative could generate approximately 4,478 vehicle trips per day from the warehouse component, with 3,246 of these trips being from passenger vehicles. This would be significantly fewer trips than the proposed project, which estimates 10,040 new vehicle trips per day from the proposed project assuming all conventional housing (the Active Adult Option was not modeled because development of all conventional housing represents the worst-case scenario). The distance traveled for each trip would be higher under this alternative because trips would be for commuting to work, rather than residential VMT. However, given the difference in trip generation, it is likely that this alternative would still generate less VMT than the proposed project. Therefore, project-level and cumulative-level VMT impacts under this alternative would be **less than significant,** the same as the proposed project, and may be less severe than the proposed project.

Tribal Cultural Resources

As shown in the conceptual land use plan in Figure 5-1, this alternative generally proposes development in the same areas as the proposed project. Therefore, this alternative would also impact the TCRs that exist onsite and would require implementation of mitigation measures TCR-1 through TCR-5. As discussed in Section 3.13 of this Draft EIR, the consulting Tribes have indicated there are TCRs on the site that are important and have requested these resources not be disturbed. Given that this alternative proposes to remove the TCRs, impacts to TCRs would be **significant and unavoidable** even with incorporation of mitigation measures TCR-1 through TCR-5, and the incremental contribution to the cumulative loss of TCRs would be considerable, the same as the proposed project.

Utilities and Service Systems

The development of warehouses and offices rather than residential uses may increase demand for certain utilities, such as electricity for lighting and operational equipment. However, depending on future tenants and types of operations proposed, there may be a decrease in demand for utilities such as water supply and wastewater treatment, given that residential uses generally use more water per square foot.[1] Estimates for solid waste generation also vary widely depending on operational uses. Nevertheless, given the available water supply, wastewater treatment capacity, landfill capacity, and supply/capacity of other utilities (see Section 3.14 of this Draft EIR for more detail), it is presumed that project-level and cumulative-level impacts would be **less than significant**, the same as the proposed project.

Wildfire

Existing potential ignition sources near the project site include surrounding roadways and vehicles, overhead transmission lines, off-site commercial areas, off-site residential neighborhoods, and other potential sources of ignitions. Construction and operation of the project would also introduce new potential sources of ignition to the project site, the same as the proposed project, including increased human activity and additional vehicles traveling on internal and external roads. Depending on what operations are proposed, there may be storage or use of flammable materials that can increase fire hazards. Therefore, impacts under this alternative may be greater than that of the proposed project. It is anticipated that all construction activities, building materials, access, and vegetation maintenance activities would be conducted as prescribed by federal, state, and local requirements. Additionally, mitigation measures WF-1 through WF-5 would be applicable (with modifications specific to

[1] EPA. 2003. U.S. Water Use Intensity by Property Type. June 2023. https://www.energystar.gov/sites/default/files/tools/National%20WUI%20Technical%20Reference%202023_0719b.pdf

warehouse/office developments) and would ensure potential project-level and cumulative-level impacts are reduced to **less-than-significant with mitigation**, the same as the proposed project.

Relationship to Project Objectives

This alternative would fail to meet project objectives 1-6 and 9 (see Section 5.1 of this chapter) because no residential uses are proposed. This alternative would not provide any new homes (including age-restricted housing), provide for connectivity between adjacent residential communities, promote walkability and neighborhood interaction, or create a pedestrian network. This alternative would partially satisfy objective 7 because it would preserve existing natural features, but this would not contribute to community identity nor would these features be integrated into development to the same extent as the proposed project. This alternative would also partially satisfy objective 8 because open space land would be retained; however, no parks or trails would be provided, nor would recreational uses be encouraged.

5.4.3 Alternative 3: Reduced Impact Alternative

Description

The Reduced Impact Alternative, or RIA, was developed with substantial input from consulting tribes to reduce impacts to TCRs identified during preparation of this Draft EIR as well as changes to reduce other environmental impacts, including vehicle trips, air pollutants, and GHG emissions. The County requested that the RIA be analyzed at a more detailed level to help inform County decision makers because it is the land use plan preferred by the Tribes the County is consulting with on the project. As previously stated, this alternative is being analyzed at the project-specific level so that it could be recommended by County staff and the Planning Commission and ultimately approved by the Board of Supervisors instead of the proposed project.

The RIA would develop the same approximately 208 acres of land as the proposed project with a mix of residential (conventional and age-restricted) units, parks, and open space land uses. The primary differences between the proposed project and the RIA are the RIA removes 155 dwelling units and redesigns the land plan to protect certain areas in open space. Specifically, the RIA provides for the development of up to 763 dwelling units, including 614 units ranging from 4 to 8 dwelling units per acre (du/ac) on approximately 117 acres and 149 dwelling units on 21.3 acres with a density of 5-12 du/ac. The RIA proposes a 7.5-acre Village Park with 1.6 acres of the park containing a Planned Development (PD) overlay designation that could allow for neighborhood commercial uses to serve the plan area, similar to the proposed project. These potential commercial uses would require approval of a Conditional Use Permit and a PD. There would be two additional Neighborhood Parks, 4.4 and 2.2 acres in size. The remainder of the project site would be open space, landscaping, public facilities, and roadway infrastructure. Figure 5-2 illustrates the RIA and Table 5-2 shows a breakdown of each land use compared to the proposed project.

Table 5-2. RIA Land Use Summary Comparison

Land Use	Land Use Designation	Acres		Approximate Dwelling Units		Approximate Density (du/ac)
		Proposed Project	RIA	Proposed Project	RIA	
Residential						
SF Low Density	CV-SFL	115.8	117.0	668	614	4-8

Table 5-2. RIA Land Use Summary Comparison

Land Use	Land Use Designation	Acres		Approximate Dwelling Units		Approximate Density (du/ac)
		Proposed Project	RIA	Proposed Project	RIA	
Residential						
SF Medium Density	CV-SFM		21.3	0	149	5-12
	CV-SFM-PD	20.8	0	250	0	
Subtotal		*136.6*	*138.3*	*918*	*763*	
Commercial						
Neighborhood Commercial	CV-NC	1.8[1]	-[2]			
Public Facilities – Parks						
Village Park	CV-P	7.0	5.9			
	CV-P-PD	0	1.6			
Neighborhood Park	CV-P	2.2	2.2			
Neighborhood Park	CV-P	4.4	4.4			
Subtotal		*13.6*	*14.1*			
Open Space						
Open Space Preserve	CV-OS-1	9.1	13.5			
Open Space Buffer	CV-OS-2	35.7	30.9			
Subtotal		*44.8*	*44.4*			
Roads						
Project Roadways (Right-of-Way)		11.1				
Total		**207.9**		**918**	**763**	

Source: CVSP 2024, RIA 2024.
Note:
1 If the 1.8 acres of neighborhood commercial is not adopted, this land would be converted to Village Park for a total of 15.4 acres of parks under the proposed project.
2 The RIA does not anticipate development of neighborhood commercial, but there is potential for future neighborhood commercial use in the same location as the proposed project through a subsequent discretionary process that would require a PD and Conditional Use Permit for all uses. This area includes 1.6 acres and is designated as Village Park (CV-P-PD) in the RIA.

Residential

The residential component of the RIA would comprise approximately 138.3 acres and would allow a maximum of 763 residences as compared to 918 new residences under the proposed project. This alternative proposes 614 single-family low density residential units and 149 medium-density residential units. A portion of the RIA is proposed to be a gated, age-restricted community that would contain 613 units. The remaining units would include 150 conventional single-family units. As detailed in Section 3.9, Land Use, Population and Housing, a population reduction of approximately 40% is anticipated for the age-restricted residential units for this option under the proposed project. Assuming 2.52 persons per household (PPH) for 150 traditional single-family units and a 40% reduction per unit for the remaining 613 age-restricted units, the RIA would result in a total of approximately 997 new residents. Compared to the proposed project, the RIA would have approximately 1,317 fewer new residents

than the proposed project with all conventional homes and approximately 543 fewer new residents than the proposed project with age-restricted units (Active Adult Option).

Commercial

The RIA removes the 1.8-acre neighborhood commercial land use designation that is included under the proposed project. While the RIA does not anticipate development of neighborhood commercial, the RIA includes the potential for future neighborhood commercial use in the same location as the proposed project through a subsequent discretionary process that would require a PD and Conditional Use Permit if such neighborhood commercial is proposed in the future. This area includes 1.6 acres and is designated as Village Park (CV-P-PD) in the RIA.

Parks and Recreation

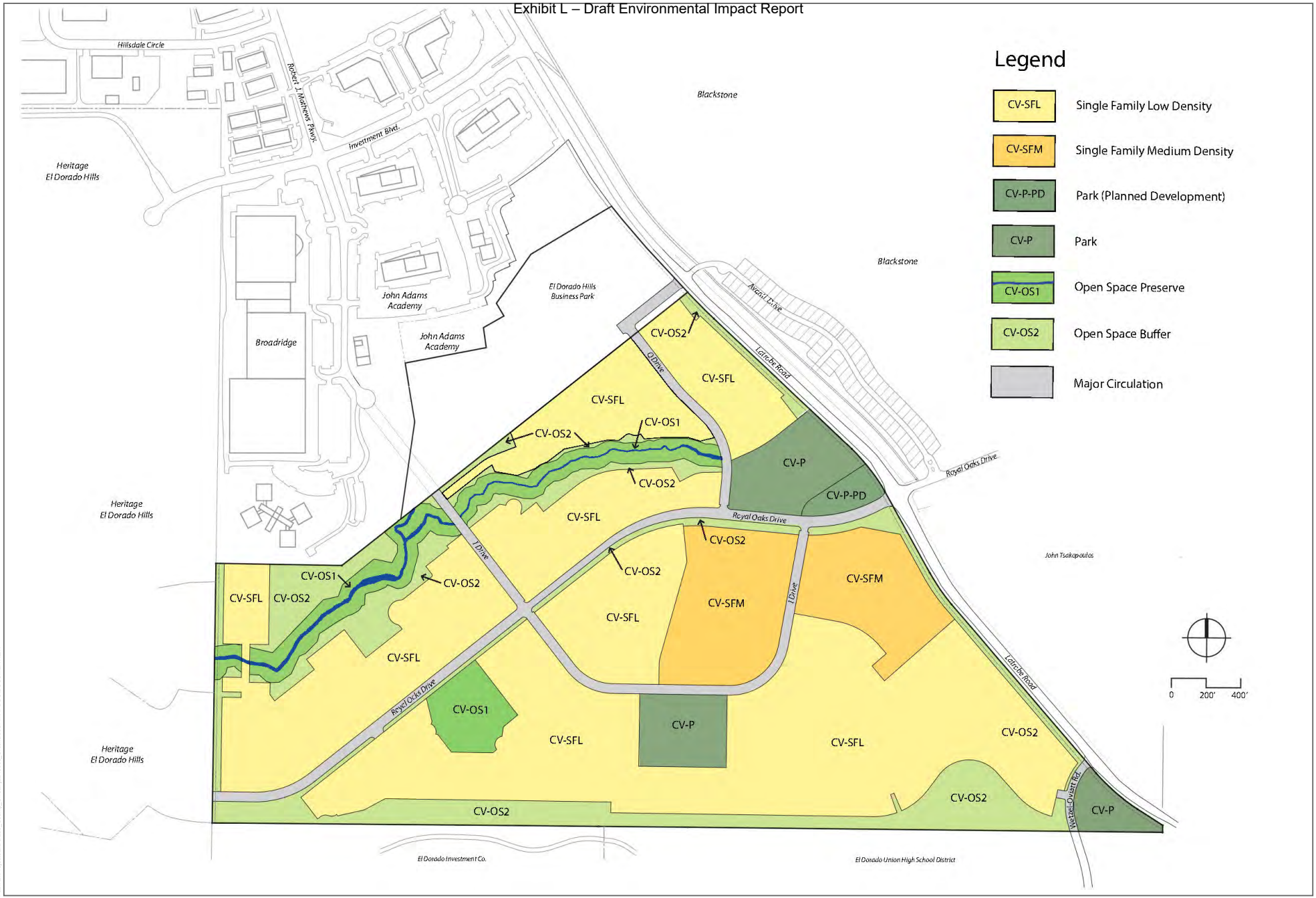
The RIA includes the integration of active and passive recreational opportunities throughout the project site, similar to the proposed project, but has increased the number of acres designated for active and passive recreation. The RIA would designate approximately 14.1 acres in three parks, as shown on Figure 5-2 and in Table 5-1 and further described below. The RIA would provide approximately 0.5 acres more parkland than the proposed project with the neighborhood commercial land use, or 1.1 acres fewer if the CV-P-PD is developed with commercial uses (if approved through a subsequent discretionary process).

Open Space

Sensitive species habitat, including the on-site drainages and seasonal wetlands, would be preserved in open space under the RIA. The RIA would designate approximately 44.4 acres for open space preserve and open space buffer which would be approximately 0.4 acres less than under the proposed project. Compared to the proposed project, the RIA would designate an additional 4.4 acres for Open Space Preserve, but 4.8 fewer acres of Open Space Buffer. The existing oak trees on the site would be preserved and protected within this open space area, the same as under the proposed project.

Circulation

Similar to the proposed project, the RIA would include a coordinated circulation system that provides for efficient vehicular travel, bikeways, sidewalks, pedestrian pathways, and sufficient space for emergency access and evacuation. The RIA proposes minimal changes to the circulation system, which include designating the western portion Royal Oaks Drive as a Minor Collector Street instead of a Local Street, and the removal of a small Local Street at the southeast corner of the site.



SOURCE: RIA 2024

FIGURE 5-2
RIA Proposed Land Uses

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Public Services and Utilities

As compared to the proposed project, the RIA would use the same public service providers including El Dorado Transit for public transportation, El Dorado Irrigation District (EID) for water and wastewater, El Dorado Union High School District (EDUHSD) and the Latrobe School District (LSD) for schools, El Dorado County Sheriff's Department (EDCSD) for law enforcement and protection, and the same service providers for dry utilities and solid waste disposal.

The water and wastewater plans for the RIA would be the same as the proposed project with only minor modifications due to the circulation changes but ultimately have the same connection points as the proposed project. With drainage, the location of the hydromodification pond differs from the proposed project and would be in a new location and an additional hydromodification pond has been added to the RIA to the south of the primary roadway for additional water quality and detention purposes. This pond would also discharge into the existing drainage channel via the proposed storm drain system.

Off-site Improvements

Because the RIA would have fewer residential units and residents, VMT would be reduced along with daily vehicle trips. Therefore, the off-site roadway infrastructure improvements required would be reduced. Generally, the off-site improvements for the RIA for connection to dry utilities, off-site water connections, and construction of a new force sewer main, would remain the same as the proposed project. The RIA would also include the approximately 650-foot-long emergency access road the same as the proposed project that would connect the project site to the adjacent business park, located to the northwest of the site that would function primarily as a Class 1 bike path. Compared to the proposed project, the off-site intersection improvements at Latrobe Road and Town Center Boulevard and at the Avanti Drive/Latrobe Road intersection would not be required, and the Royal Oaks/Latrobe Road intersection would not require road widening.

Other Specific Plan Components for the RIA

Because the RIA is analyzed at a more detailed level and could be recommended by the Planning Commission and approved by the Board of Supervisors, a separate Specific Plan was prepared for the RIA, if adopted and approved. Similar to the Specific Plan for the proposed project, the RIA Specific Plan addresses a range of issues pertinent to the development of the project site.

The layout and design of project development would be guided by the development standards included within the RIA. The RIA Specific Plan essentially includes the same development standards as the proposed project and development in areas of the proposed project Specific Plan and RIA Specific Plan with a -PD overlay would be subject to the County's PD policies described in the County's General Plan and Zoning Ordinance.

The RIA plan area would be developed in multiple phases with full build-out expected by 2030 or later, the same as the proposed project.

Impact Analysis

Aesthetics

As previously discussed in Section 3.1, Aesthetics of this Draft EIR, development of the project site under the proposed project would result in significant and unavoidable project- and cumulative-level impacts to scenic vistas, visual character, and quality of public views of the site. The County's General Plan EIR (El Dorado County 2003)

designates scenic viewpoints within the county, one of which is Point 18 spanning Latrobe Road from White Rock Road south to the county line. This viewpoint offers panoramic views of rolling hills in the middle ground and occasional vistas of the Sacramento Valley in the background. Travelers along this route experience a transition from suburban development to expansive, undeveloped grassland and rolling hills at the base of the Sierra Nevada mountains. Public views of the site currently show undeveloped grassland dotted with rock outcrops, shrubs, seasonal drainages, and a small grove of blue oak trees atop a hill.

Similar to the proposed project, buildout of the RIA would substantially alter public views of the site and a portion of the scenic vista viewable from Latrobe Road. Changes to the visual character of the site under this alternative would generally be the same as the proposed project but would retain some of the existing topography based on the elevation of the area that would be preserved in open space. The RIA land use plan is comparable to the proposed project, with similar types of development proposed in the same general areas throughout the project site. Single-family residential lots would comprise most of the site, with smaller lots located in the western-central portion of the site, and open space would surround the natural water features generally located along the northern and northwestern boundary of the site. New development would replace existing views of the broad foothills along Latrobe Road with foreground views of new housing, potential commercial buildings (if approved through a subsequent discretionary process), and other structures such as solid noise barriers that would still be required under the RIA. From the El Dorado Hills Business Park looking southwest, foreground views would be similar to current conditions because the open space buffer and preserve areas would retain the natural features within this portion of the site. Broad views of the project site from higher elevation areas, such as from Wetsel-Oviatt Road, would be similar to the proposed project. Changes to the site under the RIA (such as the additional Open Space Preserve land) would not result in a substantial visual change. Therefore, while the preservation of open space area that is generally at a higher elevation may preserve some of the existing undeveloped land aesthetic, the RIA would result in similar project- and cumulative-level **significant and unavoidable impacts** to scenic vistas, visual character, and quality of public views of the site the same as the proposed project.

Air Quality

Construction and operation emissions from the RIA were evaluated in a technical memorandum included in Appendix B to this Draft EIR (Raney Planning & Management, Inc. 2024). Compared to the proposed project, development under the RIA would result in less pollutant emissions. The RIA would develop 155 fewer dwelling units than the proposed project, resulting in approximately 543 fewer residents than the proposed project under the Active Adult Option or 1,317 fewer residents without the Active Adult Option. Similar to the proposed project, the project site is expected to be balanced and not require any import or export of soils. Due to the reduction in unit count, the off-site intersection improvements at Latrobe Road and Town Center Boulevard and at the Avanti Drive/Latrobe Road intersection would not be required, and the Royal Oaks/Latrobe Road intersection would not require road widening. To account for these changes, construction and operation emissions were estimated using the California Emissions Estimator Model (CalEEMod). The results of the updated modeling are summarized and compared to the proposed project in Tables 5-3, 5-4, and 5-5.

Table 5-3. RIA Comparison of Maximum Unmitigated Construction Emissions

Development Scenario	ROG (lbs/day)	NOx (lbs/day)
EDCAQMD Significance Threshold	82	82
Proposed Project	50.51	33.29
Exceeds Threshold?	No	No

Table 5-3. RIA Comparison of Maximum Unmitigated Construction Emissions

Development Scenario	ROG (lbs/day)	NOx (lbs/day)
RIA	50.21	33.29
Exceeds Threshold?	**No**	**No**
Difference	*-0.30*	*0.00*

Source: Raney Planning & Management, Inc. 2024 (see Appendix B).
Note: The Active Adult Option would result in the same construction emissions as the proposed project.

Table 5-4. RIA Comparison of Maximum Unmitigated Operational Emissions

Development Scenario	ROG (lbs/day)	NOx (lbs/day)
EDCAQMD Significance Threshold	**82**	**82**
Proposed Project	100	51.2
Proposed Project (Active Adult Option)	84.9	47.4
Exceeds Threshold?	**Yes**	**No**
RIA	62.6	26.9
Exceeds Threshold?	**No**	**No**
Difference (RIA – Proposed Project)	*-37.4*	*-24.3*
Difference (RIA – Proposed Project [Active Adult Option])	*-22.3*	*-20.5*

Source: Raney Planning & Management, Inc. 2024 (see Appendix B).

As shown in the above tables, the RIA would not exceed the ROG or oxides of nitrogen (NO_x) thresholds during construction or operation. Compared to the proposed project, the RIA would produce 37.4 fewer pounds of ROG and 24.3 fewer pounds of NO_x per day, or 22.3 fewer pounds of ROG and 20.5 fewer pounds of NO_x per day under the Active Adult Option. The proposed project would exceed the thresholds for ROG during operation and would require mitigation measure AQ-2 to reduce to less than significant. The reduction in ROG emissions under the RIA would avoid exceeding the El Dorado County Air Quality Management District's threshold of significance, so project- and cumulative-level impacts would be reduced to **less than significant,** as compared to the proposed project and would not require mitigation measure AQ-2 required under the proposed project to reduce ROG emissions.

Using a similar methodology, the cancer risk and non-cancer hazard indices associated with construction emissions of diesel particulate matter (DPM) were estimated for the RIA and are shown in Table 5-5.

Table 5-5. RIA Comparison of Maximum Unmitigated Cancer Risk and Hazard Index Associated with Construction Diesel Particulate Matter

Development Scenario	Cancer Risk (per million persons)	Acute Hazard Index	Chronic Hazard Index
Threshold of Significance	**10**	**1.0**	**1.0**
Proposed Project	2.06	0.00	0.001
Exceeds Threshold?	**No**	**No**	**No**
RIA	1.93	0.00	0.001
Exceeds Threshold?	**No**	**No**	**No**
Difference	*-0.13*	*0.00*	*0.00*

Source: Raney Planning & Management, Inc. 2024 (see Appendix B).
Note: The Active Adult Option would result in the same health risk as the proposed project.

As shown in Table 5-5, compared to the proposed project, the RIA would result in a slight decrease in construction-related cancer risks, but the construction-related chronic and acute hazard index risks would be the same as the proposed project. Similar to the proposed project, construction of the RIA would not result in any health impacts in excess of the El Dorado County Air Quality Management District's standards. Therefore, the RIA would result in a **less-than-significant project- and cumulative-level impact**, the same as the proposed project.

Biological Resources

An updated biological resource constraints analysis providing a comparison of impacts between the proposed project and the RIA is included in Appendix C to this Draft EIR (ESA 2025). Table 5-6 identifies acreages for habitat impacts under the RIA compared to the proposed project. Impact acreages associated with offsite areas along Latrobe Road and for intersection and sewer improvements are not included in this table but would be limited to developed/disturbed land covers within the existing roadways and the roadway rights-of-way.

Table 5-6. RIA Comparison of Habitat Impacts

Habitat Type	Proposed Project Impact (acres)	RIA Impact (acres)
California Annual Grassland	180.78	193.86
Blue Oak Woodland	0.20	0.39
Developed	0.54	0.38
Ditch	–	0.014
Riverine [a]	2.58	2.73
Seasonal Wetland [a]	1.33	1.45
Valley Foothill Riparian Wetland	0.10	0.54
Vernal Pool	0.07	0.07
Total	**185.59**	**199.42**

Source: ESA 2024 (see Appendix C).
Notes:
[a] Riverine includes acreages for intermittent and ephemeral drainage features; Seasonal Wetland includes seeps, riverine seasonal wetland, seasonal wetland, and wetland swale features.

Special-Status Species

As discussed in Section 3.3, Biological Resources, there are six special-status plant species with moderate potential to occur within the project site: dwarf downingia, Tuolumne button-celery, Boggs Lake hedge-hyssop, Ahart's dwarf rush, legenere, and pincushion navarretia. These species typically grow in seasonal wetlands or vernal pools with similar water regimes. The RIA would impact a slightly greater area of seasonal wetland habitat (0.15 acres more) compared to the proposed project, but this would not change the level of significance. Project-level and cumulative-level impacts to special-status plant species would remain **potentially significant**, the same as the proposed project. Mitigation measures BIO-1, BIO-2, and BIO-3 would still be required.

Four special-status wildlife species have high to moderate potential to occur within the project site: tricolored blackbird, burrowing owl, grasshopper sparrow, and white-tailed kite. Although northwestern pond turtle has low potential to occur, this species is also discussed below.

Tricolored Blackbird. The proposed project would remove blackberry shrubs located along a riparian wetland corridor known to support tricolored blackbird nesting colony. This colony is considered a native wildlife nursery

site. The RIA would also result in direct impacts to the tricolored blackbird nursery site, similar to the proposed project in location and magnitude. Additionally, human disturbance and noise from construction activities would have the potential to cause colony abandonment and death of young or loss of reproductive success during nesting season. Therefore, the project-level and cumulative-level impact to tricolored blackbird would remain **potentially significant** and the RIA would be required to implement mitigation measures BIO-2, BIO-3, BIO-5, and BIO-6, the same as the proposed project.

Burrowing Owl. The RIA would impact a greater area of annual grassland (13.08 acres more) which provides foraging and nesting habitat for burrowing owl. Therefore, the RIA could result in greater risk for mortality or injury to owls or destruction of burrows/nests if owls are present in or adjacent to areas of disturbance due to construction activities. Although there may be greater risk under the RIA to impact burrowing owls, this would not change the level of significance. Project-level and cumulative-level impacts to burrowing owl would remain **potentially significant** and mitigation measures BIO-2, BIO-3, and BIO-7 would be required, the same as the proposed project.

Other Nesting and Migratory Birds and Birds of Prey (including white-tailed kite and grasshopper sparrow). The RIA would impact a greater area of annual grassland (13.08 acres more) than the proposed project which provides nesting habitat for grasshopper sparrow and foraging habitat for white-tailed kite, and a slightly greater area of blue oak woodland (0.19 acres more) which provides nesting habitat for white-tailed kite. Although the RIA could result in greater impacts to nesting birds and raptors because more habitat would be affected as compared to the proposed project, this would not change the level of significance. Project-level and cumulative-level impacts would remain **potentially significant** and mitigation measures BIO-2, BIO-3, and BIO-5 would still be required, the same as the proposed project.

Northwestern Pond Turtle. The project site contains potentially suitable aquatic habitat for the northwestern pond turtle, particularly within the intermittent drainage when flooded. Annual grasslands adjacent to the intermittent drainage also provide suitable upland nesting habitat. Although the RIA would impact more habitat than the proposed project, the potential for impacts to northwestern pond turtle would be similar because it is unlikely for the species to occur, and none have been observed within this marginally suitable habitat during numerous survey efforts. Project-level and cumulative-level impacts would remain **potentially significant** and mitigation measures BIO-2, BIO-3, and BIO-4 would be required, the same as the proposed project.

Mitigation Measures

See Section 3.3 of this Draft EIR for mitigation measures BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, and BIO-7.

Similar to the proposed project, compliance with the above mitigation measures would reduce project-level and cumulative-level impacts through proper delineation of work sites, worker environmental training, preconstruction surveys, and construction monitoring. Potential impacts to special-status species under the RIA would be reduced to **less-than-significant levels,** the same as the proposed project.

Aquatic Resources

Table 5-7 compares the RIA and the proposed project regarding loss of potentially jurisdictional wetlands and other waters of the U.S. or state protected waters/wetlands.

Table 5-7. RIA Comparison of Impacts to Aquatic Resources

Aquatic Resource	Proposed Project Impact (acres)	RIA Impact (acres)
Culvert	0.003	0.004
Ditch	—	0.014
Ephemeral Drainage	1.906	1.978
Intermittent Drainage	0.671	0.753
Riparian Wetland	0.097	0.479
Riverine Seasonal Wetland	0.165	0.165
Seasonal Wetland	0.016	0.110
Seep	1.151	1.173
Vernal Pool	0.063	0.065
Wetland Swale	—	—
Total	**4.069**	**4.741**

Source: ESA 2024 (see Appendix C).

Compared to the proposed project, the RIA would result in the loss of 0.672 additional acres of protected aquatic resources. Although the RIA would result in a slightly greater loss of aquatic resources, the level of significance would not change. Impacts would be **potentially significant** and mitigation measure BIO-8 would still be applicable, the same as the proposed project. Under the proposed project, BIO-9 provided for stream preservation with park design, however, with the lotting for the RIA to preserve areas in open space, residential lots were included where the intermittent drainage is and therefore it is no longer part of the park and BIO-9 would not be feasible with the RIA.

Mitigation Measures

See Section 3.3 for mitigation measure BIO-8. Compliance with mitigation measure BIO-8 would require compensation of all waters of the U.S. and state removed by the project to a standard of no net loss. Other cumulative projects would also be expected to meet this mitigation standard. The mitigation measure reduces the **project-level and cumulative-level impact to less-than-significant**, the same as the proposed project**.**

Other Biological Resource Topics

The updated biological resource constraints analysis (Appendix C) determined that the RIA would have the same impact as the proposed project to sensitive natural communities and the potential to conflict with habitat conservation plans, less than significant. Additionally, although the RIA would impact additional blue oak woodland, the RIA would not conflict with the County's Oak Resources Conservation Ordinance because mitigation would be required as part of the approval process. Therefore, the analysis provided in Section 3.3 for the proposed project would be the same for the RIA.

Cultural Resources

As discussed in Section 3.4, Cultural Resources, seven historic-period archaeological resources were identified on the project site and four within the offsite improvements area, but all were either ineligible for the National Register of Historic Places or California Register of Historical Resources or were not evaluated for eligibility. Similar to the proposed project, the RIA as presently designed would not directly impact NRHP or CRHR-eligible historic-period

archeological resources. Nonetheless, the presence of resources in the area suggests that development may have the potential to unearth additional unknown historic-period archeological resources resulting in a substantial adverse change in the significance of the resource. The potential loss of and/or substantial damage to undiscovered archaeological resources as well as human remains is considered a **potentially significant impact**. Project-level and cumulative-level impacts would be the same as the proposed project and mitigation measures CUL-1 and CUL-2 would be required.

Mitigation Measures

See Section 3.4 of this Draft EIR for mitigation measures CUL-1 and CUL-2.

Implementation of mitigation measures CUL-1 and CUL-2 would address potential project-level and cumulative-level impacts to historic-period archeological resources and human remains and reduce impacts to **less-than-significant levels.**

Energy

Development under the RIA would be less energy-intensive than the proposed project because 155 fewer dwelling units would be constructed than under the proposed project, resulting in approximately 543 fewer residents with the Active Adult Option or 1,317 fewer residents without the Active Adult Option. A reduction in units would result in reduced consumption of energy needed to power buildings and appliances. A reduction in the amount of petroleum used would also occur because during construction there would be fewer construction vehicles and during operation there would be fewer daily vehicle trips and resulting VMT. Therefore, the RIA would result in slightly less energy demand than the proposed project, and project-level and cumulative-level impacts would remain **less than significant**, the same as the proposed project.

Geology and Soils

Geologic risks such as rupture of faults, groundshaking, liquefaction, and landslides would remain the same as the proposed project because these risks are dependent on location, as discussed in Section 3.6, Geology, Soils and Paleontological Resources. Construction activities including vegetation removal, excavation, and grading would be similar to the proposed project. To address the potential for soil erosion, the RIA would be required to prepare an Erosion and Sediment Control Plan that specifies use of best management practices (BMPs) to prevent increased discharge of sediment at all stages of grading and development, and to implement a SWPPP in accordance with the requirements of the Stormwater Construction General Permit (see Section 4.9 of this Draft EIR for further detail). Therefore, the same as the proposed project, compliance with local and state regulations would ensure that impacts are **less than significant**. Additionally, this alternative would not contribute to a potential cumulative effect, the same as the proposed project, because geologic and soil conditions typically do not combine to create a significant cumulative impact.

Greenhouse Gas Emissions

The reduction of 155 dwelling units under the RIA would result in fewer GHG emissions from vehicle trips, heating and cooling, electricity, and other construction and operation activities. The maximum unmitigated GHG emissions for the RIA, as compared to the proposed project, are presented in Tables 5-8 and 5-9.

Table 5-8. RIA Comparison of Maximum Unmitigated Construction GHG Emissions

Development Scenario	GHG Emissions (MT CO_{2e}/yr)
Significance Threshold	**1,100**
Proposed Project	997
Exceeds Threshold?	**No**
RIA	846
Exceeds Threshold?	**No**
Difference	*-151*

Source: Raney Planning & Management, Inc. 2024 (see Appendix B).
Note: The Active Adult Option would result in the same construction emissions as the proposed project.
MT = metric tons; CO_2e = carbon dioxide equivalent

As shown in Table 5-8, maximum unmitigated GHG emissions related to construction of the proposed project would be below the thresholds. Therefore, similar to the proposed project, construction of the RIA would not be considered to result in a cumulatively considerable contribution to global climate change during construction activities, and impacts would be **less than significant**.

Table 5-9. RIA Comparison of Maximum Unmitigated Operational GHG Emissions

Development Scenario	GHG Emissions (MT CO_{2e}/yr)
Significance Threshold	**1,100**
Proposed Project	9,761
Proposed Project (Active Adult Option)	9,514
Exceeds Threshold?	**Yes**
RIA	4,671
Exceeds Threshold?	**Yes**
Difference (RIA – Proposed Project)	*-5,090*
Difference (RIA – Proposed Project [Active Adult Option])	*-4,843*

Source: Raney Planning & Management, Inc. 2024 (see Appendix B).
Note: MT = metric tons; CO_2e = carbon dioxide equivalent

For evaluating operational GHG emissions, development projects in the County are required to implement Tier 1 best management practices or BMPs (BMP 1 and 2). In addition, if operations would exceed 1,100 MT CO_2e/yr after implementation of the Tier 1 BMPs, then the project is required to implement Tier 2 BMPs (BMP 3). See Section 3.7, Greenhouse Gas Emissions for further discussion of the approach to using BMPs. As shown in Table 5-9, the RIA would reduce operational GHG emissions but would still exceed the significance threshold, the same as the proposed project.

Given the similarities of the proposed project and the RIA, consistency with BMPs cannot be ensured at this time. As such, even with the reduction in GHG emissions, because the project analysis is based on a qualitative BMP-based threshold of significance, project-level and cumulative-level impacts associated with operational GHG emissions would remain **potentially significant** and mitigation measures GHG-1 and GHG-2 would still be required, the same as the proposed project.

Mitigation Measures

See Section 3.7 of this Draft EIR for mitigation measures GHG-1 and GHG-2.

Similar to the proposed project, with implementation of the aforementioned mitigation measures, the RIA would result in a **less-than-significant project-level and cumulative-level impact** related to operational GHG emissions.

Hydrology and Water Quality

The RIA land use plan is similar to the proposed project and would not result in a significant change in the amount of impervious surfaces or alteration of drainage patterns, as discussed in Section 3.8, Hydrology and Water Quality. While there would be 155 fewer dwelling units under the RIA, the overall residential acreage would be similar to the proposed project (138.3 acres under the RIA and 136.6 acres under the proposed project). Parks and open space acreage would also be similar to the proposed project, with 0.5 acres more parkland (or 1.1 acres less if the neighborhood commercial space is converted to park uses) and 0.4 acres less open space (but with a greater ratio of open space preserve to open space buffer). The RIA moves the hydromodification pond slightly to the east and proposes an additional hydromodification for additional water quality and detention purposes. This additional pond would also discharge into the existing drainage channel via the project's proposed storm drain system. These changes to the stormwater drainage system would not result in any significant changes to hydrology and water quality impacts. As previously discussed, new development would be required to comply with applicable water quality regulatory requirements, including implementation of a SWPPP. Given the similarities between the RIA and the proposed project, all hydrology and water quality project-level and cumulative-level impacts would remain **less than significant,** the same as the proposed project.

Land Use, Population and Housing

As previously discussed, the RIA would result in approximately 543 fewer residents than the proposed project under the Active Adult Option or 1,317 fewer residents without the Active Adult Option. Changes in population (and housing) in and of themselves are generally characterized as social and economic effects and are not considered physical effects on the environment. However, indirect physical environmental effects could occur, such as changes in the number of vehicle trips, air pollutant emissions, or noise. These indirect effects are evaluated under the appropriate topical area.

Regarding consistency with land use plans, the RIA would not be sufficiently different from the proposed project such that there would be no conflicts with the County General Plan or the Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). Impacts would be **less than significant**, the same as the proposed project. There would also be no contribution to a significant cumulative impact, the same as the proposed project.

Noise

The RIA would involve similar construction activities as the proposed project, which would include use of construction equipment such as forklifts, backhoes, graders and pavers. Given the RIA would develop a similar land plan as the proposed project, it would not be expected to result in significant differences in construction noise. Therefore, construction noise impacts would be **potentially significant**, the same as the proposed project and mitigation measure NOI-1 would be required.

Operational noise impacts from the RIA were evaluated in a supplemental memorandum to the Environmental Noise and Vibration Assessment (ENVA) included as Appendix G to this Draft EIR (Bollard Acoustical Consultants, Inc. 2024). The results and impact determinations for traffic noise contained in the ENVA were based on a trip generation estimate of 10,040 new vehicle trips per day from the proposed project without the Active Adult Option (the Active Adult Option was not modeled because development of all conventional housing represents the worst-case scenario). According to the revised trip generation estimate, the RIA would result in 4,147 new vehicle trips per day. This would be a decrease of approximately 59% from the proposed project. Therefore, noise levels associated with project-generated increases in off-site traffic would be lower than the proposed project and project-level and cumulative-level traffic noise impacts would remain **less than significant**, the same as the proposed project but the RIA would generate slightly less noise as compared to the proposed project.

As discussed in Section 3.10.5 for "Additional Project Considerations," noise, future traffic noise exposure under the proposed project would exceed the County's residential use exterior noise level standard, which is not an impact to the environment for purposes of CEQA. Additionally, traffic noise levels for single-family large lots constructed within 60 feet from the centerline of Latrobe Road could exceed the County's interior noise level standard at the upper floors of those residences resulting in a potentially significant impact. Mitigation measures NOI-4 and NOI-5 were recommended for the proposed project to reduce the impact to less than significant. However, these mitigations measures were not required for CEQA purposes as described in Section 3.10.5 but would still be applicable for the RIA.

The RIA land use plan is similar to the proposed project, with parks located adjacent to residential uses. Park activities have been identified as a primary noise source that could impact nearby residential uses proposed within the project. Therefore, it is anticipated that the RIA would also result in park activity noise levels that could exceed the County's General Plan nighttime noise level standards for residential uses. As a result, this impact would be **potentially significant**, the same as the proposed project and mitigation measure NOI-2 would be required.

The RIA does not anticipate development of a neighborhood commercial use that is included as an option under the proposed project. However, the RIA does include the potential for future neighborhood commercial use in the same location as the proposed project through a subsequent discretionary process that would require a PD and Conditional Use Permit if such neighborhood commercial is proposed in the future. In this case, the RIA could include live and/or amplified music associated with commercial uses that could exceed the County's thresholds and impacts associated with live or amplified music would be **potentially significant**, the same as the proposed project. In addition to a noise study that would be required as part of any conditional use permit, mitigation measure NOI-3 would be required.

Mitigation Measures

See Section 3.10 of this Draft EIR for mitigation measures NOI-1, NOI-2, NOI-3, NOI-4, and NOI-5.

Compliance with mitigation measures would ensure construction activity noise, park noise, noise associated with live/amplified music, and cumulative noise impacts would be reduced to **less than significant**, the same as the proposed project.

Public Services and Recreation

The RIA proposes a maximum of 763 dwelling units, with 613 age-restricted units and 150 traditional single-family units. As previously discussed, this would result in approximately 997 new residents. Because impacts to public

services and recreation are dependent on population, the RIA would generate less demand for services such as fire protection, police services, and schools as compared to the proposed project. The project site would continue to be served by the El Dorado Hills Fire Department and the County Sheriff. The RIA would generate fewer students than the proposed project (without the Active Adult Option), and the same amount of students as under the Active Adult Option (99 new students) because the same number of conventional single-family units (150 units) is proposed.

For the purposes of calculating parkland dedication, the County uses a ratio of 2.8 persons per dwelling unit (Section 120.12.090 of the County Code). Given that the RIA proposes a maximum of 763 dwelling units, this assumes 2,136 new residents for calculating parkland dedication. Based on the County's standard of 5 acres of parkland per 1,000 residents, the RIA would require 10.68 acres of parks. The RIA includes 14.1 acres of parks which would exceed the County's standard. In comparison to the proposed project (with the neighborhood commercial option), the RIA would provide more park acreage per resident.

Both the proposed project and the RIA would result in **less-than-significant project-level and cumulative-level impacts** on public services and recreation, but the RIA would generate less demand for fire protection, police services, and schools.

Transportation

The RIA circulation system would be similar to the proposed project. The RIA proposes minimal changes, including designating the western portion Royal Oaks Drive as a Minor Collector Street instead of a Local Street, and the removal of a small Local Street at the southeast corner of the site. The RIA proposes a bikeway and pedestrian trail system similar to the proposed project.

An updated transportation impact study (TIS) was prepared to analyze traffic and VMT under the RIA and is included in Appendix H to this EIR (T. Kear Transportation Planning & Management, Inc. 2025). On a daily basis, the RIA would generate approximately 4,147 new daily vehicle trips, compared to 10,040 new trips under the proposed project or 6,186 new trips with the Active Adult Option. The proposed project is anticipated to generate 13.6 VMT per capita based on 2018 land use and 13.1 VMT per capita by 2040, and the analysis for the RIA explains that the reduction in overall units and inclusion of age-restricted units will result in less VMT than the proposed project. Given that the proposed project would not exceed the existing Countywide per capita VMT threshold of 17.3, and the RIA would also be under this threshold, project-level and cumulative-level VMT impacts would continue to be **less than significant,** the same as the proposed project.

Tribal Cultural Resources

As discussed in Section 3.13, Tribal Cultural Resources, the project site is located on land traditionally inhabited by or otherwise traditionally culturally associated with the Nisenan and Miwok tribes. There are four recorded precontact cultural resources within the project's area of potential effect (APE) which includes the project site and off-site transportation improvements, and consulting Tribes consider the resources to be TCRs. Based on this information, the County has determined that the project would cause a substantial adverse change in the significance of a TCR with cultural value to a California Native American tribe pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. The tribes have expressed the importance of certain TCRs to remain in their current location, which would not be possible under the proposed project due to the grading plan. Therefore, under the proposed project, project-level and cumulative-level impacts, even with mitigation measures TCR-1, TCR-2, TCR-3, TCR-4, and TCR-5 were determined to be significant and unavoidable.

The RIA was developed with substantial input from consulting Tribes to reduce impacts to these TCRs. This alternative would preserve open space in areas containing known TCRs (P-09-006004, P-09-006011, and P-09-00157). With concurrence from UAIC and Wilton, P-09-006012 would be relocated to a location within the open space preserve around P-09-006011 and P-09-00157. UAIC and/or Wilton would determine the precise location. P-09-00157 would remain in its present location. As such, the RIA would avoid the significant and unavoidable impacts to known TCRs that would occur under the proposed project. Development of the project site still has the potential to unearth or disturb additional unknown or unanticipated TCRs or Native American human remains during construction activities. Impacts would be potentially significant and mitigation measures TCR-1, TCR-2, TCR-3, and TCR-4 would be required. Mitigation measure TCR-5, which requires documentation and relocation of identified TCRs within an area of potential ground disturbance as identified by the grading plan, would be applicable only to P-09-006012 because the RIA has redesigned the project to preserve all other TCRs on place without disturbance. As compared to the proposed project, this alternative would be **less-than-significant with mitigation.**

Mitigation Measures

See Section 3.13 of this Draft EIR for mitigation measure TCR-1, TCR-2, TCR-3, TCR-4, and TCR-5.

The above mitigation measures would require tribal monitoring and implementation of a Cultural Resources Management and Unanticipated Discovery Plan if any unanticipated TCRs and/or archaeological resources are encountered during construction activities and establishes the proper procedures if human remains are discovered. Additionally, relocation of P-09-006012 would be subject to appropriate archaeological and Tribal documentation, monitoring, and best practice standards. As such, project-level and cumulative-level impacts to TCRs would be reduced to **less than significant**.

Utilities and Service Systems

The proposed project's increase in demand for utilities is evaluated in Section 3.14, Utilities and Service Systems. The lower unit count and population under the RIA would reduce the demand for utilities as compared to the proposed project. Tables 5-10, 5-11, and 5-12 calculate the water demand, wastewater generation, and solid waste generation of the RIA as compared to the proposed project.

Table 5-10. RIA Estimated Annual Water Demand

Category	Dwelling Units (du) or Acres					Demand Factor[1] (af/du or af/acre)		Acre-feet per Year[2]				
	2025	2030	2035	2040	2045			2025	2030	2035	2040	2045
Residential												
Low Density Residential Conventional	0	0	150	150	150	0.18	(indoor)	0	0	27	27	27
						0.25	(outdoor)	0	0	38	38	38
Low Density Residential Age-Restricted	81	165	464	464	464	0.108	(indoor)	9	18	50	50	50
						0.15	(outdoor)	12	25	70	70	70
Medium Density Residential Age-Restricted	0	0	149	149	149	0.108	(indoor)	0	0	16	27	27
						0.048	(outdoor)	0	0	7	7	7
DU Total	**81**	**165**	**763**	**763**	**763**							
						Indoor Subtotal		*9*	*18*	*93*	*93*	*93*
						Outdoor Subtotal		*12*	*25*	*115*	*115*	*115*
Non-Residential												
Park	4	7	14.1	14.1	14.1	3.70		15	26	52	52	52
Roadway Landscaping	5	11.1	11.1	11.1	11.1	0.45		2	5	5	5	5
						Subtotal		*17*	*31*	*57*	*57*	*57*
Other Miscellaneous Uses												
Construction Water	1	1	1	0	0	5.0		5	5	5	0	0
							Subtotal	**43**	**79**	**270**	**270**	**270**
							Outdoor Non-Revenue Water	**8**	**14**	**48**	**48**	**48**
							Total RIA Demand	**51**	**93**	**318**	**318**	**318**

Source: (Appendix I; EID 2016, EID 2021a).
Notes: The average system loss was updated from 13% in the 2015 UWMP to 17.6% in the 2020 UWMP.
1 The demand factors used are based on EID's 2015 UWMP demand factor rates. For age restricted units, the demand is reduced 40% per unit.
2 Totals are rounded to the nearest whole number.

Table 5-11. RIA Comparison of Estimated Annual Wastewater Generation

Land Use	Wastewater Generation Rate	Units			Wastewater Generation (gpd)		
		Proposed Project	*Active Adult Option*	RIA	Proposed Project	*Active Adult Option*	RIA
Residential: Single Family Low Density							
Conventional	34 gpd/du	668 du	*150 du*	150 du	22,712	*5,100*	5,100
Age-restricted	20.4 gpd/du		*518 du*	464 du		*10,567*	9,465
Residential: Single Family Medium Density							
Conventional	120 gpd/du	250 du			30,000		
Age-restricted	72 gpd/du		*250 du*	149 du		*18,000*	10,728
Commercial							
Neighborhood Commercial	500 gpd/acre	1.8 acres			900		
				Total (gpd)	**53,612**	**34,567**	**25,294**
				Total (mgd)	**0.054**	**0.035**	**0.025**

Source: EID 2013b.
Notes: Parks and open space land uses would not generate wastewater, as such the land uses are not included.
Age-restricted units generate approximately 40% less demand for utilities due to fewer persons per household.
gpd= gallons per day; du = dwelling units; mgd = million gallons per day

Table 5-12. RIA Comparison of Estimated Solid Waste Generation

Land Use	Waste Generation Rate	Units			Waste Generation (tons/year)		
		Proposed Project	*Active Adult Option*	RIA	Proposed Project	*Active Adult Option*	RIA
Residential: Single Family Low Density							
Conventional	10 lbs/du/day	668 du	*150 du*	150 du	1,219	*274*	274
Age-restricted	6 lbs/du/day		*518 du*	464 du		*567*	508
Residential: Single Family Medium Density							
Conventional	4 lbs/du/day	250 du			183		
Age-restricted	2.4 lb/du/day		*250 du*	149 du		*110*	65
Commercial							
Neighborhood Commercial	5 lbs/1,000 sf/day	1.8 acres			72		
				Total (tons/year)	**1,474**	**951**	**847**
				Total (cy/year)	**2,064**	**1,331**	**1,186**

Source: CalRecycle 2019b.
Notes: 1 ton= 2,000 pounds and 1.4 cubic yards
1 acre = 43,560 square feet

As shown in the tables, the RIA would result in less demand for water supply, wastewater treatment and generation of solid waste. Therefore, project-level and cumulative-level impacts would be **less than significant,** the same as the

proposed project and no mitigation would be required but the RIA would generate less demand for utilities as compared to the proposed project.

Wildfire

A memorandum was prepared to evaluate wildfire risk from the RIA compared to the proposed project and to determine whether any modifications to the approved Fire Safe Plan would be required, included in Appendix J to this Draft EIR (Phillips Consulting Services 2025). The RIA would not propose any new components that would exacerbate wildfire risks as compared to the proposed project and the approved Fire Safe Plan remains applicable to the RIA. Wildfire risks would be **potentially significant**, the same as the proposed project and mitigation measures WF-1 through WF-5 would be applicable.

Mitigation Measures

See Section 3.15 of this Draft EIR for mitigation measures WF-1 through WF-5.

Implementation of MM-WF-1 through MM-WF-5, combined with regulatory requirements, would reduce potential impacts related to exacerbating wildfire risks and exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire to **less than significant**.

Relationship to Project Objectives

The RIA would meet all of the project objectives. Similar to the proposed project, the RIA would meet objective 1, 3, and 4 by providing a variety of new single-family homes for a range of buyers of all ages located near places of employment and retail, and with access to amenities, schools, and entertainment. The RIA would meet objective 2, 5, and 6 by providing multi-modal connectivity including a linked system of streets and trails connecting to areas inside and outside the community. The RIA would preserve natural features in accordance with objective 7 and would integrate those features into new development, similar to the proposed project. Objective 8 would be met by providing over 14 acres of parks and over 44 acres of open space throughout the project site, which would provide the community with a full range of active and passive recreational uses. Lastly, the RIA allows for flexibility in the development and implementation to adjust to current and future conditions and market demands. In accordance with objective 9, the RIA is designed to include 613 units of age-restricted housing which would reduce student generation and traffic.

5.5 Comparison of Alternatives

Table 5-13 shows the potentially significant environmental effects of the proposed project, prior to implementation of mitigation measures, compared to the potential effects of the project alternatives. If a project alternative would have new or substantially greater impacts than the proposed project, this is also noted in the table.

Table 5-13. Summary Matrix

Environmental Issue	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Zoning Consistent	Alternative 3: RIA
Aesthetics	SU	NI ▼	SU –	SU –
Air Quality	SU	NI ▼	SU ▲	LTS ▼

Table 5-13. Summary Matrix

Environmental Issue	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Zoning Consistent	Alternative 3: RIA
Biological Resources	LTS	NI ▼	LTS ▲	LTS –
Cultural Resources	LTS	NI ▼	LTS –	LTS –
Energy	LTS	NI ▼	LTS ▲	LTS ▼
Geology and Soils	LTS	NI ▼	LTS ▲	LTS –
Greenhouse Gas Emissions	LTS	NI ▼	LTS ▲	LTS ▼
Hydrology and Water Quality	LTS	NI ▼	LTS ▲	LTS –
Land Use, Population and Housing	LTS	NI ▼	LTS ▼	LTS ▼
Noise	LTS	NI ▼	LTS ▲	LTS ▼
Public Services and Recreation	LTS	NI ▼	LTS ▼	LTS ▼
Transportation	LTS	NI ▼	LTS ▼	LTS ▼
Tribal Cultural Resources	SU	NI ▼	SU –	LTS ▼
Utilities and Service Systems	LTS	NI ▼	LTS –	LTS ▼
Wildfire	LTS	NI ▼	LTS ▲	LTS –

Notes:
▲ Alternative is likely to result in greater impacts to issue when compared to proposed project.
– Alternative is likely to result in similar impacts to issue when compared to proposed project.
▼ Alternative is likely to result in reduced impacts to issue when compared to proposed project.
NI = No impact
LTS = Less-than-significant impact
SU = Significant and unavoidable impact

5.6 Environmentally Superior Alternative

As indicated in Table 6-12, the No Project/No Development Alternative would result in the least environmental impacts because it would avoid all impacts associated with the proposed project for all resource areas. However, Section 15126.6(e)(2) of the CEQA Guidelines states that if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Therefore, Alternative 3 is considered the environmentally superior alternative because it would result in reduced impacts to most of the resource areas evaluated including Energy, GHGs, Population and Housing, Noise, Public Services and Recreation, Transportation, and Utilities and Service Systems, and would avoid the significant and unavoidable impacts identified for the proposed project under Air Quality and Tribal Cultural Resources. With Alternative 3, only impacts to aesthetics would remain significant and unavoidable, which would occur with any development of the project site and is consistent with impacts assumed under anticipated buildout of the General Plan.

5.7 References

Bollard Acoustical Consultants, Inc. 2024. Creekside Village Development – Revised Tentative Map Plan & Trip Generation Information for the Reduced Impact Alternative. December 10, 2024.

ESA. 2025. Updated Biological Resources Constraints Memorandum Report for the Creekside Village Project. February 7, 2025.

Phillips Consulting Services. 2025. Creekside Village Specific Plan – Proposed Project Versus Reduced Impact Alternative – Fire Safe Plan Analysis and Recommendations. January 22, 2025.

Raney Planning & Management, Inc. 2024. Creekside Village Specific Plan Project – Reduced Impact Alternative Technical Memorandum. December 5, 2024.

T. Kear Transportation Planning & Management, Inc. 2025. Transportation Impact Study (Reduced Impact Scenario). Last revised May 20, 2025.

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6 List of Preparers

This section identifies the preparers of the EIR and persons consulted.

Applicant Team

Winn Communities, George Carpenter and Tony Gon
Legal counsel, Breann Moebius, Hefner Law

Torrence Planning & Design, Inc., Creekside Village Specific Plan
Bollard Acoustical Consultants, Inc., Environmental Noise and Vibration Technical Report
Raney Planning & Management, Inc., Air Quality and Greenhouse Gas Impact Analysis
T. Kear Transportation, Planning & Management, Inc., Transportation Impact Study
ESA, Biological Resources Constraints Report/Aquatic Resources Delineation Report
Ric Windmiller, Cultural Resources Reports
ESA, Cultural Resources consultant
Youngdahl, Geotechnical Feasibility Study
CTA Engineering & Surveying, Drainage Report
Tully & Young, Water Supply Assessment
Foothill Associates, Oak Resources Technical Report
Philips Consulting Services, Fire Safe Plan

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Christine Kronenberg, Project Director
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Angelica Chiu, Aesthetics; Land Use, Population and Housing
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Michael Henry, Biological Resources
Nicholas Hanten and Adam Giacinto, Cultural and Tribal Cultural Resources
Mark Storm and Cole Martin, Noise
Mollie Brogdon, Public Services/Recreation
Jessica Booth, Utilities and Service Systems
Eric Schniewind, Geology and Soils; Hydrology and Water Quality
Sabita Tewani, Transportation
Dana Link-Herrera, Wildfire

El Dorado County

Ande Flower, AICP, Planning Manager
Cameron Welch, Senior Planner
Jefferson Billingsley, County Counsel

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NOTICE OF PREPARATION
OF A DRAFT ENVIRONMENTAL IMPACT REPORT

Date: November 6, 2020

To: Agencies and Interested Parties

From: Gina Hamilton, Planning Division, County of El Dorado

Subject: **Notice of Preparation of a Draft Environmental Impact Report for the Creekside Village Specific Plan Project (Application Nos. General Plan Amendment GPA20-0001, Rezone Z20-0005, Specific Plan SP20-0001, Tentative Map TM20-0002)**

Review Period: November 6, 2020 to December 7, 2020

County of El Dorado will be the Lead Agency and will prepare an Environmental Impact Report (EIR) for the proposed Creekside Village Specific Plan (proposed project) located in unincorporated El Dorado County (County). This Notice of Preparation (NOP) initiates the environmental scoping process in accordance with the California Environmental Quality Act (CEQA) Guidelines (14 California Code of Regulations [CCR] Section 15082). The purpose of an NOP is to provide sufficient information about the proposed project and its potential environmental effects to allow public agencies, organizations, tribes and interested members of the public the opportunity to provide a meaningful response related to the scope and content of the EIR, including feasible mitigation measures and project alternatives that should be considered in the EIR (CEQA Guidelines, 14 CCR 15082[b]). The proposed project and location are briefly described below.

PROVIDING COMMENTS

El Dorado County is soliciting written comments from public agencies, organizations, and individuals regarding the scope and content of the environmental document. Because of time limits mandated by State law, comments should be provided no later than 5:00 PM on Monday, December 7, 2020. Please send all comments to:

Gina Hamilton, Senior Planner
County of El Dorado Planning Division
2850 Fairlane Court
Placerville, CA 95667
Email: creeksidevillagesp.edcgov.us

Agencies that will need to use the EIR when considering permits or other approvals for the proposed project should provide the name of a contact person, phone number, and email address in their comment. Comments provided by email should include “Creekside Village NOP Comment” in the subject line, and the name and physical address of the commenter in the body of the email.

PROJECT LOCATION

The project site is located south of Highway 50, west of Latrobe Road and south of Investment Boulevard in the El Dorado Hills area (APN 117-010-012), see Figure 1. The project site is bordered on the north by the existing El Dorado Hills Business Park and the John Adams Academy Charter School, to the east by the Blackstone master planned community (Valley View Specific Plan), to the south by undeveloped rural

residential and industrial lands, and to the west by undeveloped land in the Carson Creek Specific Plan zoned for research and development.

PROJECT DESCRIPTION

The project applicant proposes to develop a new 926-unit residential community located on an approximately 208-acre site. The project would include 115.9 acres of single-family low-density residential development, 21.0 acres of single-family medium-density residential development, 14.3 acres of parks, 46.3 acres of open space preserves and buffers, and 10.4 acres of roadways. The proposed land use map is provided in Figure 2. The current zoning and General Plan land use designation for the project site is Research & Development (R&D). The project would require a general plan amendment from R&D to AP - Adopted Plan and a rezone from R&D to SP - Creekside Village Specific Plan and establish a Specific Plan for Creekside Village. The project's Draft Tentative Map is shown in Figure 3

The Creekside Village Specific Plan includes a single-family low-density residential land use designation that would include single-family residential, accessory dwelling units (ADUs), and junior ADUs[1] as well as neighborhood and community serving amenities such as parks, community clubhouses, and emergency services facilities. Low-density development would range from 4 to 8 dwelling units per gross acre, with a target dwelling unit count of 676. The single-family medium-density residential land use designation would allow for single-family dwellings, and two- and three-family dwellings as well as parks and public facilities. As shown in Figure 3, the draft Tentative Map includes two parcels designated for future development of medium-density residential that would range from 8 to 12 dwelling units per gross acre with a target dwelling unit count of 250. Three parks are proposed: an 8.8-acre village park in the northeast area along Latrobe Road, a 3.3-acre neighborhood park in the south central area of the site, and a third 2.2-acre park located in the southeast corner of the site. The proposed Open Space Preserve designation would protect intermittent drainages, seasonal wetlands, vernal pools, and ponds extending from the west to the northeast part of the project site. An Open Space buffer would be located along the western, northern, and southern borders of the site, as well as along Royal Oaks Drive.

The proposed project includes amendments to the El Dorado County General Plan, adoption and implementation of the Creekside Village Specific Plan, and rezoning. In addition, the project may require the County's approval of a development agreement, financing plan, and subsequent development permits and entitlements including a Development Permit and Tentative Maps.

The proposed project also includes a request to annex into the El Dorado Hills Community Services District as part of a separate service district annexation request. The El Dorado Local Agency Formation Commission (LAFCO) is the agency with statutory responsibility for such boundary changes and it is expected that the EIR will address LAFCO's needs for environmental evaluation and disclosure under CEQA.

It is anticipated that additional State and federal actions will be required for implementation of the proposed project, including: a Clean Water Act (CWA) 401 Cerftication (Regional Water Quality Control Board – Central Valley Region), a CWA Section 404 permit (U.S. Army Corps of Engineers); an Incidental Take Authorization through a Section 7 Consultation (U.S. Fish and Wildlife Serivice and U.S. Army Corps of Engineers), a California Department of Fish and Wildlife (CDFW) 1602 Streambead Alteration Agreement, and a CDFW 2081 Incidental Take Permit.

POTENTIAL ENVIRONMENTAL IMPACTS

Pursuant to the CEQA Guidelines, 14 CCR 15063, the County is preparing an EIR to determine if the proposed project may have a significant effect on the environment. The purpose of the EIR is to provide the public with information on environmental effects that would result from project construction and operation. The County anticipates that the EIR will address the following topic areas:

[1] A junior ADU is defined as a unit that is no more than 500 square feet in size and contained entirely within a single-family residence. A junior ADU may include a separate bathroom, or may share bathroom facilities with the existing structure (California Government Code Section 65852.22).

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources and Tribal Cultural Resources
- Energy
- Geology and Soils
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services and Recreation
- Public Utilities
- Transportation
- Wildfire

Based on a preliminary analysis, the County has determined that impacts to the following topics would not be significant. Therefore, these topics will not be analyzed further in the EIR.

- Agricultural Resources and Forestry Resources
- Hazards and Hazardous Materials
- Mineral Resources

Full documentation of the factual basis for this determination will provided in the EIR. Unless specific comments are received during the NOP public comment period that indicates a potential for the project to result in significant impacts, these topics will not be analyzed further in the EIR.

SCOPING MEETING

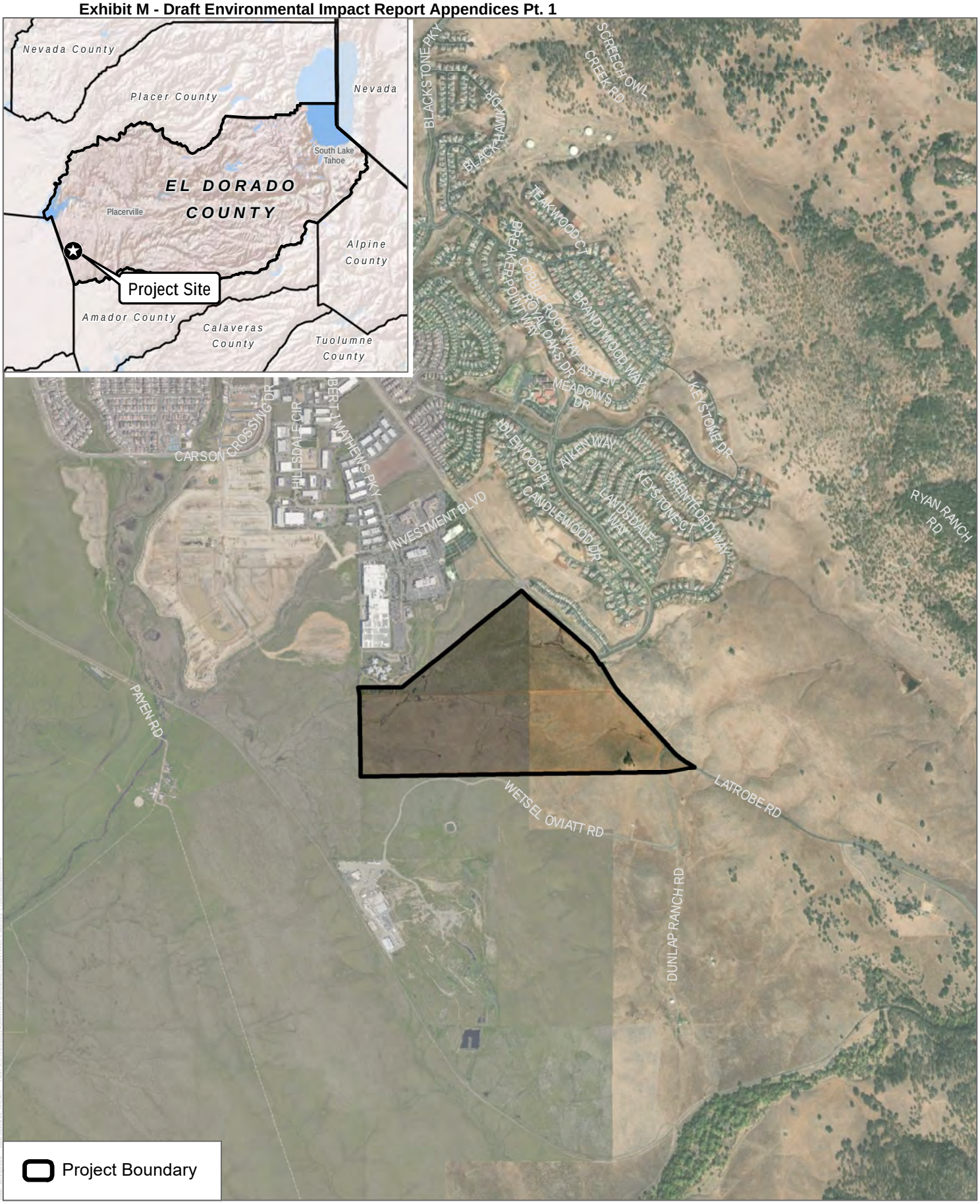
El Dorado County will hold a scoping meeting to receive verbal comments regarding the scope and content of the environmental document and answer general questions regarding the environmental process. Due to COVID-19 social distance requirements, the scoping meeting will be held remotely. The meeting will be on **Thursday, November 19, 2020 from 6:00 to 7:00 PM**.

Attendees can observe and participate via live stream of the scoping meeting by going to this website: https://rebrand.ly/CreeksideVillageScoping

Attendees can also participate and join by phone: 1-669-900-6833 or 1-929-205-6099
Webinar ID 924 1489 7860

By participating in this meeting you acknowledge that you are being recorded. While speaking, please reduce any background noise to ensure that your comments can be heard. For those joining via live stream: once public comment is open, if you wish to comment, press the "raise a hand" button. For those joining via phone: once public comment open, if you wish to comment, press *9 to indicate a desire to make a comment. You will be called by the last three digits of your phone number when it is your turn to comment.

The County of El Dorado is committed to ensuring that persons with disabilities are provided the resources to participate in its public meetings. If you require accommodation, please contact Planning Services at 530-621-5355 or via e-mail, planning@edcgov.us.



SOURCE: ESRI 2020

FIGURE 1

Project Location

Creekside Village Specific Plan NOP

DUDEK

0 1,000 2,000 Feet

FIGURE 2
Land Use

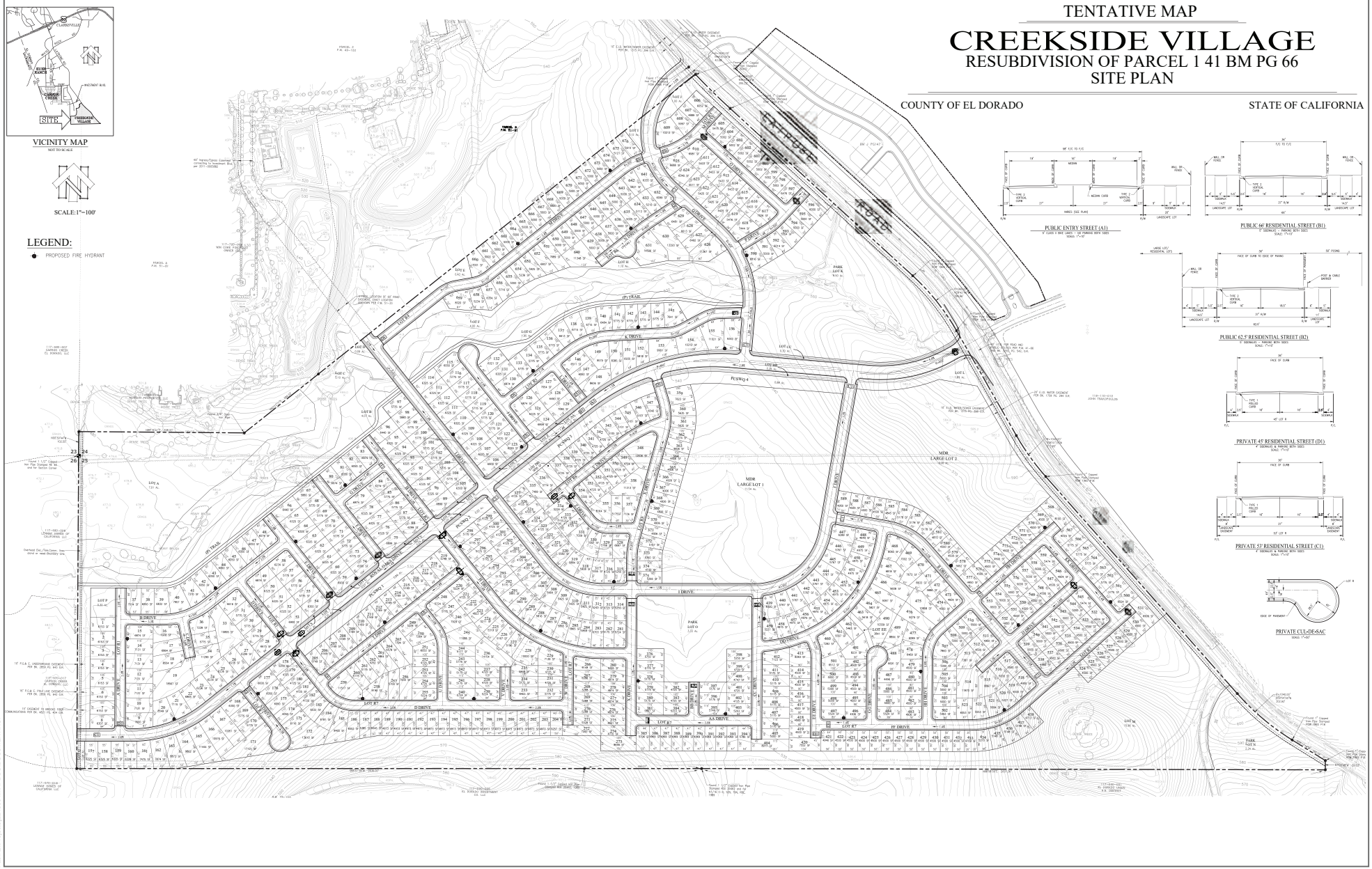


FIGURE 3
Draft Tentative Map

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Gavin Newsom
Governor

November 6, 2020

Ms. Gina Hamilton
County of El Dorado
2850 Fairlane Court
Placerville, CA 95667
creeksidevillagesp@edcgov.us

CREEKSIDE VILLAGE SPECIFIC PLAN EIR – DATED NOVEMBER 2020 (STATE CLEARINGHOUSE NUMBER: 2020110052)

Ms. Hamilton:

The Department of Toxic Substances Control (DTSC) received a Notice of Preparation of an Environmental Impact Report (EIR) for the Creekside Village Specific Plan (Project). The Lead Agency is receiving this notice from DTSC because the Project includes one or more of the following: groundbreaking activities, work in close proximity to a roadway, work in close proximity to mining or suspected mining or former mining activities, presence of site buildings that may require demolition or modifications, importation of backfill soil, and/or work on or in close proximity to an agricultural or former agricultural site.

DTSC recommends that the following issues be evaluated in the EIR. Hazards and Hazardous Materials section:

1. The EIR should acknowledge the potential for historic or future activities on or near the project site to result in the release of hazardous wastes/substances on the project site. In instances in which releases have occurred or may occur, further studies should be carried out to delineate the nature and extent of the contamination, and the potential threat to public health and/or the environment should be evaluated. The EIR should also identify the mechanism(s) to initiate any required investigation and/or remediation and the government agency who will be responsible for providing appropriate regulatory oversight.
2. Refiners in the United States started adding lead compounds to gasoline in the 1920s in order to boost octane levels and improve engine performance. This practice did not officially end until 1992 when lead was banned as a fuel additive in California. Tailpipe emissions from automobiles using leaded gasoline

contained lead and resulted in aerially deposited lead (ADL) being deposited in and along roadways throughout the state. ADL-contaminated soils still exist along roadsides and medians and can also be found underneath some existing road surfaces due to past construction activities. Due to the potential for ADL-contaminated soil DTSC, recommends collecting soil samples for lead analysis prior to performing any intrusive activities for the project described in the EIR.

3. If any sites within the project area or sites located within the vicinity of the project have been used or are suspected of having been used for mining activities, proper investigation for mine waste should be discussed in the EIR. DTSC recommends that any project sites with current and/or former mining operations onsite or in the project site area should be evaluated for mine waste according to DTSC's 1998 Abandoned Mine Land Mines Preliminary Assessment Handbook (https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/11/aml_handbook.pdf).

4. If buildings or other structures are to be demolished on any project sites included in the proposed project, surveys should be conducted for the presence of lead-based paints or products, mercury, asbestos containing materials, and polychlorinated biphenyl caulk. Removal, demolition and disposal of any of the above-mentioned chemicals should be conducted in compliance with California environmental regulations and policies. In addition, sampling near current and/or former buildings should be conducted in accordance with DTSC's 2006 *Interim Guidance Evaluation of School Sites with Potential Contamination from Lead Based Paint, Termiticides, and Electrical Transformers* (https://dtsc.ca.gov/wpcontent/uploads/sites/31/2018/09/Guidance_Lead_Contamination_050118.pdf).

5. If any projects initiated as part of the proposed project require the importation of soil to backfill any excavated areas, proper sampling should be conducted to ensure that the imported soil is free of contamination. DTSC recommends the imported materials be characterized according to *DTSC's 2001 Information Advisory Clean Imported Fill Material* (https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/SMP_FS_Cleanfill-Schools.pdf).

6. If any sites included as part of the proposed project have been used for agricultural, weed abatement or related activities, proper investigation for organochlorinated pesticides should be discussed in the EIR. DTSC recommends the current and former agricultural lands be evaluated in accordance with DTSC's 2008 *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/Ag-Guidance-Rev-3-August-7-2008-2.pdf).

DTSC appreciates the opportunity to comment on the EIR. Should you need any assistance with an environmental investigation, please submit a request for Lead Agency Oversight Application, which can be found at: https://dtsc.ca.gov/wp-

content/uploads/sites/31/2018/09/VCP_App-1460.doc. Additional information regarding voluntary agreements with DTSC can be found at: https://dtsc.ca.gov/brownfields/.

If you have any questions, please contact me at (916) 255-3710 or via email at Gavin.McCreary@dtsc.ca.gov.

Sincerely,

Gavin McCreary
Project Manager
Site Evaluation and Remediation Unit
Site Mitigation and Restoration Program
Department of Toxic Substances Control

cc: (via email)

Governor's Office of Planning and Research
State Clearinghouse
State.Clearinghouse@opr.ca.gov

Mr. Dave Kereazis
Office of Planning & Environmental Analysis
Department of Toxic Substances Control
Dave.Kereazis@dtsc.ca.gov

STATE OF CALIFORNIA — Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

RECEIVED
2020 NOV 10 AM 11:25
PLANNING DEPARTMENT

November 4, 2020

Gina Hamilton
County of El Dorado
2850 Fairlane Court
Placerville, CA 95667

Re: 2020110052, Creekside Village Specific Plan EIR Project, El Dorado County

Dear Ms. Hamilton:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[Vacant]

COMMISSIONER
[Vacant]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   - **a.** A brief description of the project.
   - **b.** The lead agency contact information.
   - **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
   - **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
   - **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   - **a.** Alternatives to the project.
   - **b.** Recommended mitigation measures.
   - **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   - **a.** Type of environmental review necessary.
   - **b.** Significance of the tribal cultural resources.
   - **c.** Significance of the project's impacts on tribal cultural resources.
   - **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   - **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
   - **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

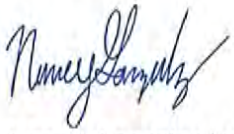
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,



Nancy Gonzalez-Lopez
Cultural Resources Analyst

cc: State Clearinghouse

December 7, 2020

Gina Hamilton
Project Planner
El Dorado County Planning Services
2850 Fairlane Court
Placerville, CA 95667

RE: Notice of Preparation of a Draft Environmental Impact Report for the Creekside Village Specific Plan (General Plan Amendment GPA20-0001, Specific Plan SP20-0001, Rezone Z20-0005, Tentative Map TM20-0002)

Dear Ms. Hamilton:

Thank you for the opportunity to review and provide comments on the Notice of Preparation of a Draft Environmental Impact Report for the Creekside Village Specific Plan. LAFCO's comments for this proposed project are essentially the same as the comments previously submitted to El Dorado County Planning on May 6, 2019 and on October 27, 2020.

As you are aware, APN 117-010-012 is not within the boundaries of the El Dorado Hills Community Services District (EDHCSD); however, the parcel is within EDHCSD's sphere of influence. The proposed project will require LAFCO approval for annexation into EDHCSD prior to receiving park and recreation and/or other services from the District. **Thank you for including annexation into the EDHCSD as part of the project description and analysis within the Draft EIR. In addition, LAFCO respectfully requests that the Draft EIR address the following potential issues:**

Park and Recreation Services: The Draft EIR should address issues associated with the provision of park and recreation services; specifically, the impacts that the proposed planned development would have on existing EDHCSD facilities and the financial implications to the District, as well as other residents of the District. The Draft EIR should include a discussion of existing recreational facilities and services provided by the EDHCSD, including the capacity and location, along with a discussion of any new facilities that will be necessary to serve future residents of the proposed development.

Other Service Impacts: The Draft EIR should also discuss the proposed development's impact on other local service providers, such as fire and emergency services, and water and wastewater services. The Draft EIR should contain a robust discussion on the mitigation measures to minimize any identified impact, including impacts on existing facilities and financial implications to the service providers.

Cumulative Impacts: The Draft EIR needs to consider potential cumulative impacts based on a range of recent, probable and reasonably foreseeable projects, including land use projects recently approved by the County and pending projects slated to move forward.

Regional Housing Needs Assessment Goals: The Draft EIR should identify the income category housing that the proposed development will provide and how that fits into the County's RHNA target goals for housing allocations.

Once again, thank you for giving LAFCO the opportunity to comment on the preparation of the Draft EIR. We look forward to reviewing the Draft EIR once it is prepared and circulated, so that we may have a chance to provide additional comments before the final document is adopted.

If you have any questions, I can be contacted at (530) 295-2707.

Sincerely,

Erica Sanchez
LAFCO Assistant Executive Officer

From: **Natalie Miller** <nmiller@latrobeschool.com>
Date: Wed, Nov 18, 2020 at 1:15 PM
Subject: Re: NOP info for Creekside Village SP (GPA20-0001)
To: Gina Hamilton <gina.hamilton@edcgov.us>

Hi Gina,

Please go ahead and submit those scoping comments for me. Thank you for your help.

Natalie Miller
Superintendent/Principal
Latrobe School District
7900 S. Shingle Road
Shingle Springs, CA 95682
530.677.0260

On Wed, Nov 18, 2020 at 11:13 AM Gina Hamilton <gina.hamilton@edcgov.us> wrote:
Natalie,

Please confirm receipt of this email, just so I know that you've received it.

Thank you for providing an NOP scoping comment for Creekside Village Specific Plan. I have recorded your concerns about the potential increase in students for the Latrobe School District as well as your request for the applicant to include the District in their outreach efforts. Additionally, I have recorded your request to receive notifications of meetings, hearings, etc. in the project folder.

For your information and reference, below is the weblink to the Notice of Preparation (NOP) for the preparation of the Draft Environmental Impact Report (DEIR) for the proposed Creekside Village Specific Plan in El Dorado Hills. This NOP is the official kick-off of the EIR process for the project subject to a 30-day public review and comment period beginning today (November 6th) and ending on December 7th. A formal virtual scoping meeting to obtain comments is scheduled on Thursday, November 19th. Information about the scoping meeting is included in the NOP.

https://www.edcgov.us/Government/planning/public%20notices/Documents/2020/20201106_CreeksideVillageSP_NOP.pdf

Also, as we discussed on the phone, you can access project application materials via the County's online Trakit system available here: https://edc-trk.aspgov.com/etrakit/. On the main page, in the Projects box, click Search. On the next page, in the drop down menu next to Search By, choose project number, and search by GPA20-0001. Click on the project that comes up (there should only be one) and that will take you to a page with links to application materials at the bottom.

Please feel free to call or email me if you have any additional questions.

Best regards,

Gina Hamilton
Senior Planner

County of El Dorado
Planning and Building Department
2850 Fairlane Court, Bldg C
Placerville, CA 95667
Main Line (530) 621-5355
Direct Line (530) 621-5980
Fax (530) 642-0508
gina.hamilton@edcgov.us

California Water Boards

Gavin Newsom
Governor

Jared Blumenfeld
Secretary for
Environmental Protection

Central Valley Regional Water Quality Control Board

11 December 2020

Gina Hamilton
County of El Dorado
Planning and Building Department
2850 Fairlane Court
Placerville, CA 95667

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, CREEKSIDE VILLAGE SPECIFIC PLAN PROJECT (GENERAL PLAN AMENDMENT GPA20-0001, REZONE Z20-0005, SPECIFIC PLAN SP20-0001, TENTATIVE MAP TM20-0002), SCH#2020110052, EL DORADO COUNTY

Pursuant to the State Clearinghouse's 3 November 2020 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Creekside Village Specific Plan Project (General Plan Amendment GPA20-0001, Rezone Z20-0005, Specific Plan SP20-0001, Tentative Map TM20-0002), located in El Dorado County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin

Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention

Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4709 or Greg.Hendricks@waterboards.ca.gov.

Greg Hendricks
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

---------- Forwarded message ---------
From: **Bonni Bergstrom** <bzbergstrom@me.com>
Date: Tue, Dec 1, 2020 at 4:28 PM
Subject: Comment from a Blackstone resident regarding proposed Creekside Villages
To: <gina.hamilton@edcgov.us>

Dear Ms. Hamilton,

As Blacksone residents we wish to register our concern regarding the proposed Creekside Villages development off Latrobe.
1. The current zoning is appropriate for light commercial and R&D utilization. By contrast, the proposed change for 926-unit residential land use represents is a dramatic change. Many homeowners in the Blackstone and Heritage communities purchased their property on the basis of the current low-density non-residential zoning of adjacent lands.
2. The draft EIR should include the impact of other proposed residential, transportation and retail developments. To consider the Creekside Village proposal as a discrete development would ignore the broader environmental issues resulting from multiple revised land use plans.
3. The traffic impact on Latrope can be easily measured and needs to be reflected in the EIR. Additionally, the EIR needs to include the significant pressure that will be exerted on feeder roads. The EIR should include but is not limited to Carson Crossing Road, Golden Foothills loop, White Rocks, Investment, and Blackstone.
4. The draft EIR should consider the impacts of the proposed development on existing infrastructures and adjacent Community Finance Districts. The Heritage and Blackstone communities currently pay heavy Mello-Roos Special Taxes for community infrastructures. Any impact or utilization of those infrastructures should be evaluated and off-sets need to be established.
5. Given the certified ballot initiative to repeal the CSD LLAD #39 special tax (Heritage Village Park), the use of the LLAD funding to finance future park operations for Creekside Village parks should be called into question. If voters approve the initiative, the invalidity of this financing mechanism in other jurisdictions is possible.
6. The three County Traffic Commission's alternative plans for the area should be factored into the proposed Creekside Village development. The Commission's plans did not take into account the proposed residential development. Additionally, since the closest regular elementary school is Brooks Elementary traffic travel on Latrobe and El Dorado Hills Blvd. will be impacted by parents transporting children twice each day.

Thank you,
Bonni Bergstrom and
James Bergstrom
1-925-890-0702

Sent from my iPhone

---------- Forwarded message ---------
From: **Bonni Bergstrom** <bzbergstrom@comcast.net>
Date: Thu, Dec 3, 2020 at 1:20 PM
Subject: RE: Carson Creek Village development concerns--should say: CREEKSIDE VILLAGES
To: <bosone@edcgov.us>, <bostwo@edcgov.us>, <bosthree@edcgov.us>, <bosfour@edcgov.us>, <bosfive@edcgov.us>, <clay.russell@edcgov.us>
Cc: <gina.hamilton@edcgov.us>

Sorry, this email was to be in reference to CREEKSIDE VILLAGES not the Carson Creek Village in preliminary authorization phase.

From: Bonni Bergstrom <bzbergstrom@comcast.net>
Sent: Thursday, December 3, 2020 1:01 PM
To: 'bosone@edcgov.us' <bosone@edcgov.us>; 'bostwo@edcgov.us' <bostwo@edcgov.us>; 'bosthree@edcgov.us' <bosthree@edcgov.us>; 'bosfour@edcgov.us' <bosfour@edcgov.us>; 'bosfive@edcgov.us' <bosfive@edcgov.us>; 'clay.russell@edcgov.us' <clay.russell@edcgov.us>
Cc: 'gina.hamilton@edcgov.us' <gina.hamilton@edcgov.us>
Subject: Carson Creek Village development concerns
Importance: High

Sirs and Madam,

As Blackstone residents we wish to register our concern regarding the proposed Carson Creek Villages development off Latrobe.

1. The current zoning is appropriate for light commercial and R&D utilization. By contrast, the proposed change for 926-unit residential land use represents is a **dramatic change**. Homeowners in the Blackstone and Heritage communities purchased their property on the basis of the current low-density non-residential zoning of adjacent lands.

2. Piece-meal changes to the El Dorado Hills Master Development Plan is not an efficient nor wise method to change and development in our community.
3. The draft EIR should include the impact of other proposed residential, transportation and retail developments. To consider the Creekside Village proposal as a discrete development would ignore the broader environmental issues resulting from multiple revised land use plans.
4. The traffic impact on Latrobe can be easily measured and needs to be reflected in the EIR. Additionally, the EIR needs to include the significant pressure that will be exerted on feeder roads. The EIR should include but is not limited to Carson Crossing Road, Golden Foothills loop, White Rocks, Investment, and Blackstone.
5. The draft EIR should consider the impacts of the proposed development on existing infrastructures and adjacent Community Finance Districts. The Heritage and Blackstone communities currently pay heavy Mello-Roos Special Taxes for community infrastructures. Any impact or utilization of those infrastructures should be evaluated and off-sets need to be established.
6. Given the certified ballot initiative to repeal the CSD LLAD #39 special tax (Heritage Village Park), the use of the LLAD funding to finance future park operations for Creekside Village parks should be called into question. If voters approve the initiative, the invalidity of this financing mechanism in other jurisdictions is possible.
7. The three County Traffic Commission's alternative plans for the area should be factored into the

proposed Creekside Village development. The Commission's plans did not take into account the proposed residential development. Additionally, since the closest regular elementary school is Brooks Elementary traffic travel on Latrobe and El Dorado Hills Blvd. will be impacted by parents transporting children twice each day.

Thank you,
Bonni Bergstrom and
James Bergstrom
1-925-890-0702

---------- Forwarded message ---------
From: **Bob.Hendricks@zoho.com** <bob.hendricks@zoho.com>
Date: Mon, Dec 7, 2020 at 4:11 PM
Subject: Comments pertaining to Creekside Villages EIR
To: <gina.hamilton@edcgov.us>

Ms. Hamilton

I am a homeowner in the Blackstone community and also serve as the President of the Blackstone Homeowners Association. This email pertains to my opposition to the proposed Creekside Village development. Additionally, I also represent 1,750 residents who have signed a petition opposing the Creekside Villages project. The reason for our opposing this development are primarily as follows:

1. This project would rezone Business Park land from commercial and R&D to residential. Many homeowners in our community purchased their property on the basis of the current low density non-residential zoning, in anticipation of commercial development..

2. The draft EIR must consider the impacts of the proposed residential development, along with the proposed Carson Creek Village development, and the significant impacts to traffic on Latrobe and Fwy 50. The developers claim that they believe a significant number of new residents will work within the Business Park, but there simply are not any jobs available in the business park. This is the same argument being used by the Carson Creek Village development. Combined, these two developments would create between 3,000-5,000 new residents, the majority of which would likely be commuter residents that drive into Sacramento, further clogging our already congested roads. Additionally, this will increase the amount of traffic on feeder roads, such as White Rock Rd, which parallels the Folsom Ranch development of 10,000 homes!

3. The significant increase in residences between Creekside Villages and Carson Creek Village will strain all of our local elementary schools. Many Blackstone residents children are scattered between Brooks, Oak Meadow, and Valley View elementary schools.

The petition was previously provided to the Board of Supervisors, but has since had more than 1,000 additional signatures, with the current number of El Dorado Hills residents who have signed the petition at 1,750 as of this date.

I will be providing the signatures to this petition to all members of the Board of Supervisors and the El Dorado County Chief Administrative Officer (CAO).

Please confirm receipt of this email so that I may be ensured that my comments have been included with the EIR.

Regards,

Bob Hendricks

El Dorado Hills Resident

---------- Forwarded message ---------
From: **Bill Mayer** <billfishboy@gmail.com>
Date: Thu, Dec 3, 2020 at 4:10 PM
Subject: [CreeksideVillageSP] Notice of Preparation Response to Creekside Village Specific Plan EIR
To: <creeksidevillagesp@edcgov.us>

Dear Ms. Hamilton:
The proposed project is seeking a General Plan Amendment and rezone from Research and Development to a Adopted Plan and Specific Plan allowing for up to 926 residential units.The current land use designation would accommodate research and development type uses consistent with the El Dorado Hills Business Park. With the change in land use, these business park uses would no longer be planned.

In the not too distant past, the County of El Dorado meticulously prepared a Comprehensive General Plan with substantial public involvement and review that established a blueprint for the long range planning objectives of the County and local communities, including El Dorado Hills. Land uses that were ultimately determined went through detailed analysis to ensure that all elements of the General Plan were compatible with one another and comprehensive as needed to achieve a specific land use balance tailored to local, community and regional goals. Land use changes subsequent to the adoption of the General Plan change the land use balance mutually agreed to by the community and it's many constituents. Such changes have a ripple effect throughout the General Plan altering the well thought out, comprehensive nature of the General Plan process. Everything changes, and the core goals and objectives brought out by both the community participation and County Administration processes are potentially upended.

It is incumbent upon the County and their environmental consultant to exhaustively study these changes in land use and the consequential ripple effect through the comprehensive plan and it's elements to determine project effects. The land use changes must be reviewed by examining the loss of business park uses, including the loss of tax base and indirect economic consequences. Conversely, the analysis should also examine the addition of the property tax base created by the Specific Plan uses to determine the effect on County revenues. An analysis should be conducted on the need for additional residential uses in contrast to the loss of business park uses. Is there sufficient demand for residential uses? Did the demand for business park uses, in the long term General Plan horizon, sufficiently decline such as to justify the change.

How will these land use changes affect the following:
- Traffic: Changes to peak hour and daily traffic conditions and the resultant effect on roadway and intersection capacity. Will the levels of service increase or decrease on the surrounding local and regional roads and highways? Is there sufficient rights-of-way available to mitigate potentially significant impacts?
- Air Quality: Changes to carbon monoxide levels along local roadways will occur, particularly affecting the health of more sensitive senior adults that reside in this part of the County. Will the overall air quality levels exceed State and federal standards as a result of the land use change. Will the change from employment generating uses to non-employment uses adversely impact the County and State air quality goals identified in adopted regional air quality plans?
- Noise: Changes in land use trigger increases or decreases in traffic, and thus noise levels along roadways. Will County noise standards be exceeded? Will sound barriers be required? Is

there sufficient right-of-way available to mitigate noise exceedances? Will noise barriers have a negative visual impact on adjacent neighbors and land uses?
- Population/Jobs/Housing: How will the increase in population from residential uses affect the jobs to housing ratio established for local and regional planning?
- Public Services: How will the land use changes impact county services, including public works demand and infrastructure maintenance, demand for parks and recreation services, school capacity and school facilities? How will law enforcement and fire protection services be affected with the increase in residential population, as offset by the decrease in business park uses?
- Water/Wastewater: The demand for potable water supply should be examined in light of current allocations and long term need given available infrastructure and supply. Existing wastewater services provided by EID treatment plants and conveyance infrastructure must be evaluated to determine the agency's ability to serve. Sewerage system capacity should be evaluated to determine expansion needs and space requirements.
- Climate Change: Land use changes will alter the equivalent carbon levels potentially increasing or decreasing carbon emissions in the atmosphere. Climate change (warming) may be incrementally and adversely affecting global temperatures, contributing to an increase in wildfires, a decrease in snowpack, and an increase in flooding. These potential effects must be studied.

Thank you for the opportunity to comment on the NOP.
Bill Mayer

---------- Forwarded message ---------
From: **CHRISTOPHER BEACH** <chrisbeach55@comcast.net>
Date: Wed, Dec 2, 2020 at 9:24 AM
Subject: [CreeksideVillageSP] Creekside Village NOP Comment
To: creeksidevillagesp@edcgov.us <creeksidevillagesp@edcgov.us>

You can add my voice to the others who are opposing the proposed project at Creekside Village. In no particular order, here are the reasons why:

The county is seeking to change the general plan and rezoning commercial property in the Business Park to residential. The current zoning is appropriate for light commercial and R&D utilization. By contrast, the proposed change (for 926-unit residential land use) is a drastic change. Many homeowners, including my wife and me, in the Blackstone and Heritage communities purchased their property on the basis of the current low-density, non-residential zoning of adjacent lands.

The proposal would have an adverse impact on our local elementary schools, which are beyond capacity now.

This additional construction will have obvious traffic implications; not just Latrobe, which will impact Blackstone Residents, but also neighboring communities that rely on White Rock Rd. and every community that will rely on an already overcrowded freeway commute. The traffic impact on Latrobe can be easily measured and needs to be reflected in the EIR. Additionally, the EIR needs to include the significant pressure that will be exerted on feeder roads. The EIR should include but is not limited to Carson Crossing Road, Golden Foothills loop, White Rock, Investment, and Blackstone.

The draft EIR should include the impact of other proposed residential, transportation and retail developments. To consider the Creekside Village proposal as a discrete development would ignore the broader environmental issues resulting from multiple revised land-use plans.

The draft EIR should consider the impacts of the proposed development on existing infrastructure and adjacent Community Finance Districts. The Heritage and Blackstone communities currently pay considerable Mello-Roos Special Taxes for community infrastructure. Any impact or utilization of such infrastructure should be evaluated and offsets should be established.

The various County Traffic Commission's alternative plans for the area should be factored into the proposed Creekside Village development. The Commission's plans did not take into account the proposed residential development.

To summarize: We strenuously object to the Creekside Village project as currently proposed.

Sincerely,

Christopher Beach
5477 Aspen Meadows Drive
El Dorado Hills, CA. 95762

---------- Forwarded message ---------
From: **Douglas Lash** <douglas.lash@gmail.com>
Date: Mon, Nov 30, 2020 at 3:18 PM
Subject: [CreeksideVillageSP] Creekside Village NOP Comment
To: <creeksidevillagesp@edcgov.us>

Hello,

I live in Blackstone and have a couple comments regarding the Creekside Village Development. My comments regard an increase in traffic and noise that would be generated by the new development.

Regarding traffic, I would like to see the roadway expanded to four lanes through and beyond the proposed intersection at Latrobe and Royal Oaks Drive. I live at 1023 Gemwood Way and the back fence of my property provides an excellent view of Latrobe where two lanes combine into one. Drivers tend to accelerate through the area at Clubhouse drive to get ahead of slower traffic. This has caused accidents in the past and I'm concerned that with the increased traffic those accidents will occur more frequently.

I am also concerned about the Latrobe Road and Larkstone Place intersection. It is difficult to enter Latrobe road at peak traffic hours as there is not enough roadway to reach 55 mph and enter safely onto Latrobe road from Larkestone Place. If the speed was dropped and the 'on ramp' lengthened it could help mitigate these issues. I'm not asking for a stop light as I think that would be overkill.

Traffic noise is already an issue for me and there is no form of noise barrier between my back yard and Latrobe Road. I am very concerned about the noise the additional traffic would generate.

Thank you for your time and consideration.

Best Regards,
Doug Lash
(707)293-3947

From: **Ginger Cockcroft** <ginger.croft@comcast.net>
Date: Fri, Nov 20, 2020 at 6:12 PM
Subject: [CreeksideVillageSP] Comment regarding proposed creek side village development
To: <creeksidevillagesp@edcgov.us>

Hello,

I listened to the scope meeting on the 19th for the above proposed development and read the document posted on the EDC web page. I noted that the document listed noise as one of the elements that is within the scope of the EIR, so I believe it is pertinent to inquire about the noise impact generated by increased traffic along major roads that border residential neighborhoods.

I live in a 15 year old development called Four Seasons which is accessed by White Rock Road and Carson Crossing. During the web meeting it was mentioned that Latrobe Road would be widened and have additional signals to handle the increased traffic. White Rock Road is commonly used by drivers coming from Latrobe to reach Folsom and bypass the bottleneck at highway 50 and Latrobe, and as a result, should be including when weighing in on traffic issues.

There is an aging brick wall between White Rock Road and Four Seasons that was built over 15 years ago. In some places this “wall” is only six feet high and has gaps in it. Many of us in Four Seasons believe this wall is inadequate to provide sound abatement with the increase in traffic coming the massive development of the business park, the proposed Carson Crossing off ramp from highway 50, and the connector to Silva Valley Parkway all the way to Elk Grove.

I am requesting that any development plans should include an engineering study to determine what structural changes need to be made to the wall on the south side of White Rock Road to ensure that noise pollution does not degrade our quality of life.

Regards,

Dan and Ginger Cockcroft

---------- Forwarded message ---------
From: **Jen A** <aldredj9@gmail.com>
Date: Thu, Dec 3, 2020 at 10:08 AM
Subject: [CreeksideVillageSP] Carson Creek Village opposal
To: <creeksidevillagesp@edcgov.us>

I **adamantly oppose** the rezoning of commercial land to residential for Carson Creek Village.

1. The current zoning is appropriate for light commercial and R&D utilization. By contrast, the proposed change for 926-unit residential land use represents a dramatic change. Many homeowners in the Blackstone and Heritage communities purchased their property on the basis of the current low-density non-residential zoning of adjacent lands.
2. The draft EIR should include the impact of other proposed residential, transportation and retail developments. To consider the Creekside Village proposal as a discrete development would ignore the broader environmental issues resulting from multiple revised land use plans.
3. The traffic impact on Latrope can be easily measured and needs to be reflected in the EIR. Additionally, the EIR needs to include the significant pressure that will be exerted on feeder roads. The EIR should include but is not limited to Carson Crossing Road, Golden Foothills loop, White Rocks, Investment, and Blackstone.
4. The draft EIR should consider the impacts of the proposed development on existing infrastructures and adjacent Community Finance Districts. The Heritage and Blackstone communities currently pay heavy Mello-Roos Special Taxes for community infrastructures. Any impact or utilization of those infrastructures should be evaluated and off-sets need to be established.
5. Given the certified ballot initiative to repeal the CSD LLAD #39 special tax (Heritage Village Park), the use of the LLAD funding to finance future park operations for Creekside Village parks should be called into question. If voters approve the initiative, the invalidity of this financing mechanism in other jurisdictions is possible.
6. The three County Traffic Commission's alternative plans for the area should be factored into the proposed Creekside Village development. The Commission's plans did not take into account the proposed residential development.

---------- Forwarded message ---------
From: **Karen Brown** <kbrown78@gmail.com>
Date: Tue, Dec 1, 2020 at 10:21 PM
Subject: [CreeksideVillageSP] Please oppose the rezoning for Creekside Villages
To: <creeksidevillagesp@edcgov.us>

To Whom it May Concern:

Please oppose the rezoning of the parcel in the El Dorado Hills Business Park for use as a housing development. The vision for that area of the "town" was that it would be for commerce and business purposes. We are just seeing the beginning of what could be a thriving business area. El Dorado Hills and nearby residents deserve to work where we live. That area has so much potential to be used for purposes other than another housing development. I am concerned with the county taking away thoughtful long-term growth plans and changing them with a rezone.

I am also concerned about the traffic that would come with another housing development. The roads already get very backed up, especially through the one lane underpass from Town Center to the rest of El Dorado Hills. How would our roads and neighborhoods and available services handle another nearly 1000 homes?

While our district faces declining enrollment in some schools, the schools closest to this new development all face large class sizes and often lack space in grade levels. If the development does not include a new elementary school, and a clear plan to actually open that elementary school (unlike what happened with Valley View), the families in that new development could be forced to drive to Cameron Park or Shingle Springs for school.

Thank you.

Karen Brown
Resident since 2006

---------- Forwarded message ---------
From: **Krishelle Torres** <ktorres4@gmail.com>
Date: Tue, Dec 1, 2020 at 8:08 PM
Subject: Creekside Village opposition to stopping the proposed development
To: <creeksidevillagesp@edcgov.us>, <gina.hamilton@edcgov.us>, <bosone@edcgov.us>, <bostwo@edcgov.us>, <bosthree@edcgov.us>, <bosfour@edcgov.us>, <bosfive@edcgov.us>

This email opposes the proposed Creekside Village development based on the impacts to:

1) the county changing the general plan and rezoning commercial property in the Business Park to residential

2) the impact to our local schools, which elementary schools are already at or beyond capacity now and EDH students have to go to high schools in different towns when land was purchased in EDH to build.

3) the obvious traffic implications. The traffic implications are not just Latrobe, which will impact Blackstone/Heritage Residents, but also neighboring communities that rely on White Rock Rd. and every community that will rely on an already overcrowded freeway commute. The “walk to work” opinion stated in a meeting is not accurate since there are few companies in the business park and many of us have to find work near Sacramento and keeping it zoned non residential actually can add in allowing for businesses to build and hire current EDH local residents.

4. When we purchased our home we were informed it was zoned non residential and should stay that way. My family moved away from high density “affordable housing” for various reasons including traffic, crime, overcrowding, low income and vandalism. We would not have purchased our home in Blackstone if we knew high density would be built.

Regards,
Krishelle Haavik
Blackstone- El Dorado Hills Home Owner and Resident

---------- Forwarded message ---------
From: **Robert Williams** <bobw1800@gmail.com>
Date: Mon, Nov 30, 2020 at 4:46 PM
Subject: Comment for Draft EIR Creekside Village Specific Plan
To: <gina.hamilton@edcgov.us>

Gina

As a preface, I am a homeowner in the age restricted Heritage Village that is near to the proposed Creekside Village development. I offer the following comments in opposition based on information and belief.

1, The current zoning is appropriate for commercial and R&D utilization. However, the proposed change for 926-unit residential land use represents a dramatic change. Many homeowners in the Blackstone and Heritage communities purchased their property on the basis of the current low density non-residential zoning of adjacent lands.

2. The draft EIR should consider the impact of other proposed residential, transportation and retail developments as direct and impacting factors. To consider the Creekside Village proposal as a discrete development would ignore the broader environmental issues resulting from revised land use.

3. The additional Traffic impact on Latrope can be easily measured, However, the pressure that will be exerted on feeder roads will be significant. The EIR should include but is not limited to Carson Crossing Road, Golden Foothills loop, White Rocks, Investment, and Blackstone.

4. The draft EIR should consider the impacts of the proposed development on existing infrastructures. The Heritage and Blackstone communities currently pay heavy Mello-Roos Special Taxes for finance their respective community infrastructures. Any impact or utilization of those infrastructures should be evaluated and off-sets be established.

5. Given the certified ballot initiative to repeal the CSD LLAD #39 special tax (Heritage Village Park), the use of the LLAD funding to finance future park operations for Creekside Village parks should be called into question. If voters approve the initiative, the invalidity of this financing mechanism in other jurisdictions is possible.

6. The three Traffic Commission's alternative plans for the R&D park should be factored into the proposed Creekside Village development. This residential development was not considered and should be factored into a comprehensive plan before approval.

Respectfully offered

Bob

Robert Williams
6512 Primavera LN El Dorado Hills, CA 95762

From: **Sean Patterson** <drseanpatterson@gmail.com>
Date: Sun, Nov 15, 2020 at 10:40 AM
Subject: [CreeksideVillageSP] Creekside Village NOP Comment
To: <creeksidevillagesp@edcgov.us>

I'd like to state my opposition to building on this open area (which houses natural animals and buffers noise). I also feel it will be visually unappealing and there is already an increase in severely damaged vehicles in auto accidents. I routinely observe people trying to walk and bike down Latrobe Rd. which is very unsafe (this needs remedy, not more cars & homes). Thank you

My personal address is

2608 Wagner Pl, El Dorado Hills, CA 95762

--
Dr. Sean Patterson, D.C.
Body Restore
916-933-0974 fax 916-974-3436
3907 Park Drive Suite 250 El Dorado Hills, CA 95762
2224 Loma Vista Dr. Sacramento, CA 95825
www.DrPatterson.com

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---------- Forwarded message ---------
From: **'Sierra' via PL-Creekside-Village-Specific-Plan-m** <creeksidevillagesp@edcgov.us>
Date: Wed, Dec 2, 2020 at 8:55 PM
Subject: [CreeksideVillageSP] Please don't build
To: <creeksidevillagesp@edcgov.us>

Please do not build more houses at Creekside Villages. This will lead to further overcrowding of local school and increased traffic congestion
Thank you
Sierra Robert

---------- Forwarded message ---------
From: **Suzan Webb** <suze.webb@gmail.com>
Date: Tue, Dec 1, 2020 at 9:26 AM
Subject: Proposed Creekside village in El Dorado Hills
To: <planning@edcgov.us>

Hello,

I am writing in opposition as a person who lives directly opposite this proposed development. One of the very reasons we purchased in this area was because there was commercial zoned and non residential across the street from an already very busy Latrobe Road, which would assist in keeping down the traffic concerns.
Other areas that the planning committee should take into consideration:

Folsom is in the process of putting in 10,000 new homes with the infrastructure in place to support them. Why would EDH want to compete with something literally 4 miles down the road and more desirable when they have so many homes already in the planning stage?
Additionally, the County changed the general plan and rezoned the commercial property in the Business Park to residential without citizen knowledge. Local elementary schools which are beyond capacity. Traffic implications on Latrobe, an already deadly street, which will impact all of El Dorado Hills and Town Center, but also neighboring communities that rely on White Rock Rd creating obstruction merging onto Highway 50.
Also, the proposed 19,000 square foot Tractor Supply retail outlet is a concern with the additional big box store retail traffic it would bring to El Dorado Hills.

Suzan Webb

408 393 3560
suze.webb@gmail.com

From: **Todd** <ToddBollman@msn.com>
Date: Wed, Nov 18, 2020 at 10:25 AM
Subject: [CreeksideVillageSP] Creekside Village NOP Comment
To: creeksidevillagesp@edcgov.us <creeksidevillagesp@edcgov.us>
Cc: Todd <toddbollman@msn.com>

Although I understand that some development will occur, this project seems too dense for the area. And, more importantly, no matter the size of the project, Latrobe Road must be widened to accommodate the traffic generated by the project. Secondly, as part of the improvements to Latrobe Road, there needs to be a pedestrian walkway along the road from the project and up to White Rock Road. There is currently no safe passage for pedestrians along Latrobe from Blackstone to White Rock. Pedestrians currently must walk in the roadway in order to get to and from White Rock while walking along Latrobe. With the addition of more people creating more traffic, walking on the road is not safe nor acceptable.

Please add sidewalks along with curbs and gutters from the Creekside Village project to White Rock Road.

Thank you,

Todd Bollman
141 Lockwood Ct
El Dorado Hills, CA 95762

949-300-7655
toddbollman@msn.com

---------- Forwarded message ---------
From: **'TERI CHATFIELD' via PL-Creekside-Village-Specific-Plan-m** <creeksidevillagesp@edcgov.us>
Date: Mon, Dec 7, 2020 at 12:12 PM
Subject: [CreeksideVillageSP] Creekside village
To: <creeksidevillagesp@edcgov.us>
Cc: Teri Chatfield <terichatfield@aol.com>, George Chatfield <georgechatfield@aol.com>

I am extremely opposed to this project going forward.
They are already doing so much building close to this area. They should not rezone the Business park. Wait and see after all the other planned building is completed and see the impact it has before rezoning for any new developments. The residents overwhelming oppose the Creekside Project. The have already added houses to Blackstone and Heritage. The apartments in Town Center aren't even completed yet but a stoplight has already been added anticipating the extra traffic that will come. There are thousands of houses in Folsom that affect white rock road, Latrobe and the freeway entrances and exits. There is also another subdivision above Blackstone to be built. Please don't take the special place that El Dorado Hills is and turn it into a mass density city. You will be destroying it.

Traffic will become unbearable. We do not have the proper infrastructure for this project. White rock turns into a one lane road in each direction, Latrobe also turns into one lane in each direction and Valley View Parkway is the same. It would be incredibly dangerous with all the fires California has had the last few years. If we have a fire it would be impossible to evacuate with the number of cars on the road. There are many elderly people who live in this area and people with disabilities. Many people will die in the case of any natural disaster here. There simply will be too many people who will be trapped because too many cars on too few roads to evacuate.

I attended the meeting in November 2019. This Creekside project was described as a walking and biking community. If you lived here you would know that is a straight out lie. The sidewalk on Latrobe dead ends about 1/2 mile from the project. No one walks or bikes on Latrobe. Going through Blackstone would impact the quality of life for the residents and the added cars, bikes and Pedestrians from Creekside would make walking and driving to the school dangerous. Because our school is a charter we already have extra hundreds of cars a day going through Blackstone. Again our streets in Blackstone have one lane in each direction.

It was said that all people would work in the business park. Another lie. No one knows where the people will work but with 900 units being built you will have 1800 more cars on the road everyday. Extremely dangerous.

Our schools here are already full. The on-ramps to the freeway are already backed up before Covid and will be after Covid.

Where will the children who live in the proposed Creekside go to school. The elementary, middle schools, and high schools are already overcrowded and the kids who already live here have to be bused or driven away from our community.

We have learned in the last year that people who live in small areas with a large population are the places where Covid has caused the most deaths. Mass density is not working in California right now. Do you want to make El Dorado Hills into the next big city mass density experiment? I know I don't. Don't ruin the quality of life for the citizens who live here already. Please!

Teri, George, and Brian Chatfield
2000 Keystone Dr
El Dorado Hills, CA
95762
650-740-9763

Sent from my iPhone

ATKINSON, ANDELSON, LOYA, RUUD & ROMO

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OUR FILE NUMBER
005945.00009
30590616.1

December 7, 2020

VIA EMAIL: CREEKSIDEVILLAGESP@EDCGOV.US AND VIA U.S. MAIL

Gina Hamilton, Senior Planner
County of El Dorado Planning Division
2850 Fairlane Court
Placerville, CA 95667
Email: creeksidevillagesp@edcgov.us

Re: Comments from Latrobe School District Re Notice of Preparation for Creekside Villages

Dear Ms. Hamilton:

Please be advised the undersigned represents the Latrobe School District ("District") in connection with the above-referenced matter.

By this letter, the District provides its comments in connection with the Notice of Preparation for the Creekside Villages Project (the "Project").

The District has conducted an initial meeting with the Project developer, Winn Communities, to discuss the Project's impact on the District. Notwithstanding this, the District provides the following comments so that it may preserve and protect its administrative and legal remedies under the provisions of the California Environmental Quality Act ("CEQA").

Given the distance of the Project from the District's nearest school sites, coupled with the scarcity and rural character of available roads, it is imperative that traffic impacts be sufficiently analyzed and impacts flowing from travel to and from District schools to the Project be specifically accounted for. Traffic impacts should be analyzed to include (but not necessarily be limited to) the following:

1) The direct, indirect, and cumulative impacts the Project will have on the circulation and traffic patterns of the Project in the event the District needs to transport students to other schools within the District to address the potentially overcrowded conditions of its schools, including:

a) the Project-specific and cumulative impacts of the required bussing that would need to be implemented by the District;
b) the Project-specific and cumulative impacts of the required private vehicle transportation of students to address the overcrowded conditions of schools and the need to transport these students to other schools within the District's boundaries;
c) the Project-specific and cumulative impacts of the added required private and public vehicles of the teachers and employees of the District that would be required as a direct result of the students generated by the Project;
d) the Project-specific and cumulative impacts of added pedestrian movements and the safety of students walking to and from schools and/or bus stop or other public transportation locations; and
e) the Project-specific and cumulative impacts to air quality that will result from the transportation impacts identified hereinabove.

In addition to traffic-related impacts, the direct, indirect, and cumulative impacts the Project will have on increased utility usage (including gas, electricity, water, sewage, and waste water treatment, etc.) at District schools where students generated as a direct result of the Project will be housed should be analyzed as should the direct, indirect, and cumulative impacts the Project will have on the need for public services at District schools that will ultimately house the students generated by the Project.

Furthermore, in order for the District to accommodate the students from the Project which are not accommodated by mitigation measures, the District may have to modify attendance area boundaries, load classrooms with students in excess of District and State standards, and house students in potentially inadequate and inappropriate school facilities throughout the District attendance area. This effect on the overall operation and administration of the District, its students, employees, and constituents affected by such actions must be addressed since it will undoubtedly result in physical, social, financial, and psychological impacts on the students, employees, and constituents of the District.

We look forward to reviewing the lead agency's response to the foregoing. Please feel free to contact the undersigned with any questions or concerns regarding any of the foregoing.

Very truly yours,

ATKINSON, ANDELSON, LOYA, RUUD & ROMO

David A. Soldani

David A. Soldani

DAS:las

cc: Natalie Miller, LUESD Superintendent

Question Report				
Report Gen	11/24/2020 10:10			
Topic	Webinar ID	Actual Start Time	Actual Duration (mi	# Question
Creekside V	924 1489 7860		93	22
Question Details				
#	Question	Asker Name	Asker Email	Answer(s)
1	With 900+ homes and only two entrances to Latrobe, are you planning to put in stop lights at those intersections?	Bob Hendricks	robert.hendricks@f	live answered
2	Where will kids from the subdivision be zoned for school (elementary and high school)?	Nicole	nlpinjuv@yahoo.co	live answered
3	Will these 900+ homes feed into William Brooks Elementary? If so, has it been confirmed that they have capacity?	Ginny Walker	ginnylynn59@gmail	live answered
4	Can we get that information before written comments are due?	Nicole	nlpinjuv@yahoo.co	live answered
5	What are the average lot sizes? Are these Zero Lot line homes? When you say that the homes you hope to build are more affordable, are these going to be low income housing?	Bob Hendricks	robert.hendricks@f	live answered
6	Has there been a preliminary traffic study determining the impact on Latrobe road south of the development?	cedra	cedratm@yahoo.co	live answered
7	The planned subdivision is located within the Latrobe School District. How will the developer work with the district to mitigate the impact to the district?	Anonymous Attendee		live answered
8	There was mention of in-law units or ADUs in the plans. Can you please expand on that? If there are 900+ properties, will there be more than one living unit on some of those -- thus there would be more than 900+ families potentially?	Ginny Walker	ginnylynn59@gmail	live answered
9	Can you address the project's traffic volumes as a residential revelopment in comparision with the existing zoning for R&D and Industrial Zoning?	John Davey	jmdavey67@gmail.(	live answered
10	is latrobe road going to be widened	graziano	jgja4@yahoo.com	live answered
11	What is an "accessory dwelling" unit" and a "junior accessory dweling unit" as listed in your project description? Can you provide specifics on what these are?	Bob Hendricks	robert.hendricks@f	live answered

12	What is the specific scope of the analysis of impacts to the local educational agency -- Latrobe School District in this case -- for traffic, student generation, etc., proposed for this project?	david soldani	dsoldani@aalrr.com	live answered
13	is there only one buider	graziano	jgja4@yahoo.com	live answered
14	What is the timeline for the development?	cedra	cedratm@yahoo.co	live answered
15	Can you confirm that these homes are only single family units, and will not include multi-family units ie. duplex, apartment type etc	Bob Hendricks	robert.hendricks@f	live answered
16	Would there be a future option to convert the medium density products to an alternate lower density - perhaps to a similar density as the single family Low Density products, if the market supports that in future years? Esentially lowering the overall density of the Plan Area?	John Davey	jmdavey67@gmail.(	live answered
17	What is the impact on White Rock Road?	Dan Cockcroft	dan.croft@comcast	live answered
19	Have there been consideration to schools and high schools with more people when. We can not have all EDH resident teens at oak ridge already? Where will they go? New schools?	Brielle Black	sakika3@hotmail.cc	live answered
22	Has a sales price-range been determined for these units? You mention that they are "market-rate" housing, but also that these units are for starter families. Market rate in the area starts at $500k, which is not an affordable starter home for young families. Also why is this project being planned when right over the hill in Folsom they are building 10,000 new homes	Bob Hendricks	robert.hendricks@f	live answered

PLANNING AND BUILDING DEPARTMENT

PLANNING DIVISION

www.edcgov.us/Government/Planning

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bldgdept@edcgov.us
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(530) 621-5355 / (530) 642-0508 Fax
planning@edcgov.us

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924 B Emerald Bay Rd
South Lake Tahoe, CA 96150
(530) 573-3330
(530) 542-9082 Fax

NOTICE OF SECOND SCOPING MEETING AND EARLY CONSULTATION WITH PUBLIC FOR DRAFT ENVIRONMENTAL IMPACT REPORT

On November 6, 2020, El Dorado County as lead agency issued a Notice of Preparation for the **Creekside Village Specific Plan Project** (General Plan Amendment GPA20-0001, Rezone Z20-0005, Specific Plan SP20-0001, Tentative Map TM20-0002) ("Project") (State Clearinghouse No. 2020110052) in the El Dorado Hills area. A scoping meeting was held pursuant to the California Environmental Quality Act ("CEQA") Guidelines (14 California Code of Regulations) section 15082 on November 19, 2020. A thirty-day comment period was provided consistent with the requirements of CEQA and environmental review for the Project commenced. In October 2021, the applicant requested the Project application be placed on hold and, on July 19, 2023, the applicant requested El Dorado County to resume processing the application. To avoid confusion and comply with CEQA Guidelines section 15082(e) requiring that a single State Clearinghouse identification number be used for all environmental documents on a project, El Dorado County will continue to prepare the Draft Environmental Impact Report for the Project with State Clearinghouse identification number 2020110052.

CEQA Guidelines section 15083 provides that a lead agency may engage in early consultation with the public and "[t]his early consultation may be called scoping." The applicant has also requested early consultation with the public to receive feedback from the community. Therefore, a second scoping meeting and early consultation with the public will be held on **Tuesday, September 26, 2023,** from 6:00 to 7:30 PM at the El Dorado Hills Fire Station 85 Conference Room, 1050 Wilson Boulevard in El Dorado Hills. In addition to attending in person, attendees may also observe and participate remotely with the following link: https://us06web.zoom.us/j/85750667220. Attendees may also participate and join by phone: 1-530-621-7603 or 1-530-621-7610 (Webinar ID: 857 5066 7220).

The previously issued Notice of Preparation, including a description of the Project, maps showing the location of the Project south of Highway 50, west of Latrobe Road, and south of Investment Boulevard in the El Dorado Hills area (APN 117-010-032 and a portion of APN 117-010-031; previously numbered APN 117-010-012), and probable environmental effects of the Project, is available at: https://www.edcgov.us/planning. The project applicant proposes to develop a 918-unit residential community located on an approximately 208-acre site. The Project remains consistent with the description in the Notice of Preparation with minor revisions, including

the addition of an approximately 1.8-acre neighborhood commercial area in response to requests from the community to add a small neighborhood commercial component and the removal of 8 proposed units. The project would include 115.8 acres of single-family low-density residential development, 20.8 acres of single-family medium-density residential development, 13.6 acres of parks, 44.8 acres of open space preserves and buffers, 1.8 acre of neighborhood commercial, and 11.1 acres of roadways.

At the second scoping meeting and early public consultation, El Dorado County will receive verbal comments regarding the Project and scope and content of the Draft Environmental Impact Report and answer general questions regarding the environmental process. Written comments may also be provided no later than 5:00 PM on Thursday, October 12, 2023, and should include "Creekside Village NOP Comment" in the subject line. Written comments may be sent to:

Anna Leanza, Senior Planner
County of El Dorado Planning Division
2850 Fairlane Court
Placerville, CA 95667
Email: creeksidevillagesp@edcgov.us

El Dorado County is committed to ensuring that persons with disabilities are provided the resources to participate in its public meetings. If you require accommodation, please contact Planning Services at 530-621-5355 or via e-mail, planning@edcgov.us.

El Dorado County
Air Quality Management District

330 Fair Lane, Placerville Ca 95667
Tel. 530.621.7501 Fax 530.295.2774
www.edcgov.us/airqualitymanagement

Dave Johnston
Air Pollution Control Officer

October 2, 2023

Anna Leanza, Senior County Planner
El Dorado County Planning Services
2850 Fairlane Court
Placerville, CA 95667

Subject: GPA20-0001/SP20-0001/Z20-0005/TM20-0002 Creekside Village – AQMD Comment

Dear Ms. Leanza:

The El Dorado County Air Quality Management District (AQMD) has reviewed the General Plan Amendment request for the development of 676 single-family dwelling units (low and medium density); 14.3 acres of parks and 46.3 acres of open space with walking trails, bike paths, and neighborhood parks; a community center; and two (2) unparcelled large lots for future development of 250 single family homes (total of 926 homes). The property, identified by Assessor's Parcel Number 117-010-012, consists of 207.91 acres, and is located on the west side of Latrobe Road, approximately 895 feet south of the intersection with Investment Boulevard, in the El Dorado Hills area,

Air Quality/GHG Analysis is required for the proposed development:

The western portion of El Dorado County (where the project is located) is in non-attainment of the state Ambient Air Quality Standards (AAQS) for Particulate Matter 10 micrometers (PM10), and the federal AAQS for PM2.5 (2.5 micrometers) in size. Additionally, the county's western portion is in non-attainment of the 1-hour and 8-hour state AAQS for ozone and of the 8-hour federal AAQS for ozone. The two ozone precursor pollutants most responsible for ozone generated by this project are Volatile Organic Compounds (VOC, also known as Reactive Organic Gases or ROG) and Nitrogen Oxides (NOx).

An Air Quality and Greenhouse Gas (GHG) Analysis is required for adequate environmental review of the proposed project. AQMD recommends the use of the California Emissions Estimator Model (CalEEMod), which can be downloaded for free at www.caleemod.com. This will compute mass emissions of criteria pollutants (NOx, ROG, SOx, PM & CO) and GHG (in CO2 equivalents) from both construction and operation of the project. Someone knowledgeable in all aspects of the project, such as construction phasing, materials usage, etc., should run the model and modify the defaults as appropriate, assuring that notes are included about any changes to defaults as the program requires.

AQMD's Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts under the California Environmental Quality Act, February 2002 ("CEQA Guide") should be used to assess criteria pollutant emissions impacts and can be found here: https://www.edcgov.us/Government/AirQualityManagement/pages/Guide_to_Air_Quality_Assessment.aspx

Additionally, the following standard conditions may apply to the project:

- Fugitive Dust: As we understand the project, there will be no grading or construction necessary. Please be advised that a Fugitive Dust Mitigation Plan (FDP) Application with appropriate fees shall be submitted to and approved by the EDCAQMD prior to start of project construction if during the course of the project a Grading Permit is required from the Building Department, Dust control measures shall comply with the requirements of AQMD Rule 223, Fugitive Dust – General Requirements and Rule 223.1 – Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities and Trackout Prevention.

- Open Burning: Burning of waste vegetation that results from "Land Development Clearing" must be permitted through the AQMD. Only dry vegetative waste materials originating from the property may be disposed of using an open outdoor fire. Burning shall adhere to AQMD Rule 300, Open Burning.

- Paving: Road construction shall adhere to AQMD Rule 224, Cutback and Emulsified Asphalt Paving Materials.

- Painting/Coating: The application of architectural coatings shall adhere to AQMD Rule 215, Architectural Coatings.

- New Point or Stationary Source: Prior to construction/installation of any new point/stationary source emissions units (e.g., emergency standby engine greater than 50 HP, etc.), Authority to Construct applications shall be submitted to the AQMD. Submittal of applications shall include facility diagram(s), equipment specifications and emissions estimates, and shall adhere to AQMD Rules 501, General Permit Requirements and 523, New Source Review.

- Open Burning: Burning of waste vegetation that results from "Land Development Clearing" must be permitted through the AQMD. Only dry vegetative waste materials originating from the property may be disposed of using an open outdoor fire. Burning shall adhere to AQMD Rule 300, Open Burning.

- Construction Emissions: During construction, all self-propelled diesel-fueled engines greater than 25 horsepower shall be in compliance with the California Air Resources Board (CARB) Regulation for In-Use Off-Road Diesel Fueled Fleets (§ 2449 et al, title 13, article 4.8, chapter 9, California Code of Regulations (CCR)). The full text of the regulation can be found at CARB's website here: https://ww2.arb.ca.gov/our-work/topics/construction-earthmoving-equipment Questions on applicability should be directed to CARB at 1.866.634.3735. CARB is responsible for enforcement of this regulation.

- Portable Equipment: All portable combustion engine equipment with a rating of 50 horsepower or greater shall be registered with CARB. A copy of the current portable equipment registration shall be with said equipment. The applicant shall provide a complete list of heavy-duty diesel-fueled equipment to be used on this project, including the make, model, year of equipment, and daily hours of operations of each piece.

- Electric Vehicle Charging – Residential: The residential portion of project shall comply with the Residential Mandatory Measures identified in the 2022 Cal Green Building Code §4.106.4.2.2 to facilitate future installation and use of EV chargers[1]. Please refer to: Chapter 4 Residential Mandatory Measures, 2022 California Green Building Standards Code, Title 24, Part 11 (CALGreen) | ICC Digital Codes (iccsafe.org)

- Electric Vehicle Charging – Non-Residential: The commercial portion of the project shall comply with the non-Residential Mandatory Measures identified in the 2022 Cal Green Building Code to facilitate future installation and use of EV chargers2. Please refer to: https://www.dgs.ca.gov/BSC/CALGreen

If you have any questions, please do not hesitate to contact me at (530) 621-7509. The complete list of District Rules can be viewed at: https://ww2.arb.ca.gov/current-air-district-rules.

Respectfully,

Rania Serieh
Sr. Air Quality Engineer

[1] Cal Green Building Code: CHAPTER 4 - RESIDENTIAL MANDATORY MEASURES, 2019 California Green Building Standards code, Title 24, Part 11 with July 2021 Supplement | ICC Digital Codes (iccsafe.org)

[2] Cal Green Building Code: CHAPTER 5 NONRESIDENTIAL MANDATORY MEASURES, 2022 California Green Building Standards Code, Title 24, Part 11 (CALGreen) | ICC Digital Codes (iccsafe.org)

\\AQData\AQ-Shared\CEQA or AQMD COMMENTS\AQMD Comments\2023\ GPA20-0001 SP20-0001 Z20-0005 TM20-0002 – Creekside Village

Sent via email

Hi Anna,

Thank you for the information that was shared last evening at the EDH Firehouse meeting.

After the Project Frontier battle, the Creekside Village plan seems like a much better fit.
Given the location, residential development makes much more sense than warehousing and semi truck traffic.

While I agree in principal to the project, I remain concerned about the impacts to our existing community.
My back yard is on Royal Oaks and looks down on the location of this development.

My concerns include:

- Traffic congestion and noise created by 900+ new homes.
- Nighttime lighting and our dark sky community (the original plan for research and development use would have been quiet and dark at night)
- Not sure we need a small commercial area with 3 small buildings. Seems it would be better to just add that space to the park.

As the county moves forward with their analysis of this project, I will be interested in seeing what the traffic, noise and nighttime light studies reveal about this development plan.

Please continue to keep our community informed.
Thank you for your support and understanding,

Mati Keerd

October 12, 2023

By E-Mail: creeksidevillagesp@edcgov.us

Anna Leanza
Senior Planner
County of El Dorado Planning Division
2850 Fairlane Court
Placerville, CA 95667

Re: Response of Latrobe School District to Notice of Preparation of Environmental Impact Report for the Creekside Village Project

Dear Ms. Leanza:

This correspondence provides the Latrobe School District's ("District") comments with regard to the above-referenced project. The District appreciates the opportunity to provide comments and input regarding the Notice of Preparation ("NOP") of an Environmental Impact Report ("EIR") for the Creekside Village Project ("Project") to be located west of Latrobe Road, and south of Investment Boulevard in the El Dorado Hills area as proposed by El Dorado County ("County").

As per the NOP, the EIR will evaluate the environmental impacts associated with the Project. The project would include 115.8 acres of single-family low-density residential development, 20.8 acres of single-family medium-density residential development, 13.6 acres of parks, 44.8 acres of open space preserves and buffers, 1.8 acre of neighborhood commercial, and 11.1 acres of roadways (collectively, the "Property"). This project is anticipated to generate a significant number of students, which would in turn create a significant strain on existing District facilities.

As an invested stakeholder in the future of the County and the community, the District provides the comments below to help support the County's planning process and valuation of the Project to ensure that the interaction between the County's long-term planning and the community's school needs are adequately analyzed through the EIR. Given the interplay between the California Environmental Quality Act ("CEQA") and school facilities funding, this scoping letter also provides context for consideration in the EIR.

A. School Facilities Funding

SB 50 declares that the payment of the developer fees authorized by Education Code section 17620 constitutes "full and complete mitigation of the impacts of any legislative or adjudicative act on the provision of adequate school facilities." (Gov. Code § 65995(h).) **However, California courts have acknowledged that developer fees do not constitute full and complete mitigation for school-related impacts other than school overcrowding.**

(*Chawanakee Unified Sch. Dist. v. Cty. of Madera* (2011) 196 Cal.App.4th 1016.). Thus, payment of fees do not constitute full mitigation for all impacts caused by development, nor does SB 50 obviate the need for a county to evaluate environmental impacts on schools when developing an EIR. Impacts related to traffic, noise, biological, pedestrian safety, and all other types of impacts related to the District and its educational program still need to be analyzed and mitigated.

To that end, statutory developer fees are fees that may be levied or imposed in connection with or made conditions of any legislative or adjudicative act by a local agency involving planning, use, or development of real property. (Ed. Code § 17620.) If a school district is able to establish a sufficient "nexus" between the expected impacts of residential and commercial development and the district's needs for facilities funding, it may charge a fee as prescribed by statute.

From a practical standpoint, the amount of developer fees received by school districts typically fall woefully short of alleviating the impacts caused by development. This is due largely to the facts that: (1) statutory developer fee amounts fail to acknowledge the differences in costs of school construction from one district to another; (2) the developer fee amounts fail to contemplate the special facilities needs of those districts experiencing rapid growth, such as the need for portables; and (3) the adjustment formula for developer fees is based on a "construction cost index" and does not include indexing related to the increases in land costs, resulting in the actual costs of facilities (i.e., land and improvements) increasing at a greater rate than the adjustment.

The inadequacy of developer fees as a source of funding for school facilities has forced school district to rely increasingly on other sources of funding, primarily including local bond funds and State bond funds administered under the School Facilities Program ("SFP"). However, these sources of funds can be equally unreliable. Local bond funds are also difficult to generate, as local bonds are subject to district bonding capacity limitations and voter approval. Either way, the funding formula was never intended to require the State and local taxpayers to shoulder a disproportionate portion of the cost of school facilities.

With the foregoing context in mind, below are specific scoping requests for the EIR, to evaluate adequately with potential environmental impacts of the Project on schools.

B. <u>Transportation / Circulation / Traffic Analysis</u>

1. **Describe the existing and the anticipated vehicular traffic and student pedestrian movement patterns to and from school sites, including consideration of bus routes.**

2. **Assess the impact(s) of increased vehicular movement and volumes caused by the Project, including but not limited to potential conflicts with school pedestrian movement, school transportation, and busing activities.**

3. **Estimate travel demand and trip generation, trip distribution, and trip assignment by including consideration of school sites and home-to-school travel.**

4. **Assess cumulative impacts on schools and the community in general resulting from increased vehicular movement and volumes expected from additional development already approved or pending in the County.**

5. **Assess the impacts on the routes and safety of students traveling to school by vehicle, bus, walking, and bicycles.**

The District has significant concerns about the traffic, transportation, and circulation impacts that the Project may have on schools, the District's staff, parents and students.

(a) County Must Consider All Traffic and Related Impacts, Including Impacts on Traffic on Student Safety, Caused by the Project.

Any environmental analysis related to the Project must address potential effects related to traffic, noise, air quality, and other issues affecting schools. (Pub. Resources Code, §§ 2100, et seq.; Cal. Code Regs., tit. 14 §§ 15000, et seq.; *Chawanakee Unified School District v. County of Madera, et al.*, (2011) 196 Cal.App.4th 1016.) Specifically related to traffic, there must be an analysis of safety issues, such as reduced pedestrian safety; potentially reduced response times for emergency services and first responders traveling to these schools; and increased potential for accidents due to gridlock during school drop-off and pick up hours. (See, Journal of Planning Education and Research, "Planning for Safe Schools: Impacts of School Siting and Surrounding Environments on Traffic Safety," November 2015, Chia-Yuan Yu and Xuemei Zhu, pg. 8 [Study of traffic accidents near Austin, Texas schools found that "[a higher percentage of commercial uses was associated with more motorist and pedestrian crashes" around schools].)

The State Office of Planning and Research has developed new CEQA Guidelines which set forth new criteria for the assessment of traffic impacts, and now encourages the use of metrics such as vehicle miles traveled ("VMT"), rather than level-of-service ("LOS"), to analyze project impacts on traffic. (14 Cal. Code Regs. §15064.3.) However, local agencies may still consider impacts on traffic congestion at intersections where appropriate and must do so where, as here, such traffic congestion will cause significant impacts on air quality, noise, and safety issues caused by traffic. (Pub. Res. Code § 21099(b)(3).)

To the extent changes in the Project may implement construction that impedes circulation in the County, and clog the access roads to, from, and around the District campuses, such items should be addressed in the EIR. (See, 5 Cal. Code Regs. § 14010(k), which requires that school facilities be easily accessible from arterial roads.)

In addition to increased risks of vehicular accidents, the traffic and parking impacts posed by the Project may impact the safety and convenience of students who walk or bike to school. Title 5 of the California Code of Regulations requires that school sites be located within a proposed attendance area that encourages student walking and avoids extensive bussing. (5 Cal. Code Regs. § 10410(1).) Studying these impacts would also achieve the County's General Plan policies to promote a safe and efficient transit system that provides service to all residents, including senior citizens, youths, the disabled, and those without access to automobiles that also helps to reduce congestion, and improves the environment under Goal TC-2 and to provide safe,

continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode under TC-5.

As per the District Board Policy 3510, the District is committed to reducing vehicle emissions by encouraging students to walk or bicycle to school or to use district or public transportation.

It is important that these traffic impacts are not only assessed through a VMT analysis, but also through a LOS analysis, as traffic congestion that may result from the Project may cause significant issues related to safety, noise, and air quality.

C. Noise

6. Identify any noise sources and volumes which may affect school facilities, classrooms and outdoor school areas.

Request 6 is intended to clarify that the EIR's consideration of noise issues take into account various ways in which noise may impact the schools, including, for instance, increases in noise levels in the immediate vicinity of playing fields. Maintaining the accessibility and usability of the District's playing fields is in line with the County's principle to "Provide adequate recreation opportunities and facilities including developed regional and community parks, trails, and resource-based recreation areas for the health and welfare of all residents and visitors of El Dorado County." (El Dorado County General Plan p. 186.)

D. Population

7. Describe historical, current, and future population projects for the District.

8. Assess the impacts of population growth within the District on the District's ability to provide its educational program.

The District specifically requests that historical, current, and future population projections for the District be addressed. Population growth or shrinkage is a primary consideration in determining the impact that development may have on a school district, as a booming population can directly impact the District and its provision of educational services. Overcrowding can constitute a significant impact within the meaning of CEQA. (See Cal. Code Regs., §§15064(e).) This is particularly true where the overcrowding results in unsafe conditions, decreased quality of education, the need for new bus routes, and requires new school construction. The same can hold true for potential school closures of program cuts resulting from a declining population.

E. Housing

9. Describe the type and number of anticipated dwelling units indirectly resulting from the Project.

10. Describe the average square footage for anticipated dwelling units, broken down by type of unit, indirectly resulting from the Project.

11. Estimate the amount of development fees to be generated by development in accordance with implementation of the Project.

The foregoing categories of information are critical for determining the extent of both physical and fiscal impacts on the District caused by increased population growth.

California school districts are dependent on developer fees authorized by the provisions of Government Code Sections 65995, *et seq.*, and Education Code sections 17620, *et seq.*, for financing new school facilities and maintenance of existing facilities. The developer fees mandated by Section 65995 provide the District a significant portion of its local share of financing for facilities needs related to development.

The adequacy of the statutory development fees to offset the impact of new development on local school districts can be determined only if the types of housing and average square footage can be taken into consideration. For instance, larger homes often generate approximately the same number of students as smaller homes. At the same time, however, a larger home will generate a greater statutory development fee, better providing for facilities to house the student being generated. It is for these reasons that the Government Code now requires a school district to seek – and presumably to receive – such square footage information from local planning departments. (Gov. Code § 65995.5(c)(3).)

While the foregoing funding considerations raise fiscal issues, they translate directly into physical, environmental impacts, in that inadequate funding for new school construction results in overcrowding of existing facilities. Furthermore, fiscal and social considerations are relevant to an EIR, particularly when they either contribute to or result from physical impacts. (Pub. Resources Code § 21001(g); 14 Cal. Code Regs. §§ 15021(b), 15131(a)-(c), 15142 & 15382.)

Phasing of development is also a crucial consideration in determining the extent of impacts on schools. The timing of the development will determine when new students are expected to be generated, and therefore is an important consideration particularly when considering the cumulative impact of a project in conjunction with other approved or pending development.

F. <u>Public Services</u>

12. Describe existing and future conditions within the District, on a school-by-school basis, including size, location, and capacity of facilities.

13. Describe the adequacy of both existing infrastructure serving schools and anticipated infrastructure needed to serve future schools.

14. Describe the District's past and present enrollment trends.

15. Describe the District's current uses of its facilities.

16. Describe projected teacher/staffing requirements based on anticipated population growth and existing State and District policies.

17. **Describe any impacts on curriculum as a result of anticipated population growth.**

18. **Identify the cost of providing capital facilities to properly accommodate students on a per-student basis, by the District (including land costs).**

19. **Identify the expected shortfall or excess between the estimated development fees to be generated by the Project and the cost for provision of capital facilities.**

20. **Assess the District's present and projected capital facility, operations, maintenance, and personnel costs.**

21. **Assess financing and funding sources available to the District, including but not limited to those mitigation measures set forth in Section 65996 of the Government Code.**

22. **Identify any expected fiscal impacts on the District, including an assessment of projected cost of land acquisition, school construction, and other facilities needs.**

23. **Assess cumulative impacts on schools resulting from additional development already approved, pending, or anticipated.**

24. **Identify how the District will accommodate students from the Project who are not accommodated at current District schools, including the effects on the overall operation and administration of the District the students and employees.**

CEQA Guidelines, Appendix G, states that a project may have public services impacts on schools if the project would "result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives" for the provision of school services.

There are a myriad of ways in which large residential and commercial development projects can impact a school district's need for new or physically altered facilities in order to maintain performance objectives. The EIR should analyze all potential impacts under this standard, including but not limited to: (1) whether the influx of students would require "physically altered" school facilities unrelated to the accommodation of additional enrollment; (2) whether other impacts of the proposed Project, such as increased traffic, noise, or air pollutants in the neighborhood, could impact the District's need for new or physically altered school facilities; and (3) whether other impacts of the proposed Project could otherwise interfere with the District's ability to accomplish its own performance objectives. Consideration of the above-listed categories information is essential to properly making these determinations.

The District wishes to make certain that each of these issues is directly discussed in the EIR. Regarding Requests 12-15, each of these requests go to the issue of the current condition of the District. Infrastructure is included for consideration precisely because it is an often overlooked factor. While it may appear that a school site has sufficient space to accommodate additional

students, an inadequate infrastructure – which might include cafeterias, restroom facilities, sewerage, electrical capacity, and the like – may preclude such growth. Placing too great a strain on the infrastructure is itself a physical impact to be addressed in an EIR. In particular the District's water supply is currently provided by a well on campus. This well does not have the capacity to support the large scale increase in student population that will occur due to the Project. As such, the EIR must address the impacts related to the lack of water at the school site and the impacts related to the actions necessary to ensure the District has an adequate water supply.

Relative to Request 12, the EIR should also address the location of current planned school sites in all affected school districts, both to determine the adequacy of the space existing or available for school facilities and also to address traffic, student safety and related impacts affected by a school's location.

The population elements addressed in Request 14 are essential because the ultimate impact of growth can best be determined by comparing existing student enrollment, expected future enrollment, and total school capacity.

Request 15 is a necessary consideration because certain school facilities may have been designated for particular community uses, or otherwise be unavailable for full classroom service, meaning that they cannot be considered in determining the District's total capacity. Also, some classrooms are dedicated as labs, meaning that they cannot hold the full compliment of students that would occupy a traditional classroom, again affecting a school's total capacity. Requests 16 and 17 are included because they are relevant to the social impacts which may stem from the Project. Such impacts are relevant to the extent they are caused by or result from physical impacts, which would include growth. (Pub. Res. Code § 21001(g); Cal.Code Regs., tit.14, §§ 15021(b), 15131(a)-(c), 15142 &; 15382.) If classrooms become overcrowded, or certain programs cannot be offered because of overwhelming student demand, the community's educational services are harmed, a clear social impact. Further, overcrowded classrooms create additional safety concerns, both for students and teachers.

Requests 18 through 22 deal with fiscal impacts on the District. The most immediate means of determining whether school overcrowding will occur is to determine first whether the District has adequate available capacity, and second, if not, whether it has adequate sources of funding available to construct new facilities or expand existing ones. This requires consideration of how much it costs to house each student, and how much of that amount can be covered by existing funding sources. To the extent that the existing sources prove insufficient, the difference is an unmitigated impact on the District.

Finally, Request 23 again seeks to ensure that a cumulative impact analysis is conducted, as there has been significant development approved and projected within the District's borders.

G. <u>Social</u>

25. Identify how school facilities are currently utilized as civic centers, and are projected to serve in that capacity in the future, and assess the impacts of the Project on that use.

26. Identify how the District's grounds are currently utilized for recreation (parks) and open space, and are projected to serve in that capacity in the future, and assess the impacts of the Project on that use.

These two requests are made in light of school districts' roles in providing recreational space and civic centers to the community. As overcrowding increases at school sites, the community's ability to so utilize school facilities becomes limited, which is both a physical and a social impact on the community. For example, the addition of relocatable classrooms to house new students may reduce available playing field or recreational space. Similarly, moving schools to multi-track class schedules, or having to set aside additional space for new alternative education students, may interfere with the community's ability to gain access to school facilities for civic use.

Conclusion

The District is prepared to provide any information necessary to assist the County in preparation of the EIR and in addressing each of the comment and scope/content issues set forth above. The District is committed to working with the County and any developers to ensure that the District's needs are met and that development located in the area of the proposed Project as well as all of the residents of the community can receive adequate and appropriate educational facilities.

Finally, we request that all notices and copies of documentation with regard to this Project be mailed both to the District directly, and also to our legal counsel's attention as follows:

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Superintendent/Principal
7900 S. Shingle Road
Shingle Springs, CA 95682
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Please feel free to contact me directly if we can be of any assistance in reviewing the above issues. Thank you.

Sincerely,

Dave Scroggins
Superintendent/Principal
Latrobe School District

Appendix B

Air Quality Regulatory Setting, Air Quality and Greenhouse Gas Technical Reports, and Energy Calculations

Air Quality Regulatory Setting

Regulatory Setting

Federal

Massachusetts v. U.S. Environmental Protection Agency

On April 2, 2007, in *Massachusetts v. EPA*, the U.S. Supreme Court ruled that CO_2 was a pollutant and directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA administrator is required to follow the language of Section 202(a) of the Clean Air Act. On December 7, 2009, the administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- The elevated concentrations of GHGs—CO_2, CH4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."

- The combined emissions of GHGs—CO_2, CH_4, N_2O, and hydrofluorocarbons—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Energy Independence and Security Act

The Energy Independence and Security Act of 2007 (Public Law 110-140), among other key measures, would do the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.

- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020, and direct National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.

- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

State

The statewide GHG emissions regulatory framework is summarized in this subsection by category: state climate change targets, building energy, renewable energy and energy procurement, mobile

sources, water, solid waste, and other state actions. The following text describes EOs, Assembly Bills (ABs), Senate Bills (SBs), and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

California Air Resources Board's Regulations for the Mandatory Reporting of GHG Emissions

CARB's Regulation for the Mandatory Reporting of GHG Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that EPA promulgated in its Final Rule on Mandatory Reporting of GHGs (40 CFR, Section 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that EPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit over 10,000 MT CO_2e per year are required to report annual GHG emissions through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO_2e per year threshold are required to have their GHG emissions report verified by a CARB-accredited third party.

Executive Order B-18-12

EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the Governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also identified goals for existing state buildings for reducing grid-based energy purchases and water use.

Senate Bill 605 and Senate Bill 1383

SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of SLCPs in the state (California Health and Safety Code Section 39730) and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018 (California Public Resources Code Sections 42652–43654). SB 1383 also establishes specific targets for the reduction of SLCPs (40% below 2013 levels by 2030 for CH_4 and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon) and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its SLCP Reduction Strategy in March 2017 (CARB 2017). The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases (CARB 2017).

Assembly Bill 1757

AB 1757 (September 2022) requires the CNRA to determine a range of targets for natural carbon sequestration, and for nature-based climate solutions that reduce GHG emissions for future years 2030, 2038, and 2045. These targets are to be determined by no later than January 1, 2024, and are established to support the state's goals to achieve carbon neutrality and foster climate adaptation and resilience.

Building Energy

Renewable Energy and Energy Procurement

SB 1078 (2002) (California Public Utilities Code Section 399.11 et seq.) established the Renewables Portfolio Standard (RPS) program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and EO S-21-09).

SB 1368 (2006), required CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities (California Public Utilities Code Section 8340–8341). These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC).

EO S-14-08 (2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. CNRA, in collaboration with CEC and the California Department of Fish and Wildlife, was directed to lead this effort.

EO S-21-09 (2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with CPUC and CEC to ensure that the regulation builds upon the RPS program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health, and those that can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved regulations to implement a Renewable Electricity Standard; however, this regulation was not finalized because of subsequent legislation (SB X1-2) signed by Governor Brown in April 2011.

SB X1-2 expanded RPS by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location. SB X1-2 applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All these entities must meet the renewable energy goals listed above.

Mobile Sources

Heavy-Duty Diesel

CARB adopted the final Heavy-Duty Truck and Bus Regulation on December 31, 2014, to reduce DPM, a major source of black carbon, and NO_x emissions from heavy-duty diesel vehicles (13 CCR, Part 2025). The rule requires that DPM filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxics Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR, Part 2485).

Advanced Clean Trucks Regulation

The Advanced Clean Trucks (ACT) Regulation was also approved by CARB in 2020. The purpose of the ACT Regulation is to accelerate the market for ZEVs in the medium- and heavy-duty truck sector and to reduce air pollutant emissions generated from on-road mobile sources (CARB 2021). The regulation has two components, (1) a manufacturer sales requirement and (2) a reporting requirement:

- Zero-emission truck sales: Manufacturers who certify Class 2b–8 chassis or complete vehicles with combustion engines will be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55% of Class 2b–3 truck sales, 75% of Class 4–8 straight truck sales, and 40% of truck tractor sales.

- Company and fleet reporting: Large employers including retailers, manufacturers, brokers, and others will be required to report information about shipments and shuttle services. Fleet owners with 50 or more trucks will be required to report about their existing fleet operations. This information will help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

Water

Senate Bill X7-7, Executive Order B-29-15, and Executive Order N-10-21

SB X7-7, or the Water Conservation Act of 2009, required that all water suppliers increase their water use efficiency with an overall goal of reducing per capita urban water use by 20% by December 31, 2020. Each urban water supplier was required to develop water use targets to meet this goal.

In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other

changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

In response to a state of emergency due to severe drought conditions, EO N-10-21 (July 2021) called on all Californians to voluntarily reduce their water use by 15% from their 2020 levels. Actions suggested in EO N-10-21 include reducing landscape irrigation, running dishwashers and washing machines only when full, finding and fixing leaks, installing water-efficient showerheads, taking shorter showers, using a shut-off nozzle on hoses, and taking cars to commercial car washes that use recycled water.

Solid Waste

Assembly Bill 939, Assembly Bill 341, Assembly Bill 1826, and Senate Bill 1383

In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code Section 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board (replaced in 2010 by the California Department of Resources Recycling and Recovery, or CalRecycle), which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by the year 2000.

AB 341 (2011) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. In addition, AB 341 required CalRecycle to develop strategies to achieve the state's policy goal. CalRecycle has conducted multiple workshops and published documents that identify priority strategies that it believes would assist the state in reaching the 75% goal by 2020.

AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires businesses to recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. The minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

SB 1383 (2016) requires a 50% reduction in organic waste disposal from 2014 levels by 2020 and a 75% reduction by 2025—essentially requiring the diversion of up to 27 million tons of organic waste—to reduce GHG emissions. SB 1383 also requires that not less than 20% of edible food that is currently disposed be recovered for human consumption by 2025.

Other State Actions

Executive Order S-13-08

EO S-13-08 (November 2008) was intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009, and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014. To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of Safeguarding California: Implementation Action Plans followed in March 2016. In January 2018, CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that state government should take to build climate change resiliency.

References

CARB (California Air Resources Board). 2017. Short-Lived Climate Pollutant Reduction Strategy. March 2017. Accessed May 2019. https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final_slcp_report.pdf.

CARB. 2021. Advanced Clean Trucks Fact Sheet. August 20, 2021. https://ww2.arb.ca.gov/sites/default/files/2021-08/200625factsheet_ADA.pdf

Air Quality and Greenhouse Gas Impact Analysis (April 2024)

Air Quality and Greenhouse Gas Impact Analysis

Creekside Village Specific Plan Project

Prepared for:
Winn Communities

April 2024

Prepared by

RANEY PLANNING & MANAGEMENT, INC. | 25 years
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INTRODUCTION

This Air Quality and Greenhouse Gas Impact Analysis identifies and analyzes the potential environmental impacts from the Creekside Village Specific Plan Project (proposed project) related to air quality and greenhouse gas (GHG) emissions. The information and analysis in this document are organized in accordance with the checklist in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. If the analysis provided in this document identifies potentially significant environmental effects of the project, mitigation measures that should be applied to the project are prescribed. All modeling results are included as an appendix to this document.

PROJECT SUMMARY

The approximately 208-acre project site is generally located west of the intersection of Royal Oaks Drive and Latrobe Road in the southern portion of El Dorado Hills in El Dorado County, California (see Figure 1). The project site is currently undeveloped and covered in ruderal grasses. Surrounding land uses include a business park and John Adams Academy to the north, single-family residences to the northeast and northwest, and vacant land to the south (see Figure 2). The El Dorado County General Plan designates the site as Research and Development and the site is zoned Research and Development – Design Review Community (R&D-DC).

The nearest sensitive receptors to the project site are the single-family residences across Latrobe Road, approximately 100 feet east of the project site. In addition, potential impacts to John Adams Academy, located approximately 1,000 feet north of the project site, are considered in this analysis. Furthermore, single-family residences exist along the east side of Latrobe Road, along Off-Site Improvement IV (discussed below). It is noted that the vacant land to the south of the project site is planned for residential development in the future.

The proposed project would include the development of 918 single-family residences, 1.8 acres of neighborhood commercial uses, and three parks totaling 13.6 acres (see Figure 3 and Figure 4). The remainder of the project site is proposed for open space and roadway infrastructure improvements. The neighborhood commercial portion of the site is anticipated to be developed with uses such as convenience stores, professional offices, and coffee shops, and would be developed with a maximum of 5,400 square feet (sf) of building area.

It should be noted that the potential exists for the 1.8-acres of neighborhood commercial to be used as parkland; however, in order to provide a conservative analysis, the analysis herein assumes buildout of the 1.8-acres with neighborhood commercial uses, which would result in greater emissions than if the site was developed with a park.

In addition, the proposed project would include several off-site improvements, listed below, and depicted in Figure 5.

I. Intersection improvements at Latrobe Road and Town Center Boulevard;
II. Intersection improvements at Royal Oaks Drive/Latrobe Road and Avanti Drive/Latrobe Road;
III. Connecting proposed Drive I to existing Robert J Mathews Parkway as a pedestrian/bicycle access and connecting a waterline from the proposed Drive I to the existing line in Robert J. Mathews Parkway; and
IV. Extending a wastewater force main northward along Latrobe Road, from the project site to the El Dorado Irrigation Water Treatment Plant.

Figure 1
Regional Project Location

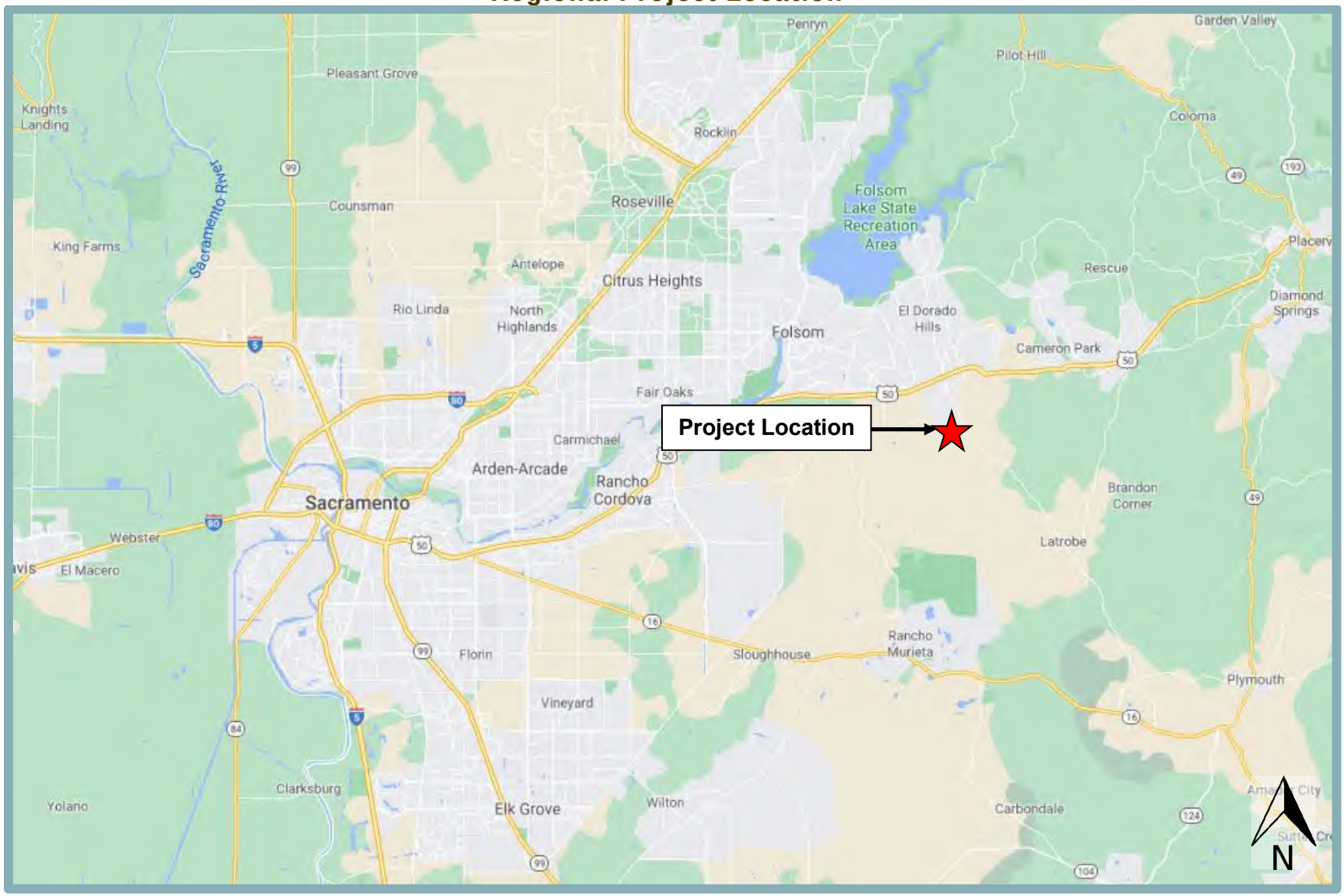


Figure 2
Project Vicinity Map

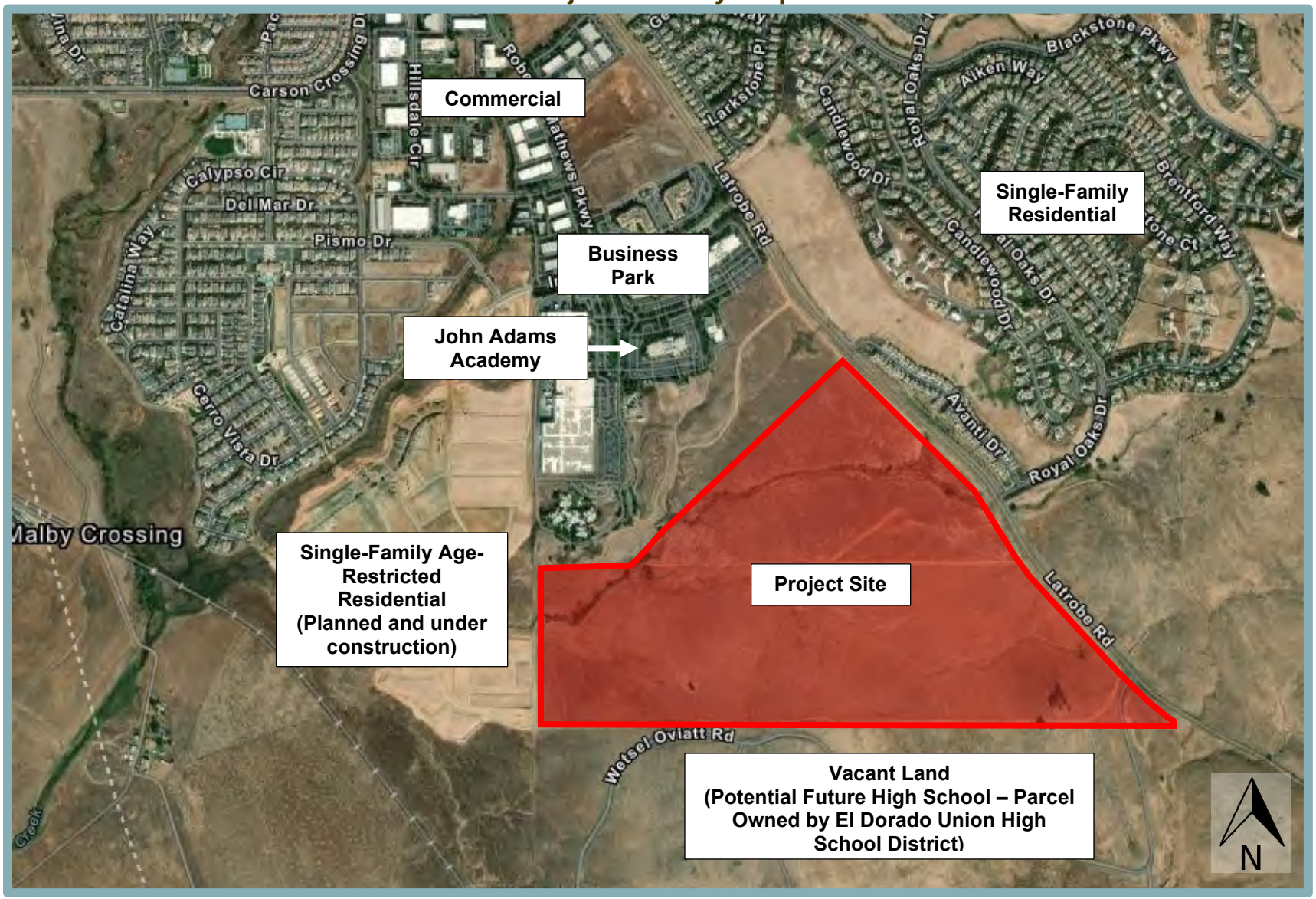


Figure 3
Land Use Designations

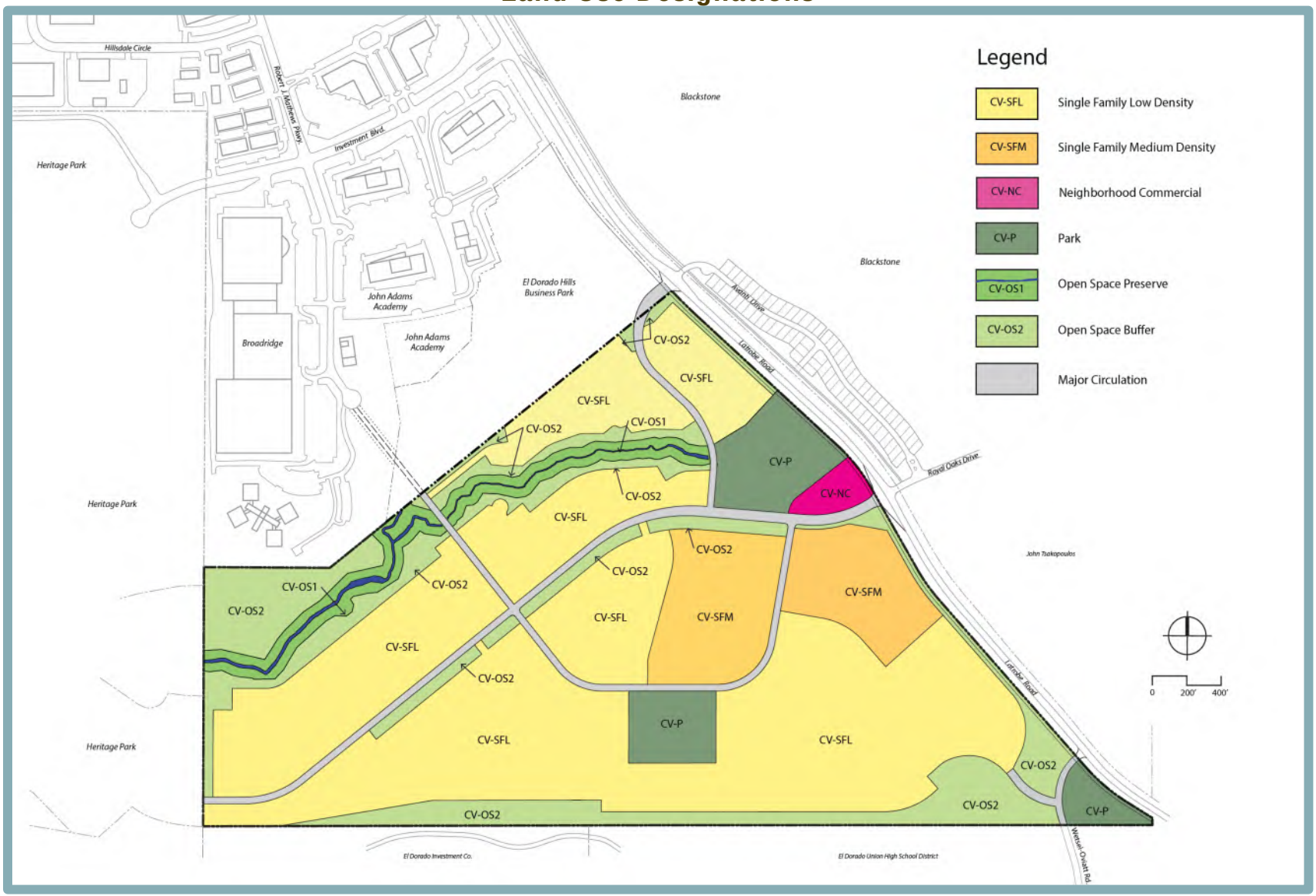


Figure 4
Tentative Subdivision Map

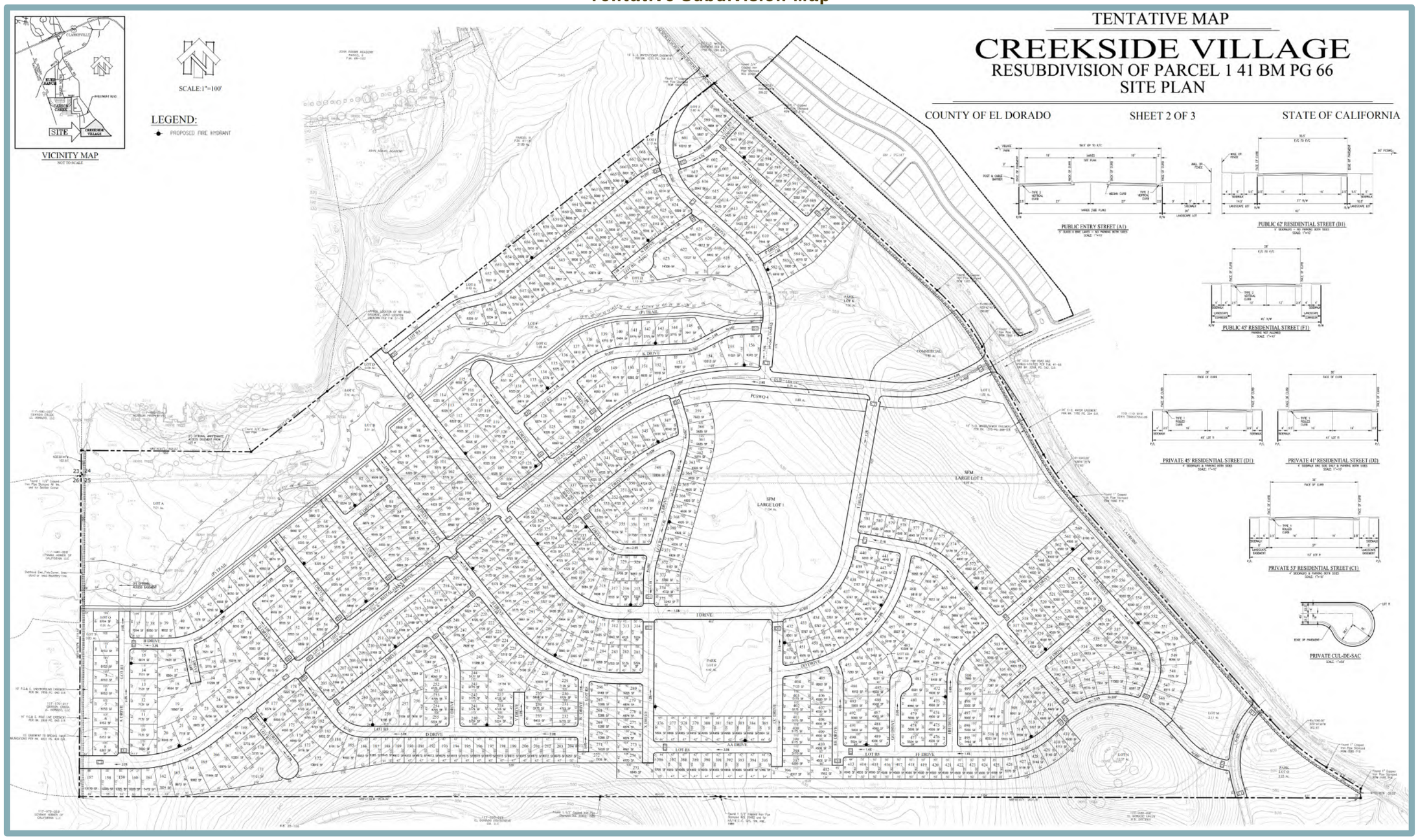
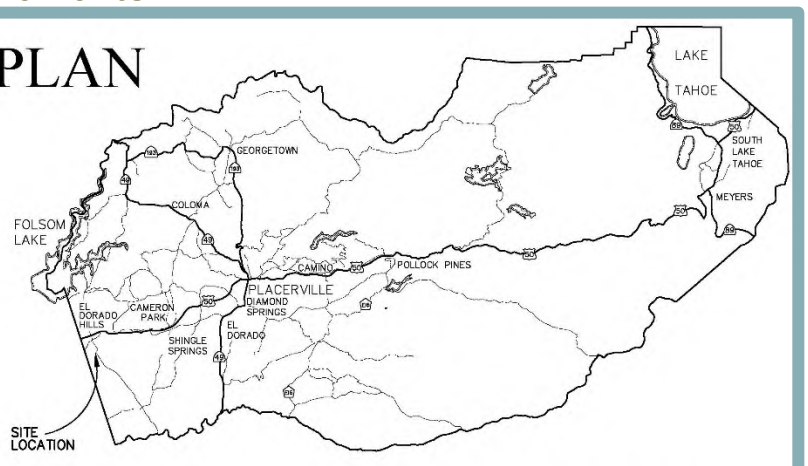


Figure 5
Off-Site Improvements

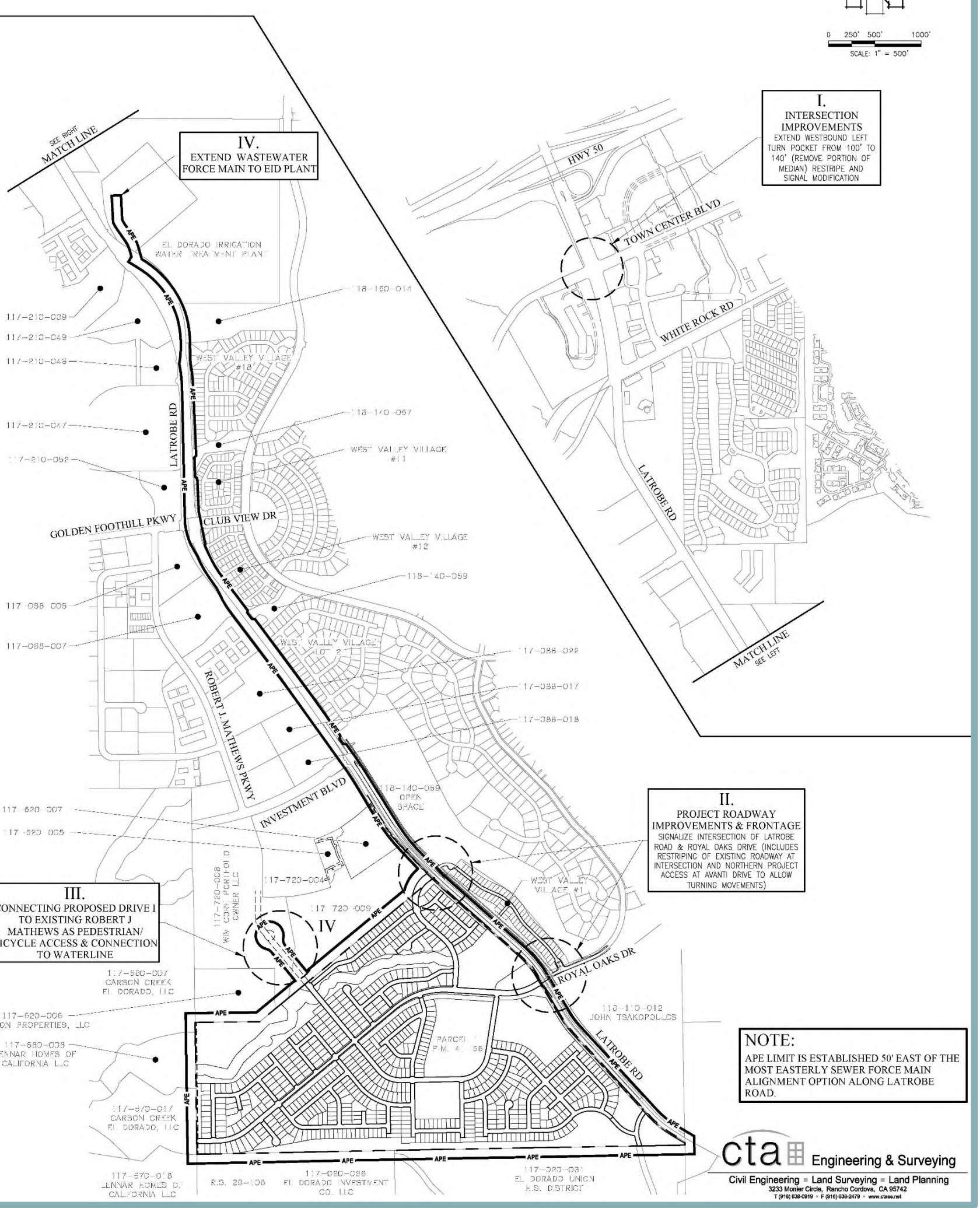
CREEKSIDE VILLAGE SPECIFIC PLAN
GPA 20-001
AREA OF POTENTIAL EFFECT - (APE)
EL DORADO HILLS, CALIFORNIA
SCALE: 1"=500' FEBRUARY, 2024



AREA OF POTENTIAL EFFECT ——— APE ———

I. INTERSECTION IMPROVEMENTS (TOWN CENTER & LATROBE)
II. TRAFFIC/INTERSECTION IMPROVEMENTS (ROYAL OAKS/LATROBE ROAD)
III. WATERLINE/ PEDESTRIAN CONNECTION
IV. WASTEWATER EXTENSION

0 250' 500' 1000'
SCALE: 1" = 500'



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1. California Air Resources Board. *California Cap-and-Trade Program Summary*. Available at: https://ww2.arb.ca.gov/sites/default/files/2020-08/results_summary.pdf. Accessed February 2024.
2. California Air Resources Board. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022.
3. El Dorado County Air Pollution Control District. *Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*. February 2002.
4. El Dorado County. *Asbestos Review Areas, Western Slope, County of El Dorado, State of California*. August 24, 2018. Available at: https://www.edcgov.us/Government/AirQualityManagement/Pages/asbestos_maps.aspx. Accessed February 2024.
5. Office of Environmental Health Hazard Assessment. *Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments* [pg. 8-18]. February 2015.
6. Rania Serieh, Air Quality Engineer at El Dorado County Air Pollution Control District. Personal Communication [phone] with Briette Shea, Associate/Air Quality Technician at Raney Planning & Management, Inc. October 22, 2020; Personal Communication [email] with Karen Huss, Air Quality Specialist at Raney Planning & Management, Inc. August 31, 2023.
7. Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment, Chapter 6: Greenhouse Gas Emissions.* February 2021.
8. T. Kear Transportation Planning and Management. *Creekside Village CEQA VMT Analysis.* January 30, 2024.
9. U.S. Environmental Protection Agency. *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*. December 2016.

III. AIR QUALITY. *Would the project:*		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Conflict with or obstruct implementation of the applicable air quality plan?	✖	☐	☐	☐
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	✖	☐	☐	☐
c.	Expose sensitive receptors to substantial pollutant concentrations?	✖	☐	☐	☐
d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	✖	☐

Discussion

a,b. The project site is located within the El Dorado County portion of the Mountain Counties Air Basin (MCAB), which is under the jurisdiction of the El Dorado County Air Quality Management District (EDCAQMD). Under State and federal law, the California Air Resources Board (CARB) is required to designate areas of the State as attainment, nonattainment, or unclassified with respect to the State and national ambient air quality standards (AAQS). The El Dorado County portion of the MCAB is designated as nonattainment for the State and federal ozone, State particulate matter 10 microns in diameter (PM_{10}), and federal particulate matter 2.5 microns in diameter ($PM_{2.5}$) standards, and attainment or unclassified for all other AAQS. The U.S. Environmental Protection Agency (USEPA) requires states with areas designated as nonattainment for national AAQS to prepare State Implementation Plans (SIP) that demonstrate attainment and maintenance of the national AAQS. The SIP contains the strategies and control measures for states to use to attain the national AAQS. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, rules, and regulations of air basins as reported by the agencies with jurisdiction over them.

Due to the nonattainment designations, the EDCAQMD, along with the other air districts in the nonattainment areas, is required to develop plans to attain the federal and State standards for ozone and particulate matter. According to the EDCAQMD, the applicable attainment plan is the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (2017 Ozone Attainment Plan), adopted September 12, 2017. The USEPA determined the motor vehicle emission budgets in the 2017 Ozone Attainment Plan to be adequate and on October 22, 2021, the USEPA approved the 2017 Ozone Attainment Plan.

The 2017 Ozone Attainment Plan demonstrates how existing and new control strategies would provide the necessary future emission reductions to meet the CAA requirements, including the NAAQS. The MCAB remains classified as a nonattainment area with an attainment deadline of July 2025.

According to the EDCAQMD, if a project can demonstrate consistency with the 2017 Ozone Attainment Plan, the project would not be considered to have a significant cumulative air quality impact with respect to ozone. Per the EDCAQMD's Guide to Air Quality Assessment, development projects within the MCAB portion of the County are considered consistent with the Attainment Plan if:

- The project does not require a change in existing land use designation, and project emissions of ROG and NO_X from the project are equal to or less than the emissions anticipated for the site if developed under the existing land use designation;
- The project does not exceed the EDCAQMD's thresholds of significance for ROG and NO_X;
- The lead agency requires the project to implement any applicable emission reduction measures contained in and/or derived from the 2017 Ozone Attainment Plan;
- The project complies with all applicable EDCAQMD rules and regulations.[1]

According to the CEQA Guidelines, an air quality impact may be considered significant if the proposed project's implementation would result in, or potentially result in, conditions, which violate any existing local, State or federal air quality regulations. In order to evaluate ozone and other criteria air pollutant emissions and support attainment goals for those pollutants designated as nonattainment in the area, the EDCAQMD has established significance thresholds associated with development projects for emissions of reactive organic gases (ROG) and nitrogen oxide (NO_x) emissions. If a project would result in mass emissions in excess of the thresholds of significance, the project could affect the EDCAQMD's commitment to attainment of the federal AAQS for ozone and, thus, could result in a significant adverse impact on air quality in the region.

Thresholds for PM_{10} or other pollutants, including CO, PM, SO_2, NO_2, sulfates, lead, and H_2S, have not yet been established by the EDCAQMD. However, a project could be considered to have a significant impact on air quality if it would cause or contribute significantly to a violation of the applicable AAQS. According to the EDCAQMD CEQA Guide, if construction-related ROG and NO_X mass emissions are determined to be less than significant, the assumption could be made that construction-related exhaust emissions of other air pollutants from the operation of equipment and worker commute vehicles would also be less than significant.[2] Similarly, according to EDCAQMD's operational screening levels for CO and PM_{10}, if a project is anticipated to be below significance for ROG and NO_X, the project's CO and PM_{10} emissions are expected to be insignificant as well.

The significance thresholds, expressed in pounds per day (lbs/day), listed in Table 1 are the EDCAQMD's current thresholds of significance for use in the evaluation of air quality impacts associated with proposed development projects. Thus, if the proposed project's emissions exceed the pollutant thresholds presented in Table 1, the project could have a significant effect on air quality, the attainment of federal and State AAQS, and could conflict with or obstruct implementation of the applicable air quality plan.

Table 1
EDCAQMD Thresholds of Significance

Pollutant	Construction Threshold (lbs/day)	Operational Threshold (lbs/day)
ROG	82	82
NO_X	82	82

Source: EDCAQMD. CEQA Guide. 2002.

[1] El Dorado County Air Pollution Control District. *Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*. February 2002.

[2] *Ibid.*

Implementation of the proposed project would contribute local emissions in the area during both the construction and operation of the proposed project. The proposed project's construction and operational emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2022.1.1.21 – a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions, including GHG emissions, from land use projects. The model applies inherent default values for various land uses, including construction data, trip generation rates, vehicle mix, trip length, average speed, compliance with the California Building Standards Code (CBSC), etc. Where project-specific data was available, such data was input into the model (e.g., construction phases and timing, inherent site or project design features, compliance with applicable regulations, etc.). Accordingly, the proposed project's modeling conservatively assumed the following:

- Construction would begin in June of 2025;
- Construction would occur over approximately four years;
- Trip generation rates and vehicle miles traveled (VMT) were adjusted consistent with the project-specific trip generation rates and VMT provided by T. Kear Transportation Planning and Management;
- Natural gas fireplaces would be installed in all 918 proposed residences.

CalEEMod was also used to model construction of the off-site improvements, including Off-Site Improvement IV, which would require construction along a 1.5-mile stretch of Latrobe Road.

All CalEEMod results are included in Appendix A.

The results of the emissions analysis for construction and operational emissions are discussed separately below.

Construction Emissions

During construction of the project, various types of equipment and vehicles would temporarily operate on the project site. Construction-related emissions would be generated from construction equipment, earth movement activities, construction workers' commute, and construction material hauling for the entire construction period. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Estimated unmitigated construction-related emissions are presented in Table 2.

Table 2
Maximum Unmitigated Construction Emissions (lbs/day)

	ROG	NO_X
Project Emissions	50.51	33.29
EDCAQMD Significance Threshold	**82.0**	**82.0**
Exceeds Threshold?	**NO**	**NO**

Source: CalEEMod, February 2024/April 2024 (see Appendix A).

As shown in Table 2, the project's construction-related emissions would be below the applicable EDCAQMD thresholds of significance for ROG and NO_X.

The project is required to comply with all EDCAQMD rules and regulations for construction, including, but not limited to, the following, which would be noted on County-approved construction plans:

- Rule 202 related to visible emissions;
- Rule 215 related to architectural coatings;
- Rule 223 related to fugitive dust;
- Rule 224 related to cutback asphalt paving material, and
- Rule 300 related to open burning.

The EDCAQMD screening approach for fugitive dust (PM_{10}) emissions is based on dust suppression measures that would prevent visible emissions beyond the boundaries of the project site. If such measures are incorporated into the design of the project, then further calculation to determine PM_{10} emissions is not necessary. All construction activities that would result in the disturbance of soil occurring within El Dorado County are subject to EDCAQMD Rule 223 related to fugitive dust. Rule 223 includes requirements related to visible emissions, vehicle speed limits on unpaved roads, and cessation of certain construction activities during times of sustained, wind caused dust emissions. Compliance with the requirements of Rule 223 would ensure that measures sufficient to prevent visible emissions beyond the boundaries of the project site would be implemented. Accordingly, fugitive dust emissions are not anticipated to result in visible emissions beyond the boundaries of the project site and further calculation to determine PM_{10} emissions is not necessary.

Because the proposed project's estimated unmitigated construction emissions would be below the applicable EDCAQMD thresholds of significance, construction activities associated with development of the proposed project would not substantially contribute to the EDCAQMD's nonattainment status for ozone. Accordingly, construction of the proposed project would not violate any AAQS or contribute substantially to an existing or projected air quality violation, and a less-than-significant impact would occur associated with construction.

Operational Emissions

Operational emissions of ROG and NO_X would be generated by the proposed project from both mobile and area sources. Day-to-day activities, such as resident vehicle trips, would make up the majority of the mobile emissions. Emissions would also occur from area sources such as natural gas combustion from heating mechanisms, landscape maintenance equipment exhaust, and consumer products (e.g., deodorants, cleaning products, spray paint, etc.). As stated above, the project would be required to comply with all applicable EDCAQMD rules and regulations, including the following rules that specifically pertain to project operations:

- Rule 205 related to nuisance;
- Rule 207 related to particulate matter;
- Rule 215 related to architectural coatings;
- Rule 239 related to natural gas-fired residential water heaters; and
- Rule 502 related to general conformity.

Implementation of the above rules would likely reduce the operational emissions below the amount presented in Table 3. Nonetheless, the maximum unmitigated operational emissions for the proposed project are presented in Table 3 below.

Table 3
Maximum Unmitigated Operational Emissions (lbs/day)

	ROG	NO_X
Project Emissions	100	51.2
EDCAQMD Significance Threshold	**82.0**	**82.0**
Exceeds Threshold?	**YES**	**NO**

Source: CalEEMod, April 2024 (see Appendix A).

As shown in the table, unmitigated operational emissions would fall below the EDCAQMD's thresholds of significance for NO_X, and would exceed the threshold of significance for ROG. Considering the modeled operational emissions of ROG would exceed the adopted EDCAQMD thresholds of significance operations of the proposed project could violate an AAQS or contribute substantially to an existing or projected air quality violation, and a potentially significant impact could occur.

Cumulative Emissions

A cumulative impact analysis considers a project over time in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed. Due to the dispersive nature and regional sourcing of air pollutants, air pollution is already largely a cumulative impact. The nonattainment status of regional pollutants, including ozone, is a result of past and present development, and, thus, cumulative impacts related to these pollutants could be considered cumulatively significant.

Adopted EDCAQMD rules and regulations, as well as the thresholds of significance, have been developed consistent with the applicable air quality plan with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the MCAB is currently designated nonattainment for ozone. If a project's operational emissions exceed the EDCAQMD's emission thresholds, a project would be considered to conflict with or obstruct implementation of the EDCAQMD's air quality planning efforts, including emission reduction measures contained in and/or derived from the applicable air quality plan. Similarly, if a project does not comply with the adopted EDCAQMD's rules and regulations, a project would be considered to conflict with or obstruct implementation of the EDCAQMD's air quality planning efforts. The proposed project would be required to comply with all applicable EDCAQMD rules and regulations. However, as discussed above, the proposed project would exceed the significance criteria set forth by the EDCAQMD for emissions of ROG and, therefore, project-level impacts would be potentially significant. As a result, the project could result in a cumulatively considerable net increase of any criteria pollutant for which the MCAB is designated as nonattainment.

Conclusion

The project's construction-related emissions would be below the applicable EDCAQMD thresholds of significance. However, because the proposed project would result in operational emissions of ROG that exceed the EDCAQMD's thresholds of significance, operations of the proposed project could be considered to conflict with or obstruct the implementation of any applicable air quality plans. Furthermore, the proposed project

could result in a cumulatively considerable net increase of a criteria air pollutant for which the project region is non-attainment under an applicable ambient air quality standard, and a ***potentially significant*** impact could result.

Mitigation Measure(s)

Implementation of Mitigation Measure AQ-1, which requires that only paints with no volatile organic compounds (VOCs) be used on-site, would reduce emissions of ROG. However, the majority of ROG emissions would be generated by mobile sources and consumer products (e.g., deodorants, cleaning products, spray paint, etc.). Feasible mitigation does not exist to reduce ROG emissions related to mobile sources and consumer products. Thus, as presented in Table 4, ROG emissions would still be above the applicable EDCAQMD threshold of significance. Mitigation Measure AQ-1 represents all feasible mitigation to reduce project-generated ROG emissions. Therefore, even with implementation of Mitigation Measure AQ-1, the impact would remain *significant and unavoidable.*

Table 4
Maximum Mitigated Operational Emissions (lbs/day)

	ROG	NO_X
Project Emissions	90.9	51.2
EDCAQMD Significance Threshold	**82.0**	**82.0**
Exceeds Threshold?	**YES**	**NO**

Source: CalEEMod, April 2024 (see Appendix A).

AQ-1 *Prior to the issuance of building permits, the project applicant shall ensure that all initial and ongoing interior and exterior architectural coatings associated with the proposed project have no volatile organic compounds (VOCs). Verification of the ongoing use of no VOC architectural coatings shall be ensured in perpetuity by the project's proposed homeowner's association (HOA).*

In addition, a green cleaning product education program shall be made available to all residents and commercial tenants of the proposed project. The program shall include free educational materials such as brochures, pamphlets, checklists, etc., that provide information regarding the proper use of green cleaning products.

The aforementioned requirements shall be noted on the project Improvement Plans, Conditions, Covenants and Restrictions (CC&Rs), and the Informational Sheet filed with the Final Subdivision Map(s), and submitted for review and approval by the El Dorado County Planning Department.

c. Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Sensitive receptors are typically defined as facilities where sensitive receptor population groups (i.e., children, the elderly, the acutely ill, and the chronically ill) are likely to be located. Accordingly, land uses that

are typically considered to be sensitive receptors include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. The nearest sensitive receptors to the project site are the single-family residences across Latrobe Road, approximately 100 feet east of the project site, as well as the single-family residences exist along the east side of Latrobe Road, along Off-Site Improvement IV. It should be noted that an active adult (55 and older) residential development is under construction to the west of the project site and would be a continuation of the active adult Heritage community to the northwest of the project site.

The major pollutant concentrations of concern are localized carbon monoxide (CO) emissions and TAC emissions, which are addressed in further detail below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Traffic congestion near a roadway's intersection with vehicles moving slowly or idling could result in localized CO emissions at that intersection due to a vehicle engine's inefficient combustion. High levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high. Accordingly, a land use project could result in impacts associated with localized CO concentrations at roadway intersections if the project generates substantial traffic.

The MCAB has been in attainment for CO for multiple years. Due to the continued attainment of CAAQS and NAAQS, and advances in vehicle emissions technologies, the likelihood that any single project would create a CO hotspot is minimal. In addition, as discussed above and depicted in Figure 5, the proposed project would include several off-site intersection improvements at Latrobe Road/Town Center Boulevard, Royal Oaks Drive/Latrobe Road, and Avanti Drive/Latrobe Road. As discussed in the Transportation Impact Study prepared for the proposed project, with implementation of the aforementioned intersection improvements, the proposed project is not anticipated to cause new, or worsen existing, traffic deficiencies on project area roadways. Therefore, given that high levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high, the proposed project would not be anticipated to generate localized CO emissions that would contribute to an exceedance of AAQS and/or expose sensitive receptors to substantial concentrations of localized CO.

TAC Emissions

Another category of environmental concern is TACs. The CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook) provides recommended setback distances for sensitive land uses from major sources of TACs, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified diesel particulate matter (DPM) from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. DPM is the solid material in diesel exhaust, more than 90 percent of such material is less than one micrometer in diameter, and, thus, DPM is a subset of the $PM_{2.5}$ category of pollutants. Health risks associated with TACs are a function of both the concentration of emissions and the duration of exposure, where the higher the

concentration and/or the longer the period of time that a sensitive receptor is exposed to pollutant concentrations would correlate to a higher health risk.

The proposed project would not involve any land uses or operations that would be considered major sources of TACs, including DPM. As such, the proposed project would not generate any substantial pollutant concentrations during operations.

However, short-term, construction-related activities could result in the generation of TACs, primarily DPM, from on-road haul trucks and off-road equipment exhaust emissions. Although DPM emissions from on-road haul trucks would be widely dispersed throughout the project site and surrounding vicinity as haul trucks move goods and material to and from the site, exhaust from off-road equipment would primarily occur within the project site. As noted previously, the nearest sensitive receptors are located approximately 100 feet east of the project site, as well as along the east side of Latrobe Road, along Off-Site Improvement IV. In addition, an active adult (55 and older) residential development is under construction to the west of the project site and would be a continuation of the active adult Heritage community to the northwest of the project site. Consequently, the operation of off-road equipment within the project site during project construction could result in exposure of nearby residents to DPM.

EDCAQMD has established significance criteria for local community risk and hazard impacts as a result of new sources of TACs. The EDCAQMD's thresholds for analyzing health risks from new sources of emissions are presented below:

1. The lifetime probability of contracting cancer is greater than one in one million (ten in one million if best available control technology for toxics [T-BACT] is applied); or
2. The ground-level concentration of non-carcinogenic toxic air contaminants would result in a Hazard Index of greater than 1.

As stated above, the foregoing thresholds are generally intended for use when analyzing the operation of new proposed sources of TACs. Although the proposed project would not involve the siting or operation of any permanent sources of TACs, in the absence of specific thresholds for use when analyzing health risks from short-term projects, the foregoing EDCAQMD thresholds are applied to the project, for construction specifically.

To analyze potential health risks to nearby sensitive receptors that could result from DPM emissions from off-road equipment at the project site, total DPM emissions from project construction were estimated. DPM is considered a subset of $PM_{2.5}$, thus, the CalEEMod estimated $PM_{2.5}$ emissions from exhaust during construction was assumed to conservatively represent all DPM emitted on-site.

The CalEEMod estimated $PM_{2.5}$ exhaust emissions were used to calculate the concentration of DPM at the maximally exposed sensitive receptor near the project site and the off-site improvement areas. DPM concentrations resulting from project implementation were estimated using the American Meteorological Society/Environmental Protection Agency (AMS/EPA) Regulatory Model (AERMOD). In addition, the following information was input into the AMS/EPA AERMOD Model:

- Meteorology data was sourced from the Sacramento Executive Airport;

- Surrounding area receptors were placed in polygon grid pattern with the closest receptors (i.e., within 0.25-mile radius) placed five meters apart, and farther receptors placed 10 or 15 meters apart as distance increases;
- Volume sources were placed over the entire disturbance area, including the project site and the off-site improvement disturbance areas in a grid of approximately four sources per acre;
- Volume sources were assumed to have a release height of five meters, the initial lateral dimension was assumed to be 29.59 meters, and the initial vertical dimension was assumed to be one meter; and
- Construction was assumed to occur seven days per week for 12 hours per day, based on Section 130.37.020 of the County Code.

The associated cancer risk and non-cancer hazard index were calculated using the CARB's Hotspot Analysis Reporting Program Version 2 (HARP 2) Risk Assessment Standalone Tool (RAST), which calculates the cancer and non-cancer health impacts using the risk assessment guidelines of the 2015 Office of Environmental Health Hazard Assessment (OEHHA) Guidance Manual for Preparation of Health Risk Assessments.[3] The modeling was performed in accordance with the USEPA's User's Guide for the AERMOD[4] and the 2015 OEHHA Guidance Manual. The results of the dispersion modeling are included as Figure 6.

As shown in the figure, the maximally-exposed receptor, represented by a white X, is located just north of the project site.

Based on the foregoing methodology, and the methodology presented in response to questions 'a' and 'b' regarding the estimation of construction emissions, the cancer risk and non-cancer hazard indices were estimated for the maximally-exposed receptor, and are presented in Table 5. As shown in Table 5, construction of the proposed project would not result in any health impacts in excess of the EDCAQMD's standards.

Table 5
Maximum Unmitigated Cancer Risk and Hazard Index Associated with Project Construction DPM

	Cancer Risk (per million persons)	Acute Hazard Index	Chronic Hazard Index
Construction DPM Health Risks	2.06	0.00	0.001
Thresholds of Significance	10	1.0	1.0
Exceed Thresholds?	**NO**	**NO**	**NO**
Source: AERMOD and HARP 2 RAST, February 2024 (see Appendix B).			

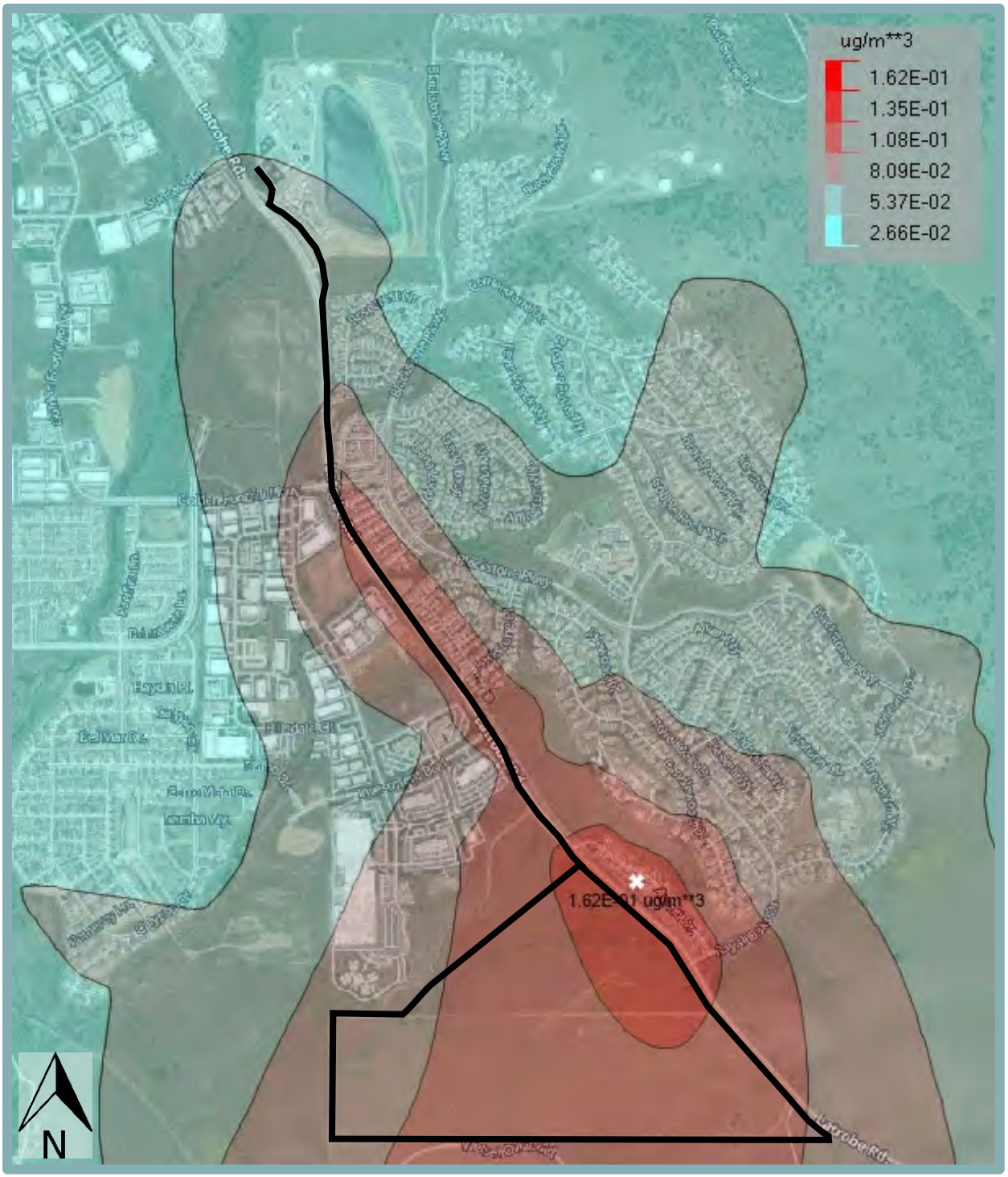
Naturally Occurring Asbestos

When rock containing naturally occurring asbestos (NOA) is broken or crushed, asbestos may become released and become airborne, causing a potential health hazard. Asbestos is a known carcinogen and, thus, NOA is considered a TAC.

[3] Office of Environmental Health Hazard Assessment. *Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments* [pg. 8-18]. February 2015.

[4] U.S. Environmental Protection Agency. *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*. December 2016.

Figure 6
AERMOD Results



According to the *El Dorado County Naturally Occurring Asbestos Review Map*, the project site is not within an Asbestos Review Area.[5] Thus, the site is not expected to contain NOA and impacts associated with potential exposure to NOA would not occur.

Criteria Pollutants

The EDCAQMD thresholds of significance were established with consideration given to the health-based air quality standards established by the NAAQS, and are designed to aid the district in achieving attainment of the NAAQS.[6] Although the EDCAQMD's thresholds of significance are intended to aid achievement of the NAAQS for which the MCAB is in nonattainment, the thresholds of significance do not represent a level above which individual project-level emissions would directly result in public health impacts.

Nevertheless, a project's compliance with EDCAQMD's thresholds of significance provides an indication that criteria pollutants released as a result of project implementation would not inhibit attainment of the health-based regional NAAQS. Because project-related ROG emissions would exceed the EDCAQMD's thresholds and, thus, could inhibit attainment of regional NAAQS, the criteria pollutants emitted during project implementation could be anticipated to result in measurable health impacts to sensitive receptors. Accordingly, the proposed project could expose sensitive receptors to excess concentrations of criteria pollutants.

Conclusion

Based on the above analysis, the proposed project would not be anticipated to result in the production of substantial concentrations of TACs, including DPM, or localized CO. In addition, the likelihood of NOA being present on the project site is low. However, because the proposed project would result in emissions of ROG above the applicable threshold of significance, the proposed project would be anticipated to result in the production of substantial concentrations of criteria pollutants. Therefore, a ***potentially significant*** impact would result.

Mitigation Measure(s)

As discussed above, implementation of Mitigation Measure AQ-1 would reduce emissions of ROG during project operations. However, as presented in Table 4, above, ROG emissions would still be above the applicable EDCAQMD threshold of significance. Mitigation Measure AQ-1 represents all feasible mitigation to reduce project-generated ROG emissions. Therefore, even with implementation of Mitigation Measure AQ-1, the impact would remain *significant and unavoidable.*

AQ-2 Implement Mitigation Measure AQ-1.

d. Emissions of pollutants have the potential to adversely affect sensitive receptors within the project area. Pollutants of principal concern include emissions leading to odors, emissions of dust, or emissions considered to constitute air pollutants. Air pollutants have been discussed in sections "a" through "c" above. Therefore, the following discussion focuses on emissions of odors and dust during construction and operation of the project.

[5] El Dorado County. *Asbestos Review Areas, Western Slope, County of El Dorado, State of California*. August 24, 2018. Available at: https://www.edcgov.us/Government/AirQualityManagement/Pages/asbestos_maps.aspx. Accessed February 2024.

[6] El Dorado County Air Pollution Control District. *Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*. February 2002.

Odors

Odors are generally regarded as an annoyance rather than a health hazard. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative methodologies to determine the presence of a significant odor impact do not exist. Certain land uses such as wastewater treatment facilities, landfills, confined animal facilities, composting operations, food manufacturing plants, refineries, and chemical plants have the potential to generate considerable odors. The proposed project would not introduce any such land uses and is not located in the vicinity of any such existing or planned land uses.

Diesel fumes from construction equipment and heavy-duty trucks could be found to be objectionable; however, as addressed above, operation of construction equipment would be regulated by EDCAPCD rules and regulations, restricted to daylight hours per the El Dorado County Code, Section 130.37.020 (I), and would occur intermittently throughout the course of a day. All construction equipment and operation thereof would be regulated per the statewide In-Use Off-Road Diesel Vehicle Regulation. In addition, construction is temporary and construction equipment would operate intermittently throughout the course of a day and would likely only occur over portions of the improvement area at a time. As noted under discussion item ‘c’, the modeling performed for the health risk assessment indicated that nearby receptors would not be subjected to substantial pollutant concentration. It follows that nearby receptors would also not be subjected to substantial odor concentrations. For the aforementioned reasons and due to the distance between the project site and the nearest sensitive receptors, the project would not result in any noticeable objectionable odors associated with construction.

In addition, EDCAQMD Rule 205, Nuisance, addresses the exposure of “nuisance or annoyance” air contaminant discharges, including odors, and provides enforcement of odor control. Rule 205 is complaint-based, where if public complaints are sufficient to cause the odor source to be considered a public nuisance, then the EDCAQMD is required to investigate the identified source, as well as determine and ensure a solution for the source of the complaint, which could include operational modifications to correct the nuisance condition. Thus, although not anticipated, if odor or air quality complaints are made upon development of the proposed project, the EDCAQMD would be required (per EDCAQMD Rule 205) to ensure that such complaints are addressed and mitigated, as necessary.

Dust

As noted previously, construction of projects within El Dorado County are required to comply with all applicable EDCAPCD rules and regulations. The aforementioned rules would act to reduce construction-related dust by implementing dust control measures. EDCAPCD Rule 223 includes requirements to reduce fugitive dust emissions, such as limiting vehicle speed limits on construction sites and unpaved roads, reducing dust track-out, and use of water for soil stabilization when warranted. Compliance with Rule 223 would ensure that measures sufficient to prevent emissions of fugitive dust beyond the boundaries of the project site would be implemented. Following project construction, vehicles operating within the project site would be limited to paved areas of the site, which would not have the potential to create substantial dust emissions. Thus, project operations would not include sources of dust that could adversely affect a substantial number of people.

Conclusion

For the aforementioned reasons, construction and operation of the proposed project would not create objectionable odors affecting a substantial number of people, and impacts would be ***less than significant***.

VIII. GREENHOUSE GAS EMISSIONS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	✖	☐	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?	☐	✖	☐	☐

Discussion

a, b. Emissions of greenhouse gas (GHG) contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth. An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHG are inherently considered cumulative impacts.

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions. Estimated GHG emissions attributable to future development would be primarily associated with increases of carbon dioxide (CO_2) and, to a lesser extent, other GHG pollutants, such as methane (CH_4) and nitrous oxide (N_2O) associated with area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste. The primary source of GHG emissions for the project would be mobile source emissions. The common unit of measurement for GHG is expressed in terms of annual metric tons of CO_2 equivalents ($MTCO_2e$/yr).

In recognition of the global scale of climate change, California has enacted several pieces of legislations in an attempt to curb GHG emissions. Specifically, Assembly Bill (AB) 32 and, more recently, Senate Bill (SB) 32, have established statewide GHG emissions reduction targets. Accordingly, the CARB has prepared the Climate Change Scoping Plan for California (Scoping Plan), approved in 2008 and updated in 2014, 2017, and 2022,[7] which provides the outline for actions to reduce California's GHG emissions and achieve the emissions reduction targets required by AB 32 and SB 32. In concert with statewide efforts to reduce GHG emissions, air districts, counties, and local jurisdictions throughout the State have implemented their own policies and plans to achieve emissions reductions in line with the Scoping Plan and emissions reduction targets, including AB 32 and SB 32.

The EDCAQMD has not formally adopted thresholds for evaluating GHG emissions, but has recommended the use of thresholds adopted by the SMAQMD.[8] As such, this GHG analysis has been prepared to show compliance with SMAQMD's GHG thresholds of

7 California Air Resources Board. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022.

8 Rania Serieh, Air Quality Engineer at El Dorado County Air Pollution Control District. Personal Communication [phone] with Briette Shea, Associate/Air Quality Technician at Raney Planning & Management, Inc. October 22, 2020; Personal Communication [email] with Karen Huss, Air Quality Specialist at Raney Planning & Management, Inc. August 31, 2023.

significance.[9] For construction related GHG emissions, SMAQMD has adopted a threshold of significance of 1,100 $MTCO_2e$/yr. For evaluating operational GHG emissions, SMAQMD has prepared a two-tiered framework of analysis for new projects. All development projects are required to implement Tier 1 measures (BMP 1 and 2). In addition, if operations of the proposed project would exceed 1,100 $MTCO_2e$/yr after implementation of the Tier 1 measures, then the project is required to implement Tier 2 measures (BMP 3). The Tier 1 and Tier 2 measures are presented below.

The 1,100 $MTCO_2e$/yr numerical thresholds used by SMAQMD is a screening level threshold that has been established as a universally accepted threshold throughout the State, with several other air districts, including the Placer County Air Pollution Control District (PCAPCD), which also has jurisdiction of a portion of the MCAB, having adopted the same 1,100 $MTCO_2e$/yr numerical threshold. In any case, SMAQMD has further included requirements to implement BMPs, as presented below, to reduce operational GHG emissions associated with new development. The SMAQMD BMPs are consistent with the Statewide CARB GHG reduction targets, including the 2045 target of carbon neutrality established by Executive Order (EO) B-55-18 (Assembly Bill [AB] 1279), by focusing on reducing GHG emissions related to natural gas and vehicle trips, which are widespread sources of GHG emissions. Therefore, while other approaches may be used in other areas of the State, and even by other development projects within the County, to reduce GHG emissions, for the reasons stated above, use of the SMAQMD GHG thresholds for the proposed project is appropriate. The SMAQMD BMPs are also consistent with guidance from other agencies, including the Governor's Office of Planning and Research (OPR).

Tier 1

All projects within SMAQMD's jurisdiction would be required to comply with the BMPs included in Tier 1. The proposed Tier 1 BMPs are as follows:

- ***BMP 1:*** No natural gas: Projects shall be designed and constructed without natural gas infrastructure.
- ***BMP 2:*** Electric vehicle (EV) ready: Projects shall meet the current California Green Building Code (CalGreen) Tier 2 standards, except all EV Capable spaces shall instead be EV Ready.

If a project would not comply with both of the foregoing BMPs, the project would be required to include features that would achieve an equivalent level of GHG emissions reductions. For instance, a project that includes natural gas infrastructure may include pre-wiring to allow for the future retrofit of all natural gas appliances with all-electric appliances. Furthermore, projects that are below OPR's *de minimis* vehicle miles travelled (VMT) criteria, and/or projects that emit less than 1,100 $MTCO_2e$/yr prior to implementation of BMP 1 and BMP 2 would be considered sufficiently small to screen out of further requirements, and would be assumed to result in a less-than-significant impact related to GHG emissions and climate change. Projects that are not small enough to screen out of further review are subject to review under Tier 2 of SMAQMD's updated Thresholds.

The following types of projects would be considered to be below the OPR's *de minimis* VMT criteria:

[9] Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment, Chapter 6: Greenhouse Gas Emissions.* February 2021.

- Projects (including office, residential, retail, and mixed-use developments) proposed within half a mile of an existing major transit stop or within a quarter of an existing stop along a high-quality transit corridor may be presumed to have a less-than-significant impact;
- 100 percent affordable residential development in infill locations be presumed to have a less-than-significant impact on VMT;
- Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant impact; and
- Local-serving retail developments (considered to be less than 50,000 square feet in size).

Tier 2

The second tier of SMAQMD's updated thresholds includes the following BMP:

- ***BMP 3***: Residential projects shall achieve a 15 percent reduction in VMT per resident, and office projects should achieve a 15 percent reduction in VMT per worker compared to existing average VMT per capita for the county, or for the city if a more local Senate Bill (SB) 743 target has been established. Retail projects should achieve no net increase in total VMT, as required to show consistency with SB 743. These reductions can be achieved by many strategies, such as:

    - Locate in an area that already has low VMT due to location, transit service, etc.;
    - Adopt CAPCOA measures;
    - Adopt measures noted in Sacramento's CAP checklist;
    - Join a Transportation Management Association;
    - Incorporate traffic calming measures;
    - Incorporate pedestrian facilities and connections to public transportation; and/or
    - Promote electric bicycle or other micro-mobility options.

As noted in SMAQMD's Guidance, for jurisdictions with SB 743 targets already established, projects that show consistency with those established targets would show consistency with the SMAQMD GHG targets. For El Dorado County, the 15 percent reduction goal for residential projects would remain applicable for the proposed project.

If a project cannot incorporate the foregoing BMPs, other reductions or purchasing and retiring of GHG/carbon offsets can be used as an alternative method of compliance. Additionally, while the all electric requirement in SMAQMD's BMP 1 has not been challenged and is consistent with guidance from other agencies, the Ninth Circuit recently held that the Energy Policy and Conservation Act expressly preempted an ordinance banning natural gas piping within new buildings for appliances covered by the Act unless narrow exceptions applied.[10] While that Ninth Circuit decision does not address mitigation measures or GHG emissions thresholds, a similar challenge could be brought forth in the future and a future court decision could find that all-electric mitigation requirements or

[10] *California Restaurant Association v. City of Berkeley* (9th Cir. 2023) 65 F.4th 1045, opinion modified (9th Cir. 2024) 89 F.4th 1094, rehearing and request for En banc hearing denied on January 2, 2024.

GHG emissions thresholds are similarly preempted for covered appliances. The feasibility of BMP 1 also relies on the adequate availability of electricity at the time of development.

Based on the project construction timeline, operational GHG emissions were estimated for the proposed project in the first full year of operations, 2028. Construction and operational GHG emissions were modeled using the same modeling assumptions as discussed in the Air Quality Section above. In addition, California has recently proposed amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation, which require the use of renewable diesel fuel in all off-road equipment greater than 25 horsepower. CalEEMod does not include renewable diesel as a fuel type for off-road equipment. As such, off-model calculations were conducted to determine the emissions reduction associated with renewable diesel-powered off-road equipment anticipated to be used during project construction. All modeling results and off-model calculations are included as Appendix A.

Construction Emissions

Construction-related GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change, as global climate change is inherently a cumulative effect that occurs over a long period of time and is quantified on a yearly basis. However, the proposed project's construction GHG emissions have been estimated and compared to the threshold of significance. The estimated unmitigated maximum annual construction-related emissions from the proposed project are presented in Table 6.

Table 6
Maximum Unmitigated Construction GHG Emissions

	GHG Emissions ($MTCO_2e$/yr)
Project Emissions	997.33
SMAQMD Threshold	**1,100.00**
Exceeds Threshold?	**NO**

Source: CalEEMod, February 2024/April 2024 (see Appendix A).

As shown in the table, maximum emissions related to construction of the proposed project would exceed the applicable threshold of significance. Therefore, project construction would be considered to result in a cumulatively considerable contribution to global climate change.

Operational GHG Emissions

The estimated unmitigated maximum annual operational emissions from the proposed project are presented in Table 7. The proposed project's compliance with the SMAQMD's BMPs is discussed in further detail below.

BMP-1: No Natural Gas

In order to be consistent with BMP 1, the proposed project is required to include all electric appliances and plumbing. However, project specific information is not available to ensure that the proposed project would be designed and constructed without natural gas infrastructure. Compliance with such requirements would be ensured by Mitigation Measure GHG-1. Therefore, with implementation of Mitigation Measure GHG-1 the proposed project would comply with BMP-1.

Table 7
Unmitigated Operational GHG Emissions ($MTCO_2e$/yr)

Emission Source	Project Emissions
Mobile	6,582
Area	731
Energy	2,210
Water	55
Waste	180
Refrigerants	3.52
Total Annual GHG Emissions	*9,761*
SMAQMD Threshold	**1,100.00**
Exceeds Threshold?	**YES**

Note: Rounding may result in small differences in summation.

Source: CalEEMod, April 2024 (see Appendix A).

It should be noted, however, that as discussed above, the potential exists that a challenge could be brought forth in the future and a future court decision could find that all-electric mitigation requirements or GHG emissions thresholds are preempted for covered appliances. The feasibility of BMP 1 also relies on the adequate availability of electricity at the time of development. Therefore, to conservatively address the possibility that implementation of BMP 1 may not be enforceable or commercially feasible at the time of development for certain project components, the use of GHG/carbon offsets is included in Mitigation Measure GHG-1 to ensure that any natural gas usage associated with the proposed project due the unenforceability of the prohibition of natural gas or commercial infeasibility of all electric is adequately offset at the time of project development.

BMP-2: EV-Ready

Consistent with BMP-2, the proposed project would be required to provide EV Ready parking spaces at the ratio with which the current CalGreen Tier 2 standards require EV Capable spaces (see Table 8). Compliance with BMP-2 would be ensured by Mitigation Measure GHG-1.

BMP-3: VMT Reduction

As noted above, the project would be required to implement BMPs 1 and 2. However, even with implementation of BMPs 1 and 2, the project would still result in annual emissions over the SMAQMD's threshold of significance and, therefore, would be subject to BMP 3. The proposed project would not qualify for exemption from BMP 3 under the OPR's *de minimis* VMT criteria. Therefore, in order to address the VMT reduction required by BMP-3, T. Kear Transportation Planning and Management conducted a VMT Analysis for the proposed project.[11]

Consistent with El Dorado County VMT Guidance (Resolution 141-2020), for the residential component of the project, a VMT model run was conducted for the Baseline Condition and Baseline Plus Project Condition (2018), as well as the Cumulative and Cumulative Plus Project Condition (2040) using the El Dorado County Travel Demand Model. Based on County guidance, project VMT was compared to the 15 percent reduction threshold of 17.3 VMT per capita. Based on the results of the VMT Analysis, the

[11] T. Kear Transportation Planning and Management. *Creekside Village CEQA VMT Analysis.* January 30, 2024.

residential component of the project is anticipated to generate 13.6 VMT per capita for the Baseline (2018) Condition, and 13.1 VMT per capita for the Cumulative (2040) Condition, which is below the 17.3 VMT per capita threshold.

Table 8
EV Ready Parking Space Requirements

Land Use Type	Requirements for New Construction		
1-2 family dwelling units/townhouses[1]	Each dwelling unit shall have a listed raceway to accommodate a dedicated 208/40-volt branch circuit		
Nonresidential[2]	**Total Number of Parking Spaces**	**EV Capable Spaces**	**EVSE Spaces**
	0-9	3	0
	10.25	8	3
	26-50	17	6
	51-75	28	9
	76-100	40	13
	101-150	57	19
	151-200	79	26
	201 and over	45 percent of actual parking spaces	33 percent of EV Ready Spaces

Sources:
1. 2022 CalGreen Code Section A4.106.8.1.
2. 2022 CalGreen Code Table A5.106.5.3.3.

In addition, with regard to the commercial component of the proposed project, the OPR Technical Advisory notes that projects less than 50,000 sf can generally be considered local serving. The proposed project would include a maximum of 5,400 sf of commercial uses on-site. Thus, the commercial component of the proposed project would be well below 50,000 sf, and, as a result, would be considered local serving. In addition, given the nature of the proposed project and the existing residential uses located in the direct vicinity of the project site, a reasonable assumption can be made that the majority of patrons visiting the proposed project would be travelling from the immediately surrounding area. As such, the proposed project would be classified as local-serving, and, based on guidance provided by OPR, may be presumed to result in a less-than-significant VMT impact. It should also be noted that according to the VMT Analysis, if built entirely as professional office rather than retail, the commercial component's anticipated trip generation would be under the County's 100 trip per day de minimis threshold for small projects, and the VMT impact would remain less-than-significant.

Based on the above, implementation of the proposed project would result in a reduction in local VMT in compliance with the relevant thresholds of significance and, consequently, the project would be considered to comply with BMP-3.

Conclusion

Based on the information presented above, the proposed project could be considered to generate GHG emissions during construction that would have a significant impact on the environment. In addition, project consistency with SMAQMD BMP-1 and BMP-2 cannot be ensured at this time. Therefore, the proposed project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Consequently, the project could result in a cumulatively considerable incremental

contribution to impacts related to GHG emissions or climate change and the project's impact would be ***potentially significant***.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

GHG-1 *The following requirements shall be noted on project improvement plans, subject to review and approval by the El Dorado County Planning Services Department:*

- *The proposed project shall be designed such that the project is built all-electric, and natural gas infrastructure shall be prohibited on-site; and*
- *The project shall be constructed to include electric vehicle (EV) ready parking spaces at the ratio with which the current CalGreen Tier 2 standards require EV Capable spaces.*

If the use of all-electric for any project component(s) (e.g., an appliance) is not enforceable or commercially feasible at the time of issuance of building permit, the applicant shall be required to include pre-wiring to allow for the future retrofit of all natural gas appliances with all-electric appliances and purchase off-site mitigation credits or forecasted mitigation units ("FMUs") (collectively, "GHG credits") for project-related GHG emissions from the component(s) using natural gas instead of electric. The emissions from the use of natural gas shall be calculated by a qualified professional utilizing EDCAQMD-, CARB-, or the USEPA-approved emissions models and quantification methods available and submitted to the County for review and approval, which shall include third-party review by a qualified consultant of the County's selection and be subject to applicant reimbursement of consultant costs.

Any and all GHG credits to off-set for the use of natural gas must be created through a CARB-approved registry. These registries are currently the ACR, CAR, and Verra, although CARB may accredit additional registries in the future. These registries use robust accounting protocols for all GHG credits created for their exchange, including the six currently approved CARB protocols. This mitigation measure specifically requires GHG credits created for the project originate from a CARB-approved protocol or a protocol that is equal to or more rigorous than CARB requirements under 17 CCR 95972. The selected protocol must demonstrate that the GHG-emissions reductions are real, permanent, quantifiable, verifiable, enforceable, and additional. Definitions of these terms from 17 CCR 95802(a) are provided below.

(1) Real: GHG reductions or enhancements result from a demonstrable action or set of actions and are quantified using appropriate, accurate, and conservative methodologies that account for all GHG emissions sources, GHG sinks, and GHG reservoirs within the [GHG credit] project boundary and account for uncertainty and the potential for activity-shifting and market-shifting leakage.

(2) Additional: GHG reductions or removals that exceed any GHG reduction, or removals otherwise required by law, regulation, or legally binding mandate, and that exceed any GHG reductions or removals that would otherwise occur in a conservative BAU scenario.
(3) Permanent: GHG reductions and removal enhancements are not reversible or, when GHG reductions and GHG-removal enhancements may be reversible, mechanisms are in place to replace any reversed GHG-emission reductions and GHG-removal enhancements to ensure that all credited reductions endure for at least 100 years.
(4) Quantifiable: The ability to accurately measure and calculate GHG reductions or GHG-removal enhancements relative to a project baseline in a reliable and replicable manner for all GHG emission sources, GHG sinks, or GHG reservoirs included within the [GHG credit] project boundary, while accounting for uncertainty. activity-shifting, and market-shifting leakage.
(5) Verifiable: A [GHG credit] project report assertion is well-documented and transparent such that it lends itself to an objective review by an accredited verification body.
(6) Enforceable: The authority for CARB to hold a particular party liable and take appropriate action if any of the provisions of this article are violated. Note that this definition of enforceability is specific to the Cap-and-Trade regulation, where CARB holds enforcement authority, but this measure will employ GHG credits from the voluntary market, where CARB has no enforcement authority. Applying the definition to this mitigation measure means that GHG reductions must be owned by a single entity and backed by a legal instrument or contract that defines exclusive ownership.

Geographic Prioritization of GHG Credits
GHG credits from reduction projects in the County will be prioritized before projects in larger geographies (i.e., northern California, California, United States, and international). The applicant will inform brokers of the required geographic prioritization for the procurement of GHG credits. GHG credits from reduction projects identified in the County that are of equal or lesser cost compared to the settlement price of the latest Cap-and-Trade auction must be included in the transaction. GHG credits from reduction projects outside of the County may be purchased if adequate credits cannot be found in the County or if they exceed the maximum price identified above. The economic and geographic analysis undertaken to inform the selection of GHG credits must be provided by the applicant to the County as part of the required documentation discussed below under Plan Implementation and Reporting.

Types of GHG Credits.
GHG credits may be in the form of GHG offsets for prior reductions of GHG emissions verified through protocols or FMUs for future committed GHG emissions meeting protocols. Because emissions reductions from GHG offsets have already occurred, their benefits are immediate and can be used to compensate for an equivalent quantity of project-generated emissions at any time. GHG credits from FMUs must be funded and implemented within 5 years of project GHG emissions to qualify as a GHG credit under this measure (i.e., there can only be a maximum of 5 years lag between project emissions and their real-world reductions through funding

a FMU in advance and implementing the FMU on the ground). Any use of FMUs that result in a time lag between project emissions and their reduction by GHG credits from FMUs must be compensated through a prorated surcharge of additional FMUs proportional to the effect of the delay. Because emissions of CO2 in the atmosphere reach their peak radiative forcing within 10 years, a surcharge of 10 percent for every year of lag between project emissions and their reduction through a FMU will be added to the GHG credit requirement (i.e., 1.10 FMUs would be required to mitigate 1 metric ton of project GHG emissions generated in the year prior to funding and implementation of the FMU).

Verification and Independent Review of GHG Credits

All GHG credits will be verified by an independent verifier accredited by the ANSI National Accreditation Board (ANAB) or CARB, or an expert with equivalent qualifications to the extent necessary to assist with the verification. Following the standards and requirements established by the accreditation board (i.e., ANAB or CARB), the verifier will certify the following.

- *GHG credits conform to a CARB-approved protocol or a protocol that is equal to or more rigorous than CARB requirements under 17 CCR 95972. Verification of the latter requires certification that the credits meet or exceed the standards in 17 CCR 95972.*
- *GHG credits are real, permanent, quantifiable, verifiable, enforceable, and additional, as defined in this measure.*
- *GHG credits are purchased according to the geographic prioritization standard defined in this measure under Geographic Prioritization of GHG Credits.*

Verification of GHG offsets must occur as part of the certification process for compliance with the accounting protocol. Because FMUs are GHG credits that will result from future projects, additional verification must occur beyond initial certification is required. Verification for FMUs must include initial certification and independent verification every 5 years over the duration of the FMU generating the GHG credits. The verification will examine both the GHG credit realization on the ground and its progress toward delivering future GHG credits. The applicant will retain an independent verifier meeting the qualifications described above to certify reductions achieved by FMUs are achieved following completion of the future reduction project.

Appendix A

CalEEMod Air Quality and Greenhouse Gas Modeling Results

Creekside Village Specific Plan Custom Report

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5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Creekside Village Specific Plan
Construction Start Date	6/3/2025
Operational Year	2028
Lead Agency	El Dorado County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	9.40
Location	38.61348203944053, -121.05086586387135
County	El Dorado-Mountain County
City	Unincorporated
Air District	El Dorado County AQMD
Air Basin	Mountain Counties
TAZ	470
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Single Family Housing	918	Dwelling Unit	137	1,790,100	804,400	—	2,332	—
Fast Food Restaurant with Drive Thru	2.40	1000sqft	0.47	2,400	2,768	—	—	—
Fast Food Restaurant w/o Drive Thru	1.50	1000sqft	0.29	1,500	1,708	—	—	—
High Turnover (Sit Down Restaurant)	1.50	1000sqft	0.29	1,500	1,708	—	—	—
Parking Lot	70.0	Space	0.75	0.00	4,417	—	—	—
City Park	13.6	Acre	13.6	0.00	592,416	592,416	—	—
Other Asphalt Surfaces	11.1	Acre	11.1	0.00	0.00	—	—	—
Other Asphalt Surfaces	52.5	1000sqft	1.21	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.91	50.1	29.7	38.4	0.06	1.23	9.41	10.6	1.14	3.70	4.84	—	9,998	9,998	0.28	0.66	22.7	10,221
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	3.51	50.1	18.1	34.8	0.04	0.50	4.78	5.28	0.46	1.15	1.61	—	9,681	9,681	0.21	0.66	0.64	9,882
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.39	35.7	12.0	24.0	0.03	0.30	3.40	3.70	0.28	0.81	1.09	—	6,889	6,889	0.14	0.47	7.01	7,039
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.44	6.51	2.19	4.38	0.01	0.05	0.62	0.67	0.05	0.15	0.20	—	1,140	1,140	0.02	0.08	1.16	1,165

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.91	3.29	29.7	29.6	0.06	1.23	9.41	10.6	1.14	3.70	4.84	—	6,823	6,823	0.28	0.06	0.87	6,849
2026	3.50	50.1	16.3	38.4	0.04	0.42	4.78	5.21	0.39	1.15	1.54	—	9,998	9,998	0.18	0.66	22.7	10,221
2027	3.36	50.0	15.6	36.9	0.04	0.37	4.78	5.16	0.35	1.15	1.49	—	9,867	9,867	0.18	0.63	20.7	10,079
2028	3.12	49.9	14.7	35.5	0.04	0.33	4.78	5.12	0.31	1.15	1.46	—	9,713	9,713	0.17	0.63	18.8	9,923
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.51	50.1	18.1	34.8	0.04	0.50	4.78	5.28	0.46	1.15	1.61	—	9,681	9,681	0.21	0.66	0.64	9,882
2026	3.34	49.9	17.0	33.4	0.04	0.42	4.78	5.21	0.39	1.15	1.54	—	9,558	9,558	0.20	0.66	0.59	9,760
2027	3.10	49.8	16.1	32.1	0.04	0.37	4.78	5.16	0.35	1.15	1.49	—	9,436	9,436	0.20	0.64	0.54	9,631
2028	2.98	49.6	15.2	31.0	0.04	0.33	4.78	5.12	0.31	1.15	1.46	—	9,290	9,290	0.20	0.64	0.49	9,485
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.10	6.65	7.09	10.0	0.02	0.26	1.74	2.00	0.24	0.57	0.82	—	2,431	2,431	0.07	0.11	1.62	2,466
2026	2.39	35.7	12.0	24.0	0.03	0.30	3.40	3.70	0.28	0.81	1.09	—	6,889	6,889	0.14	0.47	7.01	7,039

2027	2.21	35.6	11.4	23.2	0.03	0.27	3.40	3.67	0.25	0.81	1.06	—	6,800	6,800	0.14	0.45	6.39	6,945
2028	1.20	21.0	5.99	12.6	0.02	0.13	1.91	2.04	0.12	0.46	0.58	—	3,745	3,745	0.07	0.25	3.24	3,825
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.20	1.21	1.29	1.83	< 0.005	0.05	0.32	0.37	0.04	0.10	0.15	—	402	402	0.01	0.02	0.27	408
2026	0.44	6.51	2.19	4.38	0.01	0.05	0.62	0.67	0.05	0.15	0.20	—	1,140	1,140	0.02	0.08	1.16	1,165
2027	0.40	6.49	2.07	4.23	0.01	0.05	0.62	0.67	0.05	0.15	0.19	—	1,126	1,126	0.02	0.08	1.06	1,150
2028	0.22	3.84	1.09	2.29	< 0.005	0.02	0.35	0.37	0.02	0.08	0.11	—	620	620	0.01	0.04	0.54	633

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	55.8	100	47.8	275	0.55	2.23	33.7	35.9	2.20	8.57	10.8	370	74,081	74,451	41.3	2.39	142	76,336
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	46.0	90.4	51.2	221	0.52	2.21	33.7	35.9	2.18	8.57	10.8	370	71,122	71,492	41.8	2.59	24.4	73,333
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	47.3	92.3	38.3	233	0.45	1.27	33.5	34.7	1.24	8.52	9.76	370	56,744	57,113	41.3	2.48	73.5	58,959
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.63	16.9	7.00	42.5	0.08	0.23	6.11	6.34	0.23	1.55	1.78	61.2	9,395	9,456	6.83	0.41	12.2	9,761

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	48.4	46.2	25.1	213	0.41	0.42	33.7	34.1	0.39	8.57	8.96	—	41,254	41,254	2.29	2.10	121	42,057
Area	6.62	53.5	15.7	58.9	0.10	1.26	—	1.26	1.25	—	1.25	0.00	19,470	19,470	0.37	0.04	—	19,490
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Total	55.8	100	47.8	275	0.55	2.23	33.7	35.9	2.20	8.57	10.8	370	74,081	74,451	41.3	2.39	142	76,336
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	43.4	41.1	29.0	212	0.38	0.42	33.7	34.1	0.39	8.57	8.96	—	38,436	38,436	2.78	2.30	3.14	39,195
Area	1.78	49.0	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Total	46.0	90.4	51.2	221	0.52	2.21	33.7	35.9	2.18	8.57	10.8	370	71,122	71,492	41.8	2.59	24.4	73,333
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	43.7	41.4	27.7	203	0.38	0.42	33.5	33.9	0.39	8.52	8.91	—	38,975	38,975	2.58	2.22	52.3	39,754
Area	2.78	50.5	3.67	27.3	0.02	0.29	—	0.29	0.29	—	0.29	0.00	4,412	4,412	0.08	0.01	—	4,416
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3

Total	47.3	92.3	38.3	233	0.45	1.27	33.5	34.7	1.24	8.52	9.76	370	56,744	57,113	41.3	2.48	73.5	58,959
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	7.97	7.56	5.06	37.0	0.07	0.08	6.11	6.18	0.07	1.55	1.63	—	6,453	6,453	0.43	0.37	8.65	6,582
Area	0.51	9.22	0.67	4.98	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	730	730	0.01	< 0.005	—	731
Energy	0.15	0.07	1.26	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	2,199	2,199	0.25	0.02	—	2,210
Water	—	—	—	—	—	—	—	—	—	—	—	9.84	12.7	22.5	1.01	0.02	—	55.0
Waste	—	—	—	—	—	—	—	—	—	—	—	51.4	0.00	51.4	5.13	0.00	—	180
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.52	3.52
Total	8.63	16.9	7.00	42.5	0.08	0.23	6.11	6.34	0.23	1.55	1.78	61.2	9,395	9,456	6.83	0.41	12.2	9,761

3. Construction Emissions Details

3.1. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	0.35	3.25	3.10	0.01	0.14	—	0.14	0.12	—	0.12	—	723	723	0.03	0.01	—	726
Dust From Material Movement	—	—	—	—	—	—	1.01	1.01	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.06	0.59	0.57	< 0.005	0.02	—	0.02	0.02	—	0.02	—	120	120	< 0.005	< 0.005	—	120
Dust From Material Movement	—	—	—	—	—	—	0.18	0.18	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.07	1.26	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	224	224	0.01	0.01	0.87	228
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.6	22.6	< 0.005	< 0.005	0.04	22.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.74	3.74	< 0.005	< 0.005	0.01	3.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.17	1.53	1.91	< 0.005	0.06	—	0.06	0.06	—	0.06	—	352	352	0.01	< 0.005	—	353
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.28	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	58.3	58.3	< 0.005	< 0.005	—	58.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.58	1.43	1.48	16.5	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,359	3,359	0.09	0.13	0.37	3,401
Vendor	0.11	0.09	5.01	0.86	0.02	0.04	0.75	0.79	0.04	0.20	0.24	—	3,120	3,120	< 0.005	0.47	0.19	3,261
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.21	0.20	2.46	0.00	0.00	0.49	0.49	0.00	0.11	0.11	—	504	504	0.01	0.02	0.91	511
Vendor	0.02	0.01	0.73	0.12	< 0.005	0.01	0.11	0.12	0.01	0.03	0.04	—	458	458	< 0.005	0.07	0.47	479
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.45	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	83.4	83.4	< 0.005	< 0.005	0.15	84.6
Vendor	< 0.005	< 0.005	0.13	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	75.8	75.8	< 0.005	0.01	0.08	79.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.77	7.04	9.26	0.02	0.27	—	0.27	0.25	—	0.25	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.28	1.69	< 0.005	0.05	—	0.05	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.65	1.52	0.98	19.6	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,664	3,664	0.06	0.13	13.2	3,719
Vendor	0.10	0.09	4.43	0.78	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,071	3,071	< 0.005	0.47	6.87	3,219
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.52	1.37	1.36	15.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,298	3,298	0.08	0.13	0.34	3,340
Vendor	0.09	0.09	4.69	0.82	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,071	3,071	< 0.005	0.47	0.18	3,212
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.08	0.98	0.87	11.1	0.00	0.00	2.39	2.39	0.00	0.56	0.56	—	2,406	2,406	0.05	0.10	4.07	2,440
Vendor	0.07	0.06	3.31	0.57	0.01	0.01	0.53	0.55	0.01	0.14	0.16	—	2,193	2,193	< 0.005	0.34	2.12	2,296
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	0.16	2.03	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	398	398	0.01	0.02	0.67	404
Vendor	0.01	0.01	0.60	0.10	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	363	363	< 0.005	0.06	0.35	380
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.88	0.74	6.71	9.24	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.22	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.58	1.46	0.97	18.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,603	3,603	0.06	0.13	12.0	3,654
Vendor	0.09	0.07	4.18	0.76	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,014	3,014	< 0.005	0.45	6.24	3,155
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.36	1.32	1.24	14.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,243	3,243	0.08	0.13	0.31	3,285
Vendor	0.09	0.07	4.41	0.80	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,014	3,014	< 0.005	0.45	0.16	3,149
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.97	0.95	0.79	10.5	0.00	0.00	2.39	2.39	0.00	0.56	0.56	—	2,366	2,366	0.05	0.10	3.72	2,400
Vendor	0.07	0.05	3.12	0.56	0.01	0.01	0.53	0.55	0.01	0.14	0.16	—	2,153	2,153	< 0.005	0.32	1.92	2,251
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.17	0.14	1.91	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	392	392	0.01	0.02	0.62	397
Vendor	0.01	0.01	0.57	0.10	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	356	356	< 0.005	0.05	0.32	373
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.55	5.14	0.01	0.12	—	0.12	0.11	—	0.11	—	952	952	0.04	0.01	—	956
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.65	0.94	< 0.005	0.02	—	0.02	0.02	—	0.02	—	158	158	0.01	< 0.005	—	158
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.43	1.40	0.86	17.3	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,532	3,532	0.05	0.13	10.9	3,582
Vendor	0.09	0.07	3.94	0.72	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	2,943	2,943	< 0.005	0.45	5.63	3,084
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.31	1.17	1.12	13.5	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,180	3,180	0.07	0.13	0.28	3,222
Vendor	0.09	0.07	4.16	0.76	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	2,943	2,943	< 0.005	0.45	0.15	3,079
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.52	0.51	0.39	5.48	0.00	0.00	1.33	1.33	0.00	0.31	0.31	—	1,291	1,291	0.03	0.05	1.88	1,309
Vendor	0.04	0.03	1.63	0.29	0.01	0.01	0.30	0.30	0.01	0.08	0.09	—	1,169	1,169	< 0.005	0.18	0.96	1,224
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.07	1.00	0.00	0.00	0.24	0.24	0.00	0.06	0.06	—	214	214	< 0.005	0.01	0.31	217
Vendor	0.01	0.01	0.30	0.05	< 0.005	< 0.005	0.05	0.06	< 0.005	0.01	0.02	—	194	194	< 0.005	0.03	0.16	203
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.23	1.64	< 0.005	0.06	—	0.06	0.05	—	0.05	—	248	248	0.01	< 0.005	—	249
Paving	—	0.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.22	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.1	41.1	< 0.005	< 0.005	—	41.3
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.94	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	168	168	0.01	0.01	0.65	171
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.74	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	151	151	< 0.005	0.01	0.02	153
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.05	25.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.21	4.21	< 0.005	< 0.005	0.01	4.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134

Architectural	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.11	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.9	15.9	< 0.005	< 0.005	—	16.0
Architectural Coatings	—	5.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.64	2.64	< 0.005	< 0.005	—	2.65
Architectural Coatings	—	1.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32	0.29	0.30	3.30	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	672	672	0.02	0.03	0.07	680
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.04	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.9	81.9	< 0.005	< 0.005	0.15	83.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.6	13.6	< 0.005	< 0.005	0.02	13.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.61	0.81	< 0.005	0.02	—	0.02	0.02	—	0.02	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	—	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	—	6.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33	0.30	0.20	3.92	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	733	733	0.01	0.03	2.64	744
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.27	0.27	3.07	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	660	660	0.02	0.03	0.07	668
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.20	0.17	2.23	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	481	481	0.01	0.02	0.81	488

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.41	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	79.7	79.7	< 0.005	< 0.005	0.13	80.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	—	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	—	6.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32	0.29	0.19	3.68	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	721	721	0.01	0.03	2.41	731
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.26	0.25	2.87	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	649	649	0.02	0.03	0.06	657
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.19	0.16	2.09	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	473	473	0.01	0.02	0.74	480

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.38	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	78.4	78.4	< 0.005	< 0.005	0.12	79.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.19. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.34	0.47	< 0.005	0.01	—	0.01	0.01	—	0.01	—	56.7	56.7	< 0.005	< 0.005	—	56.9
Architectural Coatings	—	20.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.39	9.39	< 0.005	< 0.005	—	9.42
Architectural Coatings	—	3.64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.28	0.17	3.46	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	706	706	0.01	0.03	2.19	716
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.23	0.22	2.70	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	636	636	0.01	0.03	0.06	644
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.08	1.17	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	276	276	0.01	0.01	0.40	280

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.21	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	45.7	45.7	< 0.005	< 0.005	0.07	46.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	41.4	39.5	22.4	190	0.37	0.38	30.6	31.0	0.36	7.80	8.16	—	37,443	37,443	2.00	1.87	110	38,159
Fast Food Restaurant with Drive Thru	5.61	5.43	2.20	18.4	0.03	0.03	2.44	2.47	0.03	0.62	0.65	—	3,075	3,075	0.23	0.19	8.77	3,145
Fast Food Restaurant w/o Drive Thru	0.64	0.62	0.25	2.10	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	350	350	0.03	0.02	1.00	358

High Turnover (Sit Down Restaurant)	0.71	0.68	0.28	2.31	< 0.005	< 0.005	0.31	0.31	< 0.005	0.08	0.08	—	387	387	0.03	0.02	1.10	396
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	48.4	46.2	25.1	213	0.41	0.42	33.7	34.1	0.39	8.57	8.96	—	41,254	41,254	2.29	2.10	121	42,057
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	37.2	35.1	25.9	187	0.34	0.38	30.6	31.0	0.36	7.80	8.16	—	34,873	34,873	2.42	2.05	2.86	35,547
Fast Food Restaurant with Drive Thru	4.98	4.77	2.55	19.8	0.03	0.03	2.44	2.47	0.03	0.62	0.65	—	2,873	2,873	0.30	0.21	0.23	2,942
Fast Food Restaurant w/o Drive Thru	0.57	0.54	0.29	2.26	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	327	327	0.03	0.02	0.03	335
High Turnover (Sit Down Restaurant)	0.63	0.60	0.32	2.50	< 0.005	< 0.005	0.31	0.31	< 0.005	0.08	0.08	—	362	362	0.04	0.03	0.03	370
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	43.4	41.1	29.0	212	0.38	0.42	33.7	34.1	0.39	8.57	8.96	—	38,436	38,436	2.78	2.30	3.14	39,195
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	6.83	6.47	4.52	32.8	0.06	0.07	5.56	5.63	0.07	1.41	1.48	—	5,855	5,855	0.37	0.33	7.88	5,970
Fast Food Restaurant with Drive Thru	0.92	0.88	0.44	3.38	0.01	0.01	0.44	0.45	0.01	0.11	0.12	—	482	482	0.04	0.03	0.63	493
Fast Food Restaurant w/o Drive Thru	0.10	0.10	0.05	0.39	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	54.9	54.9	0.01	< 0.005	0.07	56.2
High Turnover (Sit Down Restaurant)	0.12	0.11	0.06	0.43	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	60.7	60.7	0.01	< 0.005	0.08	62.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.97	7.56	5.06	37.0	0.07	0.08	6.11	6.18	0.07	1.55	1.63	—	6,453	6,453	0.43	0.37	8.65	6,582

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	4,374	4,374	0.71	0.09	—	4,417
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	53.9	53.9	0.01	< 0.005	—	54.4
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	16.0	16.0	< 0.005	< 0.005	—	16.2
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,511	4,511	0.73	0.09	—	4,556
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	4,374	4,374	0.71	0.09	—	4,417

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	53.9	53.9	0.01	< 0.005	—	54.4
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	16.0	16.0	< 0.005	< 0.005	—	16.2
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,511	4,511	0.73	0.09	—	4,556
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	724	724	0.12	0.01	—	731
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	8.92	8.92	< 0.005	< 0.005	—	9.00
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	5.57	5.57	< 0.005	< 0.005	—	5.63

High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	5.57	5.57	< 0.005	< 0.005	—	5.63
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	2.65	2.65	< 0.005	< 0.005	—	2.67
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	747	747	0.12	0.01	—	754

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.79	0.39	6.74	2.87	0.04	0.55	—	0.55	0.55	—	0.55	—	8,558	8,558	0.76	0.02	—	8,582
Fast Food Restaurant with Drive Thru	0.01	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.7	93.7	0.01	< 0.005	—	94.0
Fast Food Restaurant w/o Drive Thru	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7

High Turnover (Sit Down Restaurant)	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	8,769	8,769	0.78	0.02	—	8,794
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.79	0.39	6.74	2.87	0.04	0.55	—	0.55	0.55	—	0.55	—	8,558	8,558	0.76	0.02	—	8,582
Fast Food Restaurant with Drive Thru	0.01	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.7	93.7	0.01	< 0.005	—	94.0
Fast Food Restaurant w/o Drive Thru	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
High Turnover (Sit Down Restaurant)	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	8,769	8,769	0.78	0.02	—	8,794
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.14	0.07	1.23	0.52	0.01	0.10	—	0.10	0.10	—	0.10	—	1,417	1,417	0.13	< 0.005	—	1,421
Fast Food Restaurant with Drive Thru	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.5	15.5	< 0.005	< 0.005	—	15.6
Fast Food Restaurant w/o Drive Thru	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.70	9.70	< 0.005	< 0.005	—	9.73
High Turnover (Sit Down Restaurant)	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.70	9.70	< 0.005	< 0.005	—	9.73
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.15	0.07	1.26	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	1,452	1,452	0.13	< 0.005	—	1,456

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.78	0.89	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Consumer Products	—	38.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	9.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	4.84	4.58	0.50	52.4	< 0.005	0.02	—	0.02	0.02	—	0.02	—	140	140	0.01	< 0.005	—	141
Total	6.62	53.5	15.7	58.9	0.10	1.26	—	1.26	1.25	—	1.25	0.00	19,470	19,470	0.37	0.04	—	19,490
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.78	0.89	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Consumer Products	—	38.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	9.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	1.78	49.0	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.07	0.04	0.62	0.27	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	719	719	0.01	< 0.005	—	720
Consumer Products	—	7.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coatings	—	1.69	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.44	0.41	0.04	4.72	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.4	11.4	< 0.005	< 0.005	—	11.5
Total	0.51	9.22	0.67	4.98	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	730	730	0.01	< 0.005	—	731

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	56.3	60.9	117	5.78	0.14	—	303
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.40	1.30	2.70	0.14	< 0.005	—	7.30
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.04	0.04	< 0.005	< 0.005	—	0.04
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	12.7	12.7	< 0.005	< 0.005	—	12.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	56.3	60.9	117	5.78	0.14	—	303
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.40	1.30	2.70	0.14	< 0.005	—	7.30
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.04	0.04	< 0.005	< 0.005	—	0.04
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	12.7	12.7	< 0.005	< 0.005	—	12.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	9.32	10.1	19.4	0.96	0.02	—	50.1
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.23	0.22	0.45	0.02	< 0.005	—	1.21
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.14	0.13	0.28	0.01	< 0.005	—	0.76
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.14	0.13	0.28	0.01	< 0.005	—	0.76
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.01	0.01	< 0.005	< 0.005	—	0.01
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	2.11	2.11	< 0.005	< 0.005	—	2.13
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	9.84	12.7	22.5	1.01	0.02	—	55.0

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	276	0.00	276	27.6	0.00	—	965
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	14.9	0.00	14.9	1.49	0.00	—	52.1
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	9.31	0.00	9.31	0.93	0.00	—	32.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	9.62	0.00	9.62	0.96	0.00	—	33.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.21
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	276	0.00	276	27.6	0.00	—	965
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	14.9	0.00	14.9	1.49	0.00	—	52.1

Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	9.31	0.00	9.31	0.93	0.00	—	32.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	9.62	0.00	9.62	0.96	0.00	—	33.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.21
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	45.6	0.00	45.6	4.56	0.00	—	160
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	2.47	0.00	2.47	0.25	0.00	—	8.63
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.54	0.00	1.54	0.15	0.00	—	5.39
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	1.59	0.00	1.59	0.16	0.00	—	5.57
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

City Park	—	—	—	—	—	—	—	—	—	—	—	0.10	0.00	0.10	0.01	0.00	—	0.37
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	51.4	0.00	51.4	5.13	0.00	—	180

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.75	3.75
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.75	3.75
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.12	2.12
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.62	0.62
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.39	0.39

High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.39	0.39
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.52	3.52

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	6/2/2025	7/25/2025	5.00	40.0	—
Building Construction	Building Construction	10/18/2025	7/21/2028	5.00	720	—
Paving	Paving	7/26/2025	10/17/2025	5.00	60.0	—
Architectural Coating	Architectural Coating	11/1/2025	8/4/2028	5.00	720	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20

Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	333	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	99.0	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT

Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	66.5	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	3,624,953	1,208,318	8,100	2,700	34,124

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	—	—	120	0.00	—
Paving	0.00	0.00	0.00	0.00	23.2

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	10.1	0%
Fast Food Restaurant with Drive Thru	0.00	0%
Fast Food Restaurant w/o Drive Thru	0.00	0%
High Turnover (Sit Down Restaurant)	0.00	0%
Parking Lot	0.75	100%
City Park	0.00	0%
Other Asphalt Surfaces	11.1	100%
Other Asphalt Surfaces	1.21	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	8,482	8,482	8,482	3,096,047	42,968	42,968	42,968	15,683,177
Fast Food Restaurant with Drive Thru	1,255	1,255	1,255	458,078	3,419	3,419	3,419	1,247,954

Fast Food Restaurant w/o Drive Thru	143	143	143	52,193	390	390	390	142,191
High Turnover (Sit Down Restaurant)	158	158	158	57,668	430	430	430	157,107
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	918
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
3624952.5	1,208,318	8,100	2,700	34,124

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	7,826,601	204	0.0330	0.0040	26,704,643
Fast Food Restaurant with Drive Thru	96,369	204	0.0330	0.0040	292,442
Fast Food Restaurant w/o Drive Thru	60,230	204	0.0330	0.0040	182,776
High Turnover (Sit Down Restaurant)	60,230	204	0.0330	0.0040	182,776
Parking Lot	28,619	204	0.0330	0.0040	0.00
City Park	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	29,362,184	10,550,988
Fast Food Restaurant with Drive Thru	728,481	29,706

Fast Food Restaurant w/o Drive Thru	455,301	18,330
High Turnover (Sit Down Restaurant)	455,301	18,330
Parking Lot	0.00	47,402
City Park	0.00	14,128,146
Other Asphalt Surfaces	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	512	—
Fast Food Restaurant with Drive Thru	27.6	—
Fast Food Restaurant w/o Drive Thru	17.3	—
High Turnover (Sit Down Restaurant)	17.8	—
Parking Lot	0.00	—
City Park	1.17	—
Other Asphalt Surfaces	0.00	—
Other Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0

Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Fast Food Restaurant w/o Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant w/o Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant w/o Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
High Turnover (Sit Down Restaurant)	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
High Turnover (Sit Down Restaurant)	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
High Turnover (Sit Down Restaurant)	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage and square footage adjusted based on Creekside SP land use summary.
Construction: Construction Phases	Phase timing based on applicant provided information. Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days
Construction: Architectural Coatings	Based on EDCAQMD Rule 215.
Operations: Vehicle Data	Trip rates and VMT adjusted based on project-specific traffic report.
Operations: Hearths	All units would have natural gas fireplaces per applicant’s AQ questionnaire.
Operations: Architectural Coatings	Based on EDCAQMD Rule 215.
Operations: Road Dust	All roads in project vicinity are paved
Construction: On-Road Fugitive Dust	All roads in project area are paved.

Creekside Village - Off-Site Pipeline Improvement Custom Report

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5.18.2.1. Unmitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Creekside Village - Off-Site Pipeline Improvement
Construction Start Date	6/2/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	9.40
Location	38.61311297891615, -121.0506230315606
County	El Dorado-Mountain County
City	Unincorporated
Air District	El Dorado County AQMD
Air Basin	Mountain Counties
TAZ	470
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Linear	1.50	Mile	2.50	0.00	—	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.49	0.41	3.59	4.97	0.01	0.21	0.53	0.74	0.19	0.06	0.25	—	757	757	0.03	0.01	0.02	760
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.08	0.07	0.54	0.77	< 0.005	0.02	0.01	0.03	0.02	< 0.005	0.02	—	117	117	< 0.005	< 0.005	< 0.005	117
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	0.01	0.10	0.14	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	19.4	19.4	< 0.005	< 0.005	< 0.005	19.4

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.49	0.41	3.59	4.97	0.01	0.21	0.53	0.74	0.19	0.06	0.25	—	757	757	0.03	0.01	0.02	760
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.08	0.07	0.54	0.77	< 0.005	0.02	0.01	0.03	0.02	< 0.005	0.02	—	117	117	< 0.005	< 0.005	< 0.005	117
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.01	0.01	0.10	0.14	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	19.4	19.4	< 0.005	< 0.005	< 0.005	19.4

3. Construction Emissions Details

3.1. Linear, Grubbing & Land Clearing (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.46	0.39	3.39	3.49	< 0.005	0.21	—	0.21	0.19	—	0.19	—	490	490	0.02	< 0.005	—	492
Dust From Material Movement	—	—	—	—	—	—	0.53	0.53	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.40	9.40	< 0.005	< 0.005	—	9.44

Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.56	1.56	< 0.005	< 0.005	—	1.56
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Linear, Grading & Excavation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.37	0.31	2.36	4.14	0.01	0.11	—	0.11	0.10	—	0.10	—	643	643	0.03	0.01	—	645
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.19	0.34	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.8	52.8	< 0.005	< 0.005	—	53.0
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.75	8.75	< 0.005	< 0.005	—	8.78

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Linear, Drainage, Utilities, & Sub-Grade (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.49	0.41	3.32	4.16	0.01	0.12	—	0.12	0.11	—	0.11	—	607	607	0.02	< 0.005	—	609
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.18	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	—	33.2	33.2	< 0.005	< 0.005	—	33.4
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.50	5.50	< 0.005	< 0.005	—	5.52
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.3	13.3	< 0.005	< 0.005	0.02	13.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.73	0.73	< 0.005	< 0.005	< 0.005	0.76
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.12	0.12	< 0.005	< 0.005	< 0.005	0.13

3.7. Linear, Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.58	4.97	0.01	0.17	—	0.17	0.15	—	0.15	—	748	748	0.03	0.01	—	751

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.10	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	20.5	20.5	< 0.005	< 0.005	—	20.6
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.39	3.39	< 0.005	< 0.005	—	3.40
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.85	8.85	< 0.005	< 0.005	0.01	9.28

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.24	0.24	< 0.005	< 0.005	< 0.005	0.25
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.04	0.04	< 0.005	< 0.005	< 0.005	0.04

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description

Linear, Grubbing & Land Clearing	Linear, Grubbing & Land Clearing	6/2/2025	6/11/2025	5.00	7.00	—
Linear, Grading & Excavation	Linear, Grading & Excavation	6/12/2025	7/24/2025	5.00	30.0	—
Linear, Drainage, Utilities, & Sub-Grade	Linear, Drainage, Utilities, & Sub-Grade	7/25/2025	8/22/2025	5.00	20.0	—
Linear, Paving	Linear, Paving	8/23/2025	9/6/2025	5.00	10.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Linear, Grubbing & Land Clearing	Crawler Tractors	Diesel	Average	1.00	8.00	87.0	0.43
Linear, Grubbing & Land Clearing	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Linear, Grading & Excavation	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Linear, Grading & Excavation	Rubber Tired Loaders	Diesel	Average	1.00	8.00	150	0.36
Linear, Drainage, Utilities, & Sub-Grade	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Linear, Drainage, Utilities, & Sub-Grade	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Linear, Drainage, Utilities, & Sub-Grade	Plate Compactors	Diesel	Average	1.00	8.00	8.00	0.43
Linear, Drainage, Utilities, & Sub-Grade	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Linear, Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Linear, Paving	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Linear, Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Linear, Grubbing & Land Clearing	—	—	—	—
Linear, Grubbing & Land Clearing	Worker	0.00	14.3	LDA,LDT1,LDT2
Linear, Grubbing & Land Clearing	Vendor	0.00	8.80	HHDT,MHDT
Linear, Grubbing & Land Clearing	Hauling	0.00	20.0	HHDT
Linear, Grubbing & Land Clearing	Onsite truck	—	—	HHDT
Linear, Grading & Excavation	—	—	—	—
Linear, Grading & Excavation	Worker	0.00	14.3	LDA,LDT1,LDT2
Linear, Grading & Excavation	Vendor	0.00	8.80	HHDT,MHDT
Linear, Grading & Excavation	Hauling	0.00	20.0	HHDT
Linear, Grading & Excavation	Onsite truck	—	—	HHDT
Linear, Drainage, Utilities, & Sub-Grade	—	—	—	—
Linear, Drainage, Utilities, & Sub-Grade	Worker	0.00	14.3	LDA,LDT1,LDT2
Linear, Drainage, Utilities, & Sub-Grade	Vendor	0.00	8.80	HHDT,MHDT
Linear, Drainage, Utilities, & Sub-Grade	Hauling	0.15	20.0	HHDT
Linear, Drainage, Utilities, & Sub-Grade	Onsite truck	—	—	HHDT
Linear, Paving	—	—	—	—
Linear, Paving	Worker	0.00	14.3	LDA,LDT1,LDT2
Linear, Paving	Vendor	0.00	8.80	HHDT,MHDT
Linear, Paving	Hauling	0.10	20.0	HHDT
Linear, Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Linear, Grubbing & Land Clearing	—	—	2.50	0.00	—
Linear, Grading & Excavation	—	—	2.50	0.00	—
Linear, Drainage, Utilities, & Sub-Grade	20.0	—	2.50	0.00	—
Linear, Paving	—	7.00	2.50	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Linear	2.50	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O

2025	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Construction: Off-Road Equipment	Equipment list provided by project applicant.
Construction: Dust From Material Movement	Material hauling information provided by project applicant.
Construction: On-Road Fugitive Dust	All roads in project vicinity are paved.

Creekside Village Specific Plan - Operational Mitigation Applied Custom Report

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3.3. Building Construction (2025) - Unmitigated

3.5. Building Construction (2026) - Unmitigated

3.7. Building Construction (2027) - Unmitigated

3.9. Building Construction (2028) - Unmitigated

3.11. Paving (2025) - Unmitigated

3.13. Architectural Coating (2025) - Unmitigated

3.15. Architectural Coating (2026) - Unmitigated

3.17. Architectural Coating (2027) - Unmitigated

3.19. Architectural Coating (2028) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Creekside Village Specific Plan - Operational Mitigation Applied
Construction Start Date	6/3/2025
Operational Year	2028
Lead Agency	El Dorado County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	9.40
Location	38.61348203944053, -121.05086586387135
County	El Dorado-Mountain County
City	Unincorporated
Air District	El Dorado County AQMD
Air Basin	Mountain Counties
TAZ	470
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Single Family Housing	918	Dwelling Unit	137	1,790,100	804,400	—	2,332	—
Fast Food Restaurant with Drive Thru	2.40	1000sqft	0.47	2,400	2,768	—	—	—
Fast Food Restaurant w/o Drive Thru	1.50	1000sqft	0.29	1,500	1,708	—	—	—
High Turnover (Sit Down Restaurant)	1.50	1000sqft	0.29	1,500	1,708	—	—	—
Parking Lot	70.0	Space	0.75	0.00	4,417	—	—	—
City Park	13.6	Acre	13.6	0.00	592,416	592,416	—	—
Other Asphalt Surfaces	11.1	Acre	11.1	0.00	0.00	—	—	—
Other Asphalt Surfaces	52.5	1000sqft	1.21	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.91	50.1	29.7	38.4	0.06	1.23	9.41	10.6	1.14	3.70	4.84	—	9,998	9,998	0.28	0.66	22.7	10,221
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	3.51	50.1	18.1	34.8	0.04	0.50	4.78	5.28	0.46	1.15	1.61	—	9,681	9,681	0.21	0.66	0.64	9,882
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.39	35.7	12.0	24.0	0.03	0.30	3.40	3.70	0.28	0.81	1.09	—	6,889	6,889	0.14	0.47	7.01	7,039
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.44	6.51	2.19	4.38	0.01	0.05	0.62	0.67	0.05	0.15	0.20	—	1,140	1,140	0.02	0.08	1.16	1,165

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.91	3.29	29.7	29.6	0.06	1.23	9.41	10.6	1.14	3.70	4.84	—	6,823	6,823	0.28	0.06	0.87	6,849
2026	3.50	50.1	16.3	38.4	0.04	0.42	4.78	5.21	0.39	1.15	1.54	—	9,998	9,998	0.18	0.66	22.7	10,221
2027	3.36	50.0	15.6	36.9	0.04	0.37	4.78	5.16	0.35	1.15	1.49	—	9,867	9,867	0.18	0.63	20.7	10,079
2028	3.12	49.9	14.7	35.5	0.04	0.33	4.78	5.12	0.31	1.15	1.46	—	9,713	9,713	0.17	0.63	18.8	9,923
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.51	50.1	18.1	34.8	0.04	0.50	4.78	5.28	0.46	1.15	1.61	—	9,681	9,681	0.21	0.66	0.64	9,882
2026	3.34	49.9	17.0	33.4	0.04	0.42	4.78	5.21	0.39	1.15	1.54	—	9,558	9,558	0.20	0.66	0.59	9,760
2027	3.10	49.8	16.1	32.1	0.04	0.37	4.78	5.16	0.35	1.15	1.49	—	9,436	9,436	0.20	0.64	0.54	9,631
2028	2.98	49.6	15.2	31.0	0.04	0.33	4.78	5.12	0.31	1.15	1.46	—	9,290	9,290	0.20	0.64	0.49	9,485
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.10	6.65	7.09	10.0	0.02	0.26	1.74	2.00	0.24	0.57	0.82	—	2,431	2,431	0.07	0.11	1.62	2,466
2026	2.39	35.7	12.0	24.0	0.03	0.30	3.40	3.70	0.28	0.81	1.09	—	6,889	6,889	0.14	0.47	7.01	7,039

2027	2.21	35.6	11.4	23.2	0.03	0.27	3.40	3.67	0.25	0.81	1.06	—	6,800	6,800	0.14	0.45	6.39	6,945
2028	1.20	21.0	5.99	12.6	0.02	0.13	1.91	2.04	0.12	0.46	0.58	—	3,745	3,745	0.07	0.25	3.24	3,825
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.20	1.21	1.29	1.83	< 0.005	0.05	0.32	0.37	0.04	0.10	0.15	—	402	402	0.01	0.02	0.27	408
2026	0.44	6.51	2.19	4.38	0.01	0.05	0.62	0.67	0.05	0.15	0.20	—	1,140	1,140	0.02	0.08	1.16	1,165
2027	0.40	6.49	2.07	4.23	0.01	0.05	0.62	0.67	0.05	0.15	0.19	—	1,126	1,126	0.02	0.08	1.06	1,150
2028	0.22	3.84	1.09	2.29	< 0.005	0.02	0.35	0.37	0.02	0.08	0.11	—	620	620	0.01	0.04	0.54	633

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	55.8	90.9	47.8	275	0.55	2.23	33.7	35.9	2.20	8.57	10.8	370	74,081	74,451	41.3	2.39	142	76,336
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	46.0	81.2	51.2	221	0.52	2.21	33.7	35.9	2.18	8.57	10.8	370	71,122	71,492	41.8	2.59	24.4	73,333
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	47.3	83.1	38.3	233	0.45	1.27	33.5	34.7	1.24	8.52	9.76	370	56,744	57,113	41.3	2.48	73.5	58,959
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.63	15.2	7.00	42.5	0.08	0.23	6.11	6.34	0.23	1.55	1.78	61.2	9,395	9,456	6.83	0.41	12.2	9,761

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	48.4	46.2	25.1	213	0.41	0.42	33.7	34.1	0.39	8.57	8.96	—	41,254	41,254	2.29	2.10	121	42,057
Area	6.62	44.3	15.7	58.9	0.10	1.26	—	1.26	1.25	—	1.25	0.00	19,470	19,470	0.37	0.04	—	19,490
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Total	55.8	90.9	47.8	275	0.55	2.23	33.7	35.9	2.20	8.57	10.8	370	74,081	74,451	41.3	2.39	142	76,336
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	43.4	41.1	29.0	212	0.38	0.42	33.7	34.1	0.39	8.57	8.96	—	38,436	38,436	2.78	2.30	3.14	39,195
Area	1.78	39.7	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Total	46.0	81.2	51.2	221	0.52	2.21	33.7	35.9	2.18	8.57	10.8	370	71,122	71,492	41.8	2.59	24.4	73,333
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	43.7	41.4	27.7	203	0.38	0.42	33.5	33.9	0.39	8.52	8.91	—	38,975	38,975	2.58	2.22	52.3	39,754
Area	2.78	41.3	3.67	27.3	0.02	0.29	—	0.29	0.29	—	0.29	0.00	4,412	4,412	0.08	0.01	—	4,416
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3

Total	47.3	83.1	38.3	233	0.45	1.27	33.5	34.7	1.24	8.52	9.76	370	56,744	57,113	41.3	2.48	73.5	58,959
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	7.97	7.56	5.06	37.0	0.07	0.08	6.11	6.18	0.07	1.55	1.63	—	6,453	6,453	0.43	0.37	8.65	6,582
Area	0.51	7.53	0.67	4.98	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	730	730	0.01	< 0.005	—	731
Energy	0.15	0.07	1.26	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	2,199	2,199	0.25	0.02	—	2,210
Water	—	—	—	—	—	—	—	—	—	—	—	9.84	12.7	22.5	1.01	0.02	—	55.0
Waste	—	—	—	—	—	—	—	—	—	—	—	51.4	0.00	51.4	5.13	0.00	—	180
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.52	3.52
Total	8.63	15.2	7.00	42.5	0.08	0.23	6.11	6.34	0.23	1.55	1.78	61.2	9,395	9,456	6.83	0.41	12.2	9,761

3. Construction Emissions Details

3.1. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	0.35	3.25	3.10	0.01	0.14	—	0.14	0.12	—	0.12	—	723	723	0.03	0.01	—	726
Dust From Material Movement	—	—	—	—	—	—	1.01	1.01	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.06	0.59	0.57	< 0.005	0.02	—	0.02	0.02	—	0.02	—	120	120	< 0.005	< 0.005	—	120
Dust From Material Movement	—	—	—	—	—	—	0.18	0.18	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.07	1.26	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	224	224	0.01	0.01	0.87	228
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.6	22.6	< 0.005	< 0.005	0.04	22.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.74	3.74	< 0.005	< 0.005	0.01	3.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.17	1.53	1.91	< 0.005	0.06	—	0.06	0.06	—	0.06	—	352	352	0.01	< 0.005	—	353
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.28	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	58.3	58.3	< 0.005	< 0.005	—	58.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.58	1.43	1.48	16.5	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,359	3,359	0.09	0.13	0.37	3,401
Vendor	0.11	0.09	5.01	0.86	0.02	0.04	0.75	0.79	0.04	0.20	0.24	—	3,120	3,120	< 0.005	0.47	0.19	3,261
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.21	0.20	2.46	0.00	0.00	0.49	0.49	0.00	0.11	0.11	—	504	504	0.01	0.02	0.91	511
Vendor	0.02	0.01	0.73	0.12	< 0.005	0.01	0.11	0.12	0.01	0.03	0.04	—	458	458	< 0.005	0.07	0.47	479
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.45	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	83.4	83.4	< 0.005	< 0.005	0.15	84.6
Vendor	< 0.005	< 0.005	0.13	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	75.8	75.8	< 0.005	0.01	0.08	79.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.77	7.04	9.26	0.02	0.27	—	0.27	0.25	—	0.25	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.28	1.69	< 0.005	0.05	—	0.05	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.65	1.52	0.98	19.6	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,664	3,664	0.06	0.13	13.2	3,719
Vendor	0.10	0.09	4.43	0.78	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,071	3,071	< 0.005	0.47	6.87	3,219
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.52	1.37	1.36	15.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,298	3,298	0.08	0.13	0.34	3,340
Vendor	0.09	0.09	4.69	0.82	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,071	3,071	< 0.005	0.47	0.18	3,212
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.08	0.98	0.87	11.1	0.00	0.00	2.39	2.39	0.00	0.56	0.56	—	2,406	2,406	0.05	0.10	4.07	2,440
Vendor	0.07	0.06	3.31	0.57	0.01	0.01	0.53	0.55	0.01	0.14	0.16	—	2,193	2,193	< 0.005	0.34	2.12	2,296
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	0.16	2.03	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	398	398	0.01	0.02	0.67	404
Vendor	0.01	0.01	0.60	0.10	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	363	363	< 0.005	0.06	0.35	380
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.88	0.74	6.71	9.24	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.22	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.58	1.46	0.97	18.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,603	3,603	0.06	0.13	12.0	3,654
Vendor	0.09	0.07	4.18	0.76	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,014	3,014	< 0.005	0.45	6.24	3,155
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.36	1.32	1.24	14.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,243	3,243	0.08	0.13	0.31	3,285
Vendor	0.09	0.07	4.41	0.80	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,014	3,014	< 0.005	0.45	0.16	3,149
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.97	0.95	0.79	10.5	0.00	0.00	2.39	2.39	0.00	0.56	0.56	—	2,366	2,366	0.05	0.10	3.72	2,400
Vendor	0.07	0.05	3.12	0.56	0.01	0.01	0.53	0.55	0.01	0.14	0.16	—	2,153	2,153	< 0.005	0.32	1.92	2,251
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.17	0.14	1.91	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	392	392	0.01	0.02	0.62	397
Vendor	0.01	0.01	0.57	0.10	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	356	356	< 0.005	0.05	0.32	373
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.55	5.14	0.01	0.12	—	0.12	0.11	—	0.11	—	952	952	0.04	0.01	—	956
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.65	0.94	< 0.005	0.02	—	0.02	0.02	—	0.02	—	158	158	0.01	< 0.005	—	158
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.43	1.40	0.86	17.3	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,532	3,532	0.05	0.13	10.9	3,582
Vendor	0.09	0.07	3.94	0.72	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	2,943	2,943	< 0.005	0.45	5.63	3,084
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.31	1.17	1.12	13.5	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,180	3,180	0.07	0.13	0.28	3,222
Vendor	0.09	0.07	4.16	0.76	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	2,943	2,943	< 0.005	0.45	0.15	3,079
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.52	0.51	0.39	5.48	0.00	0.00	1.33	1.33	0.00	0.31	0.31	—	1,291	1,291	0.03	0.05	1.88	1,309
Vendor	0.04	0.03	1.63	0.29	0.01	0.01	0.30	0.30	0.01	0.08	0.09	—	1,169	1,169	< 0.005	0.18	0.96	1,224
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.07	1.00	0.00	0.00	0.24	0.24	0.00	0.06	0.06	—	214	214	< 0.005	0.01	0.31	217
Vendor	0.01	0.01	0.30	0.05	< 0.005	< 0.005	0.05	0.06	< 0.005	0.01	0.02	—	194	194	< 0.005	0.03	0.16	203
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	—	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.23	1.64	< 0.005	0.06	—	0.06	0.05	—	0.05	—	248	248	0.01	< 0.005	—	249
Paving	—	0.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.22	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.1	41.1	< 0.005	< 0.005	—	41.3
Paving	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.94	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	168	168	0.01	0.01	0.65	171
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.74	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	151	151	< 0.005	0.01	0.02	153
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.05	25.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.21	4.21	< 0.005	< 0.005	0.01	4.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134

Architectural	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.11	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.9	15.9	< 0.005	< 0.005	—	16.0
Architectural Coatings	—	5.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.64	2.64	< 0.005	< 0.005	—	2.65
Architectural Coatings	—	1.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32	0.29	0.30	3.30	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	672	672	0.02	0.03	0.07	680
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.04	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.9	81.9	< 0.005	< 0.005	0.15	83.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.6	13.6	< 0.005	< 0.005	0.02	13.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.61	0.81	< 0.005	0.02	—	0.02	0.02	—	0.02	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	—	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	—	6.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33	0.30	0.20	3.92	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	733	733	0.01	0.03	2.64	744
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.27	0.27	3.07	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	660	660	0.02	0.03	0.07	668
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.20	0.17	2.23	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	481	481	0.01	0.02	0.81	488

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.41	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	79.7	79.7	< 0.005	< 0.005	0.13	80.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	—	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	—	6.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32	0.29	0.19	3.68	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	721	721	0.01	0.03	2.41	731
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.26	0.25	2.87	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	649	649	0.02	0.03	0.06	657
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.19	0.16	2.09	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	473	473	0.01	0.02	0.74	480

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.38	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	78.4	78.4	< 0.005	< 0.005	0.12	79.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.19. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.34	0.47	< 0.005	0.01	—	0.01	0.01	—	0.01	—	56.7	56.7	< 0.005	< 0.005	—	56.9
Architectural Coatings	—	20.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.39	9.39	< 0.005	< 0.005	—	9.42
Architectural Coatings	—	3.64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.28	0.17	3.46	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	706	706	0.01	0.03	2.19	716
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.23	0.22	2.70	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	636	636	0.01	0.03	0.06	644
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.08	1.17	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	276	276	0.01	0.01	0.40	280

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.21	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	45.7	45.7	< 0.005	< 0.005	0.07	46.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	41.4	39.5	22.4	190	0.37	0.38	30.6	31.0	0.36	7.80	8.16	—	37,443	37,443	2.00	1.87	110	38,159
Fast Food Restaurant with Drive Thru	5.61	5.43	2.20	18.4	0.03	0.03	2.44	2.47	0.03	0.62	0.65	—	3,075	3,075	0.23	0.19	8.77	3,145
Fast Food Restaurant w/o Drive Thru	0.64	0.62	0.25	2.10	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	350	350	0.03	0.02	1.00	358

High Turnover (Sit Down Restaurant)	0.71	0.68	0.28	2.31	< 0.005	< 0.005	0.31	0.31	< 0.005	0.08	0.08	—	387	387	0.03	0.02	1.10	396
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	48.4	46.2	25.1	213	0.41	0.42	33.7	34.1	0.39	8.57	8.96	—	41,254	41,254	2.29	2.10	121	42,057
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	37.2	35.1	25.9	187	0.34	0.38	30.6	31.0	0.36	7.80	8.16	—	34,873	34,873	2.42	2.05	2.86	35,547
Fast Food Restaurant with Drive Thru	4.98	4.77	2.55	19.8	0.03	0.03	2.44	2.47	0.03	0.62	0.65	—	2,873	2,873	0.30	0.21	0.23	2,942
Fast Food Restaurant w/o Drive Thru	0.57	0.54	0.29	2.26	< 0.005	< 0.005	0.28	0.28	< 0.005	0.07	0.07	—	327	327	0.03	0.02	0.03	335
High Turnover (Sit Down Restaurant)	0.63	0.60	0.32	2.50	< 0.005	< 0.005	0.31	0.31	< 0.005	0.08	0.08	—	362	362	0.04	0.03	0.03	370
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	43.4	41.1	29.0	212	0.38	0.42	33.7	34.1	0.39	8.57	8.96	—	38,436	38,436	2.78	2.30	3.14	39,195
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	6.83	6.47	4.52	32.8	0.06	0.07	5.56	5.63	0.07	1.41	1.48	—	5,855	5,855	0.37	0.33	7.88	5,970
Fast Food Restaurant with Drive Thru	0.92	0.88	0.44	3.38	0.01	0.01	0.44	0.45	0.01	0.11	0.12	—	482	482	0.04	0.03	0.63	493
Fast Food Restaurant w/o Drive Thru	0.10	0.10	0.05	0.39	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	54.9	54.9	0.01	< 0.005	0.07	56.2
High Turnover (Sit Down Restaurant)	0.12	0.11	0.06	0.43	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	60.7	60.7	0.01	< 0.005	0.08	62.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.97	7.56	5.06	37.0	0.07	0.08	6.11	6.18	0.07	1.55	1.63	—	6,453	6,453	0.43	0.37	8.65	6,582

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	4,374	4,374	0.71	0.09	—	4,417
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	53.9	53.9	0.01	< 0.005	—	54.4
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	16.0	16.0	< 0.005	< 0.005	—	16.2
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,511	4,511	0.73	0.09	—	4,556
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	4,374	4,374	0.71	0.09	—	4,417

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	53.9	53.9	0.01	< 0.005	—	54.4
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	16.0	16.0	< 0.005	< 0.005	—	16.2
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,511	4,511	0.73	0.09	—	4,556
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	724	724	0.12	0.01	—	731
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	8.92	8.92	< 0.005	< 0.005	—	9.00
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	5.57	5.57	< 0.005	< 0.005	—	5.63

High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	5.57	5.57	< 0.005	< 0.005	—	5.63
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	2.65	2.65	< 0.005	< 0.005	—	2.67
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	747	747	0.12	0.01	—	754

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.79	0.39	6.74	2.87	0.04	0.55	—	0.55	0.55	—	0.55	—	8,558	8,558	0.76	0.02	—	8,582
Fast Food Restaurant with Drive Thru	0.01	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.7	93.7	0.01	< 0.005	—	94.0
Fast Food Restaurant w/o Drive Thru	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7

High Turnover (Sit Down Restaurant)	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	8,769	8,769	0.78	0.02	—	8,794
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.79	0.39	6.74	2.87	0.04	0.55	—	0.55	0.55	—	0.55	—	8,558	8,558	0.76	0.02	—	8,582
Fast Food Restaurant with Drive Thru	0.01	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.7	93.7	0.01	< 0.005	—	94.0
Fast Food Restaurant w/o Drive Thru	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
High Turnover (Sit Down Restaurant)	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	8,769	8,769	0.78	0.02	—	8,794
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.14	0.07	1.23	0.52	0.01	0.10	—	0.10	0.10	—	0.10	—	1,417	1,417	0.13	< 0.005	—	1,421
Fast Food Restaurant with Drive Thru	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.5	15.5	< 0.005	< 0.005	—	15.6
Fast Food Restaurant w/o Drive Thru	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.70	9.70	< 0.005	< 0.005	—	9.73
High Turnover (Sit Down Restaurant)	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.70	9.70	< 0.005	< 0.005	—	9.73
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.15	0.07	1.26	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	1,452	1,452	0.13	< 0.005	—	1,456

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.78	0.89	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Consumer Products	—	38.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	4.84	4.58	0.50	52.4	< 0.005	0.02	—	0.02	0.02	—	0.02	—	140	140	0.01	< 0.005	—	141
Total	6.62	44.3	15.7	58.9	0.10	1.26	—	1.26	1.25	—	1.25	0.00	19,470	19,470	0.37	0.04	—	19,490
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.78	0.89	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Consumer Products	—	38.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	1.78	39.7	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.07	0.04	0.62	0.27	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	719	719	0.01	< 0.005	—	720
Consumer Products	—	7.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.44	0.41	0.04	4.72	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.4	11.4	< 0.005	< 0.005	—	11.5
Total	0.51	7.53	0.67	4.98	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	730	730	0.01	< 0.005	—	731

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	56.3	60.9	117	5.78	0.14	—	303
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.40	1.30	2.70	0.14	< 0.005	—	7.30
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.04	0.04	< 0.005	< 0.005	—	0.04
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	12.7	12.7	< 0.005	< 0.005	—	12.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	56.3	60.9	117	5.78	0.14	—	303
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.40	1.30	2.70	0.14	< 0.005	—	7.30
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.04	0.04	< 0.005	< 0.005	—	0.04
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	12.7	12.7	< 0.005	< 0.005	—	12.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	9.32	10.1	19.4	0.96	0.02	—	50.1
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.23	0.22	0.45	0.02	< 0.005	—	1.21
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.14	0.13	0.28	0.01	< 0.005	—	0.76
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.14	0.13	0.28	0.01	< 0.005	—	0.76
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.01	0.01	< 0.005	< 0.005	—	0.01
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	2.11	2.11	< 0.005	< 0.005	—	2.13
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	9.84	12.7	22.5	1.01	0.02	—	55.0

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	276	0.00	276	27.6	0.00	—	965
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	14.9	0.00	14.9	1.49	0.00	—	52.1
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	9.31	0.00	9.31	0.93	0.00	—	32.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	9.62	0.00	9.62	0.96	0.00	—	33.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.21
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	276	0.00	276	27.6	0.00	—	965
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	14.9	0.00	14.9	1.49	0.00	—	52.1

Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	9.31	0.00	9.31	0.93	0.00	—	32.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	9.62	0.00	9.62	0.96	0.00	—	33.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.21
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	45.6	0.00	45.6	4.56	0.00	—	160
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	2.47	0.00	2.47	0.25	0.00	—	8.63
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.54	0.00	1.54	0.15	0.00	—	5.39
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	1.59	0.00	1.59	0.16	0.00	—	5.57
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

City Park	—	—	—	—	—	—	—	—	—	—	—	0.10	0.00	0.10	0.01	0.00	—	0.37
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	51.4	0.00	51.4	5.13	0.00	—	180

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.75	3.75
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.75	3.75
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.12	2.12
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.62	0.62
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.39	0.39

High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.39	0.39
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.52	3.52

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	6/2/2025	7/25/2025	5.00	40.0	—
Building Construction	Building Construction	10/18/2025	7/21/2028	5.00	720	—
Paving	Paving	7/26/2025	10/17/2025	5.00	60.0	—
Architectural Coating	Architectural Coating	11/1/2025	8/4/2028	5.00	720	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20

Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	333	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	99.0	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT

Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	66.5	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	3,624,953	1,208,318	8,100	2,700	34,124

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	—	—	120	0.00	—
Paving	0.00	0.00	0.00	0.00	23.2

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	10.1	0%
Fast Food Restaurant with Drive Thru	0.00	0%
Fast Food Restaurant w/o Drive Thru	0.00	0%
High Turnover (Sit Down Restaurant)	0.00	0%
Parking Lot	0.75	100%
City Park	0.00	0%
Other Asphalt Surfaces	11.1	100%
Other Asphalt Surfaces	1.21	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	8,482	8,482	8,482	3,096,047	42,968	42,968	42,968	15,683,177
Fast Food Restaurant with Drive Thru	1,255	1,255	1,255	458,078	3,419	3,419	3,419	1,247,954

Fast Food Restaurant w/o Drive Thru	143	143	143	52,193	390	390	390	142,191
High Turnover (Sit Down Restaurant)	158	158	158	57,668	430	430	430	157,107
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	918
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
3624952.5	1,208,318	8,100	2,700	34,124

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	7,826,601	204	0.0330	0.0040	26,704,643
Fast Food Restaurant with Drive Thru	96,369	204	0.0330	0.0040	292,442
Fast Food Restaurant w/o Drive Thru	60,230	204	0.0330	0.0040	182,776
High Turnover (Sit Down Restaurant)	60,230	204	0.0330	0.0040	182,776
Parking Lot	28,619	204	0.0330	0.0040	0.00
City Park	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	29,362,184	10,550,988
Fast Food Restaurant with Drive Thru	728,481	29,706

Fast Food Restaurant w/o Drive Thru	455,301	18,330
High Turnover (Sit Down Restaurant)	455,301	18,330
Parking Lot	0.00	47,402
City Park	0.00	14,128,146
Other Asphalt Surfaces	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	512	—
Fast Food Restaurant with Drive Thru	27.6	—
Fast Food Restaurant w/o Drive Thru	17.3	—
High Turnover (Sit Down Restaurant)	17.8	—
Parking Lot	0.00	—
City Park	1.17	—
Other Asphalt Surfaces	0.00	—
Other Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0

Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Fast Food Restaurant w/o Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant w/o Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant w/o Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
High Turnover (Sit Down Restaurant)	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
High Turnover (Sit Down Restaurant)	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
High Turnover (Sit Down Restaurant)	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage and square footage adjusted based on Creekside SP land use summary.
Construction: Construction Phases	Phase timing based on applicant provided information. Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days
Construction: Architectural Coatings	Based on EDCAQMD Rule 215.
Operations: Vehicle Data	Trip rates and VMT adjusted based on project-specific traffic report.
Operations: Hearths	Based on applicant provided information, all fireplaces would be natural gas.
Operations: Architectural Coatings	Required by AQ mitigation measure.
Operations: Road Dust	All roads in project vicinity are paved
Construction: On-Road Fugitive Dust	All roads in project area are paved.

CalEEMod Maxmimum Annual Off-Road Equipment GHG Emissions	
Phase	Emissions (MTCO2e/yr)
Building Construction (2026)	284.00
Architectural Coating (2026)	15.80
Total	*299.80*
See Table 3.5 of CalEEMod Report See Table 3.15 of CalEEMod Report	

Emissions from Off-Road Equipment <25 HP	
Equipment	Emissions (MTCO2e/yr)
Generator Sets	12.00
<25 HP equipment is not required to adhere to the CARB Renewable Diesel Fuel Requirements. Thus, MTCO2e emitted from <25 HP equipment is omitted from the reduction calculation below.	
Source: https://ww2.arb.ca.gov/resources/fact-sheets/fact-sheet-renewable-diesel-fuel-requirements	

Total Emissions from Off-Road Equipment >25 HP	*287.80*

Emissions Reduction due to use of Renewable Diesel	**187.07**
Source: https://afdc.energy.gov/fuels/renewable_diesel.html	

Appendix B

AERMOD and HARP Results

BREEZE AERMOD Model Results

Max. Annual (4 YEARS) Results of Pollutant: OTHER (ug/m**3)

Group ID	High	Avg. Conc.	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
			East (m)	North (m)	(m)	(m)	(m)		
ALL	1ST	0.00531	669850.10	4276109.50	0.00	0.00	1.80	DC	
	2ND	0.00527	669890.10	4276074.50	0.00	0.00	1.80	DC	
	3RD	0.00527	669895.10	4276069.50	0.00	0.00	1.80	DC	
	4TH	0.00527	669900.10	4276064.50	0.00	0.00	1.80	DC	
	5TH	0.00527	669885.10	4276079.50	0.00	0.00	1.80	DC	
	6TH	0.00527	669905.10	4276059.50	0.00	0.00	1.80	DC	
	7TH	0.00527	669910.10	4276054.50	0.00	0.00	1.80	DC	
	8TH	0.00526	669880.10	4276084.50	0.00	0.00	1.80	DC	
	9TH	0.00525	669875.10	4276089.50	0.00	0.00	1.80	DC	
	10TH	0.00524	669870.10	4276094.50	0.00	0.00	1.80	DC	

Highest Results of Pollutant: OTHER

Avg. Per.	Grp ID	High	Type	Val	Units	Date	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
						YYMMDDHH	East (m)	North (m)	(m)	(m)	(m)		
1-HR	ALL	1ST	Avg. Conc.	0.16229	ug/m**3	15012109	669965.10	4276009.50	0.00	0.00	1.80	DC	

Summary of Total Messages

#	Message Type
0	Fatal Error Message(s)
4	Warning Message(s)
1576	Informational Message(s)
43680	Hours Were Processed
643	Calm Hours Identified
933	Missing Hours Identified (2.14 Percent)

Error & Warning Messages

Msg. Type	Pathway	Ref. #	Description

WARNING	ME	W186	THRESH_1MIN 1-min ASOS wind speed threshold used 0.50

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AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	Creekside Village SP - Option B
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,ANNUAL
CO	URBANOPT	Urban options	
CO	POLLUTID	Pollutant ID	OTHER
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	T
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	I:\Projects\Active\El Dorado County\Creekside Village SP AQ-GHG\2023 project\HRA\AERMOD\SACEXE~1.SFC
ME	PROFFILE	Profile met file	I:\Projects\Active\El Dorado County\Creekside Village SP AQ-GHG\2023 project\HRA\AERMOD\SACEXE~1.PFL
ME	SURFDATA	Surf met data info.	23232 2014
ME	UAIRDATA	U-Air met data info.	23230 2014
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	7.3
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
2RPS3001	VOLUME	on-site	669013.2	4275254.6	0	0.00000779	(g/s)	5
2RPS3002	VOLUME	on-site	669076.8	4275254.6	0	0.00000779	(g/s)	5
2RPS3003	VOLUME	on-site	669140.4	4275254.6	0	0.00000779	(g/s)	5
2RPS3004	VOLUME	on-site	669204.0	4275254.6	0	0.00000779	(g/s)	5
2RPS3005	VOLUME	on-site	669267.7	4275254.6	0	0.00000779	(g/s)	5
2RPS3006	VOLUME	on-site	669331.3	4275254.6	0	0.00000779	(g/s)	5
2RPS3007	VOLUME	on-site	669394.9	4275254.6	0	0.00000779	(g/s)	5
2RPS3008	VOLUME	on-site	669458.5	4275254.6	0	0.00000779	(g/s)	5
2RPS3009	VOLUME	on-site	669522.1	4275254.6	0	0.00000779	(g/s)	5
2RPS300A	VOLUME	on-site	669585.7	4275254.6	0	0.00000779	(g/s)	5
2RPS300B	VOLUME	on-site	669649.4	4275254.6	0	0.00000779	(g/s)	5
2RPS300C	VOLUME	on-site	669713.0	4275254.6	0	0.00000779	(g/s)	5
2RPS300D	VOLUME	on-site	669776.6	4275254.6	0	0.00000779	(g/s)	5
2RPS300E	VOLUME	on-site	669840.2	4275254.6	0	0.00000779	(g/s)	5
2RPS300F	VOLUME	on-site	669903.8	4275254.6	0	0.00000779	(g/s)	5
2RPS300G	VOLUME	on-site	669967.4	4275254.6	0	0.00000779	(g/s)	5
2RPS300H	VOLUME	on-site	670031.0	4275254.6	0	0.00000779	(g/s)	5
2RPS300I	VOLUME	on-site	670094.7	4275254.6	0	0.00000779	(g/s)	5
2RPS300J	VOLUME	on-site	670158.3	4275254.6	0	0.00000779	(g/s)	5
2RPS300K	VOLUME	on-site	670221.9	4275254.6	0	0.00000779	(g/s)	5
2RPS300L	VOLUME	on-site	670285.5	4275254.6	0	0.00000779	(g/s)	5
2RPS300M	VOLUME	on-site	670349.1	4275254.6	0	0.00000779	(g/s)	5
2RPS300N	VOLUME	on-site	670412.7	4275254.6	0	0.00000779	(g/s)	5
2RPS300O	VOLUME	on-site	670476.3	4275254.6	0	0.00000779	(g/s)	5
2RPS300P	VOLUME	on-site	670540.0	4275254.6	0	0.00000779	(g/s)	5
2RPS300Q	VOLUME	on-site	669013.2	4275318.2	0	0.00000779	(g/s)	5
2RPS300R	VOLUME	on-site	669076.8	4275318.2	0	0.00000779	(g/s)	5
2RPS300S	VOLUME	on-site	669140.4	4275318.2	0	0.00000779	(g/s)	5
2RPS300T	VOLUME	on-site	669204.0	4275318.2	0	0.00000779	(g/s)	5
2RPS300U	VOLUME	on-site	669267.7	4275318.2	0	0.00000779	(g/s)	5
2RPS300V	VOLUME	on-site	669331.3	4275318.2	0	0.00000779	(g/s)	5
2RPS300W	VOLUME	on-site	669394.9	4275318.2	0	0.00000779	(g/s)	5
2RPS300X	VOLUME	on-site	669458.5	4275318.2	0	0.00000779	(g/s)	5
2RPS300Y	VOLUME	on-site	669522.1	4275318.2	0	0.00000779	(g/s)	5

2RPS300Z	VOLUME	on-site	669585.7	4275318.2	0	0.00000779	(g/s)	5
2RPS3010	VOLUME	on-site	669649.4	4275318.2	0	0.00000779	(g/s)	5
2RPS3011	VOLUME	on-site	669713.0	4275318.2	0	0.00000779	(g/s)	5
2RPS3012	VOLUME	on-site	669776.6	4275318.2	0	0.00000779	(g/s)	5
2RPS3013	VOLUME	on-site	669840.2	4275318.2	0	0.00000779	(g/s)	5
2RPS3014	VOLUME	on-site	669903.8	4275318.2	0	0.00000779	(g/s)	5
2RPS3015	VOLUME	on-site	669967.4	4275318.2	0	0.00000779	(g/s)	5
2RPS3016	VOLUME	on-site	670031.0	4275318.2	0	0.00000779	(g/s)	5
2RPS3017	VOLUME	on-site	670094.7	4275318.2	0	0.00000779	(g/s)	5
2RPS3018	VOLUME	on-site	670158.3	4275318.2	0	0.00000779	(g/s)	5
2RPS3019	VOLUME	on-site	670221.9	4275318.2	0	0.00000779	(g/s)	5
2RPS301A	VOLUME	on-site	670285.5	4275318.2	0	0.00000779	(g/s)	5
2RPS301B	VOLUME	on-site	670349.1	4275318.2	0	0.00000779	(g/s)	5
2RPS301C	VOLUME	on-site	670412.7	4275318.2	0	0.00000779	(g/s)	5
2RPS301D	VOLUME	on-site	669013.2	4275381.8	0	0.00000779	(g/s)	5
2RPS301E	VOLUME	on-site	669076.8	4275381.8	0	0.00000779	(g/s)	5
2RPS301F	VOLUME	on-site	669140.4	4275381.8	0	0.00000779	(g/s)	5
2RPS301G	VOLUME	on-site	669204.0	4275381.8	0	0.00000779	(g/s)	5
2RPS301H	VOLUME	on-site	669267.7	4275381.8	0	0.00000779	(g/s)	5
2RPS301I	VOLUME	on-site	669331.3	4275381.8	0	0.00000779	(g/s)	5
2RPS301J	VOLUME	on-site	669394.9	4275381.8	0	0.00000779	(g/s)	5
2RPS301K	VOLUME	on-site	669458.5	4275381.8	0	0.00000779	(g/s)	5
2RPS301L	VOLUME	on-site	669522.1	4275381.8	0	0.00000779	(g/s)	5
2RPS301M	VOLUME	on-site	669585.7	4275381.8	0	0.00000779	(g/s)	5
2RPS301N	VOLUME	on-site	669649.4	4275381.8	0	0.00000779	(g/s)	5
2RPS301O	VOLUME	on-site	669713.0	4275381.8	0	0.00000779	(g/s)	5
2RPS301P	VOLUME	on-site	669776.6	4275381.8	0	0.00000779	(g/s)	5
2RPS301Q	VOLUME	on-site	669840.2	4275381.8	0	0.00000779	(g/s)	5
2RPS301R	VOLUME	on-site	669903.8	4275381.8	0	0.00000779	(g/s)	5
2RPS301S	VOLUME	on-site	669967.4	4275381.8	0	0.00000779	(g/s)	5
2RPS301T	VOLUME	on-site	670031.0	4275381.8	0	0.00000779	(g/s)	5
2RPS301U	VOLUME	on-site	670094.7	4275381.8	0	0.00000779	(g/s)	5
2RPS301V	VOLUME	on-site	670158.3	4275381.8	0	0.00000779	(g/s)	5
2RPS301W	VOLUME	on-site	670221.9	4275381.8	0	0.00000779	(g/s)	5
2RPS301X	VOLUME	on-site	670285.5	4275381.8	0	0.00000779	(g/s)	5
2RPS301Y	VOLUME	on-site	670349.1	4275381.8	0	0.00000779	(g/s)	5
2RPS301Z	VOLUME	on-site	670412.7	4275381.8	0	0.00000779	(g/s)	5
2RPS3020	VOLUME	on-site	669013.2	4275445.5	0	0.00000779	(g/s)	5
2RPS3021	VOLUME	on-site	669076.8	4275445.5	0	0.00000779	(g/s)	5
2RPS3022	VOLUME	on-site	669140.4	4275445.5	0	0.00000779	(g/s)	5
2RPS3023	VOLUME	on-site	669204.0	4275445.5	0	0.00000779	(g/s)	5
2RPS3024	VOLUME	on-site	669267.7	4275445.5	0	0.00000779	(g/s)	5
2RPS3025	VOLUME	on-site	669331.3	4275445.5	0	0.00000779	(g/s)	5
2RPS3026	VOLUME	on-site	669394.9	4275445.5	0	0.00000779	(g/s)	5
2RPS3027	VOLUME	on-site	669458.5	4275445.5	0	0.00000779	(g/s)	5
2RPS3028	VOLUME	on-site	669522.1	4275445.5	0	0.00000779	(g/s)	5

2RPS3029	VOLUME	on-site	669585.7	4275445.5	0	0.00000779	(g/s)	5
2RPS302A	VOLUME	on-site	669649.4	4275445.5	0	0.00000779	(g/s)	5
2RPS302B	VOLUME	on-site	669713.0	4275445.5	0	0.00000779	(g/s)	5
2RPS302C	VOLUME	on-site	669776.6	4275445.5	0	0.00000779	(g/s)	5
2RPS302D	VOLUME	on-site	669840.2	4275445.5	0	0.00000779	(g/s)	5
2RPS302E	VOLUME	on-site	669903.8	4275445.5	0	0.00000779	(g/s)	5
2RPS302F	VOLUME	on-site	669967.4	4275445.5	0	0.00000779	(g/s)	5
2RPS302G	VOLUME	on-site	670031.0	4275445.5	0	0.00000779	(g/s)	5
2RPS302H	VOLUME	on-site	670094.7	4275445.5	0	0.00000779	(g/s)	5
2RPS302I	VOLUME	on-site	670158.3	4275445.5	0	0.00000779	(g/s)	5
2RPS302J	VOLUME	on-site	670221.9	4275445.5	0	0.00000779	(g/s)	5
2RPS302K	VOLUME	on-site	670285.5	4275445.5	0	0.00000779	(g/s)	5
2RPS302L	VOLUME	on-site	670349.1	4275445.5	0	0.00000779	(g/s)	5
2RPS302M	VOLUME	on-site	669013.2	4275509.1	0	0.00000779	(g/s)	5
2RPS302N	VOLUME	on-site	669076.8	4275509.1	0	0.00000779	(g/s)	5
2RPS302O	VOLUME	on-site	669140.4	4275509.1	0	0.00000779	(g/s)	5
2RPS302P	VOLUME	on-site	669204.0	4275509.1	0	0.00000779	(g/s)	5
2RPS302Q	VOLUME	on-site	669267.7	4275509.1	0	0.00000779	(g/s)	5
2RPS302R	VOLUME	on-site	669331.3	4275509.1	0	0.00000779	(g/s)	5
2RPS302S	VOLUME	on-site	669394.9	4275509.1	0	0.00000779	(g/s)	5
2RPS302T	VOLUME	on-site	669458.5	4275509.1	0	0.00000779	(g/s)	5
2RPS302U	VOLUME	on-site	669522.1	4275509.1	0	0.00000779	(g/s)	5
2RPS302V	VOLUME	on-site	669585.7	4275509.1	0	0.00000779	(g/s)	5
2RPS302W	VOLUME	on-site	669649.4	4275509.1	0	0.00000779	(g/s)	5
2RPS302X	VOLUME	on-site	669713.0	4275509.1	0	0.00000779	(g/s)	5
2RPS302Y	VOLUME	on-site	669776.6	4275509.1	0	0.00000779	(g/s)	5
2RPS302Z	VOLUME	on-site	669840.2	4275509.1	0	0.00000779	(g/s)	5
2RPS3030	VOLUME	on-site	669903.8	4275509.1	0	0.00000779	(g/s)	5
2RPS3031	VOLUME	on-site	669967.4	4275509.1	0	0.00000779	(g/s)	5
2RPS3032	VOLUME	on-site	670031.0	4275509.1	0	0.00000779	(g/s)	5
2RPS3033	VOLUME	on-site	670094.7	4275509.1	0	0.00000779	(g/s)	5
2RPS3034	VOLUME	on-site	670158.3	4275509.1	0	0.00000779	(g/s)	5
2RPS3035	VOLUME	on-site	670221.9	4275509.1	0	0.00000779	(g/s)	5
2RPS3036	VOLUME	on-site	670285.5	4275509.1	0	0.00000779	(g/s)	5
2RPS3037	VOLUME	on-site	669013.2	4275572.7	0	0.00000779	(g/s)	5
2RPS3038	VOLUME	on-site	669076.8	4275572.7	0	0.00000779	(g/s)	5
2RPS3039	VOLUME	on-site	669140.4	4275572.7	0	0.00000779	(g/s)	5
2RPS303A	VOLUME	on-site	669204.0	4275572.7	0	0.00000779	(g/s)	5
2RPS303B	VOLUME	on-site	669267.7	4275572.7	0	0.00000779	(g/s)	5
2RPS303C	VOLUME	on-site	669331.3	4275572.7	0	0.00000779	(g/s)	5
2RPS303D	VOLUME	on-site	669394.9	4275572.7	0	0.00000779	(g/s)	5
2RPS303E	VOLUME	on-site	669458.5	4275572.7	0	0.00000779	(g/s)	5
2RPS303F	VOLUME	on-site	669522.1	4275572.7	0	0.00000779	(g/s)	5
2RPS303G	VOLUME	on-site	669585.7	4275572.7	0	0.00000779	(g/s)	5
2RPS303H	VOLUME	on-site	669649.4	4275572.7	0	0.00000779	(g/s)	5

2RPS303I	VOLUME	on-site	669713.0	4275572.7	0	0.00000779	(g/s)	5
2RPS303J	VOLUME	on-site	669776.6	4275572.7	0	0.00000779	(g/s)	5
2RPS303K	VOLUME	on-site	669840.2	4275572.7	0	0.00000779	(g/s)	5
2RPS303L	VOLUME	on-site	669903.8	4275572.7	0	0.00000779	(g/s)	5
2RPS303M	VOLUME	on-site	669967.4	4275572.7	0	0.00000779	(g/s)	5
2RPS303N	VOLUME	on-site	670031.0	4275572.7	0	0.00000779	(g/s)	5
2RPS303O	VOLUME	on-site	670094.7	4275572.7	0	0.00000779	(g/s)	5
2RPS303P	VOLUME	on-site	670158.3	4275572.7	0	0.00000779	(g/s)	5
2RPS303Q	VOLUME	on-site	670221.9	4275572.7	0	0.00000779	(g/s)	5
2RPS303R	VOLUME	on-site	669331.3	4275636.3	0	0.00000779	(g/s)	5
2RPS303S	VOLUME	on-site	669394.9	4275636.3	0	0.00000779	(g/s)	5
2RPS303T	VOLUME	on-site	669458.5	4275636.3	0	0.00000779	(g/s)	5
2RPS303U	VOLUME	on-site	669522.1	4275636.3	0	0.00000779	(g/s)	5
2RPS303V	VOLUME	on-site	669585.7	4275636.3	0	0.00000779	(g/s)	5
2RPS303W	VOLUME	on-site	669649.4	4275636.3	0	0.00000779	(g/s)	5
2RPS303X	VOLUME	on-site	669713.0	4275636.3	0	0.00000779	(g/s)	5
2RPS303Y	VOLUME	on-site	669776.6	4275636.3	0	0.00000779	(g/s)	5
2RPS303Z	VOLUME	on-site	669840.2	4275636.3	0	0.00000779	(g/s)	5
2RPS3040	VOLUME	on-site	669903.8	4275636.3	0	0.00000779	(g/s)	5
2RPS3041	VOLUME	on-site	669967.4	4275636.3	0	0.00000779	(g/s)	5
2RPS3042	VOLUME	on-site	670031.0	4275636.3	0	0.00000779	(g/s)	5
2RPS3043	VOLUME	on-site	670094.7	4275636.3	0	0.00000779	(g/s)	5
2RPS3044	VOLUME	on-site	670158.3	4275636.3	0	0.00000779	(g/s)	5
2RPS3045	VOLUME	on-site	669394.9	4275699.9	0	0.00000779	(g/s)	5
2RPS3046	VOLUME	on-site	669458.5	4275699.9	0	0.00000779	(g/s)	5
2RPS3047	VOLUME	on-site	669522.1	4275699.9	0	0.00000779	(g/s)	5
2RPS3048	VOLUME	on-site	669585.7	4275699.9	0	0.00000779	(g/s)	5
2RPS3049	VOLUME	on-site	669649.4	4275699.9	0	0.00000779	(g/s)	5
2RPS304A	VOLUME	on-site	669713.0	4275699.9	0	0.00000779	(g/s)	5
2RPS304B	VOLUME	on-site	669776.6	4275699.9	0	0.00000779	(g/s)	5
2RPS304C	VOLUME	on-site	669840.2	4275699.9	0	0.00000779	(g/s)	5
2RPS304D	VOLUME	on-site	669903.8	4275699.9	0	0.00000779	(g/s)	5
2RPS304E	VOLUME	on-site	669967.4	4275699.9	0	0.00000779	(g/s)	5
2RPS304F	VOLUME	on-site	670031.0	4275699.9	0	0.00000779	(g/s)	5
2RPS304G	VOLUME	on-site	670094.7	4275699.9	0	0.00000779	(g/s)	5
2RPS304H	VOLUME	on-site	670158.3	4275699.9	0	0.00000779	(g/s)	5
2RPS304I	VOLUME	on-site	669458.5	4275763.5	0	0.00000779	(g/s)	5
2RPS304J	VOLUME	on-site	669522.1	4275763.5	0	0.00000779	(g/s)	5
2RPS304K	VOLUME	on-site	669585.7	4275763.5	0	0.00000779	(g/s)	5
2RPS304L	VOLUME	on-site	669649.4	4275763.5	0	0.00000779	(g/s)	5
2RPS304M	VOLUME	on-site	669713.0	4275763.5	0	0.00000779	(g/s)	5
2RPS304N	VOLUME	on-site	669776.6	4275763.5	0	0.00000779	(g/s)	5
2RPS304O	VOLUME	on-site	669840.2	4275763.5	0	0.00000779	(g/s)	5
2RPS304P	VOLUME	on-site	669903.8	4275763.5	0	0.00000779	(g/s)	5
2RPS304Q	VOLUME	on-site	669967.4	4275763.5	0	0.00000779	(g/s)	5
2RPS304R	VOLUME	on-site	670031.0	4275763.5	0	0.00000779	(g/s)	5

2RPS304S	VOLUME	on-site	670094.7	4275763.5	0	0.00000779	(g/s)	5
2RPS304T	VOLUME	on-site	669522.1	4275827.2	0	0.00000779	(g/s)	5
2RPS304U	VOLUME	on-site	669585.7	4275827.2	0	0.00000779	(g/s)	5
2RPS304V	VOLUME	on-site	669649.4	4275827.2	0	0.00000779	(g/s)	5
2RPS304W	VOLUME	on-site	669713.0	4275827.2	0	0.00000779	(g/s)	5
2RPS304X	VOLUME	on-site	669776.6	4275827.2	0	0.00000779	(g/s)	5
2RPS304Y	VOLUME	on-site	669840.2	4275827.2	0	0.00000779	(g/s)	5
2RPS304Z	VOLUME	on-site	669903.8	4275827.2	0	0.00000779	(g/s)	5
2RPS3050	VOLUME	on-site	669967.4	4275827.2	0	0.00000779	(g/s)	5
2RPS3051	VOLUME	on-site	670031.0	4275827.2	0	0.00000779	(g/s)	5
2RPS3052	VOLUME	on-site	669585.7	4275890.8	0	0.00000779	(g/s)	5
2RPS3053	VOLUME	on-site	669649.4	4275890.8	0	0.00000779	(g/s)	5
2RPS3054	VOLUME	on-site	669713.0	4275890.8	0	0.00000779	(g/s)	5
2RPS3055	VOLUME	on-site	669776.6	4275890.8	0	0.00000779	(g/s)	5
2RPS3056	VOLUME	on-site	669840.2	4275890.8	0	0.00000779	(g/s)	5
2RPS3057	VOLUME	on-site	669903.8	4275890.8	0	0.00000779	(g/s)	5
2RPS3058	VOLUME	on-site	669967.4	4275890.8	0	0.00000779	(g/s)	5
2RPS3059	VOLUME	on-site	669649.4	4275954.4	0	0.00000779	(g/s)	5
2RPS305A	VOLUME	on-site	669713.0	4275954.4	0	0.00000779	(g/s)	5
2RPS305B	VOLUME	on-site	669776.6	4275954.4	0	0.00000779	(g/s)	5
2RPS305C	VOLUME	on-site	669840.2	4275954.4	0	0.00000779	(g/s)	5
2RPS305D	VOLUME	on-site	669903.8	4275954.4	0	0.00000779	(g/s)	5
2RPS305E	VOLUME	on-site	669713.0	4276018.0	0	0.00000779	(g/s)	5
2RPS305F	VOLUME	on-site	669776.6	4276018.0	0	0.00000779	(g/s)	5
2RPS305G	VOLUME	on-site	669840.2	4276018.0	0	0.00000779	(g/s)	5
2RPS305H	VOLUME	on-site	669776.6	4276081.6	0	0.00000779	(g/s)	5
2RPS3070	VOLUME		668790.8	4278274.3	0	0.00001391	(g/s)	5
2RPS3071	VOLUME		668819.2	4278215.0	0	0.00001391	(g/s)	5
2RPS3072	VOLUME		668828.8	4278151.5	0	0.00001391	(g/s)	5
2RPS3073	VOLUME		668880.2	4278117.6	0	0.00001391	(g/s)	5
2RPS3074	VOLUME		668949.2	4278045.3	0	0.00001391	(g/s)	5
2RPS3075	VOLUME		668991.4	4277955.0	0	0.00001391	(g/s)	5
2RPS3076	VOLUME		668991.7	4277858.7	0	0.00001391	(g/s)	5
2RPS3077	VOLUME		668993.0	4277757.7	0	0.00001391	(g/s)	5
2RPS3078	VOLUME		668997.1	4277657.8	0	0.00001391	(g/s)	5
2RPS3079	VOLUME		669001.0	4277557.9	0	0.00001391	(g/s)	5
2RPS307A	VOLUME		669004.8	4277458.0	0	0.00001391	(g/s)	5
2RPS307B	VOLUME		669010.1	4277358.1	0	0.00001391	(g/s)	5
2RPS307C	VOLUME		669020.4	4277258.8	0	0.00001391	(g/s)	5
2RPS307D	VOLUME		669051.0	4277164.8	0	0.00001391	(g/s)	5
2RPS307E	VOLUME		669100.9	4277078.1	0	0.00001391	(g/s)	5
2RPS307F	VOLUME		669156.9	4276995.3	0	0.00001391	(g/s)	5
2RPS307G	VOLUME		669212.9	4276912.4	0	0.00001391	(g/s)	5
2RPS307H	VOLUME		669270.8	4276831.0	0	0.00001391	(g/s)	5
2RPS307I	VOLUME		669330.0	4276750.4	0	0.00001391	(g/s)	5

2RPS307J	VOLUME		669386.5	4276667.9	0	0.00001391	(g/s)	5
2RPS307K	VOLUME		669441.8	4276584.5	0	0.00001391	(g/s)	5
2RPS307L	VOLUME		669495.7	4276500.3	0	0.00001391	(g/s)	5
2RPS307M	VOLUME		669550.1	4276416.4	0	0.00001391	(g/s)	5
2RPS307N	VOLUME		669607.0	4276334.2	0	0.00001391	(g/s)	5
2RPS307O	VOLUME		669663.7	4276251.8	0	0.00001391	(g/s)	5
2RPS307P	VOLUME		669725.6	4276173.5	0	0.00001391	(g/s)	5

Volume Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Init. Lat. Dim.	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s)	(m)	(m)	(m)
2RPS3001	on-site	669013.2	4275254.6	0	0.00000779	5	29.59	1
2RPS3002	on-site	669076.8	4275254.6	0	0.00000779	5	29.59	1
2RPS3003	on-site	669140.4	4275254.6	0	0.00000779	5	29.59	1
2RPS3004	on-site	669204.0	4275254.6	0	0.00000779	5	29.59	1
2RPS3005	on-site	669267.7	4275254.6	0	0.00000779	5	29.59	1
2RPS3006	on-site	669331.3	4275254.6	0	0.00000779	5	29.59	1
2RPS3007	on-site	669394.9	4275254.6	0	0.00000779	5	29.59	1
2RPS3008	on-site	669458.5	4275254.6	0	0.00000779	5	29.59	1
2RPS3009	on-site	669522.1	4275254.6	0	0.00000779	5	29.59	1
2RPS300A	on-site	669585.7	4275254.6	0	0.00000779	5	29.59	1
2RPS300B	on-site	669649.4	4275254.6	0	0.00000779	5	29.59	1
2RPS300C	on-site	669713.0	4275254.6	0	0.00000779	5	29.59	1
2RPS300D	on-site	669776.6	4275254.6	0	0.00000779	5	29.59	1
2RPS300E	on-site	669840.2	4275254.6	0	0.00000779	5	29.59	1
2RPS300F	on-site	669903.8	4275254.6	0	0.00000779	5	29.59	1
2RPS300G	on-site	669967.4	4275254.6	0	0.00000779	5	29.59	1
2RPS300H	on-site	670031.0	4275254.6	0	0.00000779	5	29.59	1
2RPS300I	on-site	670094.7	4275254.6	0	0.00000779	5	29.59	1
2RPS300J	on-site	670158.3	4275254.6	0	0.00000779	5	29.59	1
2RPS300K	on-site	670221.9	4275254.6	0	0.00000779	5	29.59	1
2RPS300L	on-site	670285.5	4275254.6	0	0.00000779	5	29.59	1
2RPS300M	on-site	670349.1	4275254.6	0	0.00000779	5	29.59	1
2RPS300N	on-site	670412.7	4275254.6	0	0.00000779	5	29.59	1
2RPS300O	on-site	670476.3	4275254.6	0	0.00000779	5	29.59	1
2RPS300P	on-site	670540.0	4275254.6	0	0.00000779	5	29.59	1
2RPS300Q	on-site	669013.2	4275318.2	0	0.00000779	5	29.59	1
2RPS300R	on-site	669076.8	4275318.2	0	0.00000779	5	29.59	1
2RPS300S	on-site	669140.4	4275318.2	0	0.00000779	5	29.59	1
2RPS300T	on-site	669204.0	4275318.2	0	0.00000779	5	29.59	1
2RPS300U	on-site	669267.7	4275318.2	0	0.00000779	5	29.59	1
2RPS300V	on-site	669331.3	4275318.2	0	0.00000779	5	29.59	1
2RPS300W	on-site	669394.9	4275318.2	0	0.00000779	5	29.59	1
2RPS300X	on-site	669458.5	4275318.2	0	0.00000779	5	29.59	1

2RPS300Y	on-site	669522.1	4275318.2	0	0.00000779	5	29.59	1
2RPS300Z	on-site	669585.7	4275318.2	0	0.00000779	5	29.59	1
2RPS3010	on-site	669649.4	4275318.2	0	0.00000779	5	29.59	1
2RPS3011	on-site	669713.0	4275318.2	0	0.00000779	5	29.59	1
2RPS3012	on-site	669776.6	4275318.2	0	0.00000779	5	29.59	1
2RPS3013	on-site	669840.2	4275318.2	0	0.00000779	5	29.59	1
2RPS3014	on-site	669903.8	4275318.2	0	0.00000779	5	29.59	1
2RPS3015	on-site	669967.4	4275318.2	0	0.00000779	5	29.59	1
2RPS3016	on-site	670031.0	4275318.2	0	0.00000779	5	29.59	1
2RPS3017	on-site	670094.7	4275318.2	0	0.00000779	5	29.59	1
2RPS3018	on-site	670158.3	4275318.2	0	0.00000779	5	29.59	1
2RPS3019	on-site	670221.9	4275318.2	0	0.00000779	5	29.59	1
2RPS301A	on-site	670285.5	4275318.2	0	0.00000779	5	29.59	1
2RPS301B	on-site	670349.1	4275318.2	0	0.00000779	5	29.59	1
2RPS301C	on-site	670412.7	4275318.2	0	0.00000779	5	29.59	1
2RPS301D	on-site	669013.2	4275381.8	0	0.00000779	5	29.59	1
2RPS301E	on-site	669076.8	4275381.8	0	0.00000779	5	29.59	1
2RPS301F	on-site	669140.4	4275381.8	0	0.00000779	5	29.59	1
2RPS301G	on-site	669204.0	4275381.8	0	0.00000779	5	29.59	1
2RPS301H	on-site	669267.7	4275381.8	0	0.00000779	5	29.59	1
2RPS301I	on-site	669331.3	4275381.8	0	0.00000779	5	29.59	1
2RPS301J	on-site	669394.9	4275381.8	0	0.00000779	5	29.59	1
2RPS301K	on-site	669458.5	4275381.8	0	0.00000779	5	29.59	1
2RPS301L	on-site	669522.1	4275381.8	0	0.00000779	5	29.59	1
2RPS301M	on-site	669585.7	4275381.8	0	0.00000779	5	29.59	1
2RPS301N	on-site	669649.4	4275381.8	0	0.00000779	5	29.59	1
2RPS301O	on-site	669713.0	4275381.8	0	0.00000779	5	29.59	1
2RPS301P	on-site	669776.6	4275381.8	0	0.00000779	5	29.59	1
2RPS301Q	on-site	669840.2	4275381.8	0	0.00000779	5	29.59	1
2RPS301R	on-site	669903.8	4275381.8	0	0.00000779	5	29.59	1
2RPS301S	on-site	669967.4	4275381.8	0	0.00000779	5	29.59	1
2RPS301T	on-site	670031.0	4275381.8	0	0.00000779	5	29.59	1
2RPS301U	on-site	670094.7	4275381.8	0	0.00000779	5	29.59	1
2RPS301V	on-site	670158.3	4275381.8	0	0.00000779	5	29.59	1
2RPS301W	on-site	670221.9	4275381.8	0	0.00000779	5	29.59	1
2RPS301X	on-site	670285.5	4275381.8	0	0.00000779	5	29.59	1
2RPS301Y	on-site	670349.1	4275381.8	0	0.00000779	5	29.59	1
2RPS301Z	on-site	670412.7	4275381.8	0	0.00000779	5	29.59	1
2RPS3020	on-site	669013.2	4275445.5	0	0.00000779	5	29.59	1
2RPS3021	on-site	669076.8	4275445.5	0	0.00000779	5	29.59	1
2RPS3022	on-site	669140.4	4275445.5	0	0.00000779	5	29.59	1
2RPS3023	on-site	669204.0	4275445.5	0	0.00000779	5	29.59	1
2RPS3024	on-site	669267.7	4275445.5	0	0.00000779	5	29.59	1
2RPS3025	on-site	669331.3	4275445.5	0	0.00000779	5	29.59	1
2RPS3026	on-site	669394.9	4275445.5	0	0.00000779	5	29.59	1
2RPS3027	on-site	669458.5	4275445.5	0	0.00000779	5	29.59	1

2RPS3028	on-site	669522.1	4275445.5	0	0.00000779	5	29.59	1
2RPS3029	on-site	669585.7	4275445.5	0	0.00000779	5	29.59	1
2RPS302A	on-site	669649.4	4275445.5	0	0.00000779	5	29.59	1
2RPS302B	on-site	669713.0	4275445.5	0	0.00000779	5	29.59	1
2RPS302C	on-site	669776.6	4275445.5	0	0.00000779	5	29.59	1
2RPS302D	on-site	669840.2	4275445.5	0	0.00000779	5	29.59	1
2RPS302E	on-site	669903.8	4275445.5	0	0.00000779	5	29.59	1
2RPS302F	on-site	669967.4	4275445.5	0	0.00000779	5	29.59	1
2RPS302G	on-site	670031.0	4275445.5	0	0.00000779	5	29.59	1
2RPS302H	on-site	670094.7	4275445.5	0	0.00000779	5	29.59	1
2RPS302I	on-site	670158.3	4275445.5	0	0.00000779	5	29.59	1
2RPS302J	on-site	670221.9	4275445.5	0	0.00000779	5	29.59	1
2RPS302K	on-site	670285.5	4275445.5	0	0.00000779	5	29.59	1
2RPS302L	on-site	670349.1	4275445.5	0	0.00000779	5	29.59	1
2RPS302M	on-site	669013.2	4275509.1	0	0.00000779	5	29.59	1
2RPS302N	on-site	669076.8	4275509.1	0	0.00000779	5	29.59	1
2RPS302O	on-site	669140.4	4275509.1	0	0.00000779	5	29.59	1
2RPS302P	on-site	669204.0	4275509.1	0	0.00000779	5	29.59	1
2RPS302Q	on-site	669267.7	4275509.1	0	0.00000779	5	29.59	1
2RPS302R	on-site	669331.3	4275509.1	0	0.00000779	5	29.59	1
2RPS302S	on-site	669394.9	4275509.1	0	0.00000779	5	29.59	1
2RPS302T	on-site	669458.5	4275509.1	0	0.00000779	5	29.59	1
2RPS302U	on-site	669522.1	4275509.1	0	0.00000779	5	29.59	1
2RPS302V	on-site	669585.7	4275509.1	0	0.00000779	5	29.59	1
2RPS302W	on-site	669649.4	4275509.1	0	0.00000779	5	29.59	1
2RPS302X	on-site	669713.0	4275509.1	0	0.00000779	5	29.59	1
2RPS302Y	on-site	669776.6	4275509.1	0	0.00000779	5	29.59	1
2RPS302Z	on-site	669840.2	4275509.1	0	0.00000779	5	29.59	1
2RPS3030	on-site	669903.8	4275509.1	0	0.00000779	5	29.59	1
2RPS3031	on-site	669967.4	4275509.1	0	0.00000779	5	29.59	1
2RPS3032	on-site	670031.0	4275509.1	0	0.00000779	5	29.59	1
2RPS3033	on-site	670094.7	4275509.1	0	0.00000779	5	29.59	1
2RPS3034	on-site	670158.3	4275509.1	0	0.00000779	5	29.59	1
2RPS3035	on-site	670221.9	4275509.1	0	0.00000779	5	29.59	1
2RPS3036	on-site	670285.5	4275509.1	0	0.00000779	5	29.59	1
2RPS3037	on-site	669013.2	4275572.7	0	0.00000779	5	29.59	1
2RPS3038	on-site	669076.8	4275572.7	0	0.00000779	5	29.59	1
2RPS3039	on-site	669140.4	4275572.7	0	0.00000779	5	29.59	1
2RPS303A	on-site	669204.0	4275572.7	0	0.00000779	5	29.59	1
2RPS303B	on-site	669267.7	4275572.7	0	0.00000779	5	29.59	1
2RPS303C	on-site	669331.3	4275572.7	0	0.00000779	5	29.59	1
2RPS303D	on-site	669394.9	4275572.7	0	0.00000779	5	29.59	1
2RPS303E	on-site	669458.5	4275572.7	0	0.00000779	5	29.59	1
2RPS303F	on-site	669522.1	4275572.7	0	0.00000779	5	29.59	1
2RPS303G	on-site	669585.7	4275572.7	0	0.00000779	5	29.59	1

2RPS303H	on-site	669649.4	4275572.7	0	0.00000779	5	29.59	1
2RPS303I	on-site	669713.0	4275572.7	0	0.00000779	5	29.59	1
2RPS303J	on-site	669776.6	4275572.7	0	0.00000779	5	29.59	1
2RPS303K	on-site	669840.2	4275572.7	0	0.00000779	5	29.59	1
2RPS303L	on-site	669903.8	4275572.7	0	0.00000779	5	29.59	1
2RPS303M	on-site	669967.4	4275572.7	0	0.00000779	5	29.59	1
2RPS303N	on-site	670031.0	4275572.7	0	0.00000779	5	29.59	1
2RPS303O	on-site	670094.7	4275572.7	0	0.00000779	5	29.59	1
2RPS303P	on-site	670158.3	4275572.7	0	0.00000779	5	29.59	1
2RPS303Q	on-site	670221.9	4275572.7	0	0.00000779	5	29.59	1
2RPS303R	on-site	669331.3	4275636.3	0	0.00000779	5	29.59	1
2RPS303S	on-site	669394.9	4275636.3	0	0.00000779	5	29.59	1
2RPS303T	on-site	669458.5	4275636.3	0	0.00000779	5	29.59	1
2RPS303U	on-site	669522.1	4275636.3	0	0.00000779	5	29.59	1
2RPS303V	on-site	669585.7	4275636.3	0	0.00000779	5	29.59	1
2RPS303W	on-site	669649.4	4275636.3	0	0.00000779	5	29.59	1
2RPS303X	on-site	669713.0	4275636.3	0	0.00000779	5	29.59	1
2RPS303Y	on-site	669776.6	4275636.3	0	0.00000779	5	29.59	1
2RPS303Z	on-site	669840.2	4275636.3	0	0.00000779	5	29.59	1
2RPS3040	on-site	669903.8	4275636.3	0	0.00000779	5	29.59	1
2RPS3041	on-site	669967.4	4275636.3	0	0.00000779	5	29.59	1
2RPS3042	on-site	670031.0	4275636.3	0	0.00000779	5	29.59	1
2RPS3043	on-site	670094.7	4275636.3	0	0.00000779	5	29.59	1
2RPS3044	on-site	670158.3	4275636.3	0	0.00000779	5	29.59	1
2RPS3045	on-site	669394.9	4275699.9	0	0.00000779	5	29.59	1
2RPS3046	on-site	669458.5	4275699.9	0	0.00000779	5	29.59	1
2RPS3047	on-site	669522.1	4275699.9	0	0.00000779	5	29.59	1
2RPS3048	on-site	669585.7	4275699.9	0	0.00000779	5	29.59	1
2RPS3049	on-site	669649.4	4275699.9	0	0.00000779	5	29.59	1
2RPS304A	on-site	669713.0	4275699.9	0	0.00000779	5	29.59	1
2RPS304B	on-site	669776.6	4275699.9	0	0.00000779	5	29.59	1
2RPS304C	on-site	669840.2	4275699.9	0	0.00000779	5	29.59	1
2RPS304D	on-site	669903.8	4275699.9	0	0.00000779	5	29.59	1
2RPS304E	on-site	669967.4	4275699.9	0	0.00000779	5	29.59	1
2RPS304F	on-site	670031.0	4275699.9	0	0.00000779	5	29.59	1
2RPS304G	on-site	670094.7	4275699.9	0	0.00000779	5	29.59	1
2RPS304H	on-site	670158.3	4275699.9	0	0.00000779	5	29.59	1
2RPS304I	on-site	669458.5	4275763.5	0	0.00000779	5	29.59	1
2RPS304J	on-site	669522.1	4275763.5	0	0.00000779	5	29.59	1
2RPS304K	on-site	669585.7	4275763.5	0	0.00000779	5	29.59	1
2RPS304L	on-site	669649.4	4275763.5	0	0.00000779	5	29.59	1
2RPS304M	on-site	669713.0	4275763.5	0	0.00000779	5	29.59	1
2RPS304N	on-site	669776.6	4275763.5	0	0.00000779	5	29.59	1
2RPS304O	on-site	669840.2	4275763.5	0	0.00000779	5	29.59	1
2RPS304P	on-site	669903.8	4275763.5	0	0.00000779	5	29.59	1
2RPS304Q	on-site	669967.4	4275763.5	0	0.00000779	5	29.59	1

2RPS304R	on-site	670031.0	4275763.5	0	0.00000779	5	29.59	1
2RPS304S	on-site	670094.7	4275763.5	0	0.00000779	5	29.59	1
2RPS304T	on-site	669522.1	4275827.2	0	0.00000779	5	29.59	1
2RPS304U	on-site	669585.7	4275827.2	0	0.00000779	5	29.59	1
2RPS304V	on-site	669649.4	4275827.2	0	0.00000779	5	29.59	1
2RPS304W	on-site	669713.0	4275827.2	0	0.00000779	5	29.59	1
2RPS304X	on-site	669776.6	4275827.2	0	0.00000779	5	29.59	1
2RPS304Y	on-site	669840.2	4275827.2	0	0.00000779	5	29.59	1
2RPS304Z	on-site	669903.8	4275827.2	0	0.00000779	5	29.59	1
2RPS3050	on-site	669967.4	4275827.2	0	0.00000779	5	29.59	1
2RPS3051	on-site	670031.0	4275827.2	0	0.00000779	5	29.59	1
2RPS3052	on-site	669585.7	4275890.8	0	0.00000779	5	29.59	1
2RPS3053	on-site	669649.4	4275890.8	0	0.00000779	5	29.59	1
2RPS3054	on-site	669713.0	4275890.8	0	0.00000779	5	29.59	1
2RPS3055	on-site	669776.6	4275890.8	0	0.00000779	5	29.59	1
2RPS3056	on-site	669840.2	4275890.8	0	0.00000779	5	29.59	1
2RPS3057	on-site	669903.8	4275890.8	0	0.00000779	5	29.59	1
2RPS3058	on-site	669967.4	4275890.8	0	0.00000779	5	29.59	1
2RPS3059	on-site	669649.4	4275954.4	0	0.00000779	5	29.59	1
2RPS305A	on-site	669713.0	4275954.4	0	0.00000779	5	29.59	1
2RPS305B	on-site	669776.6	4275954.4	0	0.00000779	5	29.59	1
2RPS305C	on-site	669840.2	4275954.4	0	0.00000779	5	29.59	1
2RPS305D	on-site	669903.8	4275954.4	0	0.00000779	5	29.59	1
2RPS305E	on-site	669713.0	4276018.0	0	0.00000779	5	29.59	1
2RPS305F	on-site	669776.6	4276018.0	0	0.00000779	5	29.59	1
2RPS305G	on-site	669840.2	4276018.0	0	0.00000779	5	29.59	1
2RPS305H	on-site	669776.6	4276081.6	0	0.00000779	5	29.59	1
2RPS3070		668790.8	4278274.3	0	0.00001391	5	29.59	1
2RPS3071		668819.2	4278215.0	0	0.00001391	5	29.59	1
2RPS3072		668828.8	4278151.5	0	0.00001391	5	29.59	1
2RPS3073		668880.2	4278117.6	0	0.00001391	5	29.59	1
2RPS3074		668949.2	4278045.3	0	0.00001391	5	29.59	1
2RPS3075		668991.4	4277955.0	0	0.00001391	5	29.59	1
2RPS3076		668991.7	4277858.7	0	0.00001391	5	29.59	1
2RPS3077		668993.0	4277757.7	0	0.00001391	5	29.59	1
2RPS3078		668997.1	4277657.8	0	0.00001391	5	29.59	1
2RPS3079		669001.0	4277557.9	0	0.00001391	5	29.59	1
2RPS307A		669004.8	4277458.0	0	0.00001391	5	29.59	1
2RPS307B		669010.1	4277358.1	0	0.00001391	5	29.59	1
2RPS307C		669020.4	4277258.8	0	0.00001391	5	29.59	1
2RPS307D		669051.0	4277164.8	0	0.00001391	5	29.59	1
2RPS307E		669100.9	4277078.1	0	0.00001391	5	29.59	1
2RPS307F		669156.9	4276995.3	0	0.00001391	5	29.59	1
2RPS307G		669212.9	4276912.4	0	0.00001391	5	29.59	1
2RPS307H		669270.8	4276831.0	0	0.00001391	5	29.59	1

2RPS307I		669330.0	4276750.4	0	0.00001391	5	29.59	1
2RPS307J		669386.5	4276667.9	0	0.00001391	5	29.59	1
2RPS307K		669441.8	4276584.5	0	0.00001391	5	29.59	1
2RPS307L		669495.7	4276500.3	0	0.00001391	5	29.59	1
2RPS307M		669550.1	4276416.4	0	0.00001391	5	29.59	1
2RPS307N		669607.0	4276334.2	0	0.00001391	5	29.59	1
2RPS307O		669663.7	4276251.8	0	0.00001391	5	29.59	1
2RPS307P		669725.6	4276173.5	0	0.00001391	5	29.59	1

*HARP - HRACalc v22118 2/20/2024 8:49:26 AM - Cancer Risk - Input File: C:\Users\Ufahrney\Desktop\HARP\Creekside Village SP_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_RISK	MMILK_RISK	WATER_RISK	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_RISK	EGG_RISK	1ST_DRIVER	2ND_DRIVER	PASTURE_CONC	FISH_CONC	WATER_CONC
1			9901	DieselExhPM	0.00531	2.06E-06	3.167YrCancerHighEnd_Inh_FAH16to70	*	2.06E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22118 2/20/2024 8:49:26 AM - Acute Risk - Input File: C:\Users\Jfahrney\Desktop\HARP\Creekside Village SP_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL
1			9901	DieselExhPM	0.16229	NonCancerAcute	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22118 2/20/2024 8:49:26 AM - Chronic Risk - Input File: C:\Users\Ufahrney\Desktop\HARP\Creekside Village SP_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_DOSE	MMILK_DOSE	WATER_DOSE	FISH_DOSE	CROP_DOSE	BEEF_DOSE	DAIRY_DOSE	PIG_DOSE	CHICKEN_DOSE	EGG_DOSE	1ST_DRIVER	2ND_DRIVER	3RD_DRIVER	PASTURE_CONC	FISH_CONC	WATER_CONC
1			9901	DieselExhPM	0.00531	NonCancerChronicHighEnd_Inh	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	*	5.31E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	NA	NA	0.00E+00	0.00E+00	0.00E+00

Active Adult Option Technical Memorandum (December 2024)

December 5, 2024

To: Anthony Gon, Project Manager
Winn Communities
555 University Avenue, Suite 180
Sacramento, CA 95825

Subject: Creekside Village Specific Plan Project – Active Adult Project Option Technical Memorandum

Dear Mr. Gon:

Raney Planning & Management, Inc. (Raney) has prepared the following technical memorandum to present the emissions that would result from the Active Adult Project Option of the Creekside Village Specific Plan Project (proposed project). This technical memorandum is intended to supersede the original Active Adult Project Option Technical Memorandum that was prepared on June 14, 2024, as this technical memorandum includes the results of the new emissions modeling that was prepared using the California Emissions Estimator Model (CalEEMod) in November 2024.

It is our understanding that under the Active Adult Project Option, 768 units of the 918 proposed single-family residences would be age-restricted units. All other aspects of the project would remain the same. Given the similarities between the proposed project and the Active Adult Project Option, construction emissions, including criteria pollutant emissions and greenhouse gas (GHG) emissions, would remain the same as presented in the April 2024 Creekside Village Air Quality and Greenhouse Gas Impact Analysis. In addition, the results of the construction-related health risk assessment (HRA) conducted as part of the April 2024 Creekside Village Air Quality and Greenhouse Gas Impact Analysis would remain the same.

However, age-restricted households generate fewer trips than traditional households. As such, updated trip generation rates were provided for the Active Adult Project Option by T. Kear Transportation Planning and Management, Inc. (T. Kear). To account for the updated trip generation rates, operational emissions associated with the Active Adult Project Option were estimated using the CalEEMod version 2022.1.1.29.

The maximum unmitigated operational criteria pollutant emissions for the Active Adult Project Option, as compared to the proposed project, are presented in Table 1.

Table 1
Maximum Unmitigated Operational Emissions (lbs/day)

	ROG	NO_X
Proposed Project Emissions	100	51.2
Active Adult Project Option Emissions	84.9	47.4
Reduction	*-15.1*	*-3.8*
EDCAQMD Significance Threshold	**82.0**	**82.0**
Exceeds Threshold?	**YES**	**NO**

Source: CalEEMod, November 2024 (see Attachment A).

As shown in the table, the Active Adult Project Option would result in a reduction in operational ROG and NO_X emissions as compared to the proposed project. However, while NO_x emissions

would remain below the applicable EDCAQMD threshold of significance, ROG emissions would still exceed the applicable EDCAQMD threshold of significance. Therefore, Mitigation Measure AQ-1 included in the April 2024 Creekside Village Air Quality and Greenhouse Gas Impact Analysis (carried forward as Mitigation Measures AQ-1 through AQ-4 included in the Air Quality Chapter of the Draft EIR prepared for the proposed project) would still be required under the Active Adult Project Option, and, similar to the proposed project, the Active Adult Project Option would result in a ***significant and unavoidable*** impact associated with operational criteria pollutant emissions.

It should also be noted that maximum unmitigated operational GHG emissions associated with the Active Adult Project Option would be 9,487 metric tons of carbon dioxide equivalents per year ($MTCO_2e$/yr), which is a reduction of 247 $MTCO_2e$/yr compared to the 9,761 $MTCO_2e$/yr associated with operation of the proposed project. Impacts related to operational GHG emissions associated with the proposed project were analyzed within the April 2024 Creekside Village Air Quality and Greenhouse Gas Impact Analysis using the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) qualitative best management practice (BMP)-based thresholds of significance. Given the similarities of the proposed project and the Active Adult Project Option, consistency with SMAQMD BMP-1 and BMP-2 cannot be ensured at this time. As such, even with the reduction in GHG emissions, because the project analysis is based on SMAQMD's qualitative BMP-based thresholds of significance, impacts associated with operational GHG emissions would remain the same as presented in the April 2024 Creekside Village Air Quality and Greenhouse Gas Impact Analysis, and Mitigation Measure GHG-1 included therein (carried forward as Mitigation Measures GHG-1 and GHG-2 included in the Greenhouse Gas Emissions Chapter of the Draft EIR prepared for the proposed project) would still be required.

If you have any questions regarding the contents of this document, please do not hesitate to contact me at (916) 372-6100, or via email at rods@raneymanagement.com.

Best Regards,

Rod Stinson
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RANEY
PLANNING & MANAGEMENT, INC.

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CalEEMod Results

Creekside Village Specific Plan - Senior Housing Project Option Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Creekside Village Specific Plan - Senior Housing Project Option
Construction Start Date	6/3/2025
Operational Year	2028
Lead Agency	El Dorado County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	9.40
Location	38.61348203944053, -121.05086586387135
County	El Dorado-Mountain County
City	Unincorporated
Air District	El Dorado County AQMD
Air Basin	Mountain Counties
TAZ	470
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	150	Dwelling Unit	22.3	292,500	131,436	—	381	—

Fast Food Restaurant with Drive Thru	2.40	1000sqft	0.47	2,400	2,768	—	—	—
Fast Food Restaurant w/o Drive Thru	1.50	1000sqft	0.29	1,500	1,708	—	—	—
High Turnover (Sit Down Restaurant)	1.50	1000sqft	0.29	1,500	1,708	—	—	—
Parking Lot	70.0	Space	0.75	0.00	4,417	—	—	—
City Park	13.6	Acre	13.6	0.00	592,416	592,416	—	—
Other Asphalt Surfaces	11.1	Acre	11.1	0.00	0.00	—	—	—
Other Asphalt Surfaces	52.5	1000sqft	1.21	0.00	0.00	—	—	—
Single Family Housing	768	Dwelling Unit	114	1,497,600	672,964	—	1,951	Age-Restricted Units

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	50.5	50.1	29.7	38.4	0.06	1.23	9.41	10.6	1.14	3.70	4.84	—	9,998	9,998	0.28	0.66	22.7	10,221
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	50.5	50.1	18.1	34.8	0.04	0.50	4.78	5.28	0.46	1.15	1.61	—	9,681	9,681	0.21	0.66	0.64	9,882

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	36.0	35.7	12.0	24.0	0.03	0.30	3.40	3.70	0.28	0.81	1.09	—	6,889	6,889	0.14	0.47	7.01	7,039
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.56	6.51	2.19	4.38	0.01	0.05	0.62	0.67	0.05	0.15	0.20	—	1,140	1,140	0.02	0.08	1.16	1,165

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.91	3.29	29.7	29.6	0.06	1.23	9.41	10.6	1.14	3.70	4.84	—	6,823	6,823	0.28	0.06	0.87	6,849
2026	50.5	50.1	16.3	38.4	0.04	0.42	4.78	5.21	0.39	1.15	1.54	—	9,998	9,998	0.18	0.66	22.7	10,221
2027	50.4	50.0	15.6	36.9	0.04	0.37	4.78	5.16	0.35	1.15	1.49	—	9,867	9,867	0.18	0.63	20.7	10,079
2028	50.1	49.9	14.7	35.5	0.04	0.33	4.78	5.12	0.31	1.15	1.46	—	9,713	9,713	0.17	0.63	18.8	9,923
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	50.5	50.1	18.1	34.8	0.04	0.50	4.78	5.28	0.46	1.15	1.61	—	9,681	9,681	0.21	0.66	0.64	9,882
2026	50.4	49.9	17.0	33.4	0.04	0.42	4.78	5.21	0.39	1.15	1.54	—	9,558	9,558	0.20	0.66	0.59	9,760
2027	50.1	49.8	16.1	32.1	0.04	0.37	4.78	5.16	0.35	1.15	1.49	—	9,436	9,436	0.20	0.64	0.54	9,631
2028	50.0	49.6	15.2	31.0	0.04	0.33	4.78	5.12	0.31	1.15	1.46	—	9,290	9,290	0.20	0.64	0.49	9,485
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	6.80	6.65	7.09	10.0	0.02	0.26	1.74	2.00	0.24	0.57	0.82	—	2,431	2,431	0.07	0.11	1.62	2,466
2026	36.0	35.7	12.0	24.0	0.03	0.30	3.40	3.70	0.28	0.81	1.09	—	6,889	6,889	0.14	0.47	7.01	7,039
2027	35.8	35.6	11.4	23.2	0.03	0.27	3.40	3.67	0.25	0.81	1.06	—	6,800	6,800	0.14	0.45	6.39	6,945
2028	21.2	21.0	5.99	12.6	0.02	0.13	1.91	2.04	0.12	0.46	0.58	—	3,745	3,745	0.07	0.25	3.24	3,825

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.24	1.21	1.29	1.83	< 0.005	0.05	0.32	0.37	0.04	0.10	0.15	—	402	402	0.01	0.02	0.27	408
2026	6.56	6.51	2.19	4.38	0.01	0.05	0.62	0.67	0.05	0.15	0.20	—	1,140	1,140	0.02	0.08	1.16	1,165
2027	6.53	6.49	2.07	4.23	0.01	0.05	0.62	0.67	0.05	0.15	0.19	—	1,126	1,126	0.02	0.08	1.06	1,150
2028	3.86	3.84	1.09	2.29	< 0.005	0.02	0.35	0.37	0.02	0.08	0.11	—	620	620	0.01	0.04	0.54	633

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	88.3	84.9	44.6	249	0.53	2.21	32.8	35.1	2.18	8.36	10.5	370	72,491	72,860	40.8	2.10	139	74,645
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	80.5	77.2	47.4	185	0.50	2.18	32.8	35.0	2.16	8.36	10.5	370	69,580	69,949	41.1	2.27	24.3	71,676
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	81.6	78.9	34.8	202	0.43	1.24	32.7	33.9	1.22	8.31	9.53	370	55,197	55,566	40.6	2.18	72.3	57,304
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	14.9	14.4	6.36	36.8	0.08	0.23	5.96	6.19	0.22	1.52	1.74	61.2	9,138	9,200	6.73	0.36	12.0	9,487

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	32.8	30.9	21.9	188	0.39	0.39	32.8	33.2	0.37	8.36	8.73	—	39,664	39,664	1.78	1.81	118	40,367
Area	54.7	53.5	15.7	58.9	0.10	1.26	—	1.26	1.25	—	1.25	0.00	19,470	19,470	0.37	0.04	—	19,490
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Total	88.3	84.9	44.6	249	0.53	2.21	32.8	35.1	2.18	8.36	10.5	370	72,491	72,860	40.8	2.10	139	74,645
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	29.8	27.8	25.3	176	0.36	0.39	32.8	33.2	0.37	8.36	8.73	—	36,893	36,893	2.08	1.98	3.06	37,539
Area	49.9	49.0	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Total	80.5	77.2	47.4	185	0.50	2.18	32.8	35.0	2.16	8.36	10.5	370	69,580	69,949	41.1	2.27	24.3	71,676
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	29.9	28.0	24.2	171	0.37	0.39	32.7	33.0	0.37	8.31	8.68	—	37,428	37,428	1.95	1.92	51.0	38,100
Area	50.9	50.5	3.67	27.3	0.02	0.29	—	0.29	0.29	—	0.29	0.00	4,412	4,412	0.08	0.01	—	4,416
Energy	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	13,280	13,280	1.51	0.10	—	13,349
Water	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Waste	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Total	81.6	78.9	34.8	202	0.43	1.24	32.7	33.9	1.22	8.31	9.53	370	55,197	55,566	40.6	2.18	72.3	57,304
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.46	5.10	4.42	31.3	0.07	0.07	5.96	6.03	0.07	1.52	1.58	—	6,197	6,197	0.32	0.32	8.45	6,308
Area	9.28	9.22	0.67	4.98	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	730	730	0.01	< 0.005	—	731

Energy	0.15	0.07	1.26	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	2,199	2,199	0.25	0.02	—	2,210
Water	—	—	—	—	—	—	—	—	—	—	—	9.84	12.7	22.5	1.01	0.02	—	55.0
Waste	—	—	—	—	—	—	—	—	—	—	—	51.4	0.00	51.4	5.13	0.00	—	180
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.52	3.52
Total	14.9	14.4	6.36	36.8	0.08	0.23	5.96	6.19	0.22	1.52	1.74	61.2	9,138	9,200	6.73	0.36	12.0	9,487

3. Construction Emissions Details

3.1. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	0.35	3.25	3.10	0.01	0.14	—	0.14	0.12	—	0.12	—	723	723	0.03	0.01	—	726

Dust From Material Movement	—	—	—	—	—	—	1.01	1.01	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.06	0.59	0.57	< 0.005	0.02	—	0.02	0.02	—	0.02	—	120	120	< 0.005	< 0.005	—	120
Dust From Material Movement	—	—	—	—	—	—	0.18	0.18	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.07	1.26	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	224	224	0.01	0.01	0.87	228
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.6	22.6	< 0.005	< 0.005	0.04	22.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.74	3.74	< 0.005	< 0.005	0.01	3.79

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.17	1.53	1.91	< 0.005	0.06	—	0.06	0.06	—	0.06	—	352	352	0.01	< 0.005	—	353
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.28	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	58.3	58.3	< 0.005	< 0.005	—	58.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.58	1.43	1.48	16.5	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,359	3,359	0.09	0.13	0.37	3,401
Vendor	0.11	0.09	5.01	0.86	0.02	0.04	0.75	0.79	0.04	0.20	0.24	—	3,120	3,120	< 0.005	0.47	0.19	3,261
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.21	0.20	2.46	0.00	0.00	0.49	0.49	0.00	0.11	0.11	—	504	504	0.01	0.02	0.91	511
Vendor	0.02	0.01	0.73	0.12	< 0.005	0.01	0.11	0.12	0.01	0.03	0.04	—	458	458	< 0.005	0.07	0.47	479
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.45	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	83.4	83.4	< 0.005	< 0.005	0.15	84.6
Vendor	< 0.005	< 0.005	0.13	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	75.8	75.8	< 0.005	0.01	0.08	79.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.77	7.04	9.26	0.02	0.27	—	0.27	0.25	—	0.25	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.28	1.69	< 0.005	0.05	—	0.05	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.65	1.52	0.98	19.6	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,664	3,664	0.06	0.13	13.2	3,719
Vendor	0.10	0.09	4.43	0.78	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,071	3,071	< 0.005	0.47	6.87	3,219
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	1.52	1.37	1.36	15.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,298	3,298	0.08	0.13	0.34	3,340
Vendor	0.09	0.09	4.69	0.82	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,071	3,071	< 0.005	0.47	0.18	3,212
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.08	0.98	0.87	11.1	0.00	0.00	2.39	2.39	0.00	0.56	0.56	—	2,406	2,406	0.05	0.10	4.07	2,440
Vendor	0.07	0.06	3.31	0.57	0.01	0.01	0.53	0.55	0.01	0.14	0.16	—	2,193	2,193	< 0.005	0.34	2.12	2,296
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	0.16	2.03	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	398	398	0.01	0.02	0.67	404
Vendor	0.01	0.01	0.60	0.10	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	363	363	< 0.005	0.06	0.35	380
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	0.74	6.71	9.24	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.22	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.58	1.46	0.97	18.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,603	3,603	0.06	0.13	12.0	3,654
Vendor	0.09	0.07	4.18	0.76	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,014	3,014	< 0.005	0.45	6.24	3,155
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.36	1.32	1.24	14.4	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,243	3,243	0.08	0.13	0.31	3,285
Vendor	0.09	0.07	4.41	0.80	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	3,014	3,014	< 0.005	0.45	0.16	3,149
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.97	0.95	0.79	10.5	0.00	0.00	2.39	2.39	0.00	0.56	0.56	—	2,366	2,366	0.05	0.10	3.72	2,400
Vendor	0.07	0.05	3.12	0.56	0.01	0.01	0.53	0.55	0.01	0.14	0.16	—	2,153	2,153	< 0.005	0.32	1.92	2,251
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.17	0.14	1.91	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	392	392	0.01	0.02	0.62	397
Vendor	0.01	0.01	0.57	0.10	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	356	356	< 0.005	0.05	0.32	373
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.55	5.14	0.01	0.12	—	0.12	0.11	—	0.11	—	952	952	0.04	0.01	—	956
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.65	0.94	< 0.005	0.02	—	0.02	0.02	—	0.02	—	158	158	0.01	< 0.005	—	158
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.43	1.40	0.86	17.3	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,532	3,532	0.05	0.13	10.9	3,582
Vendor	0.09	0.07	3.94	0.72	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	2,943	2,943	< 0.005	0.45	5.63	3,084
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.31	1.17	1.12	13.5	0.00	0.00	3.36	3.36	0.00	0.79	0.79	—	3,180	3,180	0.07	0.13	0.28	3,222
Vendor	0.09	0.07	4.16	0.76	0.02	0.02	0.75	0.77	0.02	0.20	0.22	—	2,943	2,943	< 0.005	0.45	0.15	3,079
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.52	0.51	0.39	5.48	0.00	0.00	1.33	1.33	0.00	0.31	0.31	—	1,291	1,291	0.03	0.05	1.88	1,309
Vendor	0.04	0.03	1.63	0.29	0.01	0.01	0.30	0.30	0.01	0.08	0.09	—	1,169	1,169	< 0.005	0.18	0.96	1,224
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.09	0.09	0.07	1.00	0.00	0.00	0.24	0.24	0.00	0.06	0.06	—	214	214	< 0.005	0.01	0.31	217
Vendor	0.01	0.01	0.30	0.05	< 0.005	< 0.005	0.05	0.06	< 0.005	0.01	0.02	—	194	194	< 0.005	0.03	0.16	203
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	0.57	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	0.57	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.23	1.64	< 0.005	0.06	—	0.06	0.05	—	0.05	—	248	248	0.01	< 0.005	—	249

Paving	0.09	0.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.22	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.1	41.1	< 0.005	< 0.005	—	41.3
Paving	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.94	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	168	168	0.01	0.01	0.65	171
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.74	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	151	151	< 0.005	0.01	0.02	153
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.05	25.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.21	4.21	< 0.005	< 0.005	0.01	4.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.11	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.9	15.9	< 0.005	< 0.005	—	16.0
Architectural Coatings	5.61	5.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.64	2.64	< 0.005	< 0.005	—	2.65
Architectural Coatings	1.02	1.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32	0.29	0.30	3.30	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	672	672	0.02	0.03	0.07	680
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.03	0.40	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	81.9	81.9	< 0.005	< 0.005	0.15	83.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.6	13.6	< 0.005	< 0.005	0.02	13.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.61	0.81	< 0.005	0.02	—	0.02	0.02	—	0.02	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	33.6	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	6.13	6.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.33	0.30	0.20	3.92	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	733	733	0.01	0.03	2.64	744
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.27	0.27	3.07	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	660	660	0.02	0.03	0.07	668
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.20	0.17	2.23	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	481	481	0.01	0.02	0.81	488
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.41	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	79.7	79.7	< 0.005	< 0.005	0.13	80.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.4	95.4	< 0.005	< 0.005	—	95.7

Architect Coatings	33.6	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	6.13	6.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.32	0.29	0.19	3.68	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	721	721	0.01	0.03	2.41	731
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.26	0.25	2.87	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	649	649	0.02	0.03	0.06	657
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.19	0.16	2.09	0.00	0.00	0.48	0.48	0.00	0.11	0.11	—	473	473	0.01	0.02	0.74	480
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.04	0.03	0.03	0.38	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	78.4	78.4	< 0.005	< 0.005	0.12	79.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.19. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.34	0.47	< 0.005	0.01	—	0.01	0.01	—	0.01	—	56.7	56.7	< 0.005	< 0.005	—	56.9
Architectural Coatings	20.0	20.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.39	9.39	< 0.005	< 0.005	—	9.42
Architectural Coatings	3.64	3.64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.29	0.28	0.17	3.46	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	706	706	0.01	0.03	2.19	716
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.23	0.22	2.70	0.00	0.00	0.67	0.67	0.00	0.16	0.16	—	636	636	0.01	0.03	0.06	644
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	0.08	1.17	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	276	276	0.01	0.01	0.40	280
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.21	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	45.7	45.7	< 0.005	< 0.005	0.07	46.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	25.3	23.8	18.2	155	0.33	0.33	27.8	28.1	0.31	7.08	7.39	—	33,489	33,489	1.43	1.50	100	34,070
Fast Food Restaurant with Drive Thru	6.01	5.75	3.06	25.9	0.05	0.05	4.06	4.11	0.05	1.03	1.08	—	4,981	4,981	0.28	0.26	14.6	5,079

Fast Food Restaurant w/o Drive Thru	0.69	0.66	0.35	2.96	0.01	0.01	0.46	0.47	0.01	0.12	0.12	—	568	568	0.03	0.03	1.66	579
High Turnover (Sit Down Restaurant)	0.76	0.72	0.38	3.26	0.01	0.01	0.51	0.52	0.01	0.13	0.14	—	626	626	0.04	0.03	1.83	638
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	32.8	30.9	21.9	188	0.39	0.39	32.8	33.2	0.37	8.36	8.73	—	39,664	39,664	1.78	1.81	118	40,367
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	23.1	21.5	20.9	143	0.31	0.33	27.8	28.1	0.31	7.08	7.39	—	31,139	31,139	1.65	1.63	2.59	31,670
Fast Food Restaurant with Drive Thru	5.39	5.10	3.54	25.9	0.05	0.05	4.06	4.11	0.05	1.03	1.08	—	4,642	4,642	0.34	0.28	0.38	4,734
Fast Food Restaurant w/o Drive Thru	0.61	0.58	0.40	2.95	0.01	0.01	0.46	0.47	0.01	0.12	0.12	—	529	529	0.04	0.03	0.04	540

High Turnover (Sit Down Restaurant)	0.68	0.64	0.44	3.25	0.01	0.01	0.51	0.52	0.01	0.13	0.14	—	583	583	0.04	0.04	0.05	595
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	29.8	27.8	25.3	176	0.36	0.39	32.8	33.2	0.37	8.36	8.73	—	36,893	36,893	2.08	1.98	3.06	37,539
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	4.23	3.94	3.66	25.7	0.06	0.06	5.05	5.11	0.06	1.28	1.34	—	5,231	5,231	0.26	0.26	7.15	5,322
Fast Food Restaurant with Drive Thru	0.99	0.94	0.62	4.52	0.01	0.01	0.74	0.75	0.01	0.19	0.20	—	779	779	0.05	0.04	1.04	795
Fast Food Restaurant w/o Drive Thru	0.11	0.11	0.07	0.51	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	88.8	88.8	0.01	0.01	0.12	90.6
High Turnover (Sit Down Restaurant)	0.12	0.12	0.08	0.57	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	97.9	97.9	0.01	0.01	0.13	99.9
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	5.46	5.10	4.42	31.3	0.07	0.07	5.96	6.03	0.07	1.52	1.58	—	6,197	6,197	0.32	0.32	8.45	6,308

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	4,374	4,374	0.71	0.09	—	4,417
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	53.9	53.9	0.01	< 0.005	—	54.4
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	16.0	16.0	< 0.005	< 0.005	—	16.2
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,511	4,511	0.73	0.09	—	4,556
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	4,374	4,374	0.71	0.09	—	4,417
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	53.9	53.9	0.01	< 0.005	—	54.4
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	33.7	33.7	0.01	< 0.005	—	34.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	16.0	16.0	< 0.005	< 0.005	—	16.2
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,511	4,511	0.73	0.09	—	4,556
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	724	724	0.12	0.01	—	731

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	8.92	8.92	< 0.005	< 0.005	—	9.00
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	5.57	5.57	< 0.005	< 0.005	—	5.63
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	5.57	5.57	< 0.005	< 0.005	—	5.63
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	2.65	2.65	< 0.005	< 0.005	—	2.67
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	747	747	0.12	0.01	—	754

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.79	0.39	6.74	2.87	0.04	0.55	—	0.55	0.55	—	0.55	—	8,558	8,558	0.76	0.02	—	8,582

Fast Food Restaurant with Drive Thru	0.01	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.7	93.7	0.01	< 0.005	—	94.0
Fast Food Restaurant w/o Drive Thru	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
High Turnover (Sit Down Restaurant)	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	8,769	8,769	0.78	0.02	—	8,794
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.79	0.39	6.74	2.87	0.04	0.55	—	0.55	0.55	—	0.55	—	8,558	8,558	0.76	0.02	—	8,582
Fast Food Restaurant with Drive Thru	0.01	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	93.7	93.7	0.01	< 0.005	—	94.0

Fast Food Restaurant w/o Drive Thru	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
High Turnover (Sit Down Restaurant)	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.6	58.6	0.01	< 0.005	—	58.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.81	0.40	6.92	3.02	0.04	0.56	—	0.56	0.56	—	0.56	—	8,769	8,769	0.78	0.02	—	8,794
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.14	0.07	1.23	0.52	0.01	0.10	—	0.10	0.10	—	0.10	—	1,417	1,417	0.13	< 0.005	—	1,421
Fast Food Restaurant with Drive Thru	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.5	15.5	< 0.005	< 0.005	—	15.6
Fast Food Restaurant w/o Drive Thru	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.70	9.70	< 0.005	< 0.005	—	9.73
High Turnover (Sit Down Restaurant)	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.70	9.70	< 0.005	< 0.005	—	9.73

Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.15	0.07	1.26	0.55	0.01	0.10	—	0.10	0.10	—	0.10	—	1,452	1,452	0.13	< 0.005	—	1,456

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.78	0.89	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Consumer Products	38.8	38.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	9.27	9.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	4.84	4.58	0.50	52.4	< 0.005	0.02	—	0.02	0.02	—	0.02	—	140	140	0.01	< 0.005	—	141
Total	54.7	53.5	15.7	58.9	0.10	1.26	—	1.26	1.25	—	1.25	0.00	19,470	19,470	0.37	0.04	—	19,490
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.78	0.89	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349

Consum Products	38.8	38.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	9.27	9.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	49.9	49.0	15.2	6.48	0.10	1.23	—	1.23	1.23	—	1.23	0.00	19,329	19,329	0.36	0.04	—	19,349
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.07	0.04	0.62	0.27	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	719	719	0.01	< 0.005	—	720
Consumer Products	7.08	7.08	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.69	1.69	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.44	0.41	0.04	4.72	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.4	11.4	< 0.005	< 0.005	—	11.5
Total	9.28	9.22	0.67	4.98	< 0.005	0.05	—	0.05	0.05	—	0.05	0.00	730	730	0.01	< 0.005	—	731

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	56.3	60.9	117	5.78	0.14	—	303

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.40	1.30	2.70	0.14	< 0.005	—	7.30
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.04	0.04	< 0.005	< 0.005	—	0.04
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	12.7	12.7	< 0.005	< 0.005	—	12.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	56.3	60.9	117	5.78	0.14	—	303
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.40	1.30	2.70	0.14	< 0.005	—	7.30

Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.87	0.81	1.69	0.09	< 0.005	—	4.56
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.04	0.04	< 0.005	< 0.005	—	0.04
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	12.7	12.7	< 0.005	< 0.005	—	12.9
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	59.4	76.6	136	6.10	0.15	—	332
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	9.32	10.1	19.4	0.96	0.02	—	50.1
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.23	0.22	0.45	0.02	< 0.005	—	1.21
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.14	0.13	0.28	0.01	< 0.005	—	0.76
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	0.14	0.13	0.28	0.01	< 0.005	—	0.76

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.01	0.01	< 0.005	< 0.005	—	0.01
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	2.11	2.11	< 0.005	< 0.005	—	2.13
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	9.84	12.7	22.5	1.01	0.02	—	55.0

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	276	0.00	276	27.6	0.00	—	965
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	14.9	0.00	14.9	1.49	0.00	—	52.1
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	9.31	0.00	9.31	0.93	0.00	—	32.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	9.62	0.00	9.62	0.96	0.00	—	33.7

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.21
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	276	0.00	276	27.6	0.00	—	965
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	14.9	0.00	14.9	1.49	0.00	—	52.1
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	9.31	0.00	9.31	0.93	0.00	—	32.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	9.62	0.00	9.62	0.96	0.00	—	33.7
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.63	0.00	0.63	0.06	0.00	—	2.21
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	310	0.00	310	31.0	0.00	—	1,085

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	45.6	0.00	45.6	4.56	0.00	—	160
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	2.47	0.00	2.47	0.25	0.00	—	8.63
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	1.54	0.00	1.54	0.15	0.00	—	5.39
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	1.59	0.00	1.59	0.16	0.00	—	5.57
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
City Park	—	—	—	—	—	—	—	—	—	—	—	0.10	0.00	0.10	0.01	0.00	—	0.37
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	51.4	0.00	51.4	5.13	0.00	—	180

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.75	3.75
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.75	3.75

Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.34	2.34
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.12	2.12
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.62	0.62
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.39	0.39
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.39	0.39
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.52	3.52

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	6/2/2025	7/25/2025	5.00	40.0	—
Building Construction	Building Construction	10/18/2025	7/21/2028	5.00	720	—
Paving	Paving	7/26/2025	10/17/2025	5.00	60.0	—
Architectural Coating	Architectural Coating	11/1/2025	8/4/2028	5.00	720	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	333	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	99.0	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	66.5	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	3,624,953	1,208,318	8,100	2,700	34,124

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	—	—	120	0.00	—
Paving	0.00	0.00	0.00	0.00	23.2

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	1.65	0%
Fast Food Restaurant with Drive Thru	0.00	0%
Fast Food Restaurant w/o Drive Thru	0.00	0%
High Turnover (Sit Down Restaurant)	0.00	0%
Parking Lot	0.75	100%
City Park	0.00	0%
Other Asphalt Surfaces	11.1	100%
Other Asphalt Surfaces	1.21	100%
Single Family Housing	8.46	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	1,386	1,386	1,386	505,890	11,685	11,685	11,685	4,265,138
Fast Food Restaurant with Drive Thru	1,255	1,255	1,255	458,139	5,691	5,691	5,691	2,077,338
Fast Food Restaurant w/o Drive Thru	143	143	143	52,215	649	649	649	236,759
High Turnover (Sit Down Restaurant)	158	158	158	57,581	715	715	715	261,087
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	3,241	3,241	3,241	1,182,950	27,324	27,324	27,324	9,973,406

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	150
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Wood Fireplaces	0
Gas Fireplaces	768
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
3624952.5	1,208,318	8,100	2,700	34,124

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	1,278,856	204	0.0330	0.0040	4,363,504
Fast Food Restaurant with Drive Thru	96,369	204	0.0330	0.0040	292,442
Fast Food Restaurant w/o Drive Thru	60,230	204	0.0330	0.0040	182,776
High Turnover (Sit Down Restaurant)	60,230	204	0.0330	0.0040	182,776
Parking Lot	28,619	204	0.0330	0.0040	0.00
City Park	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Single Family Housing	6,547,745	204	0.0330	0.0040	22,341,139

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	4,797,743	1,723,993
Fast Food Restaurant with Drive Thru	728,481	29,706
Fast Food Restaurant w/o Drive Thru	455,301	18,330
High Turnover (Sit Down Restaurant)	455,301	18,330
Parking Lot	0.00	47,402
City Park	0.00	14,128,146
Other Asphalt Surfaces	0.00	0.00

Other Asphalt Surfaces	0.00	0.00
Single Family Housing	24,564,442	8,826,996

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	83.6	—
Fast Food Restaurant with Drive Thru	27.6	—
Fast Food Restaurant w/o Drive Thru	17.3	—
High Turnover (Sit Down Restaurant)	17.8	—
Parking Lot	0.00	—
City Park	1.17	—
Other Asphalt Surfaces	0.00	—
Other Asphalt Surfaces	0.00	—
Single Family Housing	428	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00

Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Fast Food Restaurant w/o Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant w/o Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant w/o Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
High Turnover (Sit Down Restaurant)	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
High Turnover (Sit Down Restaurant)	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
High Turnover (Sit Down Restaurant)	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage and square footage adjusted based on Creekside SP land use summary.
Construction: Construction Phases	Phase timing based on applicant provided information. Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days
Construction: Architectural Coatings	Based on EDCAQMD Rule 215.
Operations: Vehicle Data	Trip rates and VMT adjusted based on project-specific traffic report.
Operations: Hearths	All units would have natural gas fireplaces per applicant's AQ questionnaire.
Operations: Architectural Coatings	Based on EDCAQMD Rule 215.
Operations: Road Dust	All roads in project vicinity are paved
Construction: On-Road Fugitive Dust	All roads in project area are paved.

Reduced Impact Alternative Technical Memorandum (December 2024)

December 5, 2024

To: Anthony Gon, Project Manager
Winn Communities
555 University Avenue, Suite 180
Sacramento, CA 95825

Subject: Creekside Village Specific Plan Project – Reduced Impact Alternative Technical Memorandum

Dear Mr. Gon:

Raney Planning & Management, Inc. (Raney) has prepared the following technical memorandum to present the emissions that would result from the Reduced Impact Alternative of the Creekside Village Specific Plan Project.

It is our understanding that under the Reduced Impact Alternative, the proposed project would be revised to include 150 single-family residences, 613 age-restricted single-family residences, and 14.1 acres of parkland. In addition, the portion of the site originally designated for neighborhood commercial uses would no longer be developed with such uses, and instead, would be developed with a 1.58-acre park. The remainder of the project site would still be proposed for open space and roadway infrastructure improvements. However, the Reduced Impact Alternative would result in an overall increase in disturbance of 1.74 acres as compared to the proposed project.

In addition, it should be noted that due to a reduction in the unit count, the off-site intersection improvements at Latrobe Road and Town Center Boulevard and at the Avanti Drive/Latrobe Road intersection would not be required under the Reduced Impact Alternative, and while the Royal Oaks/Latrobe Road intersection would require signalization, road widening at the intersection would not be required under the Reduced Impact Alternative. All other aspects of the project would remain the same.

To account for the revisions to the proposed project that would occur as a result of the Reduced Impact Alternative, construction and operational emissions associated with the Reduced Impact Alternative were estimated using the California Emissions Estimator Model (CalEEMod) version 2022.1.1.29. The results of the updated modeling are presented below.

Construction Emissions

The following discussions include an analysis of the updated criteria pollutant emissions, health risks, and greenhouse gas (GHG) emissions that would occur as a result of construction of the Reduced Impact Alternative.

Criteria Pollutant Emissions

The maximum unmitigated construction criteria pollutant emissions for the Reduced Impact Alternative, as compared to the proposed project, are presented in Table 4. As shown in the table, the Reduced Impact Alternative would result in a slight decrease in construction-related ROG emissions, and the same amount of construction-related NO_X emissions as compared to the proposed project. Similar to the proposed project, ROG and NO_x emissions would be below the applicable EDCAQMD thresholds of significance. Therefore, the Reduced Impact Alternative

would result in a ***less-than-significant*** impact associated with construction-related criteria pollutant emissions.

Table 1
Maximum Unmitigated Construction Emissions (lbs/day)

	ROG	NO_X
Proposed Project Emissions	50.51	33.29
Reduced Impact Alternative Emissions	50.21	33.29
Difference	*-0.30*	*0.00*
EDCAQMD Significance Threshold	**82.0**	**82.0**
Exceeds Threshold?	**NO**	**NO**

Source: CalEEMod, November 2024 (see Attachment A).

Construction Health Risk Assessment

Using similar methodology as described in the April 2024 Creekside Village Air Quality and Greenhouse Gas Impact Analysis, the cancer risk and non-cancer hazard indices associated with the Reduced Impact Alternative were estimated for the maximally-exposed receptor. The cancer risk and non-cancer hazard indices associated with the Reduced Impact Alternative, as compared to the proposed project, are presented in Table 2.

Table 2
Maximum Unmitigated Cancer Risk and Hazard Index Associated with Project Construction DPM

	Cancer Risk (per million persons)	Acute Hazard Index	Chronic Hazard Index
Proposed Project Construction DPM Health Risks	2.06	0.00	0.001
Reduced Impact Alternative Construction DPM Health Risks	1.93	0.00	0.001
Difference	*-0.13*	*0.00*	*0.00*
Thresholds of Significance	**10**	**1.0**	**1.0**
Exceed Thresholds?	**NO**	**NO**	**NO**

Source: AERMOD and HARP 2 RAST, November 2024 (see Attachment B).

As shown in Table 2, the Reduced Impact Alternative would result in a slight decrease in construction-related cancer risks, and the same amount of construction-related chronic and acute hazard index risks as compared to the proposed project. Similar to the proposed project, construction of the Reduced Impact Alternative would not result in any health impacts in excess of the EDCAQMD's standards. Therefore, the Reduced Impact Alternative would result in a ***less-than-significant*** impact.

Greenhouse Gas Emissions

The maximum unmitigated construction GHG emissions for the Reduced Impact Alternative, as compared to the proposed project, are presented in Table 3. As shown in the table, maximum GHG emissions related to construction of the proposed project would be below the applicable threshold of significance. Therefore, similar to the proposed project, construction of the Reduced Impact Alternative would not be considered to result in a cumulatively considerable contribution to global climate change during construction activities, and a ***less-than-significant*** impact would occur.

Table 3
Maximum Unmitigated Construction GHG Emissions

	GHG Emissions ($MTCO_2e$/yr)
Proposed Project Emissions	997.33
Reduced Impact Alternative Emissions	846.33
Difference	-151.00
SMAQMD Threshold	**1,100.00**
Exceeds Threshold?	**NO**

Source: CalEEMod, November 2024 (see Appendix A).

Operational Emissions

The following discussions include an analysis of the updated operational criteria pollutant emissions and GHG emissions that would occur as a result of the Reduced Impact Alternative.

Criteria Pollutant Emissions

The maximum unmitigated operational criteria pollutant emissions for the Reduced Impact Alternative, as compared to the proposed project, are presented in Table 4.

Table 4
Maximum Unmitigated Operational Emissions (lbs/day)

	ROG	NO_X
Proposed Project Emissions	100	51.2
Reduced Impact Alternative Emissions	62.6	26.9
Reduction	*-37.4*	*-24.3*
EDCAQMD Significance Threshold	**82.0**	**82.0**
Exceeds Threshold?	**NO**	**NO**

Source: CalEEMod, November 2024 (see Attachment A).

As shown in the table, the Reduced Impact Alternative would result in a reduction in operational ROG and NO_X emissions as compared to the proposed project. In addition, ROG and NO_x emissions would be below the applicable EDCAQMD thresholds of significance. Therefore, Mitigation Measure AQ-1 included in the April 2024 Creekside Village Air Quality and Greenhouse Gas Impact Analysis (carried forward as Mitigation Measures AQ-1 through AQ-4 included in the Air Quality Chapter of the Draft EIR prepared for the proposed project) would not be required under the Reduced Impact Alternative and the Reduced Impact Alternative would result in a ***less-than-significant*** impact associated with operational criteria pollutant emissions.

Greenhouse Gas Emissions

Maximum unmitigated operational GHG emissions associated with the Reduced Impact Alternative would be 4,671 metric tons of carbon dioxide equivalents per year ($MTCO_2e$/yr), which is a reduction of 5,090 $MTCO_2e$/yr compared to the 9,761 $MTCO_2e$/yr associated with operation of the proposed project. Impacts related to operational GHG emissions associated with the proposed project were analyzed within the April 2024 Creekside Village Air Quality and Greenhouse Gas Impact Analysis using the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) qualitative best management practice (BMP)-based thresholds of significance. Given the similarities of the proposed project and the Reduced Impact Alternative, consistency with SMAQMD BMP-1 and BMP-2 cannot be ensured at this time. As such, even with the reduction in GHG emissions, because the project analysis is based on SMAQMD's qualitative BMP-based thresholds of significance, impacts associated with operational GHG emissions would remain the same as presented in the April 2024 Creekside Village Air Quality and

Greenhouse Gas Impact Analysis, and Mitigation Measure GHG-1 included therein (carried forward as Mitigation Measures GHG-1 and GHG-2 included in the Greenhouse Gas Emissions Chapter of the Draft EIR prepared for the proposed project) would still be required. Nonetheless, similar to the proposed project, with implementation of the aforementioned mitigation measures, the Reduced Impact Alternative would result in a ***less-than-significant*** impact related to operational GHG emissions.

Conclusion

Based on the above, the Reduced Impact Alternative would result in similar or reduced impacts related to air quality and GHG emissions as compared to the proposed project. Under the Reduced Impact Alternative, all impacts related to air quality and GHG emissions would be ***less than significant***.

If you have any questions regarding the contents of this document, please do not hesitate to contact me at (916) 372-6100, or via email at rods@raneymanagement.com.

Best Regards,

Rod Stinson
Vice President/Air Quality Specialist
phone. (916) 372-6100 1501 Sports Drive, Suite A, Sacramento, CA 95834
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Attachment A
CalEEMod Results

Creekside Village Specific Plan - Reduced Impacts Alternative Custom Report

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4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Creekside Village Specific Plan - Reduced Impacts Alternative
Construction Start Date	6/2/2025
Operational Year	2028
Lead Agency	El Dorado County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	9.40
Location	38.61348203944053, -121.05086586387135
County	El Dorado-Mountain County
City	Unincorporated
Air District	El Dorado County AQMD
Air Basin	Mountain Counties
TAZ	470
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	150	Dwelling Unit	21.3	292,500	125,602	—	381	—

Single Family Housing	613	Dwelling Unit	117	1,195,350	689,398	—	1,557	Age-Restricted Units
City Park	14.1	Acre	14.1	0.00	613,760	613,760	—	—
Other Asphalt Surfaces	11.1	Acre	11.1	0.00	0.00	—	—	—
Other Asphalt Surfaces	39.3	1000sqft	0.90	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	50.1	49.8	29.7	34.2	0.06	1.23	9.41	10.6	1.14	3.70	4.84	—	8,690	8,690	0.28	0.54	18.7	8,875
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	50.2	49.8	16.9	31.2	0.04	0.49	3.95	4.44	0.45	0.95	1.40	—	8,428	8,428	0.19	0.54	0.53	8,595
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	35.7	35.5	11.2	21.6	0.03	0.30	2.80	3.10	0.28	0.67	0.95	—	5,998	5,998	0.13	0.39	5.78	6,123
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.52	6.47	2.05	3.94	0.01	0.05	0.51	0.57	0.05	0.12	0.17	—	993	993	0.02	0.06	0.96	1,014

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.91	3.29	29.7	29.6	0.06	1.23	9.41	10.6	1.14	3.70	4.84	—	6,823	6,823	0.28	0.06	0.87	6,849
2026	50.1	49.8	15.3	34.2	0.04	0.42	3.95	4.37	0.39	0.95	1.33	—	8,690	8,690	0.16	0.54	18.7	8,875
2027	50.0	49.7	14.6	32.9	0.04	0.37	3.95	4.32	0.34	0.95	1.29	—	8,582	8,582	0.16	0.52	17.1	8,758
2028	49.8	49.6	13.8	31.8	0.04	0.33	3.95	4.28	0.31	0.95	1.25	—	8,454	8,454	0.16	0.52	15.5	8,629
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	50.2	49.8	16.9	31.2	0.04	0.49	3.95	4.44	0.45	0.95	1.40	—	8,428	8,428	0.19	0.54	0.53	8,595
2026	50.0	49.6	15.9	30.0	0.04	0.42	3.95	4.37	0.39	0.95	1.33	—	8,327	8,327	0.19	0.54	0.49	8,494
2027	49.8	49.5	15.1	29.0	0.04	0.37	3.95	4.32	0.34	0.95	1.29	—	8,225	8,225	0.19	0.53	0.44	8,388
2028	49.7	49.3	14.3	28.0	0.04	0.33	3.95	4.28	0.31	0.95	1.25	—	8,106	8,106	0.18	0.53	0.40	8,268
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	6.75	6.59	6.92	9.49	0.01	0.26	1.62	1.88	0.24	0.55	0.79	—	2,248	2,248	0.07	0.09	1.35	2,278
2026	35.7	35.5	11.2	21.6	0.03	0.30	2.80	3.10	0.28	0.67	0.95	—	5,998	5,998	0.13	0.39	5.78	6,123
2027	35.6	35.4	10.6	20.9	0.03	0.27	2.80	3.07	0.24	0.67	0.92	—	5,925	5,925	0.13	0.38	5.27	6,046
2028	21.0	20.9	5.62	11.4	0.02	0.13	1.57	1.71	0.12	0.38	0.50	—	3,265	3,265	0.07	0.21	2.67	3,332
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.23	1.20	1.26	1.73	< 0.005	0.05	0.29	0.34	0.04	0.10	0.14	—	372	372	0.01	0.01	0.22	377
2026	6.52	6.47	2.05	3.94	0.01	0.05	0.51	0.57	0.05	0.12	0.17	—	993	993	0.02	0.06	0.96	1,014
2027	6.49	6.46	1.94	3.81	0.01	0.05	0.51	0.56	0.04	0.12	0.17	—	981	981	0.02	0.06	0.87	1,001
2028	3.84	3.82	1.03	2.07	< 0.005	0.02	0.29	0.31	0.02	0.07	0.09	—	541	541	0.01	0.03	0.44	552

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	64.6	62.6	26.9	121	0.25	1.63	10.6	12.3	1.62	2.71	4.33	277	40,112	40,389	30.1	0.92	48.9	41,464
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	58.9	57.0	27.8	78.3	0.24	1.61	10.6	12.3	1.60	2.71	4.31	277	39,108	39,384	30.2	0.99	11.6	40,447
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	59.8	58.4	17.8	92.2	0.18	0.83	10.6	11.4	0.82	2.69	3.51	277	26,878	27,154	29.9	0.94	27.2	28,210
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	10.9	10.7	3.24	16.8	0.03	0.15	1.93	2.08	0.15	0.49	0.64	45.8	4,450	4,496	4.96	0.16	4.50	4,671

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	17.0	16.3	8.25	69.7	0.13	0.13	10.6	10.8	0.13	2.71	2.84	—	13,116	13,116	0.78	0.69	38.3	13,380
Area	47.0	46.0	13.1	48.7	0.08	1.04	—	1.04	1.04	—	1.04	0.00	16,181	16,181	0.31	0.03	—	16,198
Energy	0.66	0.33	5.60	2.38	0.04	0.45	—	0.45	0.45	—	0.45	—	10,749	10,749	1.22	0.08	—	10,805
Water	—	—	—	—	—	—	—	—	—	—	—	46.8	65.5	112	4.81	0.12	—	267
Waste	—	—	—	—	—	—	—	—	—	—	—	230	0.00	230	23.0	0.00	—	804
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.7	10.7

Total	64.6	62.6	26.9	121	0.25	1.63	10.6	12.3	1.62	2.71	4.33	277	40,112	40,389	30.1	0.92	48.9	41,464
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	15.2	14.4	9.54	70.5	0.12	0.13	10.6	10.8	0.13	2.71	2.84	—	12,228	12,228	0.96	0.76	0.99	12,479
Area	43.0	42.2	12.7	5.39	0.08	1.02	—	1.02	1.02	—	1.02	0.00	16,066	16,066	0.30	0.03	—	16,082
Energy	0.66	0.33	5.60	2.38	0.04	0.45	—	0.45	0.45	—	0.45	—	10,749	10,749	1.22	0.08	—	10,805
Water	—	—	—	—	—	—	—	—	—	—	—	46.8	65.5	112	4.81	0.12	—	267
Waste	—	—	—	—	—	—	—	—	—	—	—	230	0.00	230	23.0	0.00	—	804
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.7	10.7
Total	58.9	57.0	27.8	78.3	0.24	1.61	10.6	12.3	1.60	2.71	4.31	277	39,108	39,384	30.2	0.99	11.6	40,447
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	15.3	14.6	9.11	67.2	0.12	0.13	10.6	10.7	0.13	2.69	2.82	—	12,397	12,397	0.88	0.73	16.5	12,654
Area	43.8	43.5	3.05	22.6	0.02	0.24	—	0.24	0.24	—	0.24	0.00	3,666	3,666	0.07	0.01	—	3,670
Energy	0.66	0.33	5.60	2.38	0.04	0.45	—	0.45	0.45	—	0.45	—	10,749	10,749	1.22	0.08	—	10,805
Water	—	—	—	—	—	—	—	—	—	—	—	46.8	65.5	112	4.81	0.12	—	267
Waste	—	—	—	—	—	—	—	—	—	—	—	230	0.00	230	23.0	0.00	—	804
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.7	10.7
Total	59.8	58.4	17.8	92.2	0.18	0.83	10.6	11.4	0.82	2.69	3.51	277	26,878	27,154	29.9	0.94	27.2	28,210
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	2.79	2.66	1.66	12.3	0.02	0.02	1.93	1.96	0.02	0.49	0.51	—	2,052	2,052	0.15	0.12	2.74	2,095
Area	7.99	7.94	0.56	4.12	< 0.005	0.04	—	0.04	0.04	—	0.04	0.00	607	607	0.01	< 0.005	—	608
Energy	0.12	0.06	1.02	0.44	0.01	0.08	—	0.08	0.08	—	0.08	—	1,780	1,780	0.20	0.01	—	1,789
Water	—	—	—	—	—	—	—	—	—	—	—	7.74	10.9	18.6	0.80	0.02	—	44.2
Waste	—	—	—	—	—	—	—	—	—	—	—	38.0	0.00	38.0	3.80	0.00	—	133
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.76	1.76
Total	10.9	10.7	3.24	16.8	0.03	0.15	1.93	2.08	0.15	0.49	0.64	45.8	4,450	4,496	4.96	0.16	4.50	4,671

3. Construction Emissions Details

3.1. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	0.35	3.25	3.10	0.01	0.14	—	0.14	0.12	—	0.12	—	723	723	0.03	0.01	—	726
Dust From Material Movement	—	—	—	—	—	—	1.01	1.01	—	0.40	0.40	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.08	0.06	0.59	0.57	< 0.005	0.02	—	0.02	0.02	—	0.02	—	120	120	< 0.005	< 0.005	—	120
Dust From Material Movement	—	—	—	—	—	—	0.18	0.18	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.07	1.26	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	224	224	0.01	0.01	0.87	228
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.6	22.6	< 0.005	< 0.005	0.04	22.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.74	3.74	< 0.005	< 0.005	0.01	3.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	0.17	1.53	1.91	< 0.005	0.06	—	0.06	0.06	—	0.06	—	352	352	0.01	< 0.005	—	353
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.28	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	58.3	58.3	< 0.005	< 0.005	—	58.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.30	1.18	1.22	13.6	0.00	0.00	2.78	2.78	0.00	0.65	0.65	—	2,772	2,772	0.07	0.11	0.31	2,808
Vendor	0.09	0.07	4.13	0.71	0.02	0.03	0.62	0.65	0.03	0.17	0.20	—	2,570	2,570	< 0.005	0.39	0.16	2,686

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.19	0.17	0.16	2.03	0.00	0.00	0.40	0.40	0.00	0.09	0.09	—	416	416	0.01	0.02	0.75	422
Vendor	0.01	0.01	0.60	0.10	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	377	377	< 0.005	0.06	0.39	395
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.37	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	68.8	68.8	< 0.005	< 0.005	0.12	69.8
Vendor	< 0.005	< 0.005	0.11	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	62.4	62.4	< 0.005	0.01	0.06	65.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.77	7.04	9.26	0.02	0.27	—	0.27	0.25	—	0.25	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.28	1.69	< 0.005	0.05	—	0.05	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.36	1.25	0.81	16.2	0.00	0.00	2.78	2.78	0.00	0.65	0.65	—	3,024	3,024	0.05	0.11	10.9	3,070
Vendor	0.08	0.07	3.65	0.64	0.02	0.02	0.62	0.63	0.02	0.17	0.18	—	2,529	2,529	< 0.005	0.39	5.66	2,652
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.25	1.13	1.12	12.7	0.00	0.00	2.78	2.78	0.00	0.65	0.65	—	2,722	2,722	0.07	0.11	0.28	2,757
Vendor	0.08	0.07	3.86	0.67	0.02	0.02	0.62	0.63	0.02	0.17	0.18	—	2,529	2,529	< 0.005	0.39	0.15	2,646
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.89	0.81	0.72	9.20	0.00	0.00	1.97	1.97	0.00	0.46	0.46	—	1,986	1,986	0.04	0.08	3.36	2,014
Vendor	0.06	0.05	2.73	0.47	0.01	0.01	0.44	0.45	0.01	0.12	0.13	—	1,807	1,807	< 0.005	0.28	1.75	1,892
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.16	0.15	0.13	1.68	0.00	0.00	0.36	0.36	0.00	0.08	0.08	—	329	329	0.01	0.01	0.56	334
Vendor	0.01	0.01	0.50	0.09	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	299	299	< 0.005	0.05	0.29	313
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	0.74	6.71	9.24	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.22	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.31	1.20	0.80	15.2	0.00	0.00	2.78	2.78	0.00	0.65	0.65	—	2,974	2,974	0.05	0.10	9.94	3,016
Vendor	0.08	0.06	3.44	0.63	0.02	0.02	0.62	0.63	0.02	0.17	0.18	—	2,482	2,482	< 0.005	0.37	5.14	2,599
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.12	1.09	1.02	11.9	0.00	0.00	2.78	2.78	0.00	0.65	0.65	—	2,677	2,677	0.07	0.11	0.26	2,712
Vendor	0.08	0.06	3.64	0.66	0.02	0.02	0.62	0.63	0.02	0.17	0.18	—	2,482	2,482	< 0.005	0.37	0.13	2,594
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.78	0.65	8.64	0.00	0.00	1.97	1.97	0.00	0.46	0.46	—	1,954	1,954	0.04	0.08	3.07	1,981
Vendor	0.06	0.04	2.57	0.46	0.01	0.01	0.44	0.45	0.01	0.12	0.13	—	1,773	1,773	< 0.005	0.27	1.59	1,855
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.14	0.12	1.58	0.00	0.00	0.36	0.36	0.00	0.08	0.08	—	323	323	0.01	0.01	0.51	328
Vendor	0.01	0.01	0.47	0.08	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	294	294	< 0.005	0.04	0.26	307
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.55	5.14	0.01	0.12	—	0.12	0.11	—	0.11	—	952	952	0.04	0.01	—	956
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.65	0.94	< 0.005	0.02	—	0.02	0.02	—	0.02	—	158	158	0.01	< 0.005	—	158
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.18	1.15	0.71	14.3	0.00	0.00	2.78	2.78	0.00	0.65	0.65	—	2,916	2,916	0.04	0.10	9.03	2,957
Vendor	0.08	0.06	3.25	0.60	0.02	0.02	0.62	0.63	0.02	0.17	0.18	—	2,424	2,424	< 0.005	0.37	4.64	2,541
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.08	0.96	0.92	11.1	0.00	0.00	2.78	2.78	0.00	0.65	0.65	—	2,625	2,625	0.06	0.11	0.23	2,660
Vendor	0.08	0.06	3.43	0.63	0.02	0.02	0.62	0.63	0.02	0.17	0.18	—	2,424	2,424	< 0.005	0.37	0.12	2,536
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.43	0.42	0.32	4.53	0.00	0.00	1.10	1.10	0.00	0.26	0.26	—	1,065	1,065	0.02	0.04	1.55	1,081
Vendor	0.03	0.02	1.34	0.24	0.01	0.01	0.24	0.25	0.01	0.07	0.07	—	963	963	< 0.005	0.15	0.79	1,008
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.06	0.83	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	176	176	< 0.005	0.01	0.26	179
Vendor	0.01	< 0.005	0.25	0.04	< 0.005	< 0.005	0.04	0.05	< 0.005	0.01	0.01	—	159	159	< 0.005	0.02	0.13	167
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	0.52	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	0.52	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.23	1.64	< 0.005	0.06	—	0.06	0.05	—	0.05	—	248	248	0.01	< 0.005	—	249
Paving	0.09	0.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.22	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.1	41.1	< 0.005	< 0.005	—	41.3
Paving	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.94	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	168	168	0.01	0.01	0.65	171
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.74	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	151	151	< 0.005	0.01	0.02	153
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	25.4	25.4	< 0.005	< 0.005	0.05	25.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.21	4.21	< 0.005	< 0.005	0.01	4.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.11	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.9	15.9	< 0.005	< 0.005	—	16.0
Architectural Coatings	5.61	5.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.64	2.64	< 0.005	< 0.005	—	2.65
Architectural Coatings	1.02	1.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	0.24	2.72	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	554	554	0.01	0.02	0.06	562
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.33	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	67.6	67.6	< 0.005	< 0.005	0.12	68.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.2	11.2	< 0.005	< 0.005	0.02	11.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134

Architectural Coating	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.61	0.81	< 0.005	0.02	—	0.02	0.02	—	0.02	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	33.6	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8

Architectural Coatings	6.13	6.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.25	0.16	3.23	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	605	605	0.01	0.02	2.18	614
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.23	0.22	2.54	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	544	544	0.01	0.02	0.06	551
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.16	0.14	1.84	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	397	397	0.01	0.02	0.67	403
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.34	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	65.8	65.8	< 0.005	< 0.005	0.11	66.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	33.6	33.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	6.13	6.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.26	0.24	0.16	3.03	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	595	595	0.01	0.02	1.99	603
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.22	0.20	2.37	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	535	535	0.01	0.02	0.05	542
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.16	0.13	1.73	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	391	391	0.01	0.02	0.61	396
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.32	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	64.7	64.7	< 0.005	< 0.005	0.10	65.6

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.19. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	47.0	47.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.06	0.05	0.34	0.47	< 0.005	0.01	—	0.01	0.01	—	0.01	—	56.7	56.7	< 0.005	< 0.005	—	56.9
Architectural Coatings	20.0	20.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.39	9.39	< 0.005	< 0.005	—	9.42
Architectural Coatings	3.64	3.64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.24	0.23	0.14	2.85	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	583	583	0.01	0.02	1.81	591
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.19	0.18	2.23	0.00	0.00	0.56	0.56	0.00	0.13	0.13	—	525	525	0.01	0.02	0.05	532
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	0.07	0.97	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	228	228	< 0.005	0.01	0.33	231

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.18	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	37.7	37.7	< 0.005	< 0.005	0.05	38.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	17.0	16.3	8.25	69.7	0.13	0.13	10.6	10.8	0.13	2.71	2.84	—	13,116	13,116	0.78	0.69	38.3	13,380
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	17.0	16.3	8.25	69.7	0.13	0.13	10.6	10.8	0.13	2.71	2.84	—	13,116	13,116	0.78	0.69	38.3	13,380
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	15.2	14.4	9.54	70.5	0.12	0.13	10.6	10.8	0.13	2.71	2.84	—	12,228	12,228	0.96	0.76	0.99	12,479

City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	15.2	14.4	9.54	70.5	0.12	0.13	10.6	10.8	0.13	2.71	2.84	—	12,228	12,228	0.96	0.76	0.99	12,479
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	2.79	2.66	1.66	12.3	0.02	0.02	1.93	1.96	0.02	0.49	0.51	—	2,052	2,052	0.15	0.12	2.74	2,095
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.79	2.66	1.66	12.3	0.02	0.02	1.93	1.96	0.02	0.49	0.51	—	2,052	2,052	0.15	0.12	2.74	2,095

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	3,635	3,635	0.59	0.07	—	3,671
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	—	3,635	3,635	0.59	0.07	—	3,671
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	3,635	3,635	0.59	0.07	—	3,671
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	3,635	3,635	0.59	0.07	—	3,671
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	602	602	0.10	0.01	—	608
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	602	602	0.10	0.01	—	608

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.66	0.33	5.60	2.38	0.04	0.45	—	0.45	0.45	—	0.45	—	7,113	7,113	0.63	0.01	—	7,133

City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.66	0.33	5.60	2.38	0.04	0.45	—	0.45	0.45	—	0.45	—	7,113	7,113	0.63	0.01	—	7,133
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.66	0.33	5.60	2.38	0.04	0.45	—	0.45	0.45	—	0.45	—	7,113	7,113	0.63	0.01	—	7,133
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.66	0.33	5.60	2.38	0.04	0.45	—	0.45	0.45	—	0.45	—	7,113	7,113	0.63	0.01	—	7,133
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.12	0.06	1.02	0.44	0.01	0.08	—	0.08	0.08	—	0.08	—	1,178	1,178	0.10	< 0.005	—	1,181
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.12	0.06	1.02	0.44	0.01	0.08	—	0.08	0.08	—	0.08	—	1,178	1,178	0.10	< 0.005	—	1,181

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.48	0.74	12.7	5.39	0.08	1.02	—	1.02	1.02	—	1.02	0.00	16,066	16,066	0.30	0.03	—	16,082
Consumer Products	32.2	32.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	9.27	9.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	3.98	3.77	0.41	43.4	< 0.005	0.02	—	0.02	0.02	—	0.02	—	116	116	< 0.005	< 0.005	—	116
Total	47.0	46.0	13.1	48.7	0.08	1.04	—	1.04	1.04	—	1.04	0.00	16,181	16,181	0.31	0.03	—	16,198
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.48	0.74	12.7	5.39	0.08	1.02	—	1.02	1.02	—	1.02	0.00	16,066	16,066	0.30	0.03	—	16,082
Consumer Products	32.2	32.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	9.27	9.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	43.0	42.2	12.7	5.39	0.08	1.02	—	1.02	1.02	—	1.02	0.00	16,066	16,066	0.30	0.03	—	16,082
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.06	0.03	0.52	0.22	< 0.005	0.04	—	0.04	0.04	—	0.04	0.00	598	598	0.01	< 0.005	—	598
Consumer Products	5.88	5.88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	1.69	1.69	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.36	0.34	0.04	3.90	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.45	9.45	< 0.005	< 0.005	—	9.48
Total	7.99	7.94	0.56	4.12	< 0.005	0.04	—	0.04	0.04	—	0.04	0.00	607	607	0.01	< 0.005	—	608

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	46.8	52.3	99.1	4.80	0.11	—	253
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	13.2	13.2	< 0.005	< 0.005	—	13.3
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	46.8	65.5	112	4.81	0.12	—	267
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	46.8	52.3	99.1	4.80	0.11	—	253
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	13.2	13.2	< 0.005	< 0.005	—	13.3

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	46.8	65.5	112	4.81	0.12	—	267
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	7.74	8.67	16.4	0.80	0.02	—	42.0
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	2.18	2.18	< 0.005	< 0.005	—	2.21
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	7.74	10.9	18.6	0.80	0.02	—	44.2

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	229	0.00	229	22.9	0.00	—	802
City Park	—	—	—	—	—	—	—	—	—	—	—	0.65	0.00	0.65	0.07	0.00	—	2.28
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	230	0.00	230	23.0	0.00	—	804

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	229	0.00	229	22.9	0.00	—	802
City Park	—	—	—	—	—	—	—	—	—	—	—	0.65	0.00	0.65	0.07	0.00	—	2.28
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	230	0.00	230	23.0	0.00	—	804
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	37.9	0.00	37.9	3.79	0.00	—	133
City Park	—	—	—	—	—	—	—	—	—	—	—	0.11	0.00	0.11	0.01	0.00	—	0.38
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	38.0	0.00	38.0	3.80	0.00	—	133

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.7	10.7

City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.7	10.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.7	10.7
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.7	10.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.76	1.76
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.76	1.76

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Remove	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	6/2/2025	7/25/2025	5.00	40.0	—
Building Construction	Building Construction	10/18/2025	7/21/2028	5.00	720	—
Paving	Paving	7/26/2025	10/17/2025	5.00	60.0	—
Architectural Coating	Architectural Coating	11/1/2025	8/4/2028	5.00	720	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41

Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	275	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	81.6	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT

Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	54.9	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	3,624,953	1,208,318	8,100	2,700	34,124

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	—	—	120	0.00	—
Paving	0.00	0.00	0.00	0.00	20.4

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	1.65	0%
Single Family Housing	6.75	0%
City Park	0.00	0%
Other Asphalt Surfaces	11.1	100%
Other Asphalt Surfaces	0.90	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	1,436	1,436	1,436	523,958	5,954	5,954	5,954	2,173,220
Single Family Housing	2,164	2,164	2,164	789,820	8,975	8,975	8,975	3,275,938
City Park	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	150
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Wood Fireplaces	0
Gas Fireplaces	613
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
3624952.5	1,208,318	8,100	2,700	34,124

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	1,278,856	204	0.0330	0.0040	4,363,504
Single Family Housing	5,226,260	204	0.0330	0.0040	17,832,186
City Park	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	4,797,743	1,647,470
Single Family Housing	19,606,774	9,042,554
City Park	0.00	14,637,165
Other Asphalt Surfaces	0.00	0.00
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	83.6	—
Single Family Housing	342	—
City Park	1.21	—
Other Asphalt Surfaces	0.00	—
Other Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage and square footage adjusted based on land use summary and tentative map provided by project applicant.
Construction: Construction Phases	Phase timing based on applicant provided information. Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days
Construction: Architectural Coatings	Based on EDCAQMD Rule 215.
Operations: Vehicle Data	Trip rates and VMT adjusted based on project-specific traffic report.
Operations: Hearths	All units would have natural gas fireplaces per applicant's AQ questionnaire.
Operations: Architectural Coatings	Based on EDCAQMD Rule 215.
Operations: Road Dust	All roads in project vicinity are paved
Construction: On-Road Fugitive Dust	All roads in project area are paved.

Attachment B
AERMOD and HARP Results

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	Creekside Village SP - Reduced Impact Alternative
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,ANNUAL
CO	URBANOPT	Urban options	
CO	POLLUTID	Pollutant ID	OTHER
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	T
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	I:\Projects\Active\El Dorado County\Creekside Village SP AQ-GHG\2023 project\HRA\AERMOD\SACEXE~1.SFC
ME	PROFFILE	Profile met file	I:\Projects\Active\El Dorado County\Creekside Village SP AQ-GHG\2023 project\HRA\AERMOD\SACEXE~1.PFL
ME	SURFDATA	Surf met data info.	23232 2014
ME	UAIRDATA	U-Air met data info.	23230 2014
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	7.3
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
2RPS3001	VOLUME	on-site	669013.2	4275254.6	0	0.00000726	(g/s)	5
2RPS3002	VOLUME	on-site	669076.8	4275254.6	0	0.00000726	(g/s)	5
2RPS3003	VOLUME	on-site	669140.4	4275254.6	0	0.00000726	(g/s)	5
2RPS3004	VOLUME	on-site	669204.0	4275254.6	0	0.00000726	(g/s)	5
2RPS3005	VOLUME	on-site	669267.7	4275254.6	0	0.00000726	(g/s)	5
2RPS3006	VOLUME	on-site	669331.3	4275254.6	0	0.00000726	(g/s)	5
2RPS3007	VOLUME	on-site	669394.9	4275254.6	0	0.00000726	(g/s)	5
2RPS3008	VOLUME	on-site	669458.5	4275254.6	0	0.00000726	(g/s)	5
2RPS3009	VOLUME	on-site	669522.1	4275254.6	0	0.00000726	(g/s)	5
2RPS300A	VOLUME	on-site	669585.7	4275254.6	0	0.00000726	(g/s)	5
2RPS300B	VOLUME	on-site	669649.4	4275254.6	0	0.00000726	(g/s)	5
2RPS300C	VOLUME	on-site	669713.0	4275254.6	0	0.00000726	(g/s)	5
2RPS300D	VOLUME	on-site	669776.6	4275254.6	0	0.00000726	(g/s)	5
2RPS300E	VOLUME	on-site	669840.2	4275254.6	0	0.00000726	(g/s)	5
2RPS300F	VOLUME	on-site	669903.8	4275254.6	0	0.00000726	(g/s)	5
2RPS300G	VOLUME	on-site	669967.4	4275254.6	0	0.00000726	(g/s)	5
2RPS300H	VOLUME	on-site	670031.0	4275254.6	0	0.00000726	(g/s)	5
2RPS300I	VOLUME	on-site	670094.7	4275254.6	0	0.00000726	(g/s)	5
2RPS300J	VOLUME	on-site	670158.3	4275254.6	0	0.00000726	(g/s)	5
2RPS300K	VOLUME	on-site	670221.9	4275254.6	0	0.00000726	(g/s)	5
2RPS300L	VOLUME	on-site	670285.5	4275254.6	0	0.00000726	(g/s)	5
2RPS300M	VOLUME	on-site	670349.1	4275254.6	0	0.00000726	(g/s)	5
2RPS300N	VOLUME	on-site	670412.7	4275254.6	0	0.00000726	(g/s)	5
2RPS300O	VOLUME	on-site	670476.3	4275254.6	0	0.00000726	(g/s)	5
2RPS300P	VOLUME	on-site	670540.0	4275254.6	0	0.00000726	(g/s)	5
2RPS300Q	VOLUME	on-site	669013.2	4275318.2	0	0.00000726	(g/s)	5
2RPS300R	VOLUME	on-site	669076.8	4275318.2	0	0.00000726	(g/s)	5
2RPS300S	VOLUME	on-site	669140.4	4275318.2	0	0.00000726	(g/s)	5
2RPS300T	VOLUME	on-site	669204.0	4275318.2	0	0.00000726	(g/s)	5
2RPS300U	VOLUME	on-site	669267.7	4275318.2	0	0.00000726	(g/s)	5
2RPS300V	VOLUME	on-site	669331.3	4275318.2	0	0.00000726	(g/s)	5
2RPS300W	VOLUME	on-site	669394.9	4275318.2	0	0.00000726	(g/s)	5
2RPS300X	VOLUME	on-site	669458.5	4275318.2	0	0.00000726	(g/s)	5
2RPS300Y	VOLUME	on-site	669522.1	4275318.2	0	0.00000726	(g/s)	5

2RPS300Z	VOLUME	on-site	669585.7	4275318.2	0	0.00000726	(g/s)	5
2RPS3010	VOLUME	on-site	669649.4	4275318.2	0	0.00000726	(g/s)	5
2RPS3011	VOLUME	on-site	669713.0	4275318.2	0	0.00000726	(g/s)	5
2RPS3012	VOLUME	on-site	669776.6	4275318.2	0	0.00000726	(g/s)	5
2RPS3013	VOLUME	on-site	669840.2	4275318.2	0	0.00000726	(g/s)	5
2RPS3014	VOLUME	on-site	669903.8	4275318.2	0	0.00000726	(g/s)	5
2RPS3015	VOLUME	on-site	669967.4	4275318.2	0	0.00000726	(g/s)	5
2RPS3016	VOLUME	on-site	670031.0	4275318.2	0	0.00000726	(g/s)	5
2RPS3017	VOLUME	on-site	670094.7	4275318.2	0	0.00000726	(g/s)	5
2RPS3018	VOLUME	on-site	670158.3	4275318.2	0	0.00000726	(g/s)	5
2RPS3019	VOLUME	on-site	670221.9	4275318.2	0	0.00000726	(g/s)	5
2RPS301A	VOLUME	on-site	670285.5	4275318.2	0	0.00000726	(g/s)	5
2RPS301B	VOLUME	on-site	670349.1	4275318.2	0	0.00000726	(g/s)	5
2RPS301C	VOLUME	on-site	670412.7	4275318.2	0	0.00000726	(g/s)	5
2RPS301D	VOLUME	on-site	669013.2	4275381.8	0	0.00000726	(g/s)	5
2RPS301E	VOLUME	on-site	669076.8	4275381.8	0	0.00000726	(g/s)	5
2RPS301F	VOLUME	on-site	669140.4	4275381.8	0	0.00000726	(g/s)	5
2RPS301G	VOLUME	on-site	669204.0	4275381.8	0	0.00000726	(g/s)	5
2RPS301H	VOLUME	on-site	669267.7	4275381.8	0	0.00000726	(g/s)	5
2RPS301I	VOLUME	on-site	669331.3	4275381.8	0	0.00000726	(g/s)	5
2RPS301J	VOLUME	on-site	669394.9	4275381.8	0	0.00000726	(g/s)	5
2RPS301K	VOLUME	on-site	669458.5	4275381.8	0	0.00000726	(g/s)	5
2RPS301L	VOLUME	on-site	669522.1	4275381.8	0	0.00000726	(g/s)	5
2RPS301M	VOLUME	on-site	669585.7	4275381.8	0	0.00000726	(g/s)	5
2RPS301N	VOLUME	on-site	669649.4	4275381.8	0	0.00000726	(g/s)	5
2RPS301O	VOLUME	on-site	669713.0	4275381.8	0	0.00000726	(g/s)	5
2RPS301P	VOLUME	on-site	669776.6	4275381.8	0	0.00000726	(g/s)	5
2RPS301Q	VOLUME	on-site	669840.2	4275381.8	0	0.00000726	(g/s)	5
2RPS301R	VOLUME	on-site	669903.8	4275381.8	0	0.00000726	(g/s)	5
2RPS301S	VOLUME	on-site	669967.4	4275381.8	0	0.00000726	(g/s)	5
2RPS301T	VOLUME	on-site	670031.0	4275381.8	0	0.00000726	(g/s)	5
2RPS301U	VOLUME	on-site	670094.7	4275381.8	0	0.00000726	(g/s)	5
2RPS301V	VOLUME	on-site	670158.3	4275381.8	0	0.00000726	(g/s)	5
2RPS301W	VOLUME	on-site	670221.9	4275381.8	0	0.00000726	(g/s)	5
2RPS301X	VOLUME	on-site	670285.5	4275381.8	0	0.00000726	(g/s)	5
2RPS301Y	VOLUME	on-site	670349.1	4275381.8	0	0.00000726	(g/s)	5
2RPS301Z	VOLUME	on-site	670412.7	4275381.8	0	0.00000726	(g/s)	5
2RPS3020	VOLUME	on-site	669013.2	4275445.5	0	0.00000726	(g/s)	5
2RPS3021	VOLUME	on-site	669076.8	4275445.5	0	0.00000726	(g/s)	5
2RPS3022	VOLUME	on-site	669140.4	4275445.5	0	0.00000726	(g/s)	5
2RPS3023	VOLUME	on-site	669204.0	4275445.5	0	0.00000726	(g/s)	5
2RPS3024	VOLUME	on-site	669267.7	4275445.5	0	0.00000726	(g/s)	5
2RPS3025	VOLUME	on-site	669331.3	4275445.5	0	0.00000726	(g/s)	5
2RPS3026	VOLUME	on-site	669394.9	4275445.5	0	0.00000726	(g/s)	5
2RPS3027	VOLUME	on-site	669458.5	4275445.5	0	0.00000726	(g/s)	5
2RPS3028	VOLUME	on-site	669522.1	4275445.5	0	0.00000726	(g/s)	5

2RPS3029	VOLUME	on-site	669585.7	4275445.5	0	0.00000726	(g/s)	5
2RPS302A	VOLUME	on-site	669649.4	4275445.5	0	0.00000726	(g/s)	5
2RPS302B	VOLUME	on-site	669713.0	4275445.5	0	0.00000726	(g/s)	5
2RPS302C	VOLUME	on-site	669776.6	4275445.5	0	0.00000726	(g/s)	5
2RPS302D	VOLUME	on-site	669840.2	4275445.5	0	0.00000726	(g/s)	5
2RPS302E	VOLUME	on-site	669903.8	4275445.5	0	0.00000726	(g/s)	5
2RPS302F	VOLUME	on-site	669967.4	4275445.5	0	0.00000726	(g/s)	5
2RPS302G	VOLUME	on-site	670031.0	4275445.5	0	0.00000726	(g/s)	5
2RPS302H	VOLUME	on-site	670094.7	4275445.5	0	0.00000726	(g/s)	5
2RPS302I	VOLUME	on-site	670158.3	4275445.5	0	0.00000726	(g/s)	5
2RPS302J	VOLUME	on-site	670221.9	4275445.5	0	0.00000726	(g/s)	5
2RPS302K	VOLUME	on-site	670285.5	4275445.5	0	0.00000726	(g/s)	5
2RPS302L	VOLUME	on-site	670349.1	4275445.5	0	0.00000726	(g/s)	5
2RPS302M	VOLUME	on-site	669013.2	4275509.1	0	0.00000726	(g/s)	5
2RPS302N	VOLUME	on-site	669076.8	4275509.1	0	0.00000726	(g/s)	5
2RPS302O	VOLUME	on-site	669140.4	4275509.1	0	0.00000726	(g/s)	5
2RPS302P	VOLUME	on-site	669204.0	4275509.1	0	0.00000726	(g/s)	5
2RPS302Q	VOLUME	on-site	669267.7	4275509.1	0	0.00000726	(g/s)	5
2RPS302R	VOLUME	on-site	669331.3	4275509.1	0	0.00000726	(g/s)	5
2RPS302S	VOLUME	on-site	669394.9	4275509.1	0	0.00000726	(g/s)	5
2RPS302T	VOLUME	on-site	669458.5	4275509.1	0	0.00000726	(g/s)	5
2RPS302U	VOLUME	on-site	669522.1	4275509.1	0	0.00000726	(g/s)	5
2RPS302V	VOLUME	on-site	669585.7	4275509.1	0	0.00000726	(g/s)	5
2RPS302W	VOLUME	on-site	669649.4	4275509.1	0	0.00000726	(g/s)	5
2RPS302X	VOLUME	on-site	669713.0	4275509.1	0	0.00000726	(g/s)	5
2RPS302Y	VOLUME	on-site	669776.6	4275509.1	0	0.00000726	(g/s)	5
2RPS302Z	VOLUME	on-site	669840.2	4275509.1	0	0.00000726	(g/s)	5
2RPS3030	VOLUME	on-site	669903.8	4275509.1	0	0.00000726	(g/s)	5
2RPS3031	VOLUME	on-site	669967.4	4275509.1	0	0.00000726	(g/s)	5
2RPS3032	VOLUME	on-site	670031.0	4275509.1	0	0.00000726	(g/s)	5
2RPS3033	VOLUME	on-site	670094.7	4275509.1	0	0.00000726	(g/s)	5
2RPS3034	VOLUME	on-site	670158.3	4275509.1	0	0.00000726	(g/s)	5
2RPS3035	VOLUME	on-site	670221.9	4275509.1	0	0.00000726	(g/s)	5
2RPS3036	VOLUME	on-site	670285.5	4275509.1	0	0.00000726	(g/s)	5
2RPS3037	VOLUME	on-site	669013.2	4275572.7	0	0.00000726	(g/s)	5
2RPS3038	VOLUME	on-site	669076.8	4275572.7	0	0.00000726	(g/s)	5
2RPS3039	VOLUME	on-site	669140.4	4275572.7	0	0.00000726	(g/s)	5
2RPS303A	VOLUME	on-site	669204.0	4275572.7	0	0.00000726	(g/s)	5
2RPS303B	VOLUME	on-site	669267.7	4275572.7	0	0.00000726	(g/s)	5
2RPS303C	VOLUME	on-site	669331.3	4275572.7	0	0.00000726	(g/s)	5
2RPS303D	VOLUME	on-site	669394.9	4275572.7	0	0.00000726	(g/s)	5
2RPS303E	VOLUME	on-site	669458.5	4275572.7	0	0.00000726	(g/s)	5
2RPS303F	VOLUME	on-site	669522.1	4275572.7	0	0.00000726	(g/s)	5
2RPS303G	VOLUME	on-site	669585.7	4275572.7	0	0.00000726	(g/s)	5
2RPS303H	VOLUME	on-site	669649.4	4275572.7	0	0.00000726	(g/s)	5

2RPS303I	VOLUME	on-site	669713.0	4275572.7	0	0.00000726	(g/s)	5
2RPS303J	VOLUME	on-site	669776.6	4275572.7	0	0.00000726	(g/s)	5
2RPS303K	VOLUME	on-site	669840.2	4275572.7	0	0.00000726	(g/s)	5
2RPS303L	VOLUME	on-site	669903.8	4275572.7	0	0.00000726	(g/s)	5
2RPS303M	VOLUME	on-site	669967.4	4275572.7	0	0.00000726	(g/s)	5
2RPS303N	VOLUME	on-site	670031.0	4275572.7	0	0.00000726	(g/s)	5
2RPS303O	VOLUME	on-site	670094.7	4275572.7	0	0.00000726	(g/s)	5
2RPS303P	VOLUME	on-site	670158.3	4275572.7	0	0.00000726	(g/s)	5
2RPS303Q	VOLUME	on-site	670221.9	4275572.7	0	0.00000726	(g/s)	5
2RPS303R	VOLUME	on-site	669331.3	4275636.3	0	0.00000726	(g/s)	5
2RPS303S	VOLUME	on-site	669394.9	4275636.3	0	0.00000726	(g/s)	5
2RPS303T	VOLUME	on-site	669458.5	4275636.3	0	0.00000726	(g/s)	5
2RPS303U	VOLUME	on-site	669522.1	4275636.3	0	0.00000726	(g/s)	5
2RPS303V	VOLUME	on-site	669585.7	4275636.3	0	0.00000726	(g/s)	5
2RPS303W	VOLUME	on-site	669649.4	4275636.3	0	0.00000726	(g/s)	5
2RPS303X	VOLUME	on-site	669713.0	4275636.3	0	0.00000726	(g/s)	5
2RPS303Y	VOLUME	on-site	669776.6	4275636.3	0	0.00000726	(g/s)	5
2RPS303Z	VOLUME	on-site	669840.2	4275636.3	0	0.00000726	(g/s)	5
2RPS3040	VOLUME	on-site	669903.8	4275636.3	0	0.00000726	(g/s)	5
2RPS3041	VOLUME	on-site	669967.4	4275636.3	0	0.00000726	(g/s)	5
2RPS3042	VOLUME	on-site	670031.0	4275636.3	0	0.00000726	(g/s)	5
2RPS3043	VOLUME	on-site	670094.7	4275636.3	0	0.00000726	(g/s)	5
2RPS3044	VOLUME	on-site	670158.3	4275636.3	0	0.00000726	(g/s)	5
2RPS3045	VOLUME	on-site	669394.9	4275699.9	0	0.00000726	(g/s)	5
2RPS3046	VOLUME	on-site	669458.5	4275699.9	0	0.00000726	(g/s)	5
2RPS3047	VOLUME	on-site	669522.1	4275699.9	0	0.00000726	(g/s)	5
2RPS3048	VOLUME	on-site	669585.7	4275699.9	0	0.00000726	(g/s)	5
2RPS3049	VOLUME	on-site	669649.4	4275699.9	0	0.00000726	(g/s)	5
2RPS304A	VOLUME	on-site	669713.0	4275699.9	0	0.00000726	(g/s)	5
2RPS304B	VOLUME	on-site	669776.6	4275699.9	0	0.00000726	(g/s)	5
2RPS304C	VOLUME	on-site	669840.2	4275699.9	0	0.00000726	(g/s)	5
2RPS304D	VOLUME	on-site	669903.8	4275699.9	0	0.00000726	(g/s)	5
2RPS304E	VOLUME	on-site	669967.4	4275699.9	0	0.00000726	(g/s)	5
2RPS304F	VOLUME	on-site	670031.0	4275699.9	0	0.00000726	(g/s)	5
2RPS304G	VOLUME	on-site	670094.7	4275699.9	0	0.00000726	(g/s)	5
2RPS304H	VOLUME	on-site	670158.3	4275699.9	0	0.00000726	(g/s)	5
2RPS304I	VOLUME	on-site	669458.5	4275763.5	0	0.00000726	(g/s)	5
2RPS304J	VOLUME	on-site	669522.1	4275763.5	0	0.00000726	(g/s)	5
2RPS304K	VOLUME	on-site	669585.7	4275763.5	0	0.00000726	(g/s)	5
2RPS304L	VOLUME	on-site	669649.4	4275763.5	0	0.00000726	(g/s)	5
2RPS304M	VOLUME	on-site	669713.0	4275763.5	0	0.00000726	(g/s)	5
2RPS304N	VOLUME	on-site	669776.6	4275763.5	0	0.00000726	(g/s)	5
2RPS304O	VOLUME	on-site	669840.2	4275763.5	0	0.00000726	(g/s)	5
2RPS304P	VOLUME	on-site	669903.8	4275763.5	0	0.00000726	(g/s)	5
2RPS304Q	VOLUME	on-site	669967.4	4275763.5	0	0.00000726	(g/s)	5
2RPS304R	VOLUME	on-site	670031.0	4275763.5	0	0.00000726	(g/s)	5

2RPS304S	VOLUME	on-site	670094.7	4275763.5	0	0.00000726	(g/s)	5
2RPS304T	VOLUME	on-site	669522.1	4275827.2	0	0.00000726	(g/s)	5
2RPS304U	VOLUME	on-site	669585.7	4275827.2	0	0.00000726	(g/s)	5
2RPS304V	VOLUME	on-site	669649.4	4275827.2	0	0.00000726	(g/s)	5
2RPS304W	VOLUME	on-site	669713.0	4275827.2	0	0.00000726	(g/s)	5
2RPS304X	VOLUME	on-site	669776.6	4275827.2	0	0.00000726	(g/s)	5
2RPS304Y	VOLUME	on-site	669840.2	4275827.2	0	0.00000726	(g/s)	5
2RPS304Z	VOLUME	on-site	669903.8	4275827.2	0	0.00000726	(g/s)	5
2RPS3050	VOLUME	on-site	669967.4	4275827.2	0	0.00000726	(g/s)	5
2RPS3051	VOLUME	on-site	670031.0	4275827.2	0	0.00000726	(g/s)	5
2RPS3052	VOLUME	on-site	669585.7	4275890.8	0	0.00000726	(g/s)	5
2RPS3053	VOLUME	on-site	669649.4	4275890.8	0	0.00000726	(g/s)	5
2RPS3054	VOLUME	on-site	669713.0	4275890.8	0	0.00000726	(g/s)	5
2RPS3055	VOLUME	on-site	669776.6	4275890.8	0	0.00000726	(g/s)	5
2RPS3056	VOLUME	on-site	669840.2	4275890.8	0	0.00000726	(g/s)	5
2RPS3057	VOLUME	on-site	669903.8	4275890.8	0	0.00000726	(g/s)	5
2RPS3058	VOLUME	on-site	669967.4	4275890.8	0	0.00000726	(g/s)	5
2RPS3059	VOLUME	on-site	669649.4	4275954.4	0	0.00000726	(g/s)	5
2RPS305A	VOLUME	on-site	669713.0	4275954.4	0	0.00000726	(g/s)	5
2RPS305B	VOLUME	on-site	669776.6	4275954.4	0	0.00000726	(g/s)	5
2RPS305C	VOLUME	on-site	669840.2	4275954.4	0	0.00000726	(g/s)	5
2RPS305D	VOLUME	on-site	669903.8	4275954.4	0	0.00000726	(g/s)	5
2RPS305E	VOLUME	on-site	669713.0	4276018.0	0	0.00000726	(g/s)	5
2RPS305F	VOLUME	on-site	669776.6	4276018.0	0	0.00000726	(g/s)	5
2RPS305G	VOLUME	on-site	669840.2	4276018.0	0	0.00000726	(g/s)	5
2RPS305H	VOLUME	on-site	669776.6	4276081.6	0	0.00000726	(g/s)	5
2RPS3070	VOLUME		668790.8	4278274.3	0	0.00001391	(g/s)	5
2RPS3071	VOLUME		668819.2	4278215.0	0	0.00001391	(g/s)	5
2RPS3072	VOLUME		668828.8	4278151.5	0	0.00001391	(g/s)	5
2RPS3073	VOLUME		668880.2	4278117.6	0	0.00001391	(g/s)	5
2RPS3074	VOLUME		668949.2	4278045.3	0	0.00001391	(g/s)	5
2RPS3075	VOLUME		668991.4	4277955.0	0	0.00001391	(g/s)	5
2RPS3076	VOLUME		668991.7	4277858.7	0	0.00001391	(g/s)	5
2RPS3077	VOLUME		668993.0	4277757.7	0	0.00001391	(g/s)	5
2RPS3078	VOLUME		668997.1	4277657.8	0	0.00001391	(g/s)	5
2RPS3079	VOLUME		669001.0	4277557.9	0	0.00001391	(g/s)	5
2RPS307A	VOLUME		669004.8	4277458.0	0	0.00001391	(g/s)	5
2RPS307B	VOLUME		669010.1	4277358.1	0	0.00001391	(g/s)	5
2RPS307C	VOLUME		669020.4	4277258.8	0	0.00001391	(g/s)	5
2RPS307D	VOLUME		669051.0	4277164.8	0	0.00001391	(g/s)	5
2RPS307E	VOLUME		669100.9	4277078.1	0	0.00001391	(g/s)	5
2RPS307F	VOLUME		669156.9	4276995.3	0	0.00001391	(g/s)	5
2RPS307G	VOLUME		669212.9	4276912.4	0	0.00001391	(g/s)	5
2RPS307H	VOLUME		669270.8	4276831.0	0	0.00001391	(g/s)	5
2RPS307I	VOLUME		669330.0	4276750.4	0	0.00001391	(g/s)	5

2RPS307J	VOLUME		669386.5	4276667.9	0	0.00001391	(g/s)	5
2RPS307K	VOLUME		669441.8	4276584.5	0	0.00001391	(g/s)	5
2RPS307L	VOLUME		669495.7	4276500.3	0	0.00001391	(g/s)	5
2RPS307M	VOLUME		669550.1	4276416.4	0	0.00001391	(g/s)	5
2RPS307N	VOLUME		669607.0	4276334.2	0	0.00001391	(g/s)	5
2RPS307O	VOLUME		669663.7	4276251.8	0	0.00001391	(g/s)	5
2RPS307P	VOLUME		669725.6	4276173.5	0	0.00001391	(g/s)	5

Volume Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Init. Lat. Dim.	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s)	(m)	(m)	(m)
2RPS3001	on-site	669013.2	4275254.6	0	0.00000726	5	29.59	1
2RPS3002	on-site	669076.8	4275254.6	0	0.00000726	5	29.59	1
2RPS3003	on-site	669140.4	4275254.6	0	0.00000726	5	29.59	1
2RPS3004	on-site	669204.0	4275254.6	0	0.00000726	5	29.59	1
2RPS3005	on-site	669267.7	4275254.6	0	0.00000726	5	29.59	1
2RPS3006	on-site	669331.3	4275254.6	0	0.00000726	5	29.59	1
2RPS3007	on-site	669394.9	4275254.6	0	0.00000726	5	29.59	1
2RPS3008	on-site	669458.5	4275254.6	0	0.00000726	5	29.59	1
2RPS3009	on-site	669522.1	4275254.6	0	0.00000726	5	29.59	1
2RPS300A	on-site	669585.7	4275254.6	0	0.00000726	5	29.59	1
2RPS300B	on-site	669649.4	4275254.6	0	0.00000726	5	29.59	1
2RPS300C	on-site	669713.0	4275254.6	0	0.00000726	5	29.59	1
2RPS300D	on-site	669776.6	4275254.6	0	0.00000726	5	29.59	1
2RPS300E	on-site	669840.2	4275254.6	0	0.00000726	5	29.59	1
2RPS300F	on-site	669903.8	4275254.6	0	0.00000726	5	29.59	1
2RPS300G	on-site	669967.4	4275254.6	0	0.00000726	5	29.59	1
2RPS300H	on-site	670031.0	4275254.6	0	0.00000726	5	29.59	1
2RPS300I	on-site	670094.7	4275254.6	0	0.00000726	5	29.59	1
2RPS300J	on-site	670158.3	4275254.6	0	0.00000726	5	29.59	1
2RPS300K	on-site	670221.9	4275254.6	0	0.00000726	5	29.59	1
2RPS300L	on-site	670285.5	4275254.6	0	0.00000726	5	29.59	1
2RPS300M	on-site	670349.1	4275254.6	0	0.00000726	5	29.59	1
2RPS300N	on-site	670412.7	4275254.6	0	0.00000726	5	29.59	1
2RPS300O	on-site	670476.3	4275254.6	0	0.00000726	5	29.59	1
2RPS300P	on-site	670540.0	4275254.6	0	0.00000726	5	29.59	1
2RPS300Q	on-site	669013.2	4275318.2	0	0.00000726	5	29.59	1
2RPS300R	on-site	669076.8	4275318.2	0	0.00000726	5	29.59	1
2RPS300S	on-site	669140.4	4275318.2	0	0.00000726	5	29.59	1
2RPS300T	on-site	669204.0	4275318.2	0	0.00000726	5	29.59	1
2RPS300U	on-site	669267.7	4275318.2	0	0.00000726	5	29.59	1
2RPS300V	on-site	669331.3	4275318.2	0	0.00000726	5	29.59	1
2RPS300W	on-site	669394.9	4275318.2	0	0.00000726	5	29.59	1
2RPS300X	on-site	669458.5	4275318.2	0	0.00000726	5	29.59	1

2RPS300Y	on-site	669522.1	4275318.2	0	0.00000726	5	29.59	1
2RPS300Z	on-site	669585.7	4275318.2	0	0.00000726	5	29.59	1
2RPS3010	on-site	669649.4	4275318.2	0	0.00000726	5	29.59	1
2RPS3011	on-site	669713.0	4275318.2	0	0.00000726	5	29.59	1
2RPS3012	on-site	669776.6	4275318.2	0	0.00000726	5	29.59	1
2RPS3013	on-site	669840.2	4275318.2	0	0.00000726	5	29.59	1
2RPS3014	on-site	669903.8	4275318.2	0	0.00000726	5	29.59	1
2RPS3015	on-site	669967.4	4275318.2	0	0.00000726	5	29.59	1
2RPS3016	on-site	670031.0	4275318.2	0	0.00000726	5	29.59	1
2RPS3017	on-site	670094.7	4275318.2	0	0.00000726	5	29.59	1
2RPS3018	on-site	670158.3	4275318.2	0	0.00000726	5	29.59	1
2RPS3019	on-site	670221.9	4275318.2	0	0.00000726	5	29.59	1
2RPS301A	on-site	670285.5	4275318.2	0	0.00000726	5	29.59	1
2RPS301B	on-site	670349.1	4275318.2	0	0.00000726	5	29.59	1
2RPS301C	on-site	670412.7	4275318.2	0	0.00000726	5	29.59	1
2RPS301D	on-site	669013.2	4275381.8	0	0.00000726	5	29.59	1
2RPS301E	on-site	669076.8	4275381.8	0	0.00000726	5	29.59	1
2RPS301F	on-site	669140.4	4275381.8	0	0.00000726	5	29.59	1
2RPS301G	on-site	669204.0	4275381.8	0	0.00000726	5	29.59	1
2RPS301H	on-site	669267.7	4275381.8	0	0.00000726	5	29.59	1
2RPS301I	on-site	669331.3	4275381.8	0	0.00000726	5	29.59	1
2RPS301J	on-site	669394.9	4275381.8	0	0.00000726	5	29.59	1
2RPS301K	on-site	669458.5	4275381.8	0	0.00000726	5	29.59	1
2RPS301L	on-site	669522.1	4275381.8	0	0.00000726	5	29.59	1
2RPS301M	on-site	669585.7	4275381.8	0	0.00000726	5	29.59	1
2RPS301N	on-site	669649.4	4275381.8	0	0.00000726	5	29.59	1
2RPS301O	on-site	669713.0	4275381.8	0	0.00000726	5	29.59	1
2RPS301P	on-site	669776.6	4275381.8	0	0.00000726	5	29.59	1
2RPS301Q	on-site	669840.2	4275381.8	0	0.00000726	5	29.59	1
2RPS301R	on-site	669903.8	4275381.8	0	0.00000726	5	29.59	1
2RPS301S	on-site	669967.4	4275381.8	0	0.00000726	5	29.59	1
2RPS301T	on-site	670031.0	4275381.8	0	0.00000726	5	29.59	1
2RPS301U	on-site	670094.7	4275381.8	0	0.00000726	5	29.59	1
2RPS301V	on-site	670158.3	4275381.8	0	0.00000726	5	29.59	1
2RPS301W	on-site	670221.9	4275381.8	0	0.00000726	5	29.59	1
2RPS301X	on-site	670285.5	4275381.8	0	0.00000726	5	29.59	1
2RPS301Y	on-site	670349.1	4275381.8	0	0.00000726	5	29.59	1
2RPS301Z	on-site	670412.7	4275381.8	0	0.00000726	5	29.59	1
2RPS3020	on-site	669013.2	4275445.5	0	0.00000726	5	29.59	1
2RPS3021	on-site	669076.8	4275445.5	0	0.00000726	5	29.59	1
2RPS3022	on-site	669140.4	4275445.5	0	0.00000726	5	29.59	1
2RPS3023	on-site	669204.0	4275445.5	0	0.00000726	5	29.59	1
2RPS3024	on-site	669267.7	4275445.5	0	0.00000726	5	29.59	1
2RPS3025	on-site	669331.3	4275445.5	0	0.00000726	5	29.59	1
2RPS3026	on-site	669394.9	4275445.5	0	0.00000726	5	29.59	1
2RPS3027	on-site	669458.5	4275445.5	0	0.00000726	5	29.59	1

2RPS3028	on-site	669522.1	4275445.5	0	0.00000726	5	29.59	1
2RPS3029	on-site	669585.7	4275445.5	0	0.00000726	5	29.59	1
2RPS302A	on-site	669649.4	4275445.5	0	0.00000726	5	29.59	1
2RPS302B	on-site	669713.0	4275445.5	0	0.00000726	5	29.59	1
2RPS302C	on-site	669776.6	4275445.5	0	0.00000726	5	29.59	1
2RPS302D	on-site	669840.2	4275445.5	0	0.00000726	5	29.59	1
2RPS302E	on-site	669903.8	4275445.5	0	0.00000726	5	29.59	1
2RPS302F	on-site	669967.4	4275445.5	0	0.00000726	5	29.59	1
2RPS302G	on-site	670031.0	4275445.5	0	0.00000726	5	29.59	1
2RPS302H	on-site	670094.7	4275445.5	0	0.00000726	5	29.59	1
2RPS302I	on-site	670158.3	4275445.5	0	0.00000726	5	29.59	1
2RPS302J	on-site	670221.9	4275445.5	0	0.00000726	5	29.59	1
2RPS302K	on-site	670285.5	4275445.5	0	0.00000726	5	29.59	1
2RPS302L	on-site	670349.1	4275445.5	0	0.00000726	5	29.59	1
2RPS302M	on-site	669013.2	4275509.1	0	0.00000726	5	29.59	1
2RPS302N	on-site	669076.8	4275509.1	0	0.00000726	5	29.59	1
2RPS302O	on-site	669140.4	4275509.1	0	0.00000726	5	29.59	1
2RPS302P	on-site	669204.0	4275509.1	0	0.00000726	5	29.59	1
2RPS302Q	on-site	669267.7	4275509.1	0	0.00000726	5	29.59	1
2RPS302R	on-site	669331.3	4275509.1	0	0.00000726	5	29.59	1
2RPS302S	on-site	669394.9	4275509.1	0	0.00000726	5	29.59	1
2RPS302T	on-site	669458.5	4275509.1	0	0.00000726	5	29.59	1
2RPS302U	on-site	669522.1	4275509.1	0	0.00000726	5	29.59	1
2RPS302V	on-site	669585.7	4275509.1	0	0.00000726	5	29.59	1
2RPS302W	on-site	669649.4	4275509.1	0	0.00000726	5	29.59	1
2RPS302X	on-site	669713.0	4275509.1	0	0.00000726	5	29.59	1
2RPS302Y	on-site	669776.6	4275509.1	0	0.00000726	5	29.59	1
2RPS302Z	on-site	669840.2	4275509.1	0	0.00000726	5	29.59	1
2RPS3030	on-site	669903.8	4275509.1	0	0.00000726	5	29.59	1
2RPS3031	on-site	669967.4	4275509.1	0	0.00000726	5	29.59	1
2RPS3032	on-site	670031.0	4275509.1	0	0.00000726	5	29.59	1
2RPS3033	on-site	670094.7	4275509.1	0	0.00000726	5	29.59	1
2RPS3034	on-site	670158.3	4275509.1	0	0.00000726	5	29.59	1
2RPS3035	on-site	670221.9	4275509.1	0	0.00000726	5	29.59	1
2RPS3036	on-site	670285.5	4275509.1	0	0.00000726	5	29.59	1
2RPS3037	on-site	669013.2	4275572.7	0	0.00000726	5	29.59	1
2RPS3038	on-site	669076.8	4275572.7	0	0.00000726	5	29.59	1
2RPS3039	on-site	669140.4	4275572.7	0	0.00000726	5	29.59	1
2RPS303A	on-site	669204.0	4275572.7	0	0.00000726	5	29.59	1
2RPS303B	on-site	669267.7	4275572.7	0	0.00000726	5	29.59	1
2RPS303C	on-site	669331.3	4275572.7	0	0.00000726	5	29.59	1
2RPS303D	on-site	669394.9	4275572.7	0	0.00000726	5	29.59	1
2RPS303E	on-site	669458.5	4275572.7	0	0.00000726	5	29.59	1
2RPS303F	on-site	669522.1	4275572.7	0	0.00000726	5	29.59	1
2RPS303G	on-site	669585.7	4275572.7	0	0.00000726	5	29.59	1

2RPS303H	on-site	669649.4	4275572.7	0	0.00000726	5	29.59	1
2RPS303I	on-site	669713.0	4275572.7	0	0.00000726	5	29.59	1
2RPS303J	on-site	669776.6	4275572.7	0	0.00000726	5	29.59	1
2RPS303K	on-site	669840.2	4275572.7	0	0.00000726	5	29.59	1
2RPS303L	on-site	669903.8	4275572.7	0	0.00000726	5	29.59	1
2RPS303M	on-site	669967.4	4275572.7	0	0.00000726	5	29.59	1
2RPS303N	on-site	670031.0	4275572.7	0	0.00000726	5	29.59	1
2RPS303O	on-site	670094.7	4275572.7	0	0.00000726	5	29.59	1
2RPS303P	on-site	670158.3	4275572.7	0	0.00000726	5	29.59	1
2RPS303Q	on-site	670221.9	4275572.7	0	0.00000726	5	29.59	1
2RPS303R	on-site	669331.3	4275636.3	0	0.00000726	5	29.59	1
2RPS303S	on-site	669394.9	4275636.3	0	0.00000726	5	29.59	1
2RPS303T	on-site	669458.5	4275636.3	0	0.00000726	5	29.59	1
2RPS303U	on-site	669522.1	4275636.3	0	0.00000726	5	29.59	1
2RPS303V	on-site	669585.7	4275636.3	0	0.00000726	5	29.59	1
2RPS303W	on-site	669649.4	4275636.3	0	0.00000726	5	29.59	1
2RPS303X	on-site	669713.0	4275636.3	0	0.00000726	5	29.59	1
2RPS303Y	on-site	669776.6	4275636.3	0	0.00000726	5	29.59	1
2RPS303Z	on-site	669840.2	4275636.3	0	0.00000726	5	29.59	1
2RPS3040	on-site	669903.8	4275636.3	0	0.00000726	5	29.59	1
2RPS3041	on-site	669967.4	4275636.3	0	0.00000726	5	29.59	1
2RPS3042	on-site	670031.0	4275636.3	0	0.00000726	5	29.59	1
2RPS3043	on-site	670094.7	4275636.3	0	0.00000726	5	29.59	1
2RPS3044	on-site	670158.3	4275636.3	0	0.00000726	5	29.59	1
2RPS3045	on-site	669394.9	4275699.9	0	0.00000726	5	29.59	1
2RPS3046	on-site	669458.5	4275699.9	0	0.00000726	5	29.59	1
2RPS3047	on-site	669522.1	4275699.9	0	0.00000726	5	29.59	1
2RPS3048	on-site	669585.7	4275699.9	0	0.00000726	5	29.59	1
2RPS3049	on-site	669649.4	4275699.9	0	0.00000726	5	29.59	1
2RPS304A	on-site	669713.0	4275699.9	0	0.00000726	5	29.59	1
2RPS304B	on-site	669776.6	4275699.9	0	0.00000726	5	29.59	1
2RPS304C	on-site	669840.2	4275699.9	0	0.00000726	5	29.59	1
2RPS304D	on-site	669903.8	4275699.9	0	0.00000726	5	29.59	1
2RPS304E	on-site	669967.4	4275699.9	0	0.00000726	5	29.59	1
2RPS304F	on-site	670031.0	4275699.9	0	0.00000726	5	29.59	1
2RPS304G	on-site	670094.7	4275699.9	0	0.00000726	5	29.59	1
2RPS304H	on-site	670158.3	4275699.9	0	0.00000726	5	29.59	1
2RPS304I	on-site	669458.5	4275763.5	0	0.00000726	5	29.59	1
2RPS304J	on-site	669522.1	4275763.5	0	0.00000726	5	29.59	1
2RPS304K	on-site	669585.7	4275763.5	0	0.00000726	5	29.59	1
2RPS304L	on-site	669649.4	4275763.5	0	0.00000726	5	29.59	1
2RPS304M	on-site	669713.0	4275763.5	0	0.00000726	5	29.59	1
2RPS304N	on-site	669776.6	4275763.5	0	0.00000726	5	29.59	1
2RPS304O	on-site	669840.2	4275763.5	0	0.00000726	5	29.59	1
2RPS304P	on-site	669903.8	4275763.5	0	0.00000726	5	29.59	1
2RPS304Q	on-site	669967.4	4275763.5	0	0.00000726	5	29.59	1

2RPS304R	on-site	670031.0	4275763.5	0	0.00000726	5	29.59	1
2RPS304S	on-site	670094.7	4275763.5	0	0.00000726	5	29.59	1
2RPS304T	on-site	669522.1	4275827.2	0	0.00000726	5	29.59	1
2RPS304U	on-site	669585.7	4275827.2	0	0.00000726	5	29.59	1
2RPS304V	on-site	669649.4	4275827.2	0	0.00000726	5	29.59	1
2RPS304W	on-site	669713.0	4275827.2	0	0.00000726	5	29.59	1
2RPS304X	on-site	669776.6	4275827.2	0	0.00000726	5	29.59	1
2RPS304Y	on-site	669840.2	4275827.2	0	0.00000726	5	29.59	1
2RPS304Z	on-site	669903.8	4275827.2	0	0.00000726	5	29.59	1
2RPS3050	on-site	669967.4	4275827.2	0	0.00000726	5	29.59	1
2RPS3051	on-site	670031.0	4275827.2	0	0.00000726	5	29.59	1
2RPS3052	on-site	669585.7	4275890.8	0	0.00000726	5	29.59	1
2RPS3053	on-site	669649.4	4275890.8	0	0.00000726	5	29.59	1
2RPS3054	on-site	669713.0	4275890.8	0	0.00000726	5	29.59	1
2RPS3055	on-site	669776.6	4275890.8	0	0.00000726	5	29.59	1
2RPS3056	on-site	669840.2	4275890.8	0	0.00000726	5	29.59	1
2RPS3057	on-site	669903.8	4275890.8	0	0.00000726	5	29.59	1
2RPS3058	on-site	669967.4	4275890.8	0	0.00000726	5	29.59	1
2RPS3059	on-site	669649.4	4275954.4	0	0.00000726	5	29.59	1
2RPS305A	on-site	669713.0	4275954.4	0	0.00000726	5	29.59	1
2RPS305B	on-site	669776.6	4275954.4	0	0.00000726	5	29.59	1
2RPS305C	on-site	669840.2	4275954.4	0	0.00000726	5	29.59	1
2RPS305D	on-site	669903.8	4275954.4	0	0.00000726	5	29.59	1
2RPS305E	on-site	669713.0	4276018.0	0	0.00000726	5	29.59	1
2RPS305F	on-site	669776.6	4276018.0	0	0.00000726	5	29.59	1
2RPS305G	on-site	669840.2	4276018.0	0	0.00000726	5	29.59	1
2RPS305H	on-site	669776.6	4276081.6	0	0.00000726	5	29.59	1
2RPS3070		668790.8	4278274.3	0	0.00001391	5	29.59	1
2RPS3071		668819.2	4278215.0	0	0.00001391	5	29.59	1
2RPS3072		668828.8	4278151.5	0	0.00001391	5	29.59	1
2RPS3073		668880.2	4278117.6	0	0.00001391	5	29.59	1
2RPS3074		668949.2	4278045.3	0	0.00001391	5	29.59	1
2RPS3075		668991.4	4277955.0	0	0.00001391	5	29.59	1
2RPS3076		668991.7	4277858.7	0	0.00001391	5	29.59	1
2RPS3077		668993.0	4277757.7	0	0.00001391	5	29.59	1
2RPS3078		668997.1	4277657.8	0	0.00001391	5	29.59	1
2RPS3079		669001.0	4277557.9	0	0.00001391	5	29.59	1
2RPS307A		669004.8	4277458.0	0	0.00001391	5	29.59	1
2RPS307B		669010.1	4277358.1	0	0.00001391	5	29.59	1
2RPS307C		669020.4	4277258.8	0	0.00001391	5	29.59	1
2RPS307D		669051.0	4277164.8	0	0.00001391	5	29.59	1
2RPS307E		669100.9	4277078.1	0	0.00001391	5	29.59	1
2RPS307F		669156.9	4276995.3	0	0.00001391	5	29.59	1
2RPS307G		669212.9	4276912.4	0	0.00001391	5	29.59	1
2RPS307H		669270.8	4276831.0	0	0.00001391	5	29.59	1

2RPS307I		669330.0	4276750.4	0	0.00001391	5	29.59	1
2RPS307J		669386.5	4276667.9	0	0.00001391	5	29.59	1
2RPS307K		669441.8	4276584.5	0	0.00001391	5	29.59	1
2RPS307L		669495.7	4276500.3	0	0.00001391	5	29.59	1
2RPS307M		669550.1	4276416.4	0	0.00001391	5	29.59	1
2RPS307N		669607.0	4276334.2	0	0.00001391	5	29.59	1
2RPS307O		669663.7	4276251.8	0	0.00001391	5	29.59	1
2RPS307P		669725.6	4276173.5	0	0.00001391	5	29.59	1

BREEZE AERMOD Model Results

Max. Annual (4 YEARS) Results of Pollutant: OTHER (ug/m**3)

Group ID	High	Avg. Conc.	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
			East (m)	North (m)	(m)	(m)	(m)		
ALL	1ST	0.00499	669850.10	4276109.50	0.00	0.00	1.80	DC	
	2ND	0.00495	669890.10	4276074.50	0.00	0.00	1.80	DC	
	3RD	0.00494	669895.10	4276069.50	0.00	0.00	1.80	DC	
	4TH	0.00494	669885.10	4276079.50	0.00	0.00	1.80	DC	
	5TH	0.00494	669900.10	4276064.50	0.00	0.00	1.80	DC	
	6TH	0.00494	669905.10	4276059.50	0.00	0.00	1.80	DC	
	7TH	0.00494	669880.10	4276084.50	0.00	0.00	1.80	DC	
	8TH	0.00494	669910.10	4276054.50	0.00	0.00	1.80	DC	
	9TH	0.00493	669875.10	4276089.50	0.00	0.00	1.80	DC	
	10TH	0.00492	669870.10	4276094.50	0.00	0.00	1.80	DC	

Highest Results of Pollutant: OTHER

Avg. Per.	Grp ID	High	Type	Val	Units	Date	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
						YYMMDDHH	East (m)	North (m)	(m)	(m)	(m)		
1-HR	ALL	1ST	Avg. Conc.	0.15135	ug/m**3	15012109	669965.10	4276009.50	0.00	0.00	1.80	DC	

Summary of Total Messages

#	Message Type
0	Fatal Error Message(s)
4	Warning Message(s)
1576	Informational Message(s)
43680	Hours Were Processed
643	Calm Hours Identified
933	Missing Hours Identified (2.14 Percent)

Error & Warning Messages

Msg. Type	Pathway	Ref. #	Description

WARNING	ME	W186	THRESH_1MIN 1-min ASOS wind speed threshold used 0.50

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*HARP - HRACalc v22118 11/14/2024 2:47:31 PM - Cancer Risk - Input File: C:\Users\jfahrney\Desktop\HARP Results\Creekside Village Reduced Impact Alt_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_RISK	MMILK_RISK	WATER_RISK	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_RISK	EGG_RISK	1ST_DRIVER	2ND_DRIVER	PASTURE_CONC	FISH_CONC	WATER_CONC
1			9901	DieselExhPM	0.00499	1.93E-06	3.167YrCancerHighEnd_Inh_FAH16to70	*	1.93E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22118 11/14/2024 2:47:31 PM - Chronic Risk - Input File: C:\Users\jfahrney\Desktop\HARP Results\Creekside Village Reduced Impact Alt_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	DETAILS	INH_CONC	SOIL_DOSE	DERMAL_DOSE	MMILK_DOSE	WATER_DOSE	FISH_DOSE	CROP_DOSE	BEEF_DOSE	DAIRY_DOSE	PIG_DOSE	CHICKEN_DOSE	EGG_DOSE	1ST_DRIVER	2ND_DRIVER	3RD_DRIVER	PASTURE_CONC	FISH_CONC	WATER_CONC
1			9901	DieselExhPM	0.005	NonCancerChronicHighEnd_Inh	#######	#######	#######	#######	#######	0.00E+00	9.98E-04	#######	#######	0.00E+00	#######	#######	#######	0.00E+00	*	4.99E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	NA	NA	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v22118 11/14/2024 2:47:31 PM - Acute Risk - Input File: C:\Users\jfahrney\Desktop\HARP Results\Creekside Village Reduced Impact Alt_HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL
1			9901	DieselExhPM	0.15135	NonCancerAcute	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Energy Calculations

3. Construction Emissions Details

Linear, Grubbing & Land Clearing (2025) - Unmitigated

Location	TOG	ROG	NOx	CO	SO_2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO_2	$NBCO_2$	CO_2T	CH_4	N_2O	R	CO_2e
Annual																		
Off-Road Equipment	0.001622	0.001363	0.011861	0.012209	1.58E-05	0.000734		0.000734	0.000675		0.000675		1.556922	1.556922	6.32E-05	1.26E-05		1.562265
Dust From Material Movement							0.001856	0.001856		0.0002	0.0002							
Onsite truck	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Offsite																		
Annual																		
Worker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Hauling	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0

3. Construction Emissions Details

Linear, Grading & Excavation (2025) - Unmitigated

Location	TOG	ROG	NOx	CO	SO_2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO_2	$NBCO_2$	CO_2T	CH_4	N_2O	R	CO_2e
Annual																		
Off-Road Equipment	0.00556	0.004672	0.035365	0.062138	8.9E-05	0.0016		0.0016	0.001472		0.001472		8.746742	8.746742	0.000355	7.1E-05		8.776758
Dust From Material Movement							0	0	0	0	0							
Onsite truck	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Offsite																		
Annual																		
Worker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Hauling	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0

3. Construction Emissions Details

Linear, Drainage, Utilities, & Sub-Grade (2025) - Unmitigated

Location	TOG	ROG	NOx	CO	SO_2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO_2	$NBCO_2$	CO_2T	CH_4	N_2O	R	CO_2e
Annual																		
Off-Road Equipment	0.004943	0.004103	0.033236	0.041632	6.97E-05	0.001211		0.001211	0.001114		0.001114		5.504869	5.504869	0.000223	4.47E-05		5.523761
Dust From Material Movement							5.83E-07	5.83E-07		8.82E-08	8.82E-08							
Onsite truck	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Offsite																		
Annual																		
Worker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Hauling	3.54E-06	2.71E-06	0.000229	2.26E-05	1.36E-06	1.36E-06	2.77E-05	2.9E-05	1.36E-06	7.58E-06	8.94E-06		0.120427	0.120427	6.90E-07	1.89E-05	8.58E-05	0.126153

3. Construction Emissions Details

Linear, Paving (2025) - Unmitigated

Location	TOG	ROG	NOx	CO	SO_2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO_2	$NBCO_2$	CO_2T	CH_4	N_2O	R	CO_2e
Annual																		
Off-Road Equipment	0.002338	0.001965	0.017882	0.02484	3.45E-05	0.000831		0.000831	0.000764		0.000764		3.392785	3.392785	0.000138	2.75E-05		3.404428
Dust From Material Movement							2.04E-07	2.04E-07		3.09E-08	3.09E-08							
Onsite truck	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Offsite																		
Annual																		
Worker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Hauling	1.18E-06	9.04E-07	7.62E-05	7.54E-06	4.52E-07	4.52E-07	9.23E-06	9.68E-06	4.52E-07	2.53E-06	2.98E-06		0.040142	0.040142	2.30E-07	6.29E-06	2.86E-05	0.042051

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: El Dorado
Calendar Year: 2028
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Fuel Consumption
El Dorado	2028	HHDT	Aggregate	Aggregate	Gasoline	0.320372027	17.764992	17.7649922	0	6.41000352	0.0045044
El Dorado	2028	HHDT	Aggregate	Aggregate	Diesel	600.0932676	47061.922	47061.9222	0	5674.302961	8.5522466
El Dorado	2028	LDA	Aggregate	Aggregate	Gasoline	45405.60275	1819388.3	1819388.26	0	211227.6026	56.074189
El Dorado	2028	LDA	Aggregate	Aggregate	Diesel	177.8705665	5152.8136	5152.81358	0	746.871728	0.1158724
El Dorado	2028	LDT1	Aggregate	Aggregate	Gasoline	7010.034777	205542.77	205542.773	0	29472.54131	7.9664382
El Dorado	2028	LDT1	Aggregate	Aggregate	Diesel	1.343144497	7.9632841	7.96328405	0	3.656403849	0.0003026
El Dorado	2028	LDT2	Aggregate	Aggregate	Gasoline	36379.90323	1347752.6	1347752.58	0	165754.3034	52.520294
El Dorado	2028	LDT2	Aggregate	Aggregate	Diesel	142.4706426	5490.6254	5490.6254	0	660.7568804	0.1597768
El Dorado	2028	LHDT1	Aggregate	Aggregate	Gasoline	3396.546438	111757.48	111757.479	0	50603.48107	11.451726
El Dorado	2028	LHDT1	Aggregate	Aggregate	Diesel	3591.182645	107947.57	107947.569	0	45172.55996	6.736367
El Dorado	2028	LHDT2	Aggregate	Aggregate	Gasoline	249.9970838	8776.2765	8776.2765	0	3724.584053	0.9789201
El Dorado	2028	LHDT2	Aggregate	Aggregate	Diesel	1367.870489	44427.585	44427.5853	0	17206.08997	3.3798579
El Dorado	2028	MCY	Aggregate	Aggregate	Gasoline	4772.56895	21991.344	21991.3437	0	9545.1379	0.558567
El Dorado	2028	MDV	Aggregate	Aggregate	Gasoline	22483.49203	747093.84	747093.837	0	100538.7582	35.438751
El Dorado	2028	MDV	Aggregate	Aggregate	Diesel	503.2336788	16716.829	16716.8291	0	2273.922229	0.6555079
El Dorado	2028	MH	Aggregate	Aggregate	Gasoline	632.3782347	4994.8356	4994.83563	0	63.2631186	1.131659
El Dorado	2028	MH	Aggregate	Aggregate	Diesel	413.1124379	3190.3639	3190.36389	0	41.31124379	0.3396365
El Dorado	2028	MHDT	Aggregate	Aggregate	Gasoline	168.3258964	7141.1708	7141.1708	0	3367.864536	1.4503141
El Dorado	2028	MHDT	Aggregate	Aggregate	Diesel	1851.708847	77690.629	77690.629	0	20534.67361	9.027737
El Dorado	2028	OBUS	Aggregate	Aggregate	Gasoline	35.74896276	1199.5608	1199.56085	0	715.265247	0.2415418
El Dorado	2028	OBUS	Aggregate	Aggregate	Diesel	77.31181144	4462.1567	4462.15672	0	830.7854788	0.5765251
El Dorado	2028	SBUS	Aggregate	Aggregate	Gasoline	16.73113011	700.72219	700.722191	0	66.92452042	0.0703354
El Dorado	2028	SBUS	Aggregate	Aggregate	Diesel	165.6034122	3658.0396	3658.03964	0	2397.937409	0.4363034
El Dorado	2028	UBUS	Aggregate	Aggregate	Gasoline	12.58695387	1054.0903	1054.09033	0	50.34781548	0.2242865
El Dorado	2028	UBUS	Aggregate	Aggregate	Diesel	34.46522931	3484.2543	3484.2543	0	137.8609172	0.3799405

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: El Dorado
Calendar Year: 2028
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	Fuel Consumption
El Dorado	2028	HHDT	Aggregate	Aggregate	Gasoline	0.320372027	17.7649922	0.004504
El Dorado	2028	HHDT	Aggregate	Aggregate	Diesel	600.0932676	47061.9222	8.552247
El Dorado	2028	LDA	Aggregate	Aggregate	Gasoline	45405.60275	1819388.26	56.07419
El Dorado	2028	LDA	Aggregate	Aggregate	Diesel	177.8705665	5152.81358	0.115872
El Dorado	2028	LDT1	Aggregate	Aggregate	Gasoline	7010.034777	205542.773	7.966438
El Dorado	2028	LDT1	Aggregate	Aggregate	Diesel	1.343144497	7.96328405	0.000303
El Dorado	2028	LDT2	Aggregate	Aggregate	Gasoline	36379.90323	1347752.58	52.52029
El Dorado	2028	LDT2	Aggregate	Aggregate	Diesel	142.4706426	5490.6254	0.159777
El Dorado	2028	LHDT1	Aggregate	Aggregate	Gasoline	3396.546438	111757.479	11.45173
El Dorado	2028	LHDT1	Aggregate	Aggregate	Diesel	3591.182645	107947.569	6.736367
El Dorado	2028	LHDT2	Aggregate	Aggregate	Gasoline	249.9970838	8776.2765	0.97892
El Dorado	2028	LHDT2	Aggregate	Aggregate	Diesel	1367.870489	44427.5853	3.379858
El Dorado	2028	MCY	Aggregate	Aggregate	Gasoline	4772.56895	21991.3437	0.558567
El Dorado	2028	MDV	Aggregate	Aggregate	Gasoline	22483.49203	747093.837	35.43875
El Dorado	2028	MDV	Aggregate	Aggregate	Diesel	503.2336788	16716.8291	0.655508
El Dorado	2028	MH	Aggregate	Aggregate	Gasoline	632.3782347	4994.83563	1.131659
El Dorado	2028	MH	Aggregate	Aggregate	Diesel	413.1124379	3190.36389	0.339636
El Dorado	2028	MHDT	Aggregate	Aggregate	Gasoline	168.3258964	7141.1708	1.450314
El Dorado	2028	MHDT	Aggregate	Aggregate	Diesel	1851.708847	77690.629	9.027737
El Dorado	2028	OBUS	Aggregate	Aggregate	Gasoline	35.74896276	1199.56085	0.241542
El Dorado	2028	OBUS	Aggregate	Aggregate	Diesel	77.31181144	4462.15672	0.576525
El Dorado	2028	SBUS	Aggregate	Aggregate	Gasoline	16.73113011	700.722191	0.070335
El Dorado	2028	SBUS	Aggregate	Aggregate	Diesel	165.6034122	3658.03964	0.436303
El Dorado	2028	UBUS	Aggregate	Aggregate	Gasoline	12.58695387	1054.09033	0.224286
El Dorado	2028	UBUS	Aggregate	Aggregate	Diesel	34.46522931	3484.2543	0.37994

198.47	Total
198,472	Gallons per Day
72,442,134	**Gallons per year**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit M - Draft Environmental Impact Report Appendices Pt. 1

Phase 1 2027

5.12. Operational Water and Wastewater Consumption

5.12.1 Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	29362184.1	141034904.6
Fast Food Restaurant with Drive Thru	728480.9098	2283777.925
Fast Food Restaurant w/o Drive Thru	455300.5686	1409139.589
High Turnover (Sit Down Restaurant)	455300.5686	1409139.589
Parking Lot	0	3644326.364
City Park	0	14128145.72
Total	**31,001,266**	**163,909,434**

Electricity Intensity Factors - Water/Wastewater

Process	**Units**	
Supply	kwh/MG	698
Treat	kwh/MG	748
Distribute	kwh/MG	166
Wastewater Treatment	kwh/MG	1519
Total	**kwh/MG**	**3,131**

* Electricity intensity factors from CalEEMod Appendix G for Sacramento.

Electricity Demand - Water/Wastewater

	Units	**Potable Water - Indoor**	**Potable Water - Outdoor**	**Total**
Electricity Intensity Factor				
Supply	kwh/MG	698	698	N/A
Treat	kwh/MG	748	748	N/A
Distribute	kwh/MG	166	166	N/A
Wastewater Treatment	kwh/MG	1,519	-	N/A
Total	**kwh/MG**	**3,131**	**1,612**	N/A

Project

Water Consumption	**MG/yr**	31	164	**195**
Electricity Usage	**kwh/yr**	97,065	264,222	**361,287**

Appendix C
Biological Resources Reports

Biological Resources Constraints Report (November 2023)

DRAFT

CREEKSIDE VILLAGE

Biological Resources Constraints Report

Prepared for
Winn Communities

November 2023

ESA

DRAFT

CREEKSIDE VILLAGE

Biological Resources Constraints Report

Prepared for
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November 2023

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Orlando	Sacramento	Thousand Oaks

D202000999.01

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Appendix C
Biological Resources Reports

Biological Resources Constraints Report (November 2023)

DRAFT

CREEKSIDE VILLAGE

Biological Resources Constraints Report

Prepared for
Winn Communities

November 2023

ESA

DRAFT

CREEKSIDE VILLAGE

Biological Resources Constraints Report

Prepared for
Winn Communities

November 2023

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Oakland	Rancho Cucamonga	Tampa
Orlando	Sacramento	Thousand Oaks

D202000999.01

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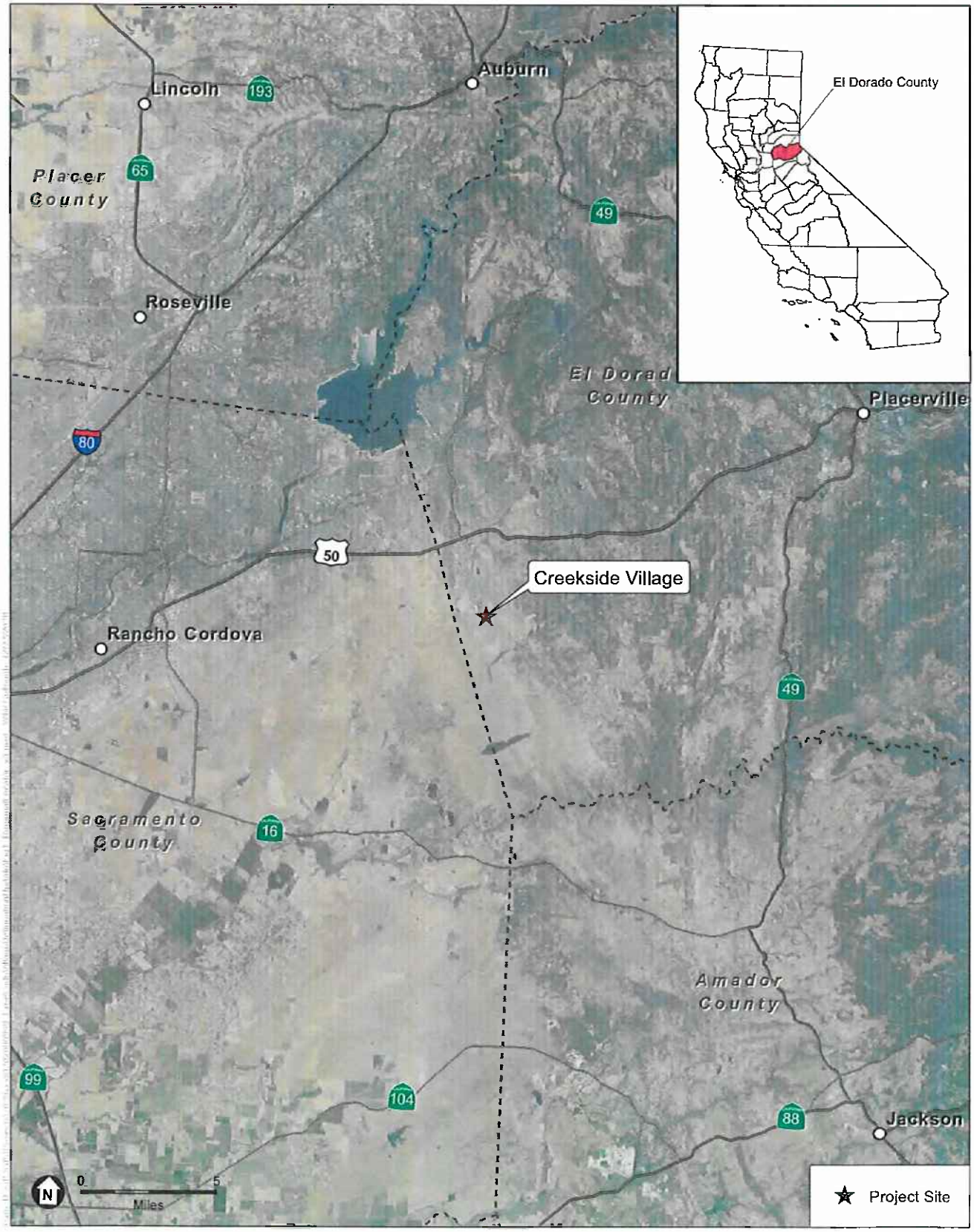
CREEKSIDE VILLAGE
Biological Resources Constraints Report

Introduction

This report analyzes biological resource constraints associated with the Creekside Village Project (project). The study area for this report comprises the main residential development project site and offsite locations including a sewer force main alignment along Latrobe Road and intersection improvements located in the unincorporated community of El Dorado Hills in western El Dorado County, California (**Figures 1** and **2**). The purpose is to document existing special-status biological resources on the project site as well as provide information on potential regulatory constraints associated with implementation of the proposed project. This report is intended to support the preparation of a California Environmental Quality Act (CEQA) environmental document and other regulatory compliance documents that may be needed.

This report identifies the existing biological resources at the project site; identifies the federal, state, and local regulations pertaining to biological resources within the region; and describes potential project impacts on those biological resources as well as mitigation measures to reduce project-related impacts. The information and analysis presented in this report is focused on special-status species,[1] wildlife habitats, vegetation communities, and aquatic resources that may qualify as waters of the U.S. or State. The results of the assessment presented in this report are based upon literature review and queries of the California Department of Fish and Wildlife's (CDFW) Natural Diversity Database (CNDDB), the U.S. Fish and Wildlife Service's (USFWS) list of federal endangered and threatened species, and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants, as well as surveys conducted at the project site. Biological resources within the project site were identified through field reconnaissance surveys conducted in August 2019, December 2020, January 2021, and April 2022.

[1] Species that are regulated pursuant to federal or state endangered species laws, or have been designated as Species of Special Concern by the CDFW, or species that are not included on any agency listing but meet the definition of rare, endangered or threatened species of the CEQA Guidelines section 15380(b), are collectively referred to as "special-status species".



SOURCE: NAIP, 2018; ESRI, 2012; ESA, 2020

Creekside Village

Figure 1
Regional Location

SOURCE: NAIP, 2020; Winn Communities, 2020; ESA, 2020

Creekside Village

Figure 2
Project Site

Project Location

The project site is located in southwestern El Dorado Hills in western El Dorado County, just east of the City of Folsom, California. The main project area is located south of the intersection of Latrobe Road and Investment Boulevard and is on the Folsom SE, California U.S. Geological Survey (USGS) 7.5-minute series quadrangle. The project includes the installation of a sewer force main within the alignment of Latrobe Road extending approximately 1.8 miles north of the main project site to the El Dorado Hills Wastewater Treatment Plant.

Data Sources/Methodology

Biological resources within the project site were identified by ESA biologists Erich Fischer, Joshua Boldt, and Chuck Hughes through field reconnaissance surveys conducted on August 20, 2019, December 10, 2020, January 13, 2021, and April 19, 2022. Prior to the surveys, a review of pertinent literature and database queries was conducted for the project site. Database queries were updated to identify any changes. The primary sources of data referenced for this report include the following:

- Folsom SE and Clarksville, California USGS 7.5-minute topographic quadrangle maps;
- Google Earth color aerial photography for vegetative, topographic, and hydrographic signatures (Google Inc., 2021);
- USFWS list of federal endangered and threatened species that may occur in the proposed project location, and/or may be affected by the project (USFWS, 2023a) (see **Appendix A**);
- CNDDB (v 5.3.0) list of special-status species occurrences within the Folsom SE, California and eight surrounding USGS 7.5-minute topographic quadrangles (Folsom, Clarksville, Shingle Springs, Buffalo Creek, Latrobe, Sloughhouse, Carbondale, and Irish Hill) (CDFW, 2023a) (see Appendix A);
- CNPS Inventory of Rare and Endangered Plants (v9.5) known to occur within the Folsom SE, California and eight surrounding USGS 7.5-minute topographic quadrangles (CNPS, 2023) (see Appendix A);
- USFWS Critical Habitat for Threatened and Endangered Species (online mapping program) (USFWS, 2023b);
- National Wetlands Inventory (USFWS, 2021c);
- CDFW Special Vascular Plants, Bryophytes, and Lichens List (CDFW, 2023b); and
- CDFW Special Animals List (CDFW, 2023c).

During the biological surveys, ESA biologists walked meandering transects through the entire project site, spaced closely to obtain maximum visual coverage of the habitats present. Existing habitat types, plants, and wildlife species within and adjacent to the project site were recorded. Vegetation communities and wildlife habitats were identified and mapped using aerial photo interpretation and field reconnaissance. Prior to the field surveys, special-status species characteristics and habitat requirements were reviewed to aid in field recognition of suitable habitats. During the surveys, habitats were evaluated for their potential to support regionally

occurring special-status species and the presence of any other biologically sensitive resources such as wetlands, riparian habitat, or drainages. Based on the information collected, ESA identified specific biological constraints that could potentially be encountered by implementation of the proposed project.

Environmental Setting

Regional Setting

The project site is in western El Dorado County south of the community of El Dorado Hills. Regionally, the site is located in the Sierra Nevada foothills, just west of the Sierra Nevada Range, within the northern Sierra Nevada Foothills District of the California Floristic Province (Baldwin et al., 2012). Regional natural vegetation communities in the vicinity of the project site include those that are prevalent to the Sierra Nevada foothills, such as annual grasslands, blue oak woodlands, chamise chaparral, and mixed oak/foothill pine woodlands.

The overall climate in the region is Mediterranean in nature, which is characterized by hot, dry summers and cool, wet winters, with the bulk of precipitation occurring as rain in the winter months. The climate in the El Dorado Hills area is temperate with mean annual precipitation of 25.80 inches and mean annual temperatures ranging from a high of 74 to a low of 50 degrees Fahrenheit (Western Regional Climate Center, 2021). Topography throughout the project site drains generally from east to west and is characterized by rolling hills and slopes. The elevation within the project site ranges from approximately 476 feet in the west to 642 feet on a hill in the south.

Plant Communities and Wildlife Habitats

Wildlife habitats are generally described in terms of vegetation types along with landform, disturbance regime, and other unique environmental characteristics. Vegetation communities are assemblages of plant species that occur together in the same area, are repeated across landscapes, and are defined by species composition and relative abundance. Wildlife habitats generally correspond to vegetation communities. The wildlife habitat types described in this document were classified using the CDFW's *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988), a habitat classification scheme that was developed to support the CDFW's California Wildlife Habitat Relationship (CWHR) System. The CWHR System is a wildlife information system and predictive model for California's regularly-occurring wildlife species. The vegetation types described in this report were classified according to *A Manual of California Vegetation, 2nd Edition* (Sawyer et al., 2009). Within CDFW's current vegetation classification system, vegetation alliances are the scientifically derived hierarchical class that corresponds best with plant communities and are designed to be the unit for conservation of rare or threatened plant communities. Vegetation alliances typically represent a much finer scale of vegetation description than wildlife habitats, but correspond approximately with one or several wildlife habitat types. CDFW provides crosswalks to help correlate vegetation alliances with wildlife habitats and the descriptions below make use of the crosswalk. A description of each wildlife habitat type is presented below. Related vegetation alliances are listed following the wildlife habitat description and are based on the alliance descriptions presented by Sawyer, et al. (2009). Vegetation alliances considered a Sensitive Natural Community by CDFW are marked below by

an asterisk (*) and should therefore be considered a sensitive natural community under CEQA regulations. Plant nomenclature follows *The Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin et al., 2012) as revised by the Jepson eFlora (Jepson Flora Project, 2023). Common names of plant species are derived from the Jepson Manual or Calflora (2023). **Table 1** and **Figure 3** summarize the extent of wildlife habitats that occur within the project site.

TABLE 1
HABITAT TYPES

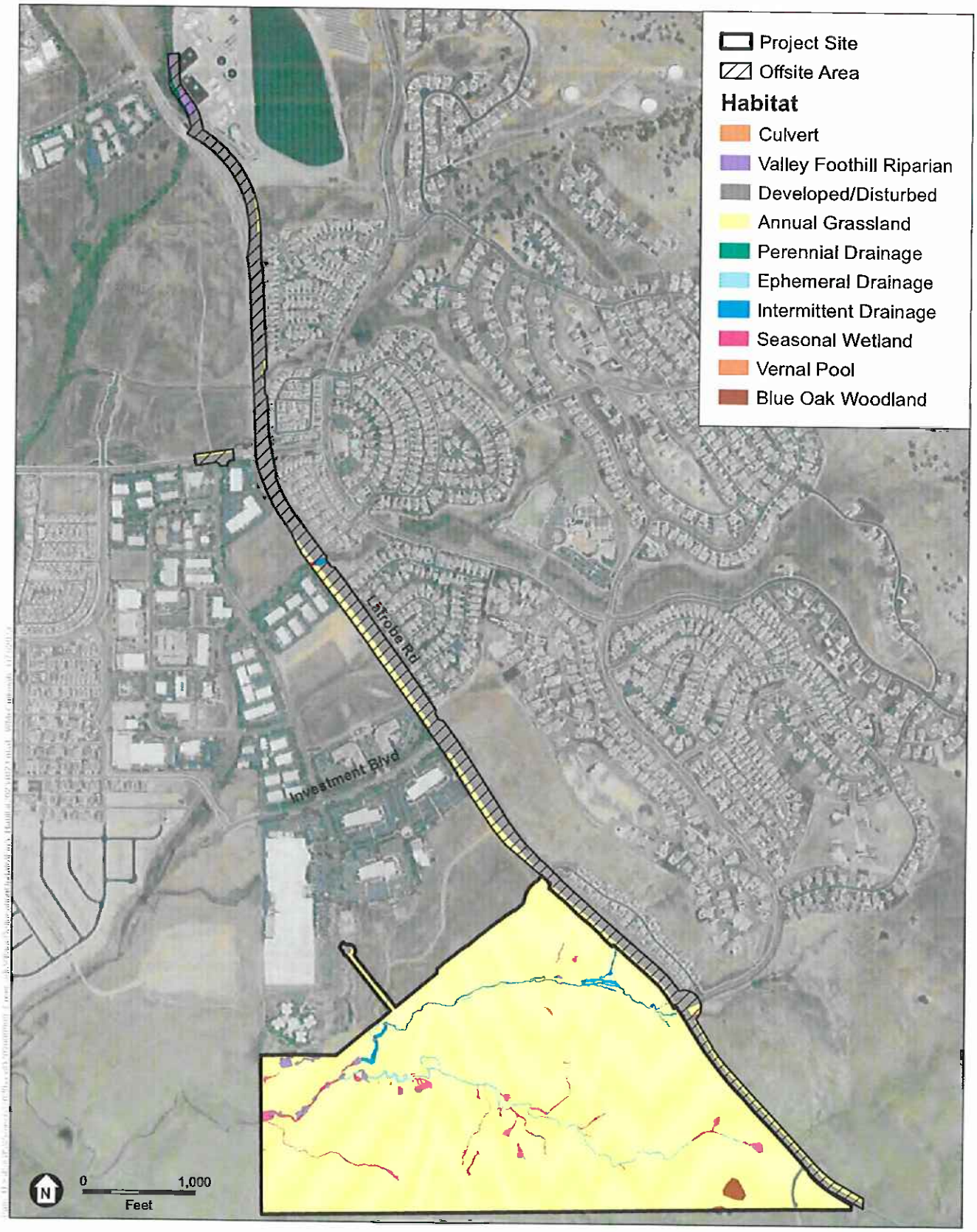
Habitat Type	Total Area (acres)	Offsite Area (acres	Project Site (acres)
Annual Grassland	208.85	7.26	201.59
Blue Oak Woodland	0.75	-	0.75
Culvert (Riverine)	0.04	0.04	<0.01
Developed/Disturbed	29.49	28.95	0.54
Ephemeral Drainage (Riverine)	1.32	<0.01	1.31
Intermittent Drainage (Riverine)	1.20	0.09	1.12
Perennial Drainage (Riverine)	0.30	0.30	-
Seasonal Wetland (including Seep, Wetland Swale, Riverine Seasonal Wetland, and Seasonal Wetland)	2.82	0.09	2.73
Valley Foothill Riparian	1.52	0.50	1.02
Vernal Pool	0.07	-	0.07
Total	**246.35**	**37.23**	**209.12**

NOTE: Total may not sum due to rounding.
SOURCE: ESA, 2023

Terrestrial Habitats

Annual Grassland

Annual grassland, the most abundant habitat type in the project site, is an annual herbaceous plant community characterized mostly by naturalized annual grasses. In the project site, annual grassland is dominated by naturalized herbaceous annual grasses and forbs, with smaller patches with relatively high proportions of native grasses and forbs. The most abundant species in this community include non-native grasses such as wild oats (*Avena barbata, A. fatua, A. sativa*), bromes (*Bromus diandrus, B. hordeaceus*), barleys (*Hordeum marinum* subsp. *gussoneanum, H. murinum*), and fescues (*Festuca myuros, F. perennis*); non-native weedy herbaceous species including yellow star-thistle (*Centaurea solstitialis*), tall sock-destroyer (*Torilis arvensis*), Italian thistle (*Carduus pycnocephalus* subsp. *pycnocephalus*), vetch (*Vicia villosa, V. sativa* subsp. *sativa*), California burclover (*Medicago polymorpha*), broad-leaf filaree (*Erodium botrys*), black mustard (*Brassica nigra*), and shortpod mustard (*Hirschfeldia incana*); and native herbaceous species such as narrow tarplant (*Holocarpha virgata* subsp. *virgata*), yarrow (*Achillea millefolium*), and spikeweed (*Centromadia fitchii*). The native perennial purple needle grass (*Stipa pulchra*) was observed in the project site, but was not present in sufficient density to be considered a separate habitat.



SOURCE: NAIP, 2020; Winn Communities, 2020; ESA, 2020

Creekside Village

Figure 3
Habitat

Annual grassland contains a mosaic of important wildlife habitat features that may provide cover, foraging, and breeding habitat for a variety of wildlife species. Common wildlife species that use annual grassland include western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), California ground squirrel (*Otospermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus californicus*), western meadowlark (*Sturnella neglecta*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), and a variety of raptors such as northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*).

Vegetation Alliances

- *Avena* (*barbata, fatua*) (44.150.00) Wild oats grassland
- *Bromus* (*diandrus, hordeaceus*) (42.026.00) Annual brome grassland
- *Festuca perennis* (41.321.00) Perennial ryegrass fields

Blue Oak Woodland

There is small grove of blue oaks (*Quercus douglasii*) in the southeast corner of the site. Annual grassland is found in the understory of this grove and surrounds the grove on all sides. The grove is located on the top of a steep rise, approximately 100 feet above the rest of the site. The trees were generally in fair to good condition and ranged in size from 18 to 24 inches in diameter at breast height (DBH). Oak trees provide nesting and foraging habitat for many species, including acorn woodpecker (*Melanerpes formicivorus*), yellow-billed magpie (*Pica nuttalli*), and gray squirrel (*Sciurus griseus*).

Vegetation Alliances

- *Quercus douglasii* (71.020.00) Blue oak woodland

Developed/Disturbed

Developed portions of the project site include paved roads, sidewalks, parking lots, and associated infrastructure. These areas are paved or otherwise developed and generally lack natural vegetation. Vegetation associated with developed areas may consist of ornamental shrubs and trees or ruderal roadside vegetation. Disturbed areas include roadsides and other areas with continuous disturbance which limits the establishment of vegetation. Plant species adapted to frequent disturbance observed in the disturbed areas include: stinkwort (*Dittrichia graveolens*), Russian thistle (*Salsola tragus*), short-pod mustard (*Hirschfeldia incana*), and yellow starthistle (*Centaurea solstitialis*). Plant cover is extremely sparse; few individuals are established within the disturbed area. As such, no vegetation alliances correlate with the disturbed type.

Ornamental vegetation associated with developed areas provides marginal habitat for wildlife species. Species expected to occur in these areas include Brewer's blackbird (*Euphagus cyanocephalus*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), rock dove (*Columba livia*), and white-crowned sparrow (*Zonotrichia leucophrys*).

Vegetation Alliances

- None

Wetland and Aquatic Habitats

Riverine

Riverine habitats are distinguished by ephemeral, intermittent, or continually running water, and occur in association with a variety of terrestrial habitats. Carson Creek, a perennial channel, is the largest riverine habitat feature within the study area. This feature flows year-round under typical climatic conditions. All features in the study area eventually drain to Carson Creek. The remaining drainage features in the study area are intermittent or ephemeral in nature and do not support flowing water year-round. Drainage features in the project site consist of perennial, intermittent, and ephemeral channels as well as man-made ditches and culverts. A perennial channel is a stream, or stream portion, that flows continuously during the calendar year. An intermittent channel has flowing water during certain times of the year, when precipitation or groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. In the project site, intermittent channels generally flow throughout the winter season and into the late spring or early summer. An ephemeral channel has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow. This habitat type also includes a man-made drainage ditch in the northwestern corner of the site. The shallow, graded ditch drains the adjacent parking lots to the north. Culverted portions of natural stream channels are also included in this habitat type. Irrigation runoff from developed areas may contribute flows to otherwise natural channels.

Vegetation Alliances

- None

Seasonal Wetlands

Seasonal Wetland/Seep/Wetland Swale/Riverine Seasonal Wetland

These habitat types are discussed collectively due to the similarities in their vegetation composition, substrate, and hydrologic conditions. These communities exhibit variable hydrologic conditions but annually pond surface water or maintain saturated soils at the ground surface for long enough each year to support facultative or obligate wetland plant species. These wetlands support ponded or saturated soil conditions during winter and spring and are typically dry through the summer and fall. Vegetation is characterized by both annual and perennial species including native and non-native grasses and forbs. Plant species found within these wetlands are adapted to withstand intermittent periods of inundation, and typically initiate growth as aquatic or semi-aquatic plants and transition to a dry-land environment as the wetlands dries. Upland grasses and forbs often establish after wetland species desiccate and features become dry. Within the project site, these wetlands occur in depressions, swales, drainages, seeps, or low areas within annual grassland habitat. These communities are dominated by Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum*), rye grass (*Festuca perennis*), rabbitsfoot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), and common toad rush.

Wildlife species use seasonal wetlands for temporary water sources and cover. Species expected to occur in this habitat type are similar to those expected to occur in the annual grassland habitat

discussed above. Seasonal wetlands may also support invertebrate communities that thrive in inundated conditions as discussed below under venal pool.

Vegetation Alliances

- *Festuca perennis* (41.321.00) Perennial ryegrass fields

Valley Foothill Riparian

The vegetation of riparian habitats is quite variable and often structurally diverse. Usually, riparian habitat occurs along streambanks and lakeshores as a narrow, often dense grove of broad-leaved, winter deciduous trees with a subcanopy tree layer and an understory shrub layer. In the project site, characteristic species include Goodding's black willow (*Salix gooddingii*), Fremont cottonwood (*Populus fremontii*), and red willow (*Salix laevigata*) trees in the overstory. The understory consists of sandbar willow (*Salix exigua*) and Himalayan blackberry (*Rubus armeniacus*), and a variety of grasses and forbs, including miner's lettuce (*Claytonia perfoliata*) and rye grass.

All riparian habitats have an exceptionally high value for many wildlife species. Such areas provide water, thermal cover, migration corridors, and diverse nesting and feeding opportunities. The shape of many riparian zones, particularly the linear nature of streams, maximizes the development of the ecotone (a region of transition between two biological communities), which is highly productive for wildlife. A wide range of amphibians, reptiles, birds, and mammals utilize montane riparian habitat for food, cover, and reproduction.

Vegetation Alliances

- *Salix exigua* (61.209.00) Sandbar willow thickets (S4)
- *Salix gooddingii* (61.211.01) Goodding's willow thickets (S3)*

Vernal Pool

Vernal pools are seasonal wetlands that occur in grasslands. These wetlands are typically found in slight depressions that form over bedrock or hardpan soils that allow water to pool during winter and spring rains. Vernal pools typically have an impervious layer of silicate-based hardpan underlying them that prevents water from percolating into the soil. Vernal pools are considered unique habitat and often support species that are endemic to vernal pools or other shallow pools in that particular geographic region. Vernal pool communities have been greatly reduced due to conversion of grasslands to agriculture or urban development. In the project site, vernal pools are dominated by species common to vernal pools including coyote-thistle (*Eryngium castrense*), common toad rush (*Juncus bufonius*), and popcornflower (*Plagiobothrys* sp.).

Vernal pools support invertebrate communities that thrive in inundated conditions. Invertebrate species that potentially occur in vernal pools within the project site include common and special-status species such as clam shrimp (*Cyzicus californicus*), seed shrimp (*Cypria* sp.), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), and several aquatic insects.

Vegetation Alliances

- *Eryngium castrense* (42.007.06) Coyote-thistle vernal pools (S2)*

Aquatic Resources

Wetlands are ecologically complex habitats that support a variety of plant and animal life. In a jurisdictional sense, the federal government defines wetlands in Section 404 of the Clean Water Act (CWA) as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b] and 40 CFR 230.3). Under normal circumstances, the federal definition of wetlands requires three wetland identification parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. The U.S. Army Corps of Engineers (USACE) is the agency responsible for regulating wetlands under Section 404 of the CWA, while the U.S Environmental Protection Agency (USEPA) has overall responsibility for the CWA. "Other waters of the U.S." refers to those hydric features that are regulated by the CWA but are not wetlands (33 CFR 328.4). Examples of other waters of the U.S. include rivers, creeks, intermittent channels, ponds, and lakes.

These features may also be regulated at the state level, including the Porter-Cologne Water Quality Control Act, the State Wetland Procedures, and California Fish and Game Code Section 1600 et seq.

An aquatic resources delineation was conducted for the project site by ESA in August 2019 and January 2021 (ESA, 2023). The aquatic resources delineation identified 7.585 acres of aquatic resources within the study area. Nearly all of the area is expected to be subject to regulation under either the CWA (2.828 acres) or state of California regulations (7.567 acres), or both. Aquatic resources within the project site are summarized in **Table 2.** All aquatic resources and extent of potentially jurisdictional boundaries identified in this report are considered preliminary pending verification from the appropriate regulatory agencies. It should be noted that the delineation study area is larger than the combination of offsite and project site areas.

TABLE 2
AQUATIC RESOURCES

Habitat Type	Area (acres)
Seasonal Wetland (includes seep, seasonal wetland, riverine seasonal wetland, and wetland swale)	3.126
Riparian Wetland	1.251
Ephemeral Drainage (Riverine)	1.579
Intermittent Drainage (Riverine)	1.201
Perennial Drainage (Riverine)	0.297
Vernal Pool	0.071
Culvert (Riverine)	0.14
Ditch	0.014
Total	**7.585**

TABLE 2
AQUATIC RESOURCES

Habitat Type	Area (acres)

NOTE: Total may not sum due to rounding.

SOURCE: ESA, 2023

Sensitive Natural Community

A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, state, or federal agencies. Most sensitive natural communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. CEQA may identify the elimination of such communities as a significant impact.

Sensitive natural communities include: (a) areas of special concern to federal, state, or local resource agencies; (b) areas regulated under Section 404 of the CWA; and (c) areas regulated under the Porter-Cologne Water Quality Control Act.

The CDFW's *California Natural Community List* (CDFW, 2023d) ranks vegetation alliances in California according to their degree of rarity imperilment (as measured by rarity, trends, and threats). All alliances are listed with a G (global) and S (state) rank. Alliances with state ranks of S1-S3 are considered of special concern by the CDFW, and all associations within them are also considered to be highly imperiled. CDFW guidance recommends all alliances with state ranks of S1-S3 be considered and analyzed under CEQA. The following alliances found on the project site are considered sensitive natural communities:

- *Eryngium castrense* (42.007.06) Coyote-thistle vernal pools (S2)*
- *Salix gooddingii* (61.211.01) Goodding's willow thickets (S3)*

Wildlife Movement Corridors

Wildlife movement corridors are considered an important ecological resource by various agencies (CDFW and USFWS) and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing animals to move between various locations within their range. Topography and other natural factors, in combination with urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated "islands" of vegetation that may not provide sufficient area to accommodate sustainable populations, and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, which

in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations.

The project site and surrounding area could potentially be used by a variety of wildlife species for dispersal and seasonal migration. However, there are no known wildlife movement corridors on the project site. The project site is not located in an "Important Biological Corridor" designated by the El Dorado County (2004) General Plan nor is it in important habitat for migratory deer herds (El Dorado County 2010).

Special-Status Species

Special-status species are regulated under the state and federal Endangered Species Acts or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status species include:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species]);
- Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 40, February 28, 1996);
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 California Code of Regulations [CCR] 670.5);
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- Animal species of special concern to CDFW;
- Animals fully protected under Fish and Game Code (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]);
- Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists (State CEQA Guidelines, Section 15380); and
- Plants considered by CNPS and CDFW to be "rare, threatened or endangered in California" (California Rare Plant Rank [CRPR] 1A, 1B, and 2 in CNPS, 2023) or that are included in El Dorado County Code §130.71.030.

A list of special-status species that have the potential to occur within the vicinity of the project site was compiled based on data contained in the CNDDB (CDFW, 2023), the USFWS list of federal endangered and threatened species that occur in or may be affected by the proposed project (USFWS, 2023a), and the CNPS Inventory of Rare and Endangered Plants (CNPS, 2023). A list of special-status species, their general habitat requirements, and an assessment of their potential to occur within and adjacent to the project site is provided below in **Table 3**.

The "Potential to Occur" categories are defined as follows:

- **Unlikely**: The project site and surrounding area does not support suitable habitat for a particular species and/or the project site is outside of the species known range;
- **Low Potential**: The project site and/or adjacent area provides only limited amounts and low quality habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate project vicinity;
- **Medium Potential**: The project site and/or adjacent area provides suitable habitat for a particular species; and
- **High Potential**: The project site and/or adjacent area provide ideal habitat conditions for a particular species and/or known populations occur in the within the project site and adjacent area.

Conclusions regarding habitat suitability and species occurrence are based on the analysis of existing literature and databases described previously and known habitats occurring within the project site and regionally. Database queries identified 56 special-status plant and wildlife species records. Of these, 43 species were eliminated from further consideration based upon a lack of suitable habitat in the project site and/or the project site being outside the known range of the species. Twelve special-status species have medium or high potential to occur in the project site. Only species classified as having a medium or high potential for occurrence were considered in the impact analysis.

Critical Habitat

Critical habitat is defined in Section 3(5)A of the federal Endangered Species Act as the specific portions of the geographic area occupied by the species in which physical or biological features essential to the conservation of the species are found and that may require special management considerations or protection. Specific areas outside of the geographic area occupied by the species may also be included in critical habitat designations upon a determination that such areas are essential for the conservation of the species.

There is no critical habitat designated within or adjacent to the project site.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Amphibians			
California tiger salamander pop. 1 *Ambystoma californiense*	FT/ST	Grassland, oak savanna, and edges of mixed woodland and lower elevation coniferous forest. Requires temporary breeding ponds to breed. Spends most time underground in animal burrows, especially those of California ground squirrels, valley pocket gophers, and moles. Requires both suitable upland terrestrial habitat with mammal burrows for refuge and temporary breeding ponds in order to survive and reproduce. Found in the Central Valley and adjacent Sierra Nevada foothills up to 1,500 feet. The Cosumnes River marks the northern boundary of the species' range, with the exception of an isolated in the Dunnigan Hills in northern Yolo County.	**Unlikely.** Suitable habitat (seasonal wetlands, vernal pools, annual grassland) is present within the project site. However, the site is outside known species range; the project area is north of the Cosumnes River. There are no recorded observations of this species in the CNDDB within five miles.
Foothill yellow-legged frog pop. 5 *Rana boylii*	FE/SE	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg laying. Need at least 15 weeks to attain metamorphosis.	**Unlikely.** No suitable habitat is present for this species within the project site. There are no recorded observations of this species in the CNDDB within five miles.
California red-legged frog *Rana draytonii*	FT/SSC	Found mainly near ponds in humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover. Most common in lowlands or foothills. Frequently found in woods adjacent to streams. Breeding habitat is in permanent or ephemeral water sources: lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Ephemeral wetland habitats require animal burrows or other moist refuges for estivation when the wetlands are dry. Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County.	**Low.** The drainages within the project site provide marginal habitat for this species. There are no recorded observations of this species in the CNDDB within five miles.
Western spadefoot *Spea hammondii*	–/SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools (typically in large complexes) are essential for breeding and egg-laying. Found in the Sierra Nevada foothills, Central Valley, Coast Ranges, and coastal counties in southern California.	**Low.** Isolated marginal aquatic habitat (discontinuous seasonal wetlands, vernal pools) is sparse and broadly distributed across the project site. Suitable upland habitat (annual grasslands) is present within project site, but the low density of aquatic habitat reduces the likelihood for the species to occur. There are no recorded observations of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Birds			
Cooper's hawk *Accipiter cooperii*	MBTA/–	Typically found in woodlands, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains and live oaks.	**Low.** Some suitable foraging habitat, but only marginal nesting habitat as there are no densely wooded areas or large open water habitats present in the project site. There are no recorded observations of this species in the CNDDB within five miles.
Tri-colored blackbird *Agelaius tricolor*	–/ST	Highly colonial, most numerous in Central Valley and vicinity. Nests in cattails, tules, and blackberries large enough for at least 50 nesting pairs, usually over water. Requires foraging area with insect prey within a few kilometers of the colony. Forages in grassland and cropland.	**High.** There is a nesting colony at the project site in riparian wetland blackberry patches associated with an intermittent channel. There are numerous occurrences documented in the CNDDB to the south and west within five miles.
Grasshopper sparrow *Ammodramus savannarum*	–/SSC	Occurs in dry, dense grasslands, especially with scattered shrubs for sitting perches. A thick cover of grasses and tall forbs is essential for concealment. Nests are built of grasses and forbs in slight depressions in ground hidden by a clump of grasses or forbs. Loosely colonial when nesting.	**Medium.** Grassland in the project site is kept grazed and relatively low in stature. There are relatively few shrubs present in the grassland. There are no recorded observations of this species in the CNDDB within five miles.
Golden eagle *Aquila chrysaetos*	–/FP	Cliffs and escarpments or tall trees for nesting; annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals for prey. Foothills and mountains throughout California; uncommon nonbreeding visitor to lowlands such as the Central Valley.	**Low.** No nesting habitat is present within the project site. Could utilize annual grasslands for foraging. There are two recorded observations of this species in the CNDDB within five miles.
Great egret *Ardea alba* (nesting colony)	MBTA/--	Colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	**Unlikely.** No suitable rookery habitat is present for this species within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Great blue heron *Ardea herodias* (nesting colony)	MBTA/--	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	**Unlikely.** No suitable nesting habitat is present for this species within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Burrowing owl *Athene cunicularia*	--/SSC	Nests and forages in open, dry, annual or perennial grasslands and scrublands characterized by low-growing vegetation. Subterranean nester dependent upon burrowing mammals, especially California ground squirrel (*Otospermophilus beecheyi*) for burrows. May also be found around golf courses, and disturbed/ruderal habitat in urban areas. Forages in open plains, grasslands, and prairies.	**High.** Suitable nesting and foraging habitat occurs in annual grasslands in the project site. There are four recorded observations of this species in the CNDDB within five miles, and there is an additional recent observation immediately west in the Carson Creek Specific Plan Area.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Ferruginous hawk *Buteo regalis*	MBTA/--	Open grasslands, sagebrush flats, desert scrub, low foothills, and fringes of pinyon and juniper habitats. Breeding habitat includes features such as cliffs, outcrops, and tree groves for nesting. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	**Low.** Suitable foraging habitat is present but there is no nesting habitat for this species on the project site. There is one recorded observation of this species in the CNDDB within five miles.
Swainson's hawk *Buteo swainsoni*	–/ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Nests in oaks or cottonwoods in or near riparian habitats. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations. Northern habitat summer range in California begins in central Tehama south to Kern County. Predominant breeding habitat is located in the Central Valley.	**Low.** No suitable nesting habitat is present on site; suitable foraging habitat is present within the annual grasslands. However, there are no recorded active nests within five miles of the project site. There are two recorded observations of this species in the CNDDB within five miles; however, both of these records are from 1992.
White-tailed kite *Elanus leucurus*	--/FP	Rolling foothills and valley margins with scattered oaks, and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Medium.** Suitable nest trees are present within the blue oak grove on site. Annual grassland in the project area provides foraging habitat for this species. There are three recorded observations of this species in the CNDDB within five miles.
Merlin *Falco columbarius*	MBTA/–	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands, deserts, farms and ranches. Clumps of trees or windbreaks are required for roosting in open country. Species does not breed in California; breeds in Alaska and Canada. Uncommon winter migrant from September to May.	**Low.** Open areas of the project site provide marginal foraging habitat for this species. There are no recorded observations of this species in the CNDDB within five miles.
Bald eagle *Haliaeetus leucocephalus*	–/SE,FP	Prefers oceans shores, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
California black rail *Laterallus jamaicensis*	--/ST,FP	Found in salt, brackish, and freshwater marsh with dense vegetation for nesting habitat. Majority of population found in the tidal salt marshes of the northern San Francisco Bay region, primarily in San Pablo and Suisun Bays; also found in freshwater marshes in the foothills of the Sierra Nevada.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Double-crested cormorant *Nannopterum auritum*	MBTA/–	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	**Unlikely.** Suitable nesting habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.

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Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Bank swallow *Riparia riparia*	--/ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.	**Unlikely**. Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Fish			
Delta smelt *Hypomesus transpacificus*	FT/SE	Open surface waters in the Sacramento/San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. May be affected by downstream sedimentation.	**Unlikely**. Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Steelhead – Central Valley DPS *Oncorhynchus mykiss irideus* pop. 11	FT/--	This evolutionary significant unit (ESU) enters the Sacramento and San Joaquin Rivers and their tributaries from July to May; spawning occurs from December to April. Young move to rearing areas in and through the Sacramento and San Joaquin Rivers, Delta, and San Pablo and San Francisco Bays. Needs cool water with moderate size gravel for spawning and cover for rearing.	**Unlikely**. Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Invertebrates			
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/--	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**Medium.** The seasonal wetlands and vernal pools within the project site provide suitable habitat for this species. There are three recorded observations of this species in the CNDDB within five miles.
Crotch bumble bee *Bombus crotchii*	--/SCE	Inhabits grassland and scrub areas, requiring a hotter and drier environment than other bumblebee species and nests underground, often in abandoned rodent dens. The historic range includes much of southern California, the San Joaquin Valley, central coast range, Bay Area, and more limited areas elsewhere in northern California (The Xerces Society 2018).	**Unlikely**. The grassland may provide suitable habitat, but the site is outside the current range and there are no records in El Dorado County despite a relatively high sampling effort (The Xerces Society 2018). There are no recorded observations of this species in the CNDDB within five miles
Monarch butterfly *Danaus plexippus*	FC/--	Overwintering trees occur near the coast. Larvae feed on milkweed plants (*Asclepias* sp.) elsewhere.	**Low.** Narrow leaf milkweed plants were observed on the project site, but in low abundance. The project site provides limited habitat but is outside of known winter aggregation sites.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT/--	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus nigra* subsp. *caerulea*). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	**Unlikely.** No suitable habitat is present for this species within the project area. No elderberry shrubs were noted within the site during biological surveys conducted for the project. There are no recorded observations of this species in the CNDDB within five miles.

TABLE 3
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Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Vernal pool tadpole shrimp *Lepidurus packardi*	FE/--	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**Medium.** The seasonal wetlands and vernal pools within the project site suitable marginal habitat for this species. There are five recorded observations of this species in the CNDDB within five miles.
Mammals			
Pallid bat *Antrozous pallidus*	--/SSC	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky outcroppings for roosting, particularly near water. Roosts in rock crevices, buildings, and under bridges. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Low.** No suitable roosting habitat is present in the project site; however, suitable foraging habitat is present in the annual grasslands. There are no recorded observations of this species in the CNDDB within five miles.
Fisher – West Coast DPS *Pekania pennanti*	--/SSC	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high canopy closure. Uses cavities, snags, logs, and rocky areas for cover and denning. Needs large areas of mature, dense forest.	**Unlikely**. Suitable habitat is not present within the project site.
American badger *Taxidea taxus*	--/SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Low.** Suitable burrowing and foraging habitat occurs in annual grasslands in the project site; however, no burrows that could be utilized by this species were present. There are no recorded observations of this species in the CNDDB within five miles.
Reptiles			
Western pond turtle *Emys marmorata*	FPT/SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometer from water for egg-laying. Populations extend throughout the coast and Central Valley of CA.	**Medium**. Suitable habitat is present in the intermittent stream and nesting habitat is present in adjacent uplands within the project site. There are four recorded observations of this species in the CNDDB within five miles.
Coast horned lizard *Phrynosoma blainvillii*	--/SSC	Frequents a wide variety of habitats; however, most common in lowlands along sandy washes with scattered low bushes. Inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains. Found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Needs open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of native ants.	**Unlikely**. Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.

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Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Giant gartersnake *Thamnophis gigas*	FT/ST	Prefers freshwater marsh and low gradient streams. Has adapted to sloughs, canals, and other small water-ways where there is a prey base of small fish and amphibians. Requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter. Utilizes upland habitats within 200 feet from aquatic habitats. This is the most aquatic of the garter snakes in California. Occurs in the Central Valley from Fresno County north to the Gridley/Sutter Buttes area; has been extirpated from areas south of Fresno.	**Unlikely.** Suitable habitat is not present within the project site. The project site is outside the range. There are no recorded observations of this species in the CNDDB within five miles.
Plants			
Jepson's onion *Allium jepsonii*	–/–/1B.2	Open, serpentine or volcanic slopes, flats. Blooms April- August. Elevation 300-600m.	**Unlikely.** Suitable habitat is not present within the project site. Site is outside elevation range of species. There are no recorded observations of this species in the CNDDB within five miles.
Ione manzanita *Arctostaphylos myrtifolia*	FT/--/1B.2	Acidic sandy or clay soils, chaparral, woodland. Blooms January – February. Elevation 70-770m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Stebbin's morning-glory *Calystegia stebbinsii*	FE/SE/1B.1	Chaparral. Blooms April – June. Elevation 185-1,090m.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Chaparral sedge *Carex xerophila*	--/--/1B.2	Dry gabbro or serpentine soils in open forest, scrub, thicket edges, chaparral. Fruits March -- June. Elevation 450-770m.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Pine Hill ceanothus *Ceanothus roderickii*	FE/SR/1B.1	Rocky, gabbro-derived substrates, chaparral, oak/pine woodland. Blooms March – June. Elevation 260-630m.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Red Hills soaproot *Chlorogalum grandiflorum*	–/–/1B.2	Serpentine or gabbro outcrops, open shrubby or wooded hills. Blooms May – June. Elevation 300-500m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Bisbee Peak rush rose *Crocanthemum suffrutescens*	--/--/3.2	Shallow soils on Ione formations within in chaparral. Blooms April – June. Elevation 100-700m.	**Unlikely.** Suitable habitat is not present within the project site. There are three recorded observations of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	**Listing Status USFWS/ CDFW/CNPS**	**General Habitat Requirements**	**Potential for Species Occurrence at the Project Site**
Dwarf downingia *Downingia pusilla*	--/--/2B.2	Vernal pools, roadside ditches. Blooms March – May. Elevation up to 150m.	**Medium.** Suitable habitat present in the vernal pools and some seasonal wetlands present in the project site. There are no recorded observations of this species in the CNDDB within five miles.
Starved daisy *Erigeron miser*	--/--/1B.3	Rocky sites. Blooms July – October. Elevation 1,900-2,300m.	**Unlikely.** Suitable habitat is not present within the project site. Site is outside elevation range of species. There is one recorded observation of this species in the CNDDB within five miles.
Ione buckwheat *Eriogonum apricum* var. *apricum*	FE/SE/1B.1	Clay soils on Ione formations. Blooms June – October. Elevation 80-200m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Irish Hill buckwheat *Eriogonum apricum* var. *prostratum*	FE/SE/1B.1	Clay soils on Ione formations. Blooms June – July. Elevation 90-120m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Tuolumne button-celery *Eryngium pinnatisectum*	--/--/1B.2	Vernal pools, swales, intermittent streams. Blooms May – August. Elevation 70-950m.	**Medium.** Suitable habitat present in the vernal pools, seasonal wetlands, swales and intermittent streams present in the project site. There are no recorded observations of this species in the CNDDB within five miles.
Pine Hill flannelbush *Fremontodendron decumbens*	FE/SR/1B.2	Gabbro outcrops in chaparral or pine woodland. Blooms April – July. Elevation 425-7 60m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
El Dorado bedstraw *Galium californicum* subsp. *sierrae*	FE/SR/1B.2	Oak pine, oak forests, chaparral. Blooms March – July. Elevation 100-500m.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	--/SE/1B.2	Shallow water, margins of vernal pools. Blooms April – September. Elevation up to 1,600m.	**Medium.** Suitable habitat present in the vernal pools and some seasonal wetlands present in the project site. There is one recorded observation of this species in the CNDDB within five miles.
Parry's horkelia *Horkelia parryi*	--/--/1B.2	Chaparral or woodland. Blooms April – September. Elevation 80-1,070m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	--/--/1B.2	Vernal pool margins, grassland swales, and gopher mounds. Fruits March – May. Elevation 30-90m.	**Medium.** Suitable habitat present in the vernal pools, seasonal wetlands, and swales present in the project site. There are no recorded observations of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Legenere *Legenere limosa*	–/–/1B.1	Wet areas, vernal pools, ponds. Blooms March – June. Elevation up to 950m.	**Medium.** Suitable habitat present in the vernal pools and some seasonal wetlands present in the project site. There is one recorded observation of this species in the CNDDB within five miles.
Pincushion navarretia *Navarretia myersii* subsp. *myersii*	–/–/1B.1	Vernal pools. Blooms April – May. Elevation 20-90m.	**Medium.** Suitable habitat present in the vernal pools and some seasonal wetlands present in the project site. There are no recorded observations of this species in the CNDDB within five miles.
Slender Orcutt grass *Orcuttia tenuis*	FT/SE/1B.1	Vernal pools, often gravelly soils. Species requires prolonged inundation period. Species known from larger pools (>0.2 acre). Blooms May – October. Elevation 36-1,760m.	**Unlikely.** Although the project site supports vernal pool habitat, the vernal pools in the site are not large enough nor do they remain inundated long enough to support this species. There are no recorded observations of this species in the CNDDB within five miles.
Sacramento Orcutt grass *Orcuttia viscida*	FE/SE/1B.1	Vernal pools. Species requires prolonged inundation period. Species known from larger pools (>0.1 acre). Blooms April – July. Elevation up to 100m.	**Unlikely.** Although the project site supports vernal pool habitat, the vernal pools in the site are not large enough nor do they remain inundated long enough to support this species. There are no recorded observations of this species in the CNDDB within five miles.
Layne's ragwort *Packera layneae*	FT/SR/1B.2	Serpentine or gabbroic soils within openings in chaparral or woodlands. Blooms April – August. Elevation 200-1,085m.	**Unlikely.** Suitable habitat is not present within the project site. There are three recorded observations of this species in the CNDDB within five miles.
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Ponds, ditches. Blooms May – November. Elevation up to 300m.	**Low.** Most of the aquatic habitats do not inundate long enough to support this species. There is limited habitat in some of the aquatic habitats that receive warm-season irrigation runoff from nearby development. There is one recorded observation of this species in the CNDDB within five miles, but most records are in the Central Valley and not the foothills.
El Dorado County mule ears *Wyethia reticulata*	–/–/1B.2	Wooded slopes, chaparral, coniferous forest, clay or gabbroic soils. Blooms April – August. Elevation 150-630m.	**Unlikely.** Suitable habitat is not present within the project site. There are two recorded observations of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site

STATUS CODES:

FEDERAL (U.S. Fish and Wildlife Service):

FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FPT = Federally proposed as Threatened
FC = Candidate for Federal Listing
MBTA = Migratory Bird Treaty Act (used when other designations absent)

STATE (California Department of Fish and Wildlife):

SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SCE = Candidate for state Listing
SSC = California species of special concern
CFP = California fully protected bird species

California Native Plant Society (CNPS):

Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere
Rank 2A = Plants presumed extirpated in California but common elsewhere
Rank 2B = Plants rare, threatened, or endangered in California but more common elsewhere
Rank 3 = Plants about which more information is needed
Rank 4 = Plants of limited distribution

CNPS Code Extensions

.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 = Fairly threatened in California (20-80% occurrences threatened)
.3 = Not very threatened in California (less than 20% of occurrences threatened or no current threats known)

SOURCE: CDFW, 2023a; USFWS, 2023a; CNPS, 2023

Regulatory Framework

This subsection briefly describes federal, state, and local regulations, permits, and policies pertaining to biological resources as they apply to the proposed project. The project proponent would be required to abide by all applicable regulations and permit requirements in effect at the time of construction.

Federal

Federal Endangered Species Act

The federal Endangered Species Act (FESA) protects candidate, threatened, and endangered plants and animals and their critical habitat. Candidate species are those proposed for listing; these species are usually treated by resource agencies as if they were actually listed during the environmental review process. Procedures for addressing impacts to federally listed species follow two principal pathways, both of which require consultation with the USFWS, which administers the FESA for all terrestrial species. The first pathway, Section 10(a) incidental take permit, applies to situations where a non-federal government entity must resolve potential adverse impacts to species protected under the FESA. The second pathway, Section 7 consultation, applies to projects directly undertaken by a federal agency or private projects requiring a federal permit or approval.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) enacts the provisions of treaties between the U.S., Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs. Most actions that result in take or in permanent or temporary possession of a protected species constitute violations of the MBTA. Examples of permitted actions that do not violate the MBTA are the possession of a hunting license to pursue specific game birds, legitimate research activities, display in zoological gardens, bird banding, and other similar activities. USFWS is responsible for overseeing compliance with the MBTA.

Clean Water Act

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the U.S. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the U.S. Waters of the U.S. refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands. Applicants must obtain a permit from the U.S. Army Corps of Engineers (USACE) for all discharges of dredged or fill material into waters of the U.S., including wetlands, before proceeding with a proposed activity. Waters of the U.S. are under the jurisdiction of the USACE and the USEPA.

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. The USACE cannot issue an individual permit or verify the use of a general nationwide permit until the requirements of FESA and the National Historic Preservation Act have been met. In addition, the USACE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities which may result in the discharge of a pollutant into waters of the U.S. must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

State

Porter-Cologne Water Quality Control Act

The State Water Resources Control Board and the Regional Water Quality Control Boards (RWQCBs) (together "Boards") are the principal state agencies with primary responsibility for the coordination and control of water quality. In the Porter-Cologne Water Quality Control Act

(Porter-Cologne), the Legislature declared that the "state must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the state from degradation..." (California Water Code section 13000).

Porter-Cologne grants the Boards the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the state. Waters of the state determined to be jurisdictional would require, if impacted, waste discharge permitting and/or a CWA Section 401 certification (in the case of a required USACE permit under Section 404). The enforcement of the state's water quality requirements is not solely the purview of the Boards and their staff. Other agencies (e.g., the CDFW under Section 5650 of the California Fish and Game Code) have the authority to enforce certain water quality provisions in state law.

State Wetland Dredge and Fill Policy

The State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (procedures), as prepared by the State Water Resources Control Board, was implemented on May 28, 2020. The procedures include a definition for wetland waters of the state that include (1) all wetland waters of the United States; and (2) aquatic resources that meet both the soils and hydrology criteria for wetland waters of the United States but lack vegetation.[2]

California Endangered Species Act

Under the California Endangered Species Act (CESA), CDFW has the responsibility for maintaining a list of endangered and threatened species.[3] Sections 2050 through 2098 of the California Fish and Game Code outline the protection provided to California's rare, endangered, and threatened species. Section 2080 of the California Fish and Game Code prohibits the taking of plants and animals listed under the CESA. Section 2081 established an incidental take permit program for state-listed species. CDFW maintains a list of "candidate species" which are species that CDFW formally notices as being under review for addition to the list of endangered or threatened species.

Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project site and determine whether the proposed project would have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. Under Section 86 of the California Fish and Game Code "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill". "Take" of protected species incidental to otherwise lawful management activities may be authorized under California Fish and Game Code Section 206.591. Authorization from CDFW would be in the form of an Incidental Take Permit.

2 Less than 5 percent areal coverage at the peak of the growing season.

3 Section 2070 of the California Fish and Game Code.

California Fish and Game Code

Fully Protected Species

Certain species are considered *fully protected*, meaning that the code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. Section 5050 lists fully protected amphibians and reptiles, Section 5515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals.

It is possible for a species to be protected under California Fish and Game Code, but not fully protected. For instance, mountain lion (*Puma concolor*) is protected under Section 4800, et seq., but is not a fully protected species.

Protection of Birds and Their Nests

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the code or any regulation made pursuant thereto. Section 3503.5 of the California Fish and Game Code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Migratory non-game birds are protected under Section 3800, while other specified birds are protected under California Fish and Game Code Section 3505.

Stream and Lake Protection

CDFW has regulatory authority over streams and lakes and the wetland resources associated with these aquatic systems under California Fish and Game Code Sections 1600, et seq. through administration of lake or streambed alteration agreements. Under Sections 1600, et seq., of the California Fish and Game Code, CDFW has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river lake or stream." CDFW enters into a lake or streambed alteration agreement with the project proponent and can impose conditions in the agreement to minimize and mitigate impacts to fish and wildlife resources. Because CDFW includes under its regulatory authority streamside habitats that may not qualify as wetlands under the federal CWA definition, CDFW regulatory authority may be broader than USACE or water board jurisdiction.

Pursuant to the California Fish and Game Code, a project proponent must submit a notification of lake or streambed alteration to CDFW before construction. The notification requires an application fee for a lake or streambed alteration agreement, with a specific fee schedule to be determined by CDFW. CDFW can enter into programmatic agreements that cover recurring operation and maintenance activities and regional plans. These agreements are sometimes referred to as Master Streambed Alteration Agreements (MSAAs).

Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed the CDFW to carry out the legislature's intent to "preserve, protect, and enhance endangered plants in this state." The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to

require permits for collecting, transporting, or selling such plants. CESA expanded on the original NPPA and enhanced legal protection for plants. CESA established threatened and endangered species categories, and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, three listing categories for plants are employed in California: rare, threatened, and endangered.

California Rare Plant Ranking System

CDFW works in collaboration with the CNPS to maintain a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. These species are categorized by rarity in the California Rare Plant Ranking (CRPR) system. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts to populations of CRPR species may receive consideration under CEQA review. The following identifies the definitions of the CRPR:

Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.

Rank 1B: Plants Rare, Threatened, or Endangered in California and elsewhere.

Rank 2A: Plants presumed extirpated in California, but more common elsewhere.

Rank 2B: Plants Rare, Threatened, or Endangered in California, but more common elsewhere.

Rank 3: Plants about which more information is needed - A Review List.

Rank 4: Plants of limited distribution - A Watch List.

Local

El Dorado County General Plan

Biological resources are addressed in the El Dorado County General Plan Conservation and Open Space Element. Applicable policies from the El Dorado County General Plan are listed below.

Conservation and Open Space Element

Policy 7.3.3.1: For projects that would result in the discharge of material to or that may affect the function and value of river, stream, lake, pond, or wetland features, the application shall include a delineation of all such features. For wetlands, the delineation shall be conducted using the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual.

Policy 7.3.3.5: Rivers, streams, lakes and ponds, and wetlands shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site while disturbance to the resource is avoided or minimized and fragmentation is limited.

Policy 7.3.4.1: Natural watercourses shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site without disturbance.

Policy 7.3.4.2: Modification of natural stream beds and flow shall be regulated to ensure that adequate mitigation measures are utilized.

Policy 7.4.2.1: The County will coordinate wildlife and vegetation protection programs with appropriate Federal and State agencies.

Policy 7.4.2.2: The County shall continue to support the Noxious Weed Management Group in its efforts to reduce and eliminate noxious weed infestations to protect native habitats and to reduce fire hazards.

Policy 7.4.2.4: Protect and preserve wildlife habitat corridors within public parks and natural resource protection areas to allow for wildlife use. Recreational uses within these areas shall be limited to those activities that do not require grading or vegetation removal.

Policy 7.4.2.5: Setbacks from all rivers, streams, and lakes shall be included in the Zoning Ordinance for all ministerial and discretionary development projects.

Policy 7.4.2.8: Conserve contiguous blocks of important habitat to offset the effects of increased habitat loss and fragmentation elsewhere in the County through a Biological Resource Mitigation Program (Program).

Policy 7.4.4.2: Through the review of discretionary projects, the County, consistent with any limitations imposed by State law, shall encourage the conservation protection, planting, restoration, and regeneration of native trees in new developments and within existing communities.

Policy 7.4.4.4: For all new development projects or actions that result in impacts to oak woodlands and/or individual native oak trees, including Heritage Trees, the County shall require mitigation as outlined in the El Dorado County Oak Resources Management Plan (ORMP). The ORMP functions as the oak resources component of the County's biological resources mitigation program, identified in Policy 7.4.2.8.

Impacts and Mitigation Measures

Significance Criteria

The project would result in a significant impact on the environment if it would:

a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Assessment Methodology

This section assesses the potential for the project to adversely change biological resources within the project site or in the adjacent area. The impact analysis focuses on foreseeable changes to the baseline condition and compares those changes to the significance criteria. Potential impacts are analyzed using information presented above regarding habitats present in the project site or adjacent area, and the potential occurrence of special-status species.

In the impact analysis, three principal factors were considered: (1) magnitude of the impact (e.g., substantial/not substantial); (2) uniqueness of the affected resource (i.e., rarity of the resource); and (3) susceptibility of the affected resource to perturbation (i.e., sensitivity of the resource). The evaluation of the significance considered the interrelationship of these three factors. For example, a relatively small magnitude impact to a state or federally listed species would be considered significant if the species is exceptionally rare or believed to be highly susceptible to disturbance. Conversely, a plant community such as annual grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be necessary to result in a significant impact.

Impact Analysis

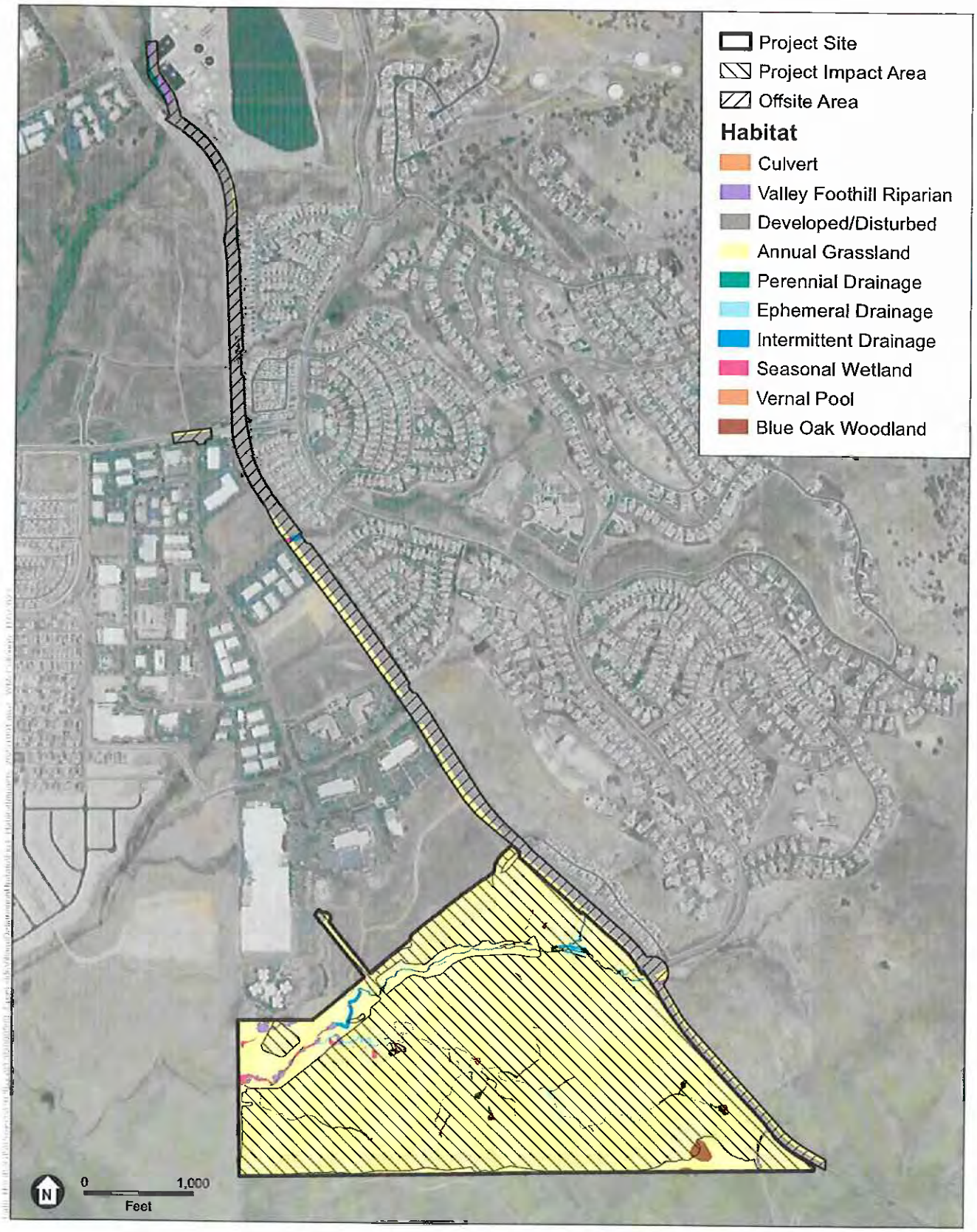
Habitat impacts are identified in **Table 4** and **Figure 4**. All of the offsite impacts will be in Latrobe Road or adjacent developed/disturbed areas, and those acreage impacts are not included.

TABLE 4
HABITAT IMPACTS

Habitat Type	Area (acres)
Annual Grassland	180.83
Blue Oak Woodland	0.20
Culvert	<0.01
Developed/Disturbed	0.54
Ephemeral Drainage (Riverine)	1.19
Intermittent Drainage (Riverine)	0.64
Seasonal Wetland*	2.01
Valley Foothill Riparian	0.11
Vernal Pool	0.07
Total Impacts	**188.59**

* Seasonal wetland includes seeps, riverine seasonal wetland, seasonal wetland, and wetland swale features.
Totals may not sum due to rounding.

SOURCE: ESA, 2023



SOURCE: NAIP, 2020; Winn Communities, 2020; ESA, 2020

Creekside Village

ESA

Figure 4
Habitat with Project Impact Areas

Impact Discussion

a) **Would the project have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of fish and Wildlife or U.S. Fish and Wildlife Service?**

Less than Significant with Mitigation Incorporated. Special-status species and their habitats that may be affected either directly or indirectly through implementation of the proposed project are vernal pool fairy and tadpole shrimp, special-status birds, nesting raptors and migratory birds, western pond turtle, and special-status plant species. Each of these potentially affected species is described below.

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Vernal pools and some seasonal wetlands in the project site provide suitable habitat for the federally listed vernal pool fairy shrimp and vernal pool tadpole shrimp. Most of the waters and wetlands on the project site are not habitat for listed branchiopods because they are either riverine, flow-through channels, or they are sloped wetlands that do not pond water. Based on a field visit on December 10, 2020 the following features on the project site provide potential habitat for listed branchiopods:

- Vernal Pools (VP) 3 (0.012 acre) and 4 (0.038 acre) are naturally occurring vernal pools. VP 3 has been slightly altered by an adjacent bladed firebreak, but retains natural hydrology. There has been no disturbance to VP 4 or its small watershed. Both of these features were dry during the field visit.
- Vernal pool 5 (0.006 acre) may be naturally occurring, but its hydrology has been substantially altered. VP 5 is next to a drainage that receives runoff from a subdivision on the east side of Latrobe Road. Most of the homes in the subdivision have been built in the last six years. The drainage was flowing during the field visit, when other drainages at the site without developed watersheds were dry. VP 5 was full as a result of runoff from the adjacent drainage. VP 5 still appears to dry in the summertime based on vegetation and aerial photography and could still provide habitat for listed branchiopods.
- Vernal pool 1 (0.007 acre) and seasonal wetland (SW) 2 (0.062 acre) are deeper areas of naturally occurring swales. They are both along the western boundary of the site. A bladed firebreak has pushed soil across the swales, causing water to inundate during the wet season. VP 1 does not receive artificial runoff. SW 2 may receive some artificial runoff from nearby developed areas. Both features were dry during the field visit.

Together these five features comprise approximately 0.125 acre. USFWS would likely concur that these features are potential habitat for listed branchiopods. Other small seasonal wetlands, and one vernal pool (VP-2), were determined based on topography and vegetation to be too infrequently, if ever, inundated to support listed branchiopods. However, USFWS could also determine that some or all of these other wetlands are also potential habitat.

The project will result in impacts to habitat potentially occupied by vernal pool fairy and tadpole shrimp. Project grading will result in the loss of three features (VP 1-4), comprising 0.065 acre, that provide potential habitat.

USFWS considers potential impacts that may occur to vernal pool fairy and tadpole shrimp as a result of work within 250 feet of potential occupied habitat (USFWS, 1996). There is no potential occupied habitat within 250 feet of project grading based on field visits and a review of aerial photography.

The loss of 0.065 acre of potentially occupied habitat would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-1** and **BIO-4** through **BIO-7**, the project's impact to vernal pool fairy shrimp and vernal pool tadpole shrimp would be considered **less than significant**.

Special-Status Birds and Common Nesting Migratory Birds and Raptors

The project site and adjacent areas provide suitable habitats for nesting birds, including, but not limited to, special-status species such as tri-colored blackbird, grasshopper sparrow, burrowing owl, and white-tailed kite, as well as more common migratory birds and raptors.

Tri-colored Blackbird

Tri-colored blackbirds nest in colonies of hundreds to tens of thousands of individuals. Nesting colonies will often occur in the same location over many years, but colonies may also shift locations if nest failure occurs. There is a CNDDB record of a tri-colored blackbird nesting colony at the project site (CNDDB Occurrence #1012). This occurrence is associated with an intermittent channel and supports dense thickets of Himalayan blackberry and a few willows, which provide suitable habitat to support this colony. This colony was first documented in 2005 and totaled approximately 200 individuals. Approximately 1,200 to 5,000 individuals were noted in 2014, and approximately 1,900 individuals were observed in 2015, the last year for which information appears in CNDDB (CDFW, 2023a).

ESA conducted a site visit on April 19, 2022 to determine the current status of the tri-colored blackbird nesting colony. The results memo is in **Appendix B**. The nesting colony reported in CNDDB was observed in clusters of Himalayan blackberry in riparian wetlands during the survey. The blackberry shrubs are in the northwest corner of the project site. The colony is located approximately 400 feet from existing development. Tri-colored blackbirds were heard vocalizing and the distinct white band under the red shoulder was observed on several individuals of male blackbirds (this characteristic is only evident on males) in the colony. Several grass cup nests were observed in the blackberry shrubs and, combined with the presence of males vocalizing, confirmed tri-colored blackbird nesting activity. Tri-colored blackbirds exhibiting potential breeding behavior were watched for approximately 45 minutes. While individual nests were observed, the presence of eggs or young could not be confirmed. Due to the concurrent presence of numerous red-winged blackbirds (*Agelaius phoeniceus*), the similarity of

both species' nests, and the tangled nature of the blackberry nesting substrate, the approximate number of tri-colored blackbird nests could not accurately be estimated.

Project grading will result in the removal of approximately 0.06 acre of tri-colored blackbird nesting habitat (Riparian Wetland [RW] 11). In other portions of the colony the limits of grading will be approximately 15 to 100 feet away. Human disturbances and noise from construction activities have the potential to cause colony abandonment and death of young or loss of reproductive success during nesting season. Nesting birds could be adversely affected if the colony is exposed to a substantial increase in noise or human presence during project construction. This would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-2a, BIO-4,** and **BIO-6,** the project's impact to tricolored blackbird would be considered **less than significant**.

Tri-colored blackbird is threatened under the California Endangered Species Act (CESA). In the event that an incidental take permit is required under CESA, CDFW may require additional mitigation. CESA requires impacts to be "fully mitigated" (CA Fish and Game Code §2081(b)(2)), a threshold higher than CEQA requirements.

Burrowing Owl and Grasshopper Sparrow

Suitable annual grassland habitat for these species is present within the project site; however, no burrowing owls or grasshopper sparrows or active nests were observed during the biological surveys. Some soils within the project site are sandy and friable, which could provide suitable burrowing sites. While no soil mounds were visible during the field survey, surrounding fence posts would provide suitable perches above potential nests within the annual grassland habitat. The annual grassland habitat also provides suitable foraging habitat for these species.

Accordingly, the proposed project could potentially impact individual burrowing owls or grasshopper sparrows if they occupied the project site prior to construction. Indirect impacts to nesting birds during construction could extend up to 500 feet from the limits of construction. Potential impacts could include abandonment of nest sites and the mortality of young. This would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-2a, BIO-2b, BIO-5,** and **BIO-6,** the project's impact to burrowing owl and grasshopper sparrow would be considered **less than significant**.

The proposed project could also result in a permanent loss of foraging opportunities for these species in the project site. The loss of foraging habitat in the project site is not expected to significantly impact these species because these habitats are abundant in the vicinity.

Other Nesting Migratory Birds and Raptors

Suitable nest trees for white-tailed kite are located within and adjacent to the project site, and the annual grasslands provide suitable foraging habitat for this species. Habitat features

within the project site and adjacent areas, such as trees, shrubs, and herbaceous plants, could serve as nesting habitats or foraging areas for common migratory birds and raptors.

Construction of the project would result in the removal of vegetation which may serve as perching or nesting sites for special-status species and more common migratory birds and raptors. Direct impacts on special-status birds, nesting raptors, or migratory birds or their habitat could result in substantial lowered reproductive success or habitat loss, thereby potentially adversely affecting local population levels. Additionally, human disturbances and noise from construction activities have the potential to cause nest abandonment and death of young or loss of reproductive success at active nests located near project activities. Birds could be adversely affected if active nesting, roosting, or foraging sites are either removed or exposed to a substantial increase in noise or human presence during Project activities. Nesting birds and raptors are protected under California Fish and Game Code Section 2080 (i.e., killing of a listed species), Sections 3503, 3503.5, and 3800 (i.e., take, possession, or destruction of birds, their nests or eggs), and Section 3513 of the MBTA (16 USC, Section 703 Supp. I 1989).

The impact to nesting birds would be less than significant if construction activities occur during the non-breeding season (i.e., from September 16 through January 31). However, construction activities conducted during the breeding season between February 1 and September 15 could affect these species adversely and result in a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-2a**, **BIO-5**, and **BIO-6,** the project's impact to nesting birds would be considered **less than significant**.

Western Pond Turtle

Four CNDDB occurrences occur within five miles of the project site, with the nearest two occurrences (#1316 and 468) respectively from observations in 2016 in Carson Creek 0.5 mile west of the project and 1988 from Deer Creek where it crosses Latrobe Road 0.9 mile southeast of the project site. Suitable aquatic habitat for western pond turtle was determined to occur on the project site within the intermittent drainage when inundated and the annual grasslands near the drainage provide suitable upland nesting habitat. The proposed project has the potential to directly impact western pond turtle by causing physical harm to individuals or eggs if they are present in the project site during construction. Western pond turtle individuals could be harmed during construction fill and grading, which could crush individuals or occupied nests. Reductions in habitat quantity and quality could result from hydrological alterations related to culvert or bridge installation, grading, or through construction of impervious surfaces, which could prevent adults from utilizing the affected habitats for nesting. Reduction in water quality could also occur from the creation of exposed areas of bare soil. This would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-3** and **BIO-4** through **BIO-7,** the project's impact to western pond turtle would be considered **less than significant**.

Special-Status Plants

Suitable habitat for six special-status plant species was determined to occur on the project site (see Table 3) based on reconnaissance-level surveys conducted from 2019 through 2021. All of the six species may occur in vernal pools or seasonal wetlands with similar hydrology. A botanical survey was conducted according to agency protocol in April 2022 (**Appendix C**). The survey was conducted during the evident and identifiable period of special-status plants with potential to occur. The entire project site was included but extra effort was expended in vernal pools and wetlands where special-status plants were more likely to occur. No special-status plants were observed. The project will have **no impact** to special-status plants.

b) **Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Less than Significant with Mitigation Incorporated. CDFW's *California Natural Communities List* (CDFW, 2023d) ranks vegetation alliances in California according to their degree of rarity imperilment (as measured by rarity, trends, and threats). All alliances are listed with a G (global) and S (state) rank. Alliances with state ranks of S1-S3 are considered of special concern by CDFW, and all associations within them are also considered to be highly imperiled. The following vegetation alliances found within the Project site are considered of special concern by CDFW and should therefore be considered a sensitive natural community under CEQA regulations:

- *Eryngium vaseyi* (42.007.06) Coyote-thistle vernal pools (state rank of S2)
- *Salix gooddingii* (61.211.01) Goodding's willow thickets (state rank of S3)

The project grading will remove approximately 0.11 acre of Goodding's willow thickets and 0.065 acre of coyote-thistle vernal pools. The removal of this habitat would result in a potentially significant impact on habitat types identified as sensitive natural communities by the California Department of Fish and Wildlife. Because these habitats are considered sensitive biological communities by CDFW and have substantial value to wildlife, loss would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-4** through **BIO-7**, the project's impact to sensitive habitats would be considered **less than significant**.

c) **Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Less than Significant with Mitigation Incorporated. The project site supports wetlands and other waters that may be subject to USACE jurisdiction under Section 404 of the CWA and/or regulation under the Porter-Cologne Act, California Fish and Game Code Section 1600 et seq. and the State Wetland Dredge and Fill Policy. Section 404 of the

CWA requires that a permit be obtained from USACE prior to the discharge of dredged or fill materials into any "waters of the United States," which includes wetlands. Section 404 permits generally require mitigation to offset losses of these habitat types, in accordance with Executive Order 11990, which is intended to result in no net loss of wetland values or acres. These features may also be protected under state regulations, including the Porter-Cologne Act, California Fish and Game Code, and the State Wetland Dredge and Fill Policy.

Development of the proposed project would result in the loss of potentially jurisdictional wetlands and other waters of the U.S. or State protected waters/wetlands as summarized in **Table 5**.

These features would be directly affected through grading. The loss of wetlands and other waters of the U.S. or State protected waters/wetlands is considered **potentially significant** impacts. With the implementation of **Mitigation Measures BIO-4** through **BIO-7,** the project's impact to state or federally protect wetlands would be considered **less than significant**.

TABLE 5
SUMMARY OF IMPACTS TO AQUATIC RESOURCES

Aquatic Resource		Acres
Culvert		0.003
Ephemeral Drainage		1.190
Intermittent Drainage		0.641
Riparian Wetland		0.113
Riverine Seasonal Wetland		0.165
Seasonal Wetland		0.069
Seep		1.053
Vernal Pool		0.065
Wetland Swale		0.789
	Total:	**4.088**

d) **Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Less than Significant with Mitigation Incorporated. The project site and surrounding area could potentially be used by a variety of wildlife species for dispersal and seasonal migration. However, there are no known wildlife movement corridors on or in the vicinity of the project site. The project site is not located in an "Important Biological Corridor" designated by the El Dorado County (2004) General Plan nor is it in important habitat for migratory deer herds (El Dorado County 2010). Because there are no known wildlife corridors or migration routes through or in the vicinity of the project site, the

project's impacts to wildlife corridors and migration routes would be **less than significant**.

As discussed above under Topic a), there is a nesting colony of tri-colored blackbird in a riparian wetland feature in the western section of the project site. Disturbance of active nest sites which results in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), or the direct removal of vegetation that supports nesting birds which result in killing of nestlings or fledgling bird species would be considered a **potentially significant** impact. In addition, this colony is considered a native wildlife nursery site. Therefore, construction activities that result in the removal of, or disturbance to, the colony, even outside of the nesting season, would be considered a **potentially significant** impact.

Project grading will result in the removal of approximately 0.06 acre of tri-colored blackbird nesting habitat (Riparian Wetland [RW] 11). In other portions of the nesting habitat the limits of grading will be approximately 15 to over 100 feet away. Human disturbances and noise from construction activities have the potential to cause colony abandonment and death of young or loss of reproductive success during nesting season. Nesting birds could be adversely affected if the colony is exposed to a substantial increase in noise or human presence during project construction. This would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-2a, BIO-5**, and **BIO-6**, the project's impact to native nursery sites would be considered **less than significant**.

e) **Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Less than Significant. The project site supports 0.75 acre of blue oak woodland regulated under the El Dorado County Oak Resources Conservation Ordinance (County Code §130.39). Project grading will remove approximately 0.20 acre of the blue oak woodland. The County ordinance requires mitigation at a 1:1 ratio for projects that remove less than 50% of on-site oak woodland. Mitigation may be in the form of an in-lieu fee to the County (used to conserve oak woodland in high priority areas of the County pursuant to the El Dorado County [2017] Oak Resources Management Plan), offsite conservation, replacement planting, or a combination of those methods. The mitigation is included as part of a development application and approved by the County as part of the review process. The project will remove oak woodland, but will not conflict with the local ordinance because mitigation will be required as part of the local approval process. The project will not conflict with any other local policies or ordinances protecting biological resources.

f) **Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

No impact. The proposed project is not located within an adopted Habitat Conservation Plan, Natural Community Conservation Plan, Oak Woodland Priority Conservation Area (El Dorado County 2017), or Ecological Preserves Overlay (El Dorado County 2004). Therefore, there would be **no impact**.

Mitigation Measures

Mitigation Measure BIO-1: Compensate for the Loss of Habitat for Vernal Pool Species.

The Project shall purchase at least 0.12 vernal pool preservation credits (2:1 ratio for 0.065 acre of impacts) and 0.065 acre of vernal pool creation credits (1:1 ratio) at a conservation bank approved by USFWS for vernal pool fairy and tadpole shrimp with a service area including the Project, or at a conservation bank with a service area not including the Project upon further approval of USFWS. Proof of purchase shall be provided to USFWS and El Dorado County prior to the initiation of any Project construction within 250 feet of vernal pools 1, 3, or 4.

Mitigation Measure BIO-2a: Perform Pre-Construction Surveys for Nesting Special-Status and Common Migratory Birds.

If construction activities begin during the nesting season (February 1 to September 15), a qualified biologist (as approved by CDFW) shall conduct a preconstruction survey for active nests in suitable nesting habitat within 500 feet of the construction area for nesting raptors and migratory birds. Areas adjacent to the project site that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. The survey shall be conducted by a qualified biologist no more than seven days prior to the onset of construction. If no active nests are identified during the pre-construction survey, no further mitigation is necessary. If construction activities begin prior to February 1, it is assumed that no birds would nest in the project site during active construction activities and no pre-construction surveys are required. If at any time during the nesting season construction stops for a period of two weeks or longer, pre-construction surveys shall be conducted prior to construction resuming.

If active nests are found during the survey, the project proponent shall implement mitigation measures to ensure that the nests would not be adversely affected, which would include establishing a no-work buffer zone, as approved by CDFW, around the active nest.

Measures shall include, but not be limited to:

a. If active nests are found on or within 500 feet of the project site, then the project proponent shall establish no disturbance buffers for active nests of 250 feet for migratory bird species and 500 feet for special-status species and raptor species, until the breeding season has ended, or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.

b. Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined on a case-by-case basis), the nest(s) shall be monitored by a qualified biologist during any

construction activities within the buffer. If, in the professional opinion of the monitor, the project would impact the nesting birds or young, the biologist shall immediately inform the construction manager and the project proponent shall notify CDFW. The construction manager shall stop construction activities within the buffer until the nest is no longer active or a new buffer distance is agreed upon with CDFW. Completion of nesting and fledging activities shall be determined by a qualified biologist.

c. If construction begins outside of the breeding season (February 1 through September 15), then the project proponent is permitted to continue construction activities throughout the breeding season.

Mitigation Measure BIO-2b: Perform Pre-Construction Surveys for Burrowing Owl

1. Pre-construction surveys for burrowing owls shall be conducted by a qualified biologist (as approved by CDFW) prior to where construction is planned in known or suitable habitat and within 500 feet of the project site. Areas adjacent to the project site that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. Surveys shall be conducted no more than 30 days and no less than 14 days prior to the commencement of construction activities. If construction activities are delayed for more than 30 days after the initial preconstruction surveys, then a new preconstruction survey shall be required. All surveys shall be conducted in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012). This mitigation shall be implemented by the project proponent.

2. If burrowing owls are discovered in project site during construction, the CDFW-approved project biologist shall be notified immediately. Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by the CDFW verifies through non-invasive methods that either: (1) the owls have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

3. If active burrows are observed within 500 feet of the project site, an impact assessment shall be prepared and submitted to the CDFW, in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012). If it is determined that project activities may result in impacts to nesting, occupied, and satellite burrows and/or burrowing owl habitat, the project proponent shall delay commencement of construction activities until the biologist determines that the burrowing owls have fledged and the burrow is no longer occupied. If this is infeasible, the project applicant shall consult with CDFW and develop a detailed mitigation plan such that the habitat acreage, number of burrows, and burrowing owls impacted are replaced. The mitigation plan shall be based on the requirements set forth in Appendix F of the *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012). No construction can commence until CDFW has approved the mitigation plan.

Mitigation Measure BIO-3: Perform Pre-Construction Surveys for Western Pond Turtle and Monitoring of In-water Work

To minimize adverse impacts on western pond turtles and their habitat from project construction activities occurring within suitable habitat (intermittent stream and adjacent uplands), the project proponent and/or its contractor(s) shall implement the following

measure during construction activities that require in-water work or ground disturbance within 300 feet of aquatic habitat in uninterrupted upland habitat (or within suitable upland habitat [e.g., annual grassland or valley foothill riparian]) or suitable aquatic habitat to minimize adverse impacts on western pond turtles and their habitat:

- A qualified biologist shall be retained to conduct a pre-construction survey for western pond turtle in suitable upland and aquatic habitat within 300 feet of aquatic habitat (unless the qualified biologist reduces the distance) in or adjacent to the work area before the installation of dewatering and diversion devices. To prevent entrapment within the active work area, the biologist shall monitor any potential dewatering and/or diversion work to rescue and relocate western pond turtles and other native aquatic wildlife species from to suitable habitat outside the work area, consistent with USFWS and CDFW authorization.

- All equipment (e.g., buckets, boots, waders) that will contact water shall be sterilized in accordance with the CDFW Aquatic Invasive Species Disinfection/Decontamination Protocols (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=92821) or current guidance.

Mitigation Measure BIO-4: No Net Loss of Aquatic Habitats

The project proponent shall demonstrate that there is no net loss of wetlands and other waters of the United States or State. To ensure this, wetland mitigation shall be developed as a part of the permitting process. Mitigation shall be provided prior to construction-related impacts to the existing waters/wetlands. The exact mitigation ratio would be determined in consultation with the applicable permitting agencies, which may include USACE, CDFW, and/or RWQCB. The amount of mitigation will be based on the type and value of the waters/wetlands affected by the project, and will be determined in consultation with the USACE, RWQCB, and/or CDFW during the regulatory permitting process. Compensation shall take the form of preservation or creation in accordance with USACE, RWQCB and/or CDFW mitigation requirements, as required under project permits. Preservation and creation may occur offsite through purchasing credits at a USACE, CDFW, and/or RWQCB-approved mitigation bank.

Mitigation Measure BIO-5: Conduct Environmental Awareness Training

Before any work occurs in the project site, including grading and equipment staging, all construction personnel shall participate in an environmental awareness training regarding special-status species and sensitive habitats present in the project site. If new construction personnel are added to the project, they must receive the mandatory training before starting work. As part of the training, an environmental awareness handout shall be provided to all personnel that describe and illustrates sensitive resources to be avoided during project construction.

Mitigation Measure BIO-6: Install Temporary Barrier Fencing, and/or Flagging to Protect Environmentally Sensitive Habitat Areas

Before any ground-disturbing activity occurs within the project site, the project proponent shall ensure that temporary orange barrier fencing is installed around the project site adjacent to sensitive habitat areas to be avoided, as appropriate. Construction personnel and construction activities shall avoid areas outside the fencing. The exact location of the

fencing shall be determined by the resident engineer coordinating with a qualified biologist, with the goal of protecting sensitive biological habitat and water quality.

The fencing material shall consist of temporary plastic mesh-type construction fence (Tensor Polygrid or equivalent) installed between the work area and environmentally sensitive habitat areas (i.e., waters of the U.S., special-status wildlife habitat, active bird nests), as appropriate. To minimize potential ground disturbance, the base of the fencing shall not be buried or keyed-in.

Installation of the barrier fence shall occur under the supervision of a qualified biologist. The temporary orange barrier fencing shall also be installed in a manner that is consistent with applicable water quality requirements contained within the project's Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Plan (WPCP). The fencing shall be shown on the final construction documents. The fencing shall be checked regularly and maintained until all construction is complete. No construction activity shall be allowed until this condition is satisfied.

Mitigation Measure BIO-7: Implement Best Management Practices to Protect Water Quality

Subject to requirements of Section 402 of the federal Clean Water Act, and the National Pollutant Discharge Elimination System (NPDES) permitting process, all construction projects that disturb more than one acre of land are required to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP is incorporated into all project plans and specifications. The restoration construction contractor(s) will be required to post a copy of the SWPPP at the project location, file a notice of intent to discharge stormwater with the RWQCB, and implement all measures required by the SWPPP. A Qualified SWPPP Practitioner (QSP) will be responsible for construction monitoring to ensure that the provisions of the SWPPP are effectively enforced. In the event of noncompliance, the QSP will have the authority to shut down the construction site or fine the responsible party or parties.

The SWPPP will include the following information and Best Management Practices (BMPs).

- A description of site characteristics, including runoff and drainage characteristics and soil erosion hazard.
- A description of proposed construction procedures and construction-site housekeeping BMPs, including prohibitions on discharging or washing potentially harmful materials into roads or drainages.
- A description of BMPs that will be implemented for erosion and sediment control, including requirements to:
  - Conduct major construction activities involving excavation and spoils haulage during the dry season, to the extent possible.
  - Conduct all construction work in accordance with site-specific construction plans that minimize the potential for increased sediment inputs to surface waters.

- Grade and stabilize spoils sites to minimize erosion and sediment input to surface waters and generation of airborne particulate matter.
- Implement erosion control measures as appropriate to prevent sediment from entering surface waters to the extent feasible, including the use of silt fencing or fiber rolls to trap sediments.
- Install fiber rolls, or other equivalent erosion and sediment control measures between the project site and aquatic resources, as necessary, to ensure that construction debris and sediment does not inadvertently enter these features. All areas of exposed soil shall be covered or otherwise stabilized 48 hours prior to potential precipitation events of greater than 0.5 inch. In addition, in order to minimize ground disturbance, fiber rolls or other equivalent control measures shall not be keyed-in or buried.
- Immediately after project construction is complete, all exposed soil shall be stabilized. Soil stabilization may include, but is not limited to, seeding with a native grass seed mix and planting native plants.
- Fiber rolls, or other equivalent erosion and sediment control measures shall not be removed from the project site until vegetation has reestablished within all temporarily-impacted areas to at least 70 percent of pre-project vegetation cover conditions or better.
- No refueling, storage, servicing, or maintenance of equipment shall take place within 100 feet of aquatic resources.
- All machinery used during construction of the project shall be properly maintained and cleaned to prevent spills and leaks that could contaminate soil or water.
- Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) shall be cleaned up in accordance with applicable local, state, and/or federal regulations.
- Implement construction vehicle track-out controls. Restrict vehicle use to properly designated exit points and wherever construction vehicle entry/exit points intersect paved roads, provisions must be made to minimize the transport of sediment (mud) onto the paved road prior to the use of these access points.

- A Spill Prevention and Response Plan that identifies any hazardous materials to be used during construction; describes measures to prevent, control, and minimize spillage of hazardous substances; describes transport, storage and disposal procedures for these substances; and outlines procedures to be followed in case of a spill of a hazardous material. The Spill Prevention and Response Plan will require that hazardous and potentially hazardous substances stored onsite be kept in securely closed containers located away from drainage courses and areas where stormwater is allowed to infiltrate. Spill prevention kits will be required to be kept in close proximity to construction areas and workers will be trained in their use. It will also stipulate procedures, such as the use of spill containment pans, to minimize

hazard during onsite fueling and servicing of construction equipment. Finally, the Spill Prevention and Response Plan will require that all agencies listed in the Spill Prevention and Response Plan be notified immediately of any substantial spill or release.

- A stipulation that construction will be monitored by a QSP to ensure that contractors are adhering to all provisions relevant to state and federal stormwater discharge requirements, and that the QSP will shut down the construction site in the event of noncompliance.

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Appendix A
Database Searches

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2024-0004896
Project Name: Creekside Village

October 13, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2024-0004896
Project Name: Creekside Village
Project Type: New Constr - Above Ground
Project Description: To inform a biological assessment
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.6201229,-121.05382599836545,14z

Counties: El Dorado and Sacramento counties, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

AMPHIBIANS

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened
Foothill Yellow-legged Frog *Rana boylii* Population: South Sierra Distinct Population Segment (South Sierra DPS) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5133	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

FLOWERING PLANTS

NAME	STATUS
El Dorado Bedstraw *Galium californicum ssp. sierrae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5209	Endangered
Pine Hill Ceanothus *Ceanothus roderickii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3293	Endangered
Pine Hill Flannelbush *Fremontodendron californicum ssp. decumbens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4818	Endangered
Stebbins' Morning-glory *Calystegia stebbinsii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3991	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Seth Kirby
Address: 180 Grand Avenue
Address Line 2: Suite 1050
City: Oakland
State: CA
Zip: 94612
Email skirby@esassoc.com
Phone: 5105010651

CALIFORNIA DEPARTMENT OF FISH and WILDLIFE **RareFind**

Query Summary:
Quad IS (Folsom SE (3812151) OR Folsom (3812162) OR Clarksville (3812161) OR Shingle Springs (3812068) OR Buffalo Creek (3812152) OR Sloughhouse (3812142) OR Latrobe (3812058) OR Carbondale (3812141) OR Irish Hill (3812048))

Print Close

CNDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Accipiter cooperii	Cooper's hawk	Birds	ABNKC12040	118	2	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Cismontane woodland, Riparian forest, Riparian woodland, Upper montane coniferous forest
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	957	40	None	Threatened	G1G2	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Swamp, Wetland
Allium jepsonii	Jepson's onion	Monocots	PMLIL022V0	26	2	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Ambystoma californiense pop. 1	California tiger salamander - central California DPS	Amphibians	AAAAA01181	1273	11	Threatened	Threatened	G2G3T3	S3	null	CDFW_WL-Watch List, IUCN_VU-Vulnerable	Cismontane woodland, Meadow & seep, Riparian woodland, Valley & foothill grassland, Vernal pool, Wetland
Ammodramus savannarum	grasshopper sparrow	Birds	ABPBXA0020	27	2	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Valley & foothill grassland
Andrena blennospermatis	Blennosperma vernal pool andrenid bee	Insects	IIHYM35030	15	2	None	None	G2	S1	null	null	Vernal pool
Antrozous pallidus	pallid bat	Mammals	AMACC10010	420	2	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland
Aquila chrysaetos	golden eagle	Birds	ABNKC22010	325	2	None	None	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, CDFW_WL-Watch List, IUCN_LC-Least Concern	Broadleaved upland forest, Cismontane woodland, Coastal prairie, Great Basin grassland, Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest, Valley & foothill grassland
Arctostaphylos myrtifolia	Ione manzanita	Dicots	PDERI04240	11	4	Threatened	None	G1	S1	1B.2	SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Ione formation
Ardea alba	great egret	Birds	ABNGA04040	43	3	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland

Ardea herodias	great blue heron	Birds	ABNGA04010	156	6	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
Athene cunicularia	burrowing owl	Birds	ABNSB10010	2011	11	None	None	G4	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Bombus crotchii	Crotch bumble bee	Insects	IIHYM24480	437	1	None	Candidate Endangered	G2	S2	null	IUCN_EN-Endangered	null
Bombus pensylvanicus	American bumble bee	Insects	IIHYM24260	225	6	None	None	G3G4	S2	null	IUCN_VU-Vulnerable	Coastal prairie, Great Basin grassland, Valley & foothill grassland
Branchinecta lynchi	vernal pool fairy shrimp	Crustaceans	ICBRA03030	796	46	Threatened	None	G3	S3	null	IUCN_VU-Vulnerable	Valley & foothill grassland, Vernal pool, Wetland
Branchinecta mesovallensis	midvalley fairy shrimp	Crustaceans	ICBRA03150	144	12	None	None	G2	S2S3	null	null	Vernal pool, Wetland
Buteo regalis	ferruginous hawk	Birds	ABNKC19120	107	1	None	None	G4	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Great Basin grassland, Great Basin scrub, Pinon & juniper woodlands, Valley & foothill grassland
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2561	24	None	Threatened	G5	S4	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland
Calystegia stebbinsii	Stebbins' morning-glory	Dicots	PDCON040H0	15	7	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Ultramafic
Carex xerophila	chaparral sedge	Monocots	PMCYP03M60	15	6	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_UCSC-UC Santa Cruz	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Ceanothus roderickii	Pine Hill ceanothus	Dicots	PDRHA04190	9	8	Endangered	Rare	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Chaparral, Cismontane woodland, Ultramafic
Central Valley Drainage Hardhead/Squawfish Stream	Central Valley Drainage Hardhead/Squawfish Stream	Inland Waters	CARA2443CA	11	1	None	None	GNR	SNR	null	null	null
Chlorogalum grandiflorum	Red Hills soaproot	Monocots	PMLIL0G020	137	9	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Clarkia biloba ssp. brandegeeae	Brandegee's clarkia	Dicots	PDONA05053	89	4	None	None	G4G5T4	S4	4.2	SB_UCSC-UC Santa Cruz	Chaparral, Cismontane woodland, Lower montane coniferous forest
Crocanthemum suffrutescens	Bisbee Peak rush-rose	Dicots	PDCIS020F0	31	17	None	None	G2?Q	S2?	3.2	null	Chaparral, Ione formation, Ultramafic
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Insects	IICOL48011	271	15	Threatened	None	G3T3	S3	null	null	Riparian scrub
Downingia pusilla	dwarf downingia	Dicots	PDCAM060C0	132	1	None	None	GU	S2	2B.2	null	Valley & foothill grassland, Vernal pool, Wetland
Dumontia oregonensis	hairy water flea	Crustaceans	ICBRA23010	2	1	None	None	G1G3	S1	null	null	Vernal pool

Elanus leucurus	white-tailed kite	Birds	ABNKC06010	184	10	None	None	G5	S3S4	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1518	13	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Erethizon dorsatum	North American porcupine	Mammals	AMAFJ01010	523	3	None	None	G5	S3	null	IUCN_LC-Least Concern	Broadleaved upland forest, Cismontane woodland, Closed-cone coniferous forest, Lower montane coniferous forest, North coast coniferous forest, Upper montane coniferous forest
Eriogonum apricum var. apricum	Ione buckwheat	Dicots	PDPGN080F1	6	1	Endangered	Endangered	G2T1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Ione formation
Eriogonum apricum var. prostratum	Irish Hill buckwheat	Dicots	PDPGN080F2	2	2	Endangered	Endangered	G2T1	S1	1B.1	null	Chaparral, Ione formation
Eryngium pinnatisectum	Tuolumne button-celery	Dicots	PDAPI0Z0P0	30	5	None	None	G2	S2	1B.2	SB_UCSC-UC Santa Cruz	Cismontane woodland, Lower montane coniferous forest, Vernal pool, Wetland
Falco columbarius	merlin	Birds	ABNKD06030	37	1	None	None	G5	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Estuary, Great Basin grassland, Valley & foothill grassland
Fremontodendron decumbens	Pine Hill flannelbush	Dicots	PDSTE03030	12	7	Endangered	Rare	G1	S1	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Ultramafic
Galium californicum ssp. sierrae	El Dorado bedstraw	Dicots	PDRUB0N0E7	17	14	Endangered	Rare	G5T1	S1	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Gratiola heterosepala	Boggs Lake hedge-hyssop	Dicots	PDSCR0R060	99	5	None	Endangered	G2	S2	1B.2	BLM_S-Sensitive	Freshwater marsh, Marsh & swamp, Vernal pool, Wetland
Haliaeetus leucocephalus	bald eagle	Birds	ABNKC10010	332	2	Delisted	Endangered	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth
Horkelia parryi	Parry's horkelia	Dicots	PDROS0W0C0	44	2	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ione formation
Hydrochara ricksecker	Ricksecker's water scavenger beetle	Insects	IICOL5V010	13	2	None	None	G2?	S2?	null	null	Aquatic, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters
Ione Chaparral	Ione Chaparral	Scrub	CTT37D00CA	12	4	None	None	G1	S1.1	null	null	Chaparral
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Monocots	PMJUN011L1	13	1	None	None	G2T1	S1	1B.2	null	Valley & foothill grassland
Lasionycteris noctivagans	silver-haired bat	Mammals	AMACC02010	139	2	None	None	G3G4	S3S4	null	IUCN_LC-Least Concern	Lower montane coniferous forest, Oldgrowth, Riparian forest

Laterallus jamaicensis coturniculus	California black rail	Birds	ABNME03041	303	1	None	Threatened	G3T1	S2	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_EN-Endangered	Brackish marsh, Freshwater marsh, Marsh & swamp, Salt marsh, Wetland
Legenere limosa	legenere	Dicots	PDCAM0C010	83	12	None	None	G2	S2	1B.1	BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley	Vernal pool, Wetland
Lepidurus packardi	vernal pool tadpole shrimp	Crustaceans	ICBRA10010	330	41	Endangered	None	G3	S3	null	IUCN_EN-Endangered	Valley & foothill grassland, Vernal pool, Wetland
Linderiella occidentalis	California linderiella	Crustaceans	ICBRA06010	508	17	None	None	G2G3	S2S3	null	IUCN_NT-Near Threatened	Vernal pool
Nannopterum auritum	double-crested cormorant	Birds	ABNFD01020	39	1	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland
Navarretia myersii ssp. myersii	pincushion navarretia	Dicots	PDPLM0C0X1	16	5	None	None	G2T2	S2	1B.1	null	Vernal pool, Wetland
Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	Herbaceous	CTT44110CA	126	30	None	None	G3	S3.1	null	null	Vernal pool, Wetland
Northern Volcanic Mud Flow Vernal Pool	Northern Volcanic Mud Flow Vernal Pool	Herbaceous	CTT44132CA	7	1	None	None	G1	S1.1	null	null	Vernal pool, Wetland
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	Fish	AFCHA0209K	31	3	Threatened	None	G5T2Q	S2	null	AFS_TH-Threatened	Aquatic, Sacramento/San Joaquin flowing waters
Orcuttia tenuis	slender Orcutt grass	Monocots	PMPOA4G050	100	1	Threatened	Endangered	G2	S2	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Vernal pool, Wetland
Orcuttia viscida	Sacramento Orcutt grass	Monocots	PMPOA4G070	12	10	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Vernal pool, Wetland
Packera layneae	Layne's ragwort	Dicots	PDAST8H1V0	48	25	Threatened	Rare	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, SB_UCSC-UC Santa Cruz	Chaparral, Cismontane woodland, Ultramafic
Pekania pennanti	Fisher	Mammals	AMAJF01020	555	1	None	None	G5	S2S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Riparian forest
Phrynosoma blainvillii	coast horned lizard	Reptiles	ARACF12100	784	4	None	None	G4	S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Chaparral, Cismontane woodland, Coastal bluff scrub, Coastal scrub, Desert wash, Pinon & juniper woodlands, Riparian scrub, Riparian woodland, Valley & foothill grassland
Rana boylii pop. 5	foothill yellow-legged frog - south Sierra DPS	Amphibians	AAABH01055	272	2	Endangered	Endangered	G3T2	S2	null	BLM_S-Sensitive, USFS_S-Sensitive	Aquatic, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters
Rana draytonii	California red-legged frog	Amphibians	AAABH01022	1692	1	Threatened	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable	Aquatic, Artificial flowing waters, Artificial standing waters, Freshwater marsh, Marsh & swamp, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing

												waters, South coast flowing waters, South coast standing waters, Wetland
Riparia riparia	bank swallow	Birds	ABPAU08010	299	3	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Riparian scrub, Riparian woodland
Sagittaria sanfordii	Sanford's arrowhead	Monocots	PMALI040Q0	143	10	None	None	G3	S3	1B.2	BLM_S-Sensitive	Marsh & swamp, Wetland
Spea hammondii	western spadefoot	Amphibians	AAABF02020	1444	12	None	None	G2G3	S3S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened	Cismontane woodland, Coastal scrub, Valley & foothill grassland, Vernal pool, Wetland
Taxidea taxus	American badger	Mammals	AMAJF04010	594	2	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, Ione formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland
Thamnophis gigas	giant gartersnake	Reptiles	ARADB36150	373	1	Threatened	Threatened	G2	S2	null	IUCN_VU-Vulnerable	Marsh & swamp, Riparian scrub, Wetland
Valley Needlegrass Grassland	Valley Needlegrass Grassland	Herbaceous	CTT42110CA	45	1	None	None	G3	S3.1	null	null	Valley & foothill grassland
Wyethia reticulata	El Dorado County mule ears	Dicots	PDAST9X0D0	25	21	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic

CNPS Rare Plant Inventory

Search Results

36 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3812048:3812058:3812068:3812141:3812151:3812162:3812161:3812142:3812152]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Allium jepsonii	Jepson's onion	Alliaceae	perennial bulbiferous herb	Apr-Aug	None	None	G2	S2	1B.2	Yes	1994-01-01	© 2019 Steven Perry
Arctostaphylos myrtifolia	Ione manzanita	Ericaceae	perennial evergreen shrub	Nov-Mar	FT	None	G1	S1	1B.2	Yes	1974-01-01	© 2006 Steve Matson
Brodiaea rosea ssp. vallicola	valley brodiaea	Themidaceae	perennial bulbiferous herb	Apr-May(Jun)	None	None	G5T3	S3	4.2	Yes	2019-01-07	© 2011 Steven Perry
Bryum chryseum	brassy bryum	Bryaceae	moss		None	None	G5	S3	4.3		2014-05-05	No Photo Available
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	None	None	G4	S4	4.2		1994-01-01	No Photo Available
Calystegia stebbinsii	Stebbins' morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jul	FE	CE	G1	S1	1B.1	Yes	1980-01-01	No Photo Available
Carex xerophila	chaparral sedge	Cyperaceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	Yes	2016-06-06	© 2023 Steven Perry
Ceanothus fresnensis	Fresno ceanothus	Rhamnaceae	perennial evergreen shrub	(Apr)May-Jul	None	None	G4	S4	4.3	Yes	1980-01-01	No Photo Available
Ceanothus roderickii	Pine Hill ceanothus	Rhamnaceae	perennial evergreen shrub	Apr-Jun	FE	CR	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Chlorogalum grandiflorum	Red Hills soaproot	Agavaceae	perennial bulbiferous herb	(Apr)May-Jun	None	None	G3	S3	1B.2	Yes	1974-01-01	No Photo Available

Clarkia biloba ssp. brandegeeae	Brandegee's clarkia	Onagraceae	annual herb	(Mar)May-Jul	None	None	G4G5T4	S4	4.2	Yes	2001-01-01	No Photo Available
Crocanthemum suffrutescens	Bisbee Peak rush-rose	Cistaceae	perennial evergreen shrub	Apr-Aug	None	None	G2?Q	S2?	3.2	Yes	1974-01-01	No Photo Available
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2		1980-01-01	© 2013 Aaron Arthur
Eriogonum apricum var. apricum	Ione buckwheat	Polygonaceae	perennial herb	Jul-Oct	FE	CE	G2T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Eriogonum apricum var. prostratum	Irish Hill buckwheat	Polygonaceae	perennial herb	Jun-Jul	FE	CE	G2T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Eriogonum tripodum	tripod buckwheat	Polygonaceae	perennial deciduous shrub	May-Jul	None	None	G4	S4	4.2	Yes	1974-01-01	©2008 Steven Perry
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	Apr-Jun	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
Eryngium pinnatisectum	Tuolumne button-celery	Apiaceae	annual/perennial herb	May-Aug	None	None	G2	S2	1B.2	Yes	1974-01-01	© 2007 Robert E. Preston, Ph.D.
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	perennial evergreen shrub	Apr-Jul	FE	CR	G1	S1	1B.2	Yes	1974-01-01	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	© 2016 Aaron Schusteff
Galium californicum ssp. sierrae	El Dorado bedstraw	Rubiaceae	perennial herb	May-Jun	FE	CR	G5T1	S1	1B.2	Yes	1974-01-01	© 2019 John Doyen

Githopsis pulchella ssp. serpentinicola	serpentine bluecup	Campanulaceae	annual herb	May-Jun	None	None	G4T3	S3	4.3	Yes	2001-01-01	© 2019 Barry Breckling
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2		1974-01-01	©2004 Carol W. Witham
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001-01-01	© 2017 John Doyen
Horkelia parryi	Parry's horkelia	Rosaceae	perennial herb	Apr-Sep	None	None	G2	S2	1B.2	Yes	1974-01-01	© 2009 Barry Breckling
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May(Jun)	None	None	G3	S3	4.2	Yes	2006-10-12	© 2014 Aaron Schusteff
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	None	None	G2T1	S1	1B.2	Yes	1984-01-01	© 2004 Carol W. Witham
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	©2000 John Game
Navarretia heterandra	Tehama navarretia	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3		1974-01-01	©2021 Scot Loring
Navarretia myersii ssp. myersii	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	None	None	G2T2	S2	1B.1	Yes	1994-01-01	© 2020 Leigh Johnson

Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	G2	S2	1B.1	Yes	1974-01-01	© 2013 Justy Leppert
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	FE	CE	G1	S1	1B.1	Yes	1974-01-01	© Rick York and CNPS
Packera layneae	Layne's ragwort	Asteraceae	perennial herb	Apr-Aug	FT	CR	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	Yes	1984-01-01	©2013 Debra L. Cook
Trichostema rubisepalum	Hernandez bluecurls	Lamiaceae	annual herb	Jun-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
Wyethia reticulata	El Dorado County mule ears	Asteraceae	perennial herb	Apr-Aug	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available

Showing 1 to 36 of 36 entries

Suggested Citation:
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Appendix B

Tri-colored Blackbird Survey Memo

ESA

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memorandum

date	June 6, 2022
to	George Carpenter, Winn Communities
cc	Erich Fischer and Eric Christensen, Environmental Science Associates (ESA)
from	Jacky Daley, ESA
subject	Results of a Tri-colored Blackbird Survey for Creekside Village, El Dorado County, CA

The purpose of this memorandum is to summarize the results of a survey for tri-colored blackbird (*Agelaius tricolor*, TRBL), a California threatened species and a State species of special concern, that took place in western El Dorado County, California, on April 19, 2022, as part of the Creekside Village (**Figure 1**) Environmental Evaluation. The survey covered the entirety of the Creekside Village Project site, focusing on areas of suitable TRBL nesting habitat, based on past records of nesting colonies near the Project.

Methods

Occurrences of past California Natural Diversity Database (CNDDB) records were reviewed the prior to conducting the survey. ESA biologists conducted the TRBL survey on Tuesday, April 19, 2022 from 8:00a.m. to 8:45a.m. and focused on suitable nesting habitat near Carson Creek. Conditions ranged from light rains, to overcast, to mostly sunny conditions throughout the day, winds of 4 to 8mph, and temperatures ranging from 49-69°Fahrenheit. Biologists, Natalie Lamas and Amanda Seguro-Moon, conducted the survey of the blackberry shrubs, and some nearby willows, for TRBL using Nikon Monarch 8x42 binoculars.

Results

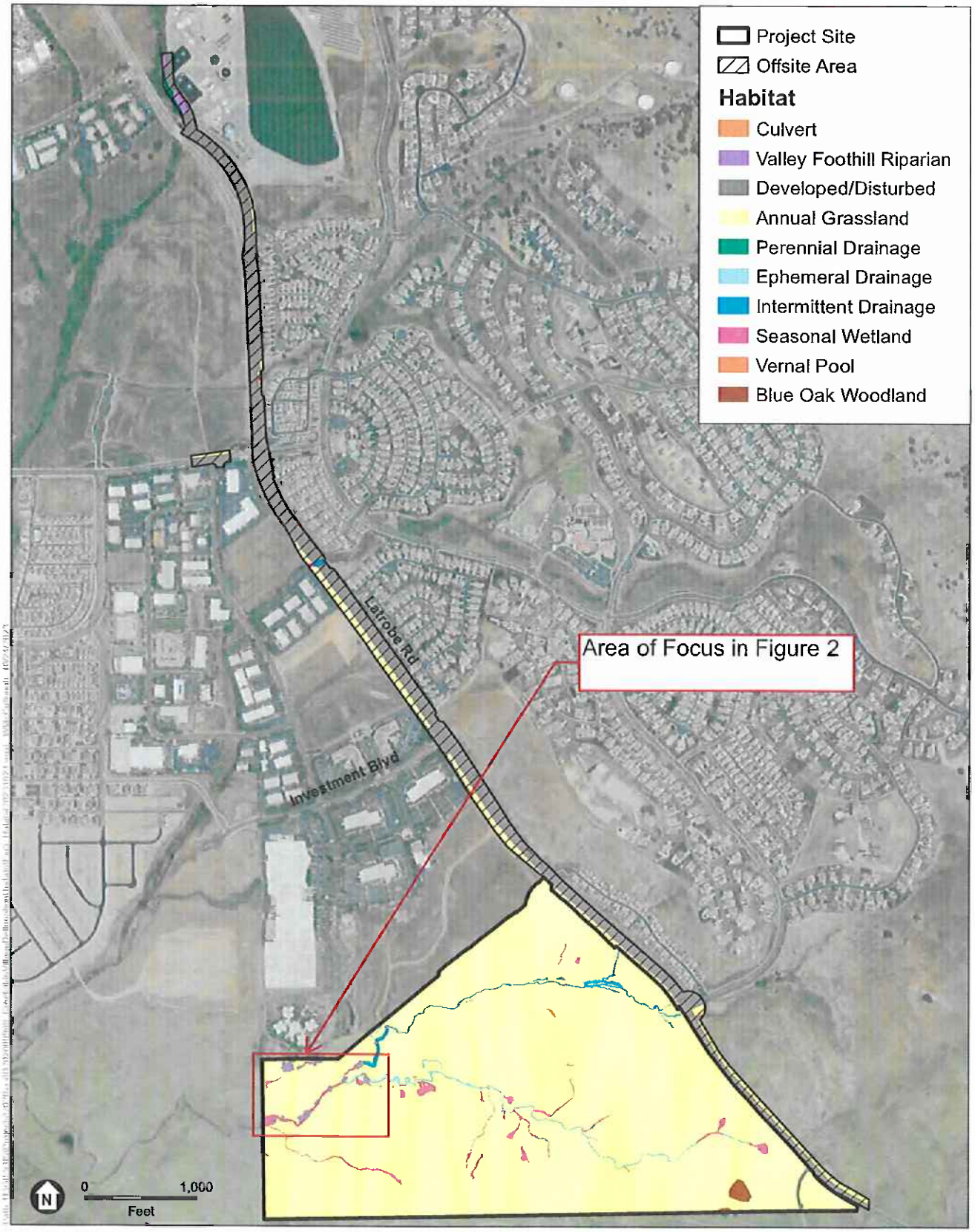
Background CNDDB data reviewed show that three occurrence records (occurrence numbers 512, 513, and 514) are located within a one-mile radius, and one of these records is located within the Project site (occurrence number 1012)[1]. TRBL was observed at the on-site occurrence in 2005, 2014, and 2015. No other observation records of nesting activity by the species are recorded within CNDDB during subsequent years. Three additional occurrence records are recorded within a broader 15-mile radius of the project, also northeast of the Project site[1].

[1] California Department of Fish and Wildlife. California Natural Diversity Database (CNDDB) RareFind 5. Retrieved May 13, 2022, from https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx.

One TRBL nesting colony was observed within two large clusters of Himalayan blackberry in two riparian wetlands during the survey. These blackberry shrubs are located within the northwest corner of the Project site south of Carson Creek in riparian wetlands along a tributary to Carson Creek and along an associated tributary that runs from the southeast to the northwest extent of the Project site parallel to the northern boundary (**Figure 2**). TRBL were heard vocalizing and the distinct white band under the red shoulder was observed on several individuals of male blackbirds (this characteristic is only evident on males) in the colony. Several grass cup nests were observed within the blackberry shrubs and, combined with the presence of males vocalizing, confirmed TRBL nesting activity. Tri-colored blackbirds observed exhibiting potential breeding behavior were watched for approximately 45 minutes. While individual nests were observed, the presence of eggs or young could not be confirmed. Due to the concurrent presence of numerous red-winged blackbirds (*Agelaius phoeniceus*), identical nests of TRBL and red-winged blackbirds, and the tangled nature of the nesting substrate, the approximate number of TRBL nests could not accurately be estimated.

Attachments

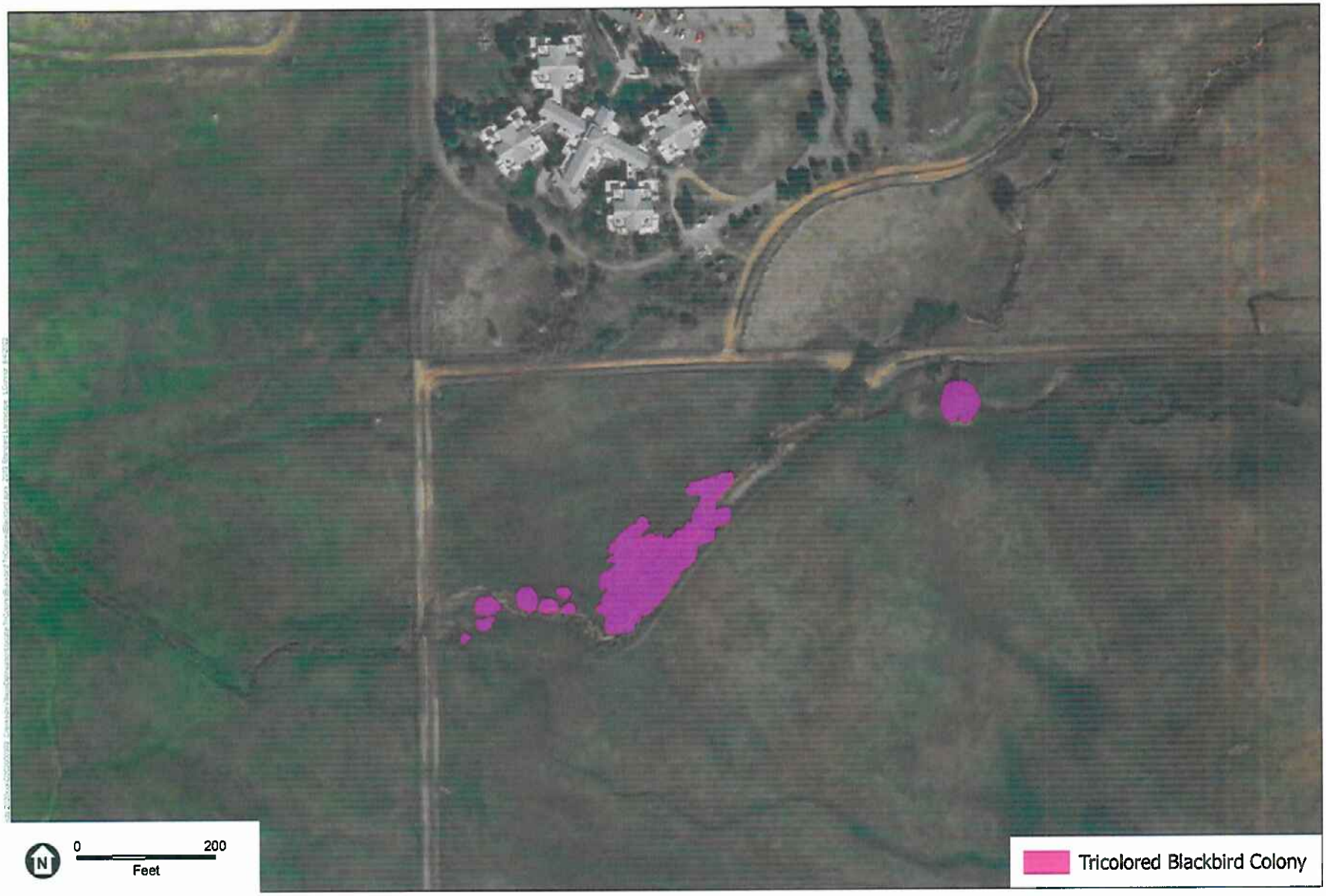
Attachment 1: Photo Appendix of Tri-colored Blackbird Nesting Colony and Habitat



SOURCE: NAIP, 2020; Winn Communities, 2020; ESA, 2020

Creekside Village

Figure 1
Habitat



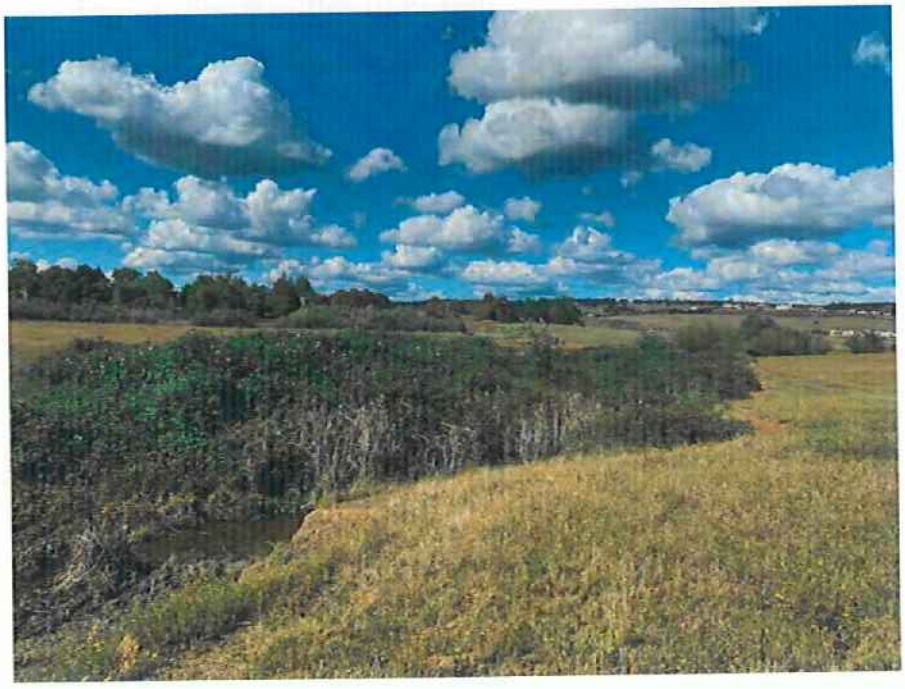
Creekside Village

Figure 1
Tri-colored Blackbird Nesting Colony Location

ESA

Attachment 1: Photo Appendix Of Tri-Colored Blackbird Nesting Colony And Habitat

Photograph 1: Southeastern view of the northernmost shrub with tri-colored blackbird nesting colony.



Photograph 2: Southwestern view of the southernmost portion of Riparian Wetland with tri-colored blackbird nesting colony. Carson Creek evident in background.

Photograph 3: Representative photo of a male tri-colored blackbird on Himalayan blackberry brambles within Riparian Wetland.

Appendix C
Botanical Survey Letter

ESA

2600 Capitol Avenue
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Sacramento, CA 95816
916.564.4500 phone
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esassoc.com

June 10, 2022

Mr. George Carpenter
Winn Communities
555 University Avenue
Sacramento, CA 95825

Subject: Botanical Survey Results for Creekside Village, El Dorado County, CA

Dear Mr. Carpenter:

Environmental Science Associates (ESA) conducted a botanical survey at the Creekside Village (Project) study area on April 19, 2022, in western El Dorado County, California. The purpose of the survey was to determine if special-status plants occur in the study area in order to support environmental review by the County and regulatory agencies. The purpose of this letter is to document the methods and results of the survey. No special-status plants were found in the study area.

Location

The study area is an approximately 241.38-acre undeveloped area located in El Dorado Hills, an unincorporated community. The study area is located west of Latrobe Road, between Investment Boulevard and Wetsel-Oviatt Road (**Figure 1**). The study area is in Sections 24 and 25 of Township 9 North Range 8 East on the Folsom SE, California U.S. Geological Survey (USGS) 7.5 series quadrangle (USGS 2022). The study area is in the Upper Consumes River Watershed (hydrologic unit code 18040013). Elevation ranges from approximately 476 feet to 642 feet.

The study area is not located in an Important Biological Corridor or Ecological Preserves overlay in the El Dorado County (2004) General Plan. The study area is not in critical habitat for any federally listed species (USFWS 2022). The study area is in County Rare Plant Mitigation Area 2 (County Code §130.71), which is defined as the El Dorado Irrigation District (EID) Service Area. The County charges a standard fee for development in Mitigation Area 2 to mitigate for EID impacts to special-status plants elsewhere in the County.

Database Queries

A list of federal listed, candidate, or proposed plants that potentially occur in or could be affected by projects within the boundary of the study area was obtained from the USFWS Sacramento Field Office. The California Natural Diversity Database (CNDDB) and California Native Plant Society online inventory were queried for known occurrences of special-status species on the Folsom SE and eight surrounding quads. The results of the database queries (**Attachment A**) were used to assemble a table of special-status plants evaluated (**Table 1**).

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Review of Background Information

Publicly available and subscription-based biological resource data were reviewed prior to fieldwork. Data sources reviewed include:

- Current and historical topographic maps (USGS 2022);
- Current and historical aerial imagery (Google, Inc. 2022);
- Soil maps and information from the National Resources Conservation Service (NRCS 2022); and
- California Natural Diversity Database (CNDDB; CDFW 2022)

Environmental Setting

Regionally, the study area is in the low Sierra Nevada foothills of the California Floristic Province (Baldwin *et al.*, 2012), where the Sierra Nevada Mountains transition to the Central Valley. Topography in the study area drains generally from east to west and is characterized by low hills with gentle slopes. Vegetation communities in the study area are mostly California annual grassland, dominated by naturalized annual grasses although some native grasses and forbs are present. There is a small stand of blue oak woodland near the southeastern corner of the study area. Several creeks and swales flow across the study area, fed in part by seeps but also urban irrigation runoff. There are some small patches of riparian wetlands with willows along the creeks. There are some small, natural vernal pools in the study area, and some seasonal wetlands that have been altered by ranching activity but have similar hydrology. These features have characteristic vernal pool vegetation, and are the areas most likely to support special-status plants. None of the soils mapped in the Action Area have serpentinite or gabbro rock as a parent material (NRCS 2022).

The overall climate in the region is Mediterranean, which is characterized by hot, dry summers and cool, wet winters, with the bulk of precipitation occurring as rain in the winter months. The climate in the El Dorado Hills area is temperate with mean annual temperatures ranging from a high of 74 to a low of 50 degrees Fahrenheit (Western Regional Climate Center, 2021). Historic average annual precipitation at the Folsom Dam gauge is 23.89 inches. Historic average precipitation from July 1 through April 19 is 21.49 inches. From July 1, 2022 through April 19, 2022 (the date of the field survey), the Folsom Dam gauge recorded 14.85 inches of precipitation, or 69% of normal for that date (CDEC 2022).

Field Survey

ESA botanists Chuck Hughes, Amanda Segura-Moon, Jacky Daley, and Natalie Lamas conducted the field survey on April 19, 2022. The field survey followed the botanical survey guidelines of USFWS (1996) and CDFW (2018). The April 2022 fieldwork was conducted during the evident and identifiable period of special-status plants with potential to occur in the study area. Transects were walked approximately 50 feet apart. Frequent deviations were made from the transects to search areas of different microhabitat more suitable for special-status plants or for detecting additional plant species, especially the vernal pools and other wetlands.

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Approximately 34 person hours were spent surveying the study area. An additional 2 person-hours were spent keying plants collected in the field. All vascular plants found in the study area were identified to the taxonomic level necessary to determine legal status. Scientific nomenclature follows the Jepson Flora Project (Jepson 2022), based on Baldwin *et al.* (2012).

Special-Status Species

Several species known to occur regionally are regulated pursuant to the federal or State endangered species acts. In addition, Section 15380(b) of the *CEQA Guidelines* provides a definition of rare, endangered, or threatened species that are not included in any listing.[1] Species recognized under these terms are collectively referred to as "special-status species." Special-status species or natural communities evaluated here are defined as:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA) (50 Code of Federal regulations [CFR] 17.12 [listed plants], and various notices in the Federal Register [FR] [proposed species]);
- Species that are candidates for possible future listing as threatened or endangered under FESA (61 FR 40, February 28, 1996);
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations [CCR] 670.5);
- Plants listed as rare or endangered under the California Native Plant Protection Act (NPPA) (California Fish and Game Code, Section 1900 *et seq.*);
- Species that meet the definitions of rare and endangered under CEQA. CEQA provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists (14 CCR 15380);
- Plants ranked by CNPS as "rare, threatened or endangered in California" (California Rare Plant Rank [CRPR] 1A, 1B, and 2) meet CEQA significance criteria and State Fish and Game Code sections 1901, 2062 and 2067 criteria as rare, threatened, or endangered species;
- Bisbee Peak rush-rose (*Crocanthemum* [=*Helianthemum*] *suffrutescens*), a CRPR 3 plant, is also included because it is regulated by El Dorado County code (§130.71).

Each of the special-status species from the queries in Attachment A is evaluated in Table 1. The table provides a summary of the special-status species, their general habitat requirements, and an assessment of their potential to occur in the study area. The "Potential for Occurrence" categories are defined as follows:

- **Unlikely:** The study area does not support suitable habitat for a particular species, does not provide soils required for the species to inhabit, or is outside of the species known elevation or geographic range;

[1] For example, vascular plants listed as rare or endangered or as Rank 1 or 2 by the California Native Plant Society (CNPS) are considered to meet Section 15380(b) requirements.

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- **Low:** The study area only provides limited amounts and low quality habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate study area;
- **Moderate:** The study area provides suitable habitat for a particular species;
- **High:** The study area provides ideal habitat conditions for a particular species and/or known populations occur in immediate area and/or within the study area; or
- **Present:** The species was observed during the biological surveys within the study area.

TABLE 1
REGIONAL SPECIAL-STATUS PLANTS

Common Name *Scientific Name*	Listing Status USFWS/CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Plants			
Jepson's onion *Allium jepsonii*	--/--/1B.2	Open, serpentine or volcanic chaparral, cismontane woodland, or lower montane coniferous forest. Blooms April – August. Elevation 985 – 4,330 feet.	**Unlikely.** Suitable soils are not present.
Ione manzanita *Arctostaphylos myrtifolia*	FT/--/1B.2	Acidic sandy or clay soils (Ione soils) in chaparral or cismontane woodland. Blooms November – March. Elevation 195 – 1,905 feet.	**Unlikely.** Suitable soils are not present. The site is outside the very limited geographic range.
Stebbin's morning-glory *Calystegia stebbinsii*	FE/SE/1B.1	Gabbroic or serpentine soils in chaparral or cismontane woodland. Blooms April – July. Elevation 605 – 3,575 feet.	**Unlikely.** Suitable soils are not present.
Chaparral sedge *Carex xerophila*	--/--/1B.2	Gabbro or serpentine soils in chaparral, cismontane woodland, or lower montane coniferous forest. Blooms March – June. Elevation 1,445 – 2,525 feet.	**Unlikely.** Suitable soils are not present. The site is below the elevation range.
Pine Hill ceanothus *Ceanothus roderickii*	FE/SR/1B.1	Gabbroic or serpentine soils in chaparral or cismontane woodland. Blooms April – June. Elevation 805 – 3,575 feet.	**Unlikely.** Suitable soils are not present.
Red Hills soaproot *Chlorogalum grandiflorum*	--/--/1B.2	Gabbro or serpentine soils in chaparral, cismontane woodland, or lower montane coniferous forest. Blooms May – June. Elevation 805 – 5,545.	**Unlikely.** Suitable soils are not present.
Bisbee Peak rush rose *Crocanthemum suffrutescens*	--/--/3.2	Gabbroic or Ione soils that are disturbed or burned in or near chaparral. Blooms April – August. Elevation 245 – 2,200 feet.	**Unlikely.** Suitable soils and habitat are not present.
Dwarf downingia *Downingia pusilla*	--/--/2B.2	Vernal pools and mesic valley/foothill grassland. Blooms March – May. Elevation up to 1,460 feet.	**Moderate.** Suitable habitat is present in the vernal pools and some seasonal wetlands.
Ione buckwheat *Eriogonum apricum* var. *apricum*	FE/SE/1B.1	Ione soils in openings of chaparral. Blooms July – October. Elevation 195 – 475 feet.	**Unlikely.** Suitable soils and habitat are not present. The site is outside the very limited geographic range.

ESA

Mr. Carpenter
June 10, 2022
Page 5

TABLE 1
REGIONAL SPECIAL-STATUS PLANTS

Common Name *Scientific Name*	Listing Status USFWS/CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Irish Hill buckwheat *Eriogonum apricum* var. *prostratum*	FE/SE/1B.1	Ione soils in openings of chaparral. Blooms June – July. Elevation 295 – 395 feet.	**Unlikely.** Suitable soils and habitat are not present. The site is outside the very limited geographic range.
Tuolumne button-celery *Eryngium pinnatisectum*	–/–/1B.2	Vernal pools and mesic areas of cismontane woodland and lower montane coniferous forest. Blooms May – August. Elevation 230 – 3,000 feet.	**Moderate.** Suitable habitat is present in the vernal pools and some seasonal wetlands.
Pine Hill flannelbush *Fremontodendron decumbens*	FE/SR/1B.2	Rocky gabbroic or serpentine chaparral or cismontane woodland. Blooms April – July. Elevation 1,395 – 2,495 feet.	**Unlikely.** Suitable soils are not present. The site is below the elevation range.
El Dorado bedstraw *Galium californicum* subsp. *sierrae*	FE/SR/1B.2	Gabbroic soil in chaparral, cismontane woodland, or lower montane coniferous forest. Blooms May – June. Elevation 330 – 1,920 feet.	**Unlikely.** Suitable soils are not present.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	–/SE/1B.2	Clay soils in shallow water of vernal pools or lake margins. Blooms April – August. Elevation up to 7,790 feet.	**Moderate.** Suitable habitat is present in the vernal pools and some seasonal wetlands.
Parry's horkelia *Horkelia parryi*	–/–/1B.2	Chaparral or cismontane woodland. Sometimes on Ione soils. Blooms April – September. Elevation 260 – 3,510 feet.	**Low.** Preferred soils are not present, and cismontane woodland is very limited in the study area.
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	–/–/1B.2	Mesic valley and foothill grassland or vernal poos. Blooms March – May. Elevation 100 – 750 feet.	**Moderate.** Suitable habitat is present in the vernal pools and some seasonal wetlands.
Legenere *Legenere limosa*	–/–/1B.1	Vernal pools. Blooms April – June. Elevation up to 2,885 feet.	**Moderate.** Suitable habitat is present in the vernal pools and some seasonal wetlands.
Pincushion navarretia *Navarretia myersii* subsp. *myersii*	–/–/1B.1	Vernal pools, often in acidic soils. Blooms April – May. Elevation 65 – 1,085 feet.	**Moderate.** Suitable habitat is present in the vernal pools and some seasonal wetlands.
Slender Orcutt grass *Orcuttia tenuis*	FT/SE/1B.1	Vernal pools, often gravelly soils. Requires prolonged inundation of larger pools (>0.2 acre). Blooms May – September (October). Elevation 115 – 5,775 feet.	**Unlikely**. Although the project site supports vernal pools, they are not large enough nor do they remain inundated long enough to support this species.
Sacramento Orcutt grass *Orcuttia viscida*	FE/SE/1B.1	Vernal pools. Requires prolonged inundation period of larger pools (>0.1 acre). Blooms April – July (September). Elevation 100 – 330 feet.	**Unlikely**. Although the project site supports vernal pools, they are not large enough nor do they remain inundated long enough to support this species.
Layne's ragwort *Packera layneae*	FT/SR/1B.2	Rocky serpentine or gabbroic soils in chaparral or cismontane woodland. Blooms April – August. Elevation 655 – 3,560 feet.	**Unlikely.** Suitable soils are not present.

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TABLE 1
REGIONAL SPECIAL-STATUS PLANTS

Common Name *Scientific Name*	Listing Status USFWS/CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Sanford's arrowhead *Sagittaria sanfordii*	--/--/1B.2	Shallow freshwater marshes and swamps, ponds, ditches. Aquatic emergent perennial herb that may bloom from late spring into the autumn. Blooms May – October (November). Elevation up to 2,135 feet.	**Low.** Most of the aquatic habitats do not inundate long enough to support this species. There is limited habitat in some of the aquatic habitats that receive warm-season irrigation runoff from nearby development. Most regional records are in the Central Valley and not the foothills.
El Dorado County mule ears *Wyethia reticulata*	--/--/1B.2	Clay or gabbroic substrates in chaparral, cismontane woodland, or lower montane coniferous forest. Blooms April – August. Elevation 605 – 2,065.	**Unlikely.** Suitable soils are not present.

STATUS CODES:

FEDERAL (U.S. Fish and Wildlife Service):

FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FC = Candidate for Federal Listing

STATE (California Department of Fish and Wildlife):

SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SSC = California species of special concern
CFP = California fully protected bird species
WL = CDFW Watch List

California Native Plant Society (CNPS):

Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere
Rank 2A = Plants presumed extirpated in California but common elsewhere
Rank 2B = Plants rare, threatened, or endangered in California but more common elsewhere
Rank 3 = Plants about which more information is needed
Rank 4 = Plants of limited distribution

CNPS Code Extensions

.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 = Fairly threatened in California (20-80% occurrences threatened)
.3 = Not very threatened in California (less than 20% of occurrences threatened or no current threats known)

Results

A list of all plants observed in the study area is in **Attachment B**. A map of the botanical survey area is in **Attachment C**. No special status species were observed.

Cordially,

Chuck Hughes, M.S.
Senior Biologist/Botanist

ESA

Attachment A. Database Queries
Attachment B. Plant Species Observed
Attachment C. Botanical Survey Area

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Consultation Code: 08ESMF00-2022-SLI-0256
Event Code: 08ESMF00-2022-E-00742
Project Name: Creekside Village

October 30, 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2022-SLI-0256
Event Code: Some(08ESMF00-2022-E-00742)
Project Name: Creekside Village
Project Type: DEVELOPMENT
Project Description: Residential
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.623642000000004,-121.0553657202736,14z

Counties: El Dorado County, California

Endangered Species Act Species

There is a total of 13 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
El Dorado Bedstraw *Galium californicum ssp. sierrae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5209	Endangered
Layne's Butterweed *Senecio layneae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4062	Threatened
Pine Hill Ceanothus *Ceanothus roderickii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3293	Endangered
Pine Hill Flannelbush *Fremontodendron californicum ssp. decumbens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4818	Endangered
Stebbins' Morning-glory *Calystegia stebbinsii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3991	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Folsom (3812162) OR Folsom SE (3812151) OR Clarksville (3812161) OR Shingle Springs (3812068) OR Buffalo Creek (3812152) OR Latrobe (3812058) OR Sloughhouse (3812142) OR Carbondale (3812141) OR Irish Hill (3812048))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Allium jepsonii Jepson's onion	PMLIL022V0	None	None	G2	S2	1B.2
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos myrtifolia Ione manzanita	PDERI04240	Threatened	None	G1	S1	1B.2
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Calystegia stebbinsii Stebbins' morning-glory	PDCON040H0	Endangered	Endangered	G1	S1	1B.1

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Carex xerophila chaparral sedge	PMCYP03M60	None	None	G2	S2	1B.2
Ceanothus roderickii Pine Hill ceanothus	PDRHA04190	Endangered	Rare	G1	S1	1B.1
Central Valley Drainage Hardhead/Squawfish Stream Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	GNR	SNR	
Chlorogalum grandiflorum Red Hills soaproot	PMLIL0G020	None	None	G3	S3	1B.2
Clarkia biloba ssp. brandegeeae Brandegee's clarkia	PDONA05053	None	None	G4G5T4	S4	4.2
Crocanthemum suffrutescens Bisbee Peak rush-rose	PDCIS020F0	None	None	G2?Q	S2?	3.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S3	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Dumontia oregonensis hairy water flea	ICBRA23010	None	None	G1G3	S1	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum apricum var. apricum Ione buckwheat	PDPGN080F1	Endangered	Endangered	G2T1	S1	1B.1
Eriogonum apricum var. prostratum Irish Hill buckwheat	PDPGN080F2	Endangered	Endangered	G2T1	S1	1B.1
Eryngium pinnatisectum Tuolumne button-celery	PDAPI0Z0P0	None	None	G2	S2	1B.2
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Fremontodendron decumbens Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1	S1	1B.2
Galium californicum ssp. sierrae El Dorado bedstraw	PDRUB0N0E7	Endangered	Rare	G5T1	S1	1B.2
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Horkelia parryi Parry's horkelia	PDROS0W0C0	None	None	G2	S2	1B.2

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Ione Chaparral Ione Chaparral	CTT37D00CA	None	None	G1	S1.1	
Juncus leiospermus var. ahartii Ahart's dwarf rush	PMJUN011L1	None	None	G2T1	S1	1B.2
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Navarretia myersii ssp. myersii pincushion navarretia	PDPLM0C0X1	None	None	G2T2	S2	1B.1
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Northern Volcanic Mud Flow Vernal Pool Northern Volcanic Mud Flow Vernal Pool	CTT44132CA	None	None	G1	S1.1	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Orcuttia tenuis slender Orcutt grass	PMPOA4G050	Threatened	Endangered	G2	S2	1B.1
Orcuttia viscida Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1
Packera layneae Layne's ragwort	PDAST8H1V0	Threatened	Rare	G2	S2	1B.2
Pekania pennanti Fisher	AMAJF01020	None	None	G5	S2S3	SSC
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Wyethia reticulata El Dorado County mule ears	PDAST9X0D0	None	None	G2	S2	1B.2

Record Count: 66

CALIFORNIA NATIVE PLANT SOCIETY

Inventory of Rare and Endangered Plants of California

Search Results

37 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3812048:3812058:3812068:3812141:3812151:3812162:3812161:3812142:3812152]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Allium jepsonii	Jepson's onion	Alliaceae	perennial bulbiferous herb	Apr-Aug	None	None	G2	S2	1B.2	No Photo Available
Arctostaphylos myrtifolia	Ione manzanita	Ericaceae	perennial evergreen shrub	Nov-Mar	FT	None	G1	S1	1B.2	No Photo Available
Brodiaea rosea ssp. *vallicola*	valley brodiaea	Themidaceae	perennial bulbiferous herb	Apr-May(Jun)	None	None	G5T3	S3	4.2	No Photo Available
Bryum chryseum	brassy bryum	Bryaceae	moss		None	None	G5	S3	4.3	No Photo Available
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	None	None	G4	S4	4.2	No Photo Available
Calystegia stebbinsii	Stebbins' morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jul	FE	CE	G1	S1	1B.1	No Photo Available
Carex xerophila	chaparral sedge	Cyperaceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	No Photo Available
Ceanothus fresnensis	Fresno ceanothus	Rhamnaceae	perennial evergreen shrub	(Apr)May-Jul	None	None	G4	S4	4.3	No Photo Available
Ceanothus roderickii	Pine Hill ceanothus	Rhamnaceae	perennial evergreen shrub	Apr-Jun	FE	CR	G1	S1	1B.1	No Photo Available
Chlorogalum grandiflorum	Red Hills soaproot	Agavaceae	perennial bulbiferous herb	May-Jun	None	None	G3	S3	1B.2	No Photo Available
Clarkia biloba ssp. *brandegeeae*	Brandegee's clarkia	Onagraceae	annual herb	May-Jul	None	None	G4G5T4	S4	4.2	No Photo Available

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Crocanthemum suffrutescens	Bisbee Peak rush-rose	Cistaceae	perennial evergreen shrub	Apr-Aug	None	None	G2?Q	S2?	3.2	No Photo Available
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2	No Photo Available
Eriogonum apricum var. *apricum*	Ione buckwheat	Polygonaceae	perennial herb	Jul-Oct	FE	CE	G2T1	S1	1B.1	No Photo Available
Eriogonum apricum var. *prostratum*	Irish Hill buckwheat	Polygonaceae	perennial herb	Jun-Jul	FE	CE	G2T1	S1	1B.1	No Photo Available
Eriogonum tripodum	tripod buckwheat	Polygonaceae	perennial deciduous shrub	May-Jul	None	None	G4	S4	4.2	©2008 Steven Perry
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	Apr-Jun	None	None	G3	S3	4.3	No Photo Available
Eryngium pinnatisectum	Tuolumne button-celery	Apiaceae	annual/perennial herb	May-Aug	None	None	G2	S2	1B.2	No Photo Available
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	perennial evergreen shrub	Apr-Jul	FE	CR	G1	S1	1B.2	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	No Photo Available
Galium californicum ssp. *sierrae*	El Dorado bedstraw	Rubiaceae	perennial herb	May-Jun	FE	CR	G5T1	S1	1B.2	No Photo Available
Githopsis pulchella ssp. *serpentinicola*	serpentine bluecup	Campanulaceae	annual herb	May-Jun	None	None	G4T3	S3	4.3	No Photo Available
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2	©2004 Carol W. Witham
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	No Photo Available
Horkelia parryi	Parry's horkelia	Rosaceae	perennial herb	Apr-Sep	None	None	G2	S2	1B.2	No Photo Available

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May(Jun)	None	None	G3	S3	4.2	No Photo Available
Juncus leiospermus var. *ahartii*	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	None	None	G2T1	S1	1B.2	No Photo Available
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	No Photo Available
Navarretia heterandra	Tehama navarretia	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3	©2021 Scot Loring
Navarretia myersii ssp. *myersii*	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	None	None	G2T2	S2	1B.1	No Photo Available
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	G2	S2	1B.1	No Photo Available
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	FE	CE	G1	S1	1B.1	No Photo Available
Packera layneae	Layne's ragwort	Asteraceae	perennial herb	Apr-Aug	FT	CR	G2	S2	1B.2	No Photo Available
Primula pauciflora	beautiful shootingstar	Primulaceae	perennial herb	Apr-Jun	None	None	G5	S3	4.2	No Photo Available
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb	May-Oct(Nov)	None	None	G3	S3	1B.2	No Photo Available
Trichostema rubisepalum	Hernandez bluecurls	Lamiaceae	annual herb	Jun-Aug	None	None	G4	S4	4.3	No Photo Available
Wyethia reticulata	El Dorado County mule ears	Asteraceae	perennial herb	Apr-Aug	None	None	G2	S2	1B.2	No Photo Available

Showing 1 to 37 of 37 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (online edition, v9-01 [illegible]). Website https://www.rareplants.cnps.org [accessed 17 December 2021].

PLANT SPECIES OBSERVED

Family	Scientific Name	Common Name	Native/ Introduced	Cal-IPC Rating
EUDICOTS				
Amaranthaceae	*Amaranthus albus*	Tumbleweed	I	
Anacardiaceae	*Toxicodendron diversilobum*	Western poison oak	N	
Apiaceae	*Daucus pusillus*	Daucus	N	
	Eryngium castrense	Great Valley coyote-thistle	N	
	Sanicula bipinnatifida	Purple sanicle, shoe buttons	N	
Asteraceae	*Baccharis pilularis* ssp. *consanguinea*	Coyote brush	N	
	Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	I	Moderate
	Centaurea solstitialis	Yellow star-thistle	I	High
	Centromadia fitchii	Spikeweed	N	
	Chondrilla juncea	Skeleton weed	I	Moderate
	Cirsium vulgare	Bull thistle	I	Moderate
	Dittrichia graveolens	Stinkwort	I	Moderate
	Erigeron sp. (=*Conyza*)	Horseweed	--	
	Helminthotheca echioides	Bristly ox-tongue	I	Limited
	Holocarpha virgata ssp. *virgata*	Tarweed	N	
	Hypochaeris glabra	Smooth cat's-ear	I	Limited
	Lactuca serriola	Prickly lettuce	I	
	Lasthenia fremontii	Fremont's goldfields	N	
	Layia fremontii	Layia	N	
	Leontodon saxatilis	Hairy hawkbit	I	
	Logfia gallica	Daggerleaf cottonrose	I	
	Psilocarphus brevissimus var. *brevissimus*	Dwarf woollyheads	N	
	Senecio vulgaris	Common groundsel	I	
	Silybum marianum	Milk thistle	I	
	Sonchus asper ssp. *asper*	Prickly sow thistle	I	
Boraginaceae	*Amsinckia* sp.	Fiddleneck	N	
	Plagiobothrys greenei	Greene's spiny-nut popcornflower	N	
	Plagiobothrys nothofulvus	Rusty popcornflower	N	
	Plagiobothrys stipitatus	Great Valley popcornflower	N	
Brassicaceae	*Lepidium nitidum*	Peppercress	N	
	Nasturtium officinale	Water cress	N	
	Raphanus sativus	Radish	I	Limited
	Sisymbrium officinale	Hedge mustard	I	
	Thysanocarpus curvipes	Lacepod	N	
Campanulaceae	*Downingia ornatissima* var. *ornatissima*	Downingia	N	
Caryophyllaceae	*Cerastium glomeratum*	Sticky mouse-ear chickweed	I	

Plant Species Observed

Family	Scientific Name	Common Name	Native/ Introduced	Cal-IPC Rating
	Silene gallica	Small-flower catchfly	I	
	Spergularia rubra	Red sand-spurrey	I	
Convolvulaceae	*Cuscuta* sp.	Dodder	--	
Crassulaceae	*Crassula* sp.	Pygmy-weed	--	
Euphorbiaceae	*Croton setigerus*	Turkey-mullein	N	
Fabaceae	*Acmispon americanus* var. *americanus*	Spanish clover	N	
	Acmispon parviflorus	Deervetch	N	
	Lupinus bicolor	Miniature lupine	N	
	Medicago polymorpha	California burclover	I	Limited
	Melilotus indicus	Sourclover	I	
	Trifolium dubium	Little hop clover	I	
	Trifolium hirtum	Rose clover	I	Moderate
	Trifolium variegatum var. *variegatum*	Variegated clover	N	
	Vicia sativa	Spring vetch	I	
	Vicia villosa	Hairy vetch	I	
Fagaceae	*Quercus douglasii*	Blue oak	N	
Gentianaceae	*Cicendia quadrangularis*	Timwort	N	
	Zeltnera sp.	Centaury	N	
Geraniaceae	*Erodium botrys*	Storksbill	I	
	Erodium cicutarium	Redstem filaree	I	Limited
	Geranium dissectum	Cranesbill	I	Limited
Hypericaceae	*Hypericum perforatum* ssp. *perforatum*	Klamathweed	I	Moderate
Lamiaceae	*Mentha pulegium*	Pennyroyal	I	
	Pogogyne zizyphoroides	Sacramento beardstyle	N	
	Stachys sp.	Hedge-nettle	N	
	Trichostema lanceolatum	Vinegar weed	N	
Linaceae	*Linum bienne*	Narrow-leaved flax	I	
Lythraceae	*Lythrum hyssopifolia*	Prostrate knotweed	I	Limited
Malvaceae	*Sidalcea* sp. (annual)	Checkerbloom	N	
Montiaceae	*Calandrinia menziesii*	Red maids	N	
	Montia fontana	Water chickweed	N	
Myrsinaceae	*Lysimachia arvensis*	Scarlet pimpernel	I	
	Lysimachia minima	Chaffweed	N	
Onagraceae	*Epilobium brachycarpum*	Fireweed	N	
	Epilobium canum	California fuchsia	N	
	Epilobium ciliatum	Willowherb	N	
	Epilobium densiflorum	Willowherb	N	
Orobanchaceae	*Castilleja attenuata*	Valley tassels	N	
	Parentucellia viscosa	Parentucellia	I	Limited

Family	Scientific Name	Common Name	Native/ Introduced	Cal-IPC Rating
	Triphysaria eriantha	Butter-and-eggs	N	
Oxalidaceae	*Oxalis micrantha*	Dwarf wood-sorrel	I	
Papaveraceae	*Eschscholzia lobbii*	Frying pans	N	
Phrymaceae	*Diplacus tricolor*	Monkeyflower	N	
	Erythranthe guttata	Seep monkeyflower	N	
Plantaginaceae	*Callitriche* sp.	Water-starwort	--	
	Gratiola ebracteata	Bractless hedge-hyssop	N	
	Veronica sp.	Speedwell	--	
	Veronica peregrina ssp. *xalapensis*	Purslane speedwell	N	
Polemoniaceae	*Navarretia intertexta*	Navarretia	N	
	Navarretia tagetina	Marigold navarretia	N	
Polygonaceae	*Eriogonum nudum*	Wild buckwheat	N	
	Persicaria sp.	Smartweed	--	
	Polygonum aviculare	Knotweed	I	
	Pterostegia drymarioides	Woodland threadstem	N	
	Rumex acetosella	Sheep sorrel	I	Moderate
	Rumex crispus	Curly dock	I	Limited
Ranunculaceae	*Ranunculus bonariensis* var. *trisepalus*	Buttercup	N	
	Ranunculus muricatus	Buttercup	I	
Rhamnaceae	*Frangula californica*	California coffee berry	N	
Rosaceae	*Prunus* sp.	Horticultural fruit (saplings)	I	
	Rubus armeniacus	Himalayan blackberry	I	High
Rubiaceae	*Galium parisiense*	Wall bedstraw	I	
Salicaceae	*Populus fremontii* ssp. *fremontii*	Fremont cottonwood	N	
	Salix gooddingii	Goodding's black willow	N	
	Salix lasiolepis	Arroyo willow	N	
Scrophulariaceae	*Verbascum blattaria*	Moth mullein	I	
MONOCOTS				
Agavaceae	*Chlorogalum pomeridianum* var. *pomeridianum*	Soaproot	N	
Alliaceae	*Allium hyalinum*	Onion	N	
Cyperaceae	*Carex praegracilis*	Black creeper sedge	N	
	Cyperus eragrostis	Nutsedge	N	
	Eleocharis acicularis	Needle spikerush	N	
	Eleocharis macrostachya	Spikerush	N	
	Isolepis cernua	Isolepis	N	
	Schoenoplectus sp.	Naked-stemmed bulrush	--	
Juncaceae	*Juncus balticus* ssp. *ater*	Baltic rush	N	
	Juncus bufonius	Toad rush	N	
	Juncus capitatus	Dwarf rush	I	

Plant Species Observed

Family	Scientific Name	Common Name	Native/ Introduced	Cal-IPC Rating
	Juncus effusus ssp. *pacificus*	Pacific rush	N	
	Juncus tenuis	Slender rush	N	
	Juncus xiphioides	Iris-leaved rush	N	
Poaceae	*Aira caryophyllea*	Silver hair grass	I	
	Andropogon virginicus var. *virginicus*	Broomsedge bluestem	I	
	Avena barbata	Slender wild oat	I	Moderate
	Brachypodium distachyon	False brome	I	Moderate
	Briza maxima	Large quaking grass	I	Limited
	Briza minor	Small quaking grass	I	
	Bromus diandrus	Ripgut grass	I	Moderate
	Bromus hordeaceus	Soft chess	I	Moderate
	Bromus madritensis ssp. *madritensis*	Foxtail chess	I	
	Bromus rubens	Red brome	I	High
	Cynodon dactylon	Bermuda grass	I	Moderate
	Deschampsia danthonioides	Annual hair grass	N	
	Elymus caput-medusae	Medusa head	I	High
	Festuca myuros	Rattail sixweeks grass	I	
	Festuca perennis	Rye grass	I	
	Gastridium phleoides	Nit grass	I	
	Glyceria sp.	Manna grass	--	
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	I	Moderate
	Paspalum dilatatum	Dallis grass	I	
	Poa annua	Annual blue grass	I	
	Polypogon monspeliensis	Annual beard grass	I	Limited
	Stipa pulchra	Purple needle grass	N	
Themidaceae	*Dichelostemma multiflorum*	Wild hyacinth	N	
	Triteleia hyacinthina	White brodiaea	N	
Typhaceae	*Typha latifolia*	Broad-leaved cattail	N	

NOTES:
1. Horticultural/garden escape.

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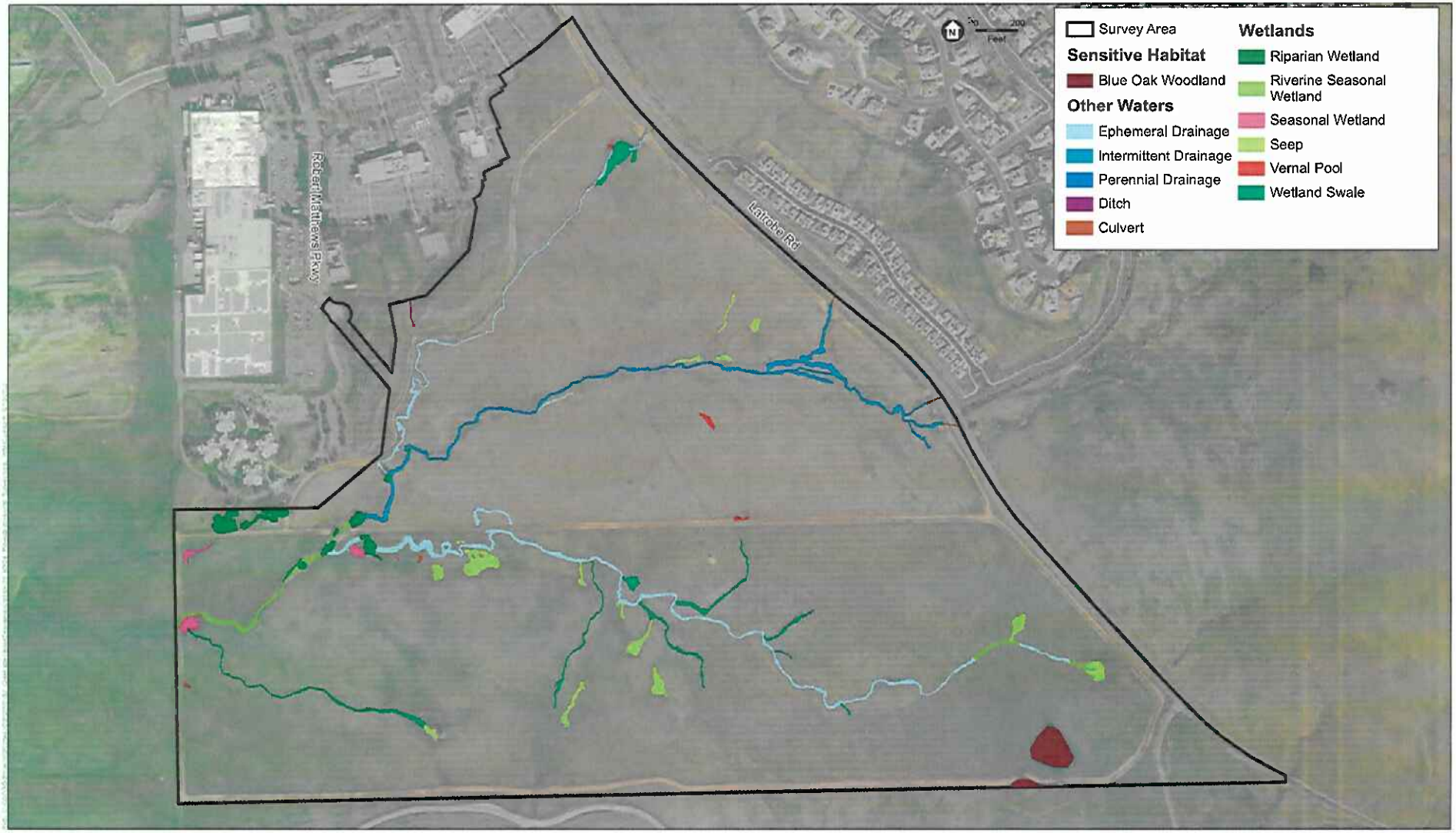

SOURCE: NAIP, 2020; Winn Communities, 2021; ESA, 2021

Creekside Village

Attachment C
Botanical Survey Area

ESA

Updated Biological Resources Constraints Memorandum (February 2025)

ESA

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memorandum

date	February 7, 2025
to	Tony Gon, Winn Communities
cc	George Carpenter, Winn Communities Erich Fischer, Environmental Science Associates
from	Joseph Huang, Environmental Science Associates Justin Whitfield, Environmental Science Associates
subject	Updated Biological Resources Constraints Memorandum Report for the Creekside Village Project

Introduction

This memorandum report provides an updated biological resource constraints analysis associated with the Creekside Village Project (project). Most of the biological resources constraints analyses were previously discussed in the November 2023 *Biological Resource Constraints Report* (2023 BRCR; ESA 2023). In addition to a handful of updates to the biological resource constraints, that reflect new information obtained from site surveys, this memorandum also provides an analysis and comparison of impacts between the Proposed Project alternative (which coincides with the alternative analysis in the 2023 BRCR), and a new project alternatives named the Reduced Impact Alternative. For each section in the 2023 BRCR, there will be a statement at the beginning identifying whether there was a change or update to the text in that section to reflect the most current data and discussions for their respective topics.

The study area for this report comprises the main residential development project site and offsite locations including a sewer force main alignment along Latrobe Road and intersection improvements located in the unincorporated community of El Dorado Hills in western El Dorado County, California (**Figure 1**). The purpose is to clarify the potential for special-status biological resources to occur on the project site as well as provide information on potential regulatory constraints associated with implementation of the proposed project and project alternatives to further avoid impacts to biological resources. This report is intended to supplement and update the 2023 BRCR.

This report identifies the existing biological resources at the project site; identifies the federal, state, and local regulations pertaining to biological resources within the region; and describes potential project impacts on those biological resources as well as mitigation measures to reduce project-related impacts. The information and

analysis presented in this report is focused on special-status species,[1] wildlife habitats, vegetation communities, and aquatic resources that may qualify as waters of the U.S. or state. The results of the assessment presented in this report are based upon literature review and queries of the California Department of Fish and Wildlife's (CDFW) Natural Diversity Database (CNDDB), the U.S. Fish and Wildlife Service's (USFWS) list of federal endangered and threatened species, and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants, as well as surveys conducted at the project site.

Biological resources within the project site were identified through field reconnaissance surveys conducted in August 2019, December 2020, January 2021, April 2022, and during protocol brachiopod surveys from January to June 2024. Updated database queries were completed in November 2024 and are attached to this report (**Attachment 1**).

Project Location

The project site is in southwestern El Dorado Hills in western El Dorado County, just east of the City of Folsom, California (**Figure 2**). The main project area is located south of the intersection of Latrobe Road and Investment Boulevard and is on the Folsom SE, California U.S. Geological Survey (USGS) 7.5-minute series quadrangle. The project includes the installation of a sewer force main within the alignment of Latrobe Road extending approximately 1.8 miles north of the main project site to the El Dorado Hills Wastewater Treatment Plant.

Data Sources/Methodology

There was an update to the data methodology for the large listed branchiopod surveys conducted in 2024 from the 2023 BRCR.

The 2023 BRCR, identified biological resources within the project site by ESA biologists Erich Fischer, Joshua Boldt, and Chuck Hughes through field reconnaissance surveys conducted on August 20, 2019, December 10, 2020, January 13, 2021, and April 19, 2022. In addition, from January to June 2024, wet and dry season surveys were conducted to evaluate the potential presence of special-status vernal pool species. The protocol-level branchiopod survey was conducted using two methodologies: in the wet season dipnet surveys were conducted, and a dry season, soil sampling surveys for large, listed branchiopods were conducted (ESA, 2024b).

In addition to the data sources/methodology described in the 2023 BRCR, database queries were updated to identify any changes. The primary updated sources include the following:

- USFWS list of federal endangered and threatened species that may occur in the proposed project location, and/or may be affected by the project (USFWS, 2024a) (see **Appendix A**);
- CNDDB (v 5.3.0) list of special-status species occurrences within the Folsom SE, California and eight surrounding USGS 7.5-minute topographic quadrangles (Folsom, Clarksville, Shingle Springs, Buffalo Creek, Latrobe, Sloughhouse, Carbondale, and Irish Hill) (CDFW, 2024a) (see Appendix A);
- CNPS Inventory of Rare and Endangered Plants (v9.5) known to occur within the Folsom SE, California and eight surrounding USGS 7.5-minute topographic quadrangles (CNPS, 2024) (see Appendix A);

[1] Species that are regulated pursuant to federal or state endangered species laws, or have been designated as Species of Special Concern by the CDFW, or species that are not included on any agency listing but meet the definition of rare, endangered or threatened species of the CEQA Guidelines section 15380(b), are collectively referred to as "special-status species".

Most of the information presented under aquatic resources remains the same as reported in the 2023 BRCR and is based on an aquatic resources delineation that was conducted for the project site by ESA in August 2019 and January 2021 (ESA, 2023). However, on September 30, 2024 the U.S. Army Corps of Engineers (USACE) identified specific data needs and requested specific revisions and additional information about certain aquatic resources. ESA biologist Chuck Hughes conducted a focused site visit on October 16, 2024, to collect additional data and site-specific information to help inform revisions and updates to the aquatic resources delineation report (ESA, 2024a).

Environmental Setting

There are no changes or updates to the environmental setting discussions from the 2023 BRCR. However, there are changes to the acreages of habitat types presented in Table 1, due to project alternative design changes and an updated aquatic resources delineation conducted by ESA in October 2024. Some habitat types will have fewer impacts while others will have more. In addition, the offsite areas include the areas along and adjacent to Latrobe Road as well as the area north of the project site associated with the emergency vehicle access road.

Figure 3 depicts the extent of wildlife habitats that occur within the project site and offsite areas. **Table 1** shows the habitat type acreages for the project site and offsite areas.

There are updates for the habitat type acreages from the 2023 BRCR.

TABLE 1
HABITAT TYPES (UPDATED)

Habitat Type	Project Area (acres)	Offsite Area (acres)[1]	Total Project and Offside Area (acres)
Annual Grassland	202.88	6.18	209.05
Blue Oak Woodland	0.45	–	0.45
Culvert (Riverine)	0.01	0.07	0.08
Developed/Disturbed	0.43	20.72	21.15
Ditch	0.01		0.01
Ephemeral Drainage (Riverine)	2.05	0.08	2.13
Intermittent Drainage (Riverine)	1.76	0.04	1.80
Perennial Drainage (Riverine)	–	0.30	0.30
Seasonal Wetland (including Seep, Wetland Swale, Riverine Seasonal Wetland, and Seasonal Wetland)	1.65	0.03	1.68
Valley Foothill Riparian	0.75	0.47	1.22
Vernal Pool	0.07	--	0.07
Total	**210.05**	**27.88**	**239.93**

NOTE: Total may not sum due to rounding.
SOURCE: ESA, 2023

[1] Offsite Area includes the corridor along Latrobe Road necessary for transportation intersection and sewer improvements as well as the emergency vehicle access road.

Terrestrial Habitats

There are no changes or updates for the terrestrial habitat discussions from the 2023 BRCR.

Aquatic Resources

As a result of the supplement aquatic resource surveys, there were some changes to aquatic resource feature types, and new features were delineated. For example, wetland swale features were reviewed in the field: two features were recharacterized as seep or riverine seasonal wetland because they were not linear features, but most wetland swales were recharacterized as ephemeral channels due to the presence of an ordinary high-water mark (OHWM) consistent with the Western Mountains, Valleys, and Coast Region OHWM Guide (USACE, 2014). Based on input from the USACE, in several locations' wetlands below the OHWM were incorporated into the acreage of the intermittent channel (ESA, 2024). As a result, revised aquatic resources extent within the project are and offsite areas are summarized in **Table 2** and are depicted in **Figure 4.** All aquatic resources, and extent of potentially jurisdictional boundaries, identified in this report are considered preliminary and are still pending verification from the appropriate regulatory agencies. It should be noted that the numbers presented in the Table 2 represent the same study area provided in Table 1.

TABLE 2
AQUATIC RESOURCES (UPDATED)

Habitat Type	Project Area (acres)	Offsite Area (acres)[1]	Total Project and Offside Area (acres)
Culvert (Riverine)	0.01	0.07	0.08
Ditch	0.01	–	0.01
Ephemeral Drainage (Riverine)	2.05	0.08	2.13
Intermittent Drainage (Riverine)	1.76	0.04	1.80
Perennial Drainage (Riverine)	--	0.30	0.30
Riparian Wetland	0.48	0.47	0.95
Seasonal Wetland (includes seep, seasonal wetland, and riverine seasonal wetland, and wetland swale)	1.65	0.03	1.68
Vernal Pool	0.07	--	0.07
Total	**6.02**	**0.99**	**7.00**

NOTE: Total may not sum due to rounding.

SOURCE: ESA, 2024a

[1] Offsite Area includes the corridor along Latrobe Road necessary for transportation intersection and sewer improvements as well as the emergency vehicle access road.

Sensitive Natural Community

There are no changes or updates for the sensitive natural community discussions from the 2023 BRCR.

Wildlife Movement Corridors

There are no changes or updates for the wildlife movement corridors discussions from the 2023 BRCR.

Special-Status Species

***Table 3**, which lists the regional special-status species and their potential to occur at the project site, has been updated to reflect additional information and survey results for some species.*

Updates to **Table 3** were made based on additional information and survey results for the following special-status species:

- **California tiger salamander** – after conducting a full season of dipnet surveys, no tiger salamander larvae were observed in any of the aquatic features. These surveys further support the revision of it potential to occur at the project site from unlikely to absent.

- **California red-legged frog** – upon surveying and further inspecting the drainage features at the project site, they do not provide sufficient depth during the wet season and are either extremely shallow or completely dry by late spring and summer. This lack of suitable aquatic habitat for the species justified the revision of its potential to occur at the project site from low to unlikely.

- **Western spadefoot** – no western spadefoot were observed during dipnet surveys of all the aquatic features. Thus, the potential to occur status for the species was revised from low to absent.

- **Tricolored blackbird** – added that it is present within the project site.

- **Great egret, great blue heron, and ferruginous hawk** – deleted these three species from the special-status species table because they are common bird species with only protections from the Migratory Bird Treaty Act.

- **Western burrowing owl** – reduced its potential to occur from high to moderate because during multiple years of surveys at the project site, no burrowing owl has ever been observed. The habitat present on site is still suitable for the species and thus its potential to occur remains moderate.

- **Vernal pool fairy shrimp and vernal pool tadpole shrimp** – wet season dipnet surveys and dry season soil sample surveys were conducted for both species. The survey results for both survey methodologies were negative. It is unlikely these species have any potential to occur at the project site, and its status was revised appropriately in Table 3.

- **Northwestern pond turtle** – the aquatic habitat is only marginally suitable for the species because it does not retain water throughout its nesting season from May to July. Also, no northwestern pond turtles have ever been observed at the project site during surveys. There is no appropriate aquatic habitat in the nearby vicinity, and it is unlikely the turtles will venture away from more suitable habitat to the project site. The species' potential to occur was reduced from medium to low.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Amphibians			
California tiger salamander *Ambystoma californiense*	FT/ST	Grassland, oak savanna, and edges of mixed woodland and lower elevation coniferous forest. Requires temporary breeding ponds to breed. Spends most time underground in animal burrows, especially those of California ground squirrels, valley pocket gophers, and moles. Requires both suitable upland terrestrial habitat with mammal burrows for refuge and temporary breeding ponds to survive and reproduce. Found in the Central Valley and adjacent Sierra Nevada foothills up to 1,500 feet. The Cosumnes River marks the northern boundary of the species' range, except for an isolated occurrence in the Dunnigan Hills in northern Yolo County.	**Absent.** Suitable habitat (seasonal wetlands, vernal pools, annual grassland) is present within the project site. However, the site is outside known species range; the project area is north of the Cosumnes River. Dipnet surveys were conducted in all the potential aquatic habitat features and none of them contained California tiger salamander larvae. There are no recorded observations of this species in the CNDDB within five miles.
Foothill yellow-legged frog *Rana boylii*	FE/SE	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg laying. Need at least 15 weeks to attain metamorphosis.	**Unlikely.** No suitable habitat is present for this species within the project site. There are no recorded observations of this species in the CNDDB within five miles.
California red-legged frog *Rana draytonii*	FT/SSC	Found mainly near ponds in humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover. Most common in lowlands or foothills. Frequently found in woods adjacent to streams. Breeding habitat is in permanent or ephemeral water sources: lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. Ephemeral wetland habitats require animal burrows or other moist refuges for estivation when the wetlands are dry. Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County.	**Unlikely.** The drainages within the project site do not provide suitable habitat for this species because they are too shallow and dry up in late spring and summer. There are no recorded observations of this species in the CNDDB within five miles.
Western spadefoot *Spea hammondii*	FPT/SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools (typically in large complexes) are essential for breeding and egg-laying. Found in the Sierra Nevada foothills, Central Valley, Coast Ranges, and coastal counties in southern California.	**Absent.** Isolated marginal aquatic habitat (discontinuous seasonal wetlands, vernal pools) is sparse and broadly distributed across the project site. Suitable upland habitat (annual grasslands) is present within project site, but the low density of aquatic habitat reduces the likelihood for the species to occur. Dipnet surveys were conducted in all the potential aquatic habitat features and none of them contained spadefoot larvae. There are no recorded observations of this species in the CNDDB within five miles.
Birds			
Tricolored blackbird *Agelaius tricolor*	–/ST	Highly colonial, most numerous in Central Valley and vicinity. Nests in cattails, tules, and blackberries large enough for at least 50 nesting pairs, usually over water. Requires foraging area with insect prey within a few kilometers of the colony. Forages in grassland and cropland.	**High/Present.** There is a nesting colony at the project site in riparian wetland blackberry patches associated with an intermittent channel. There are numerous occurrences documented in the CNDDB to the south and west within five miles.
Grasshopper sparrow *Ammodramus savannarum*	--/SSC	Occurs in dry, dense grasslands, especially with scattered shrubs for sitting perches. A thick cover of grasses and tall forbs is essential for concealment. Nests are built of grasses and forbs in slight depressions in ground hidden by a clump of grasses or forbs. Loosely colonial when nesting.	**Moderate.** Grassland in the project site is kept grazed and relatively low in stature. There are relatively few shrubs present in the grassland. There are no recorded observations of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Golden eagle *Aquila chrysaetos*	–/FP	Cliffs and escarpments or tall trees for nesting; annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals for prey. Foothills and mountains throughout California; uncommon nonbreeding visitor to lowlands such as the Central Valley.	**Low.** No nesting habitat is present within the project site. Could utilize annual grasslands for foraging. There are two recorded observations of this species in the CNDDB within five miles.
Western burrowing owl *Athene cunicularia*	–/SCE	Nests and forages in open, dry, annual or perennial grasslands and scrublands characterized by low-growing vegetation. Subterranean nester dependent upon burrowing mammals, especially California ground squirrel (*Otospermophilus beecheyi*) for burrows. May also be found around golf courses, and disturbed/ruderal habitat in urban areas. Forages in open plains, grasslands, and prairies.	**Moderate.** Suitable nesting and foraging habitat occurs in annual grasslands in the project site. However, despite regular and ongoing reconnaissance surveys of the project area, no burrowing owls have been observed. There are four recorded observations of this species in the CNDDB within five miles, and there is an additional recent observation immediately west in the Carson Creek Specific Plan Area.
Swainson's hawk *Buteo swainsoni*	–/ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Nests in oaks or cottonwoods in or near riparian habitats. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations. Northern habitat summer range in California begins in central Tehama south to Kern County. Predominant breeding habitat is located in the Central Valley.	**Low.** No suitable nesting habitat is present on site; suitable foraging habitat is present within the annual grasslands. However, there are no recorded active nests within five miles of the project site. There are two recorded observations of this species in the CNDDB within five miles; however, both records are from 1992.
White-tailed kite *Elanus leucurus*	–/FP	Rolling foothills and valley margins with scattered oaks, and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Moderate.** Suitable nest trees are present within the blue oak grove on site. Annual grassland in the project area provides foraging habitat for this species. There are three recorded observations of this species in the CNDDB within five miles.
Bald eagle *Haliaeetus leucocephalus*	–/SE,FP	Prefers oceans shores, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
California black rail *Laterallus jamaicensis*	–/ST,FP	Found in salt, brackish, and freshwater marsh with dense vegetation for nesting habitat. Majority of population found in the tidal salt marshes of the northern San Francisco Bay region, primarily in San Pablo and Suisun Bays; also found in freshwater marshes in the foothills of the Sierra Nevada.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Bank swallow *Riparia riparia*	–/ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Fish			
Delta smelt *Hypomesus transpacificus*	FT/SE	Open surface waters in the Sacramento/San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. May be affected by downstream sedimentation.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Steelhead – Central Valley DPS *Oncorhynchus mykiss irideus* pop. 11	FT/--	This evolutionary significant unit (ESU) enters the Sacramento and San Joaquin Rivers and their tributaries from July to May; spawning occurs from December to April. Young move to rearing areas in and through the Sacramento and San Joaquin Rivers, Delta, and San Pablo and San Francisco Bays. Needs cool water with moderate size gravel for spawning and cover for rearing.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Invertebrates			
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/--	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**Absent.** Wet season dipnet surveys and dry season soil sampling surveys were conducted at potentially suitable aquatic habitat features. The survey results were negative. Although there are three recorded observations of this species in the CNDDB within five miles, it is unlikely this species occurs in the project site.
Crotch bumble bee *Bombus crotchii*	--/SCE	Inhabits grassland and scrub areas, requiring a hotter and drier environment than other bumblebee species and nests underground, often in abandoned rodent dens. The historic range includes much of southern California, the San Joaquin Valley, central coast range, Bay Area, and more limited areas elsewhere in northern California (The Xerces Society 2018).	**Unlikely.** The grassland may provide suitable habitat, but the site is outside the current range and there are no records in El Dorado County despite a relatively high sampling effort (The Xerces Society 2018). There are no recorded observations of this species in the CNDDB within five miles
Monarch butterfly *Danaus plexippus*	FC/--	Overwintering trees occur near the coast. Larvae feed on milkweed plants (*Asclepias* sp.) elsewhere.	**Low.** Narrow leaf milkweed plants were observed on the project site, but in low abundance. The project site provides limited habitat but is outside of known winter aggregation sites.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT/--	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus nigra* subsp. *caerulea*). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	**Unlikely.** No suitable habitat is present for this species within the project area. No elderberry shrubs were noted within the site during biological surveys conducted for the project. There are no recorded observations of this species in the CNDDB within five miles.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE/--	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**Absent.** Wet season dipnet surveys and dry season soil sampling surveys were conducted at potentially suitable aquatic habitat features. The survey results were negative. Although there are five recorded observations of this species in the CNDDB within five miles, it is unlikely this species occurs in the project site.
Mammals			
Pallid bat *Antrozous pallidus*	--/SSC	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky outcroppings for roosting, particularly near water. Roosts in rock crevices, buildings, and under bridges. Roosts must protect bats from elevated temperatures. Sensitive to disturbance of roosting sites.	**Low.** No suitable roosting habitat is present in the project site; however, suitable foraging habitat is present in the annual grasslands. There are no recorded observations of this species in the CNDDB within five miles.
Fisher – West Coast DPS *Pekania pennanti*	--/SSC	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high canopy closure. Uses cavities, snags, logs, and rocky areas for cover and denning. Needs large areas of mature, dense forest.	**Unlikely.** Suitable habitat is not present within the project site.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
American badger *Taxidea taxus*	–/SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Low.** Suitable burrowing and foraging habitat occurs in annual grasslands in the project site; however, no burrows that could be utilized by this species were present. There are no recorded observations of this species in the CNDDB within five miles.
Reptiles			
Northwestern pond turtle *Actinemys marmorata*	FPT/SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometer from water for egg-laying. Populations extend throughout the coast and Central Valley of CA.	**Low.** Marginally suitable aquatic habitat is present in the intermittent stream. The intermittent stream only has water in it during the winter and spring and substantial portions of it dries up in the hot summer months. Potential nesting habitat is present in adjacent uplands within the project site. However, with the lack of suitable aquatic habitat during the nesting window from May to July, nesting in the project site is unlikely. No turtles have been observed at the project site during surveys. There are four recorded observations of this species in the CNDDB within five miles.
Coast horned lizard *Phrynosoma blainvillii*	–/SSC	Frequents a wide variety of habitats; however, most common in lowlands along sandy washes with scattered low bushes. Inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains. Found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Needs open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of native ants.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Giant gartersnake *Thamnophis gigas*	FT/ST	Prefers freshwater marsh and low gradient streams. Has adapted to sloughs, canals, and other small waterways where there is a prey base of small fish and amphibians. Requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter. Utilizes upland habitats within 200 feet from aquatic habitats. This is the most aquatic of the garter snakes in California. Occurs in the Central Valley from Fresno County north to the Gridley/Sutter Buttes area; has been extirpated from areas south of Fresno.	**Unlikely.** Suitable habitat is not present within the project site. The project site is outside the range. There are no recorded observations of this species in the CNDDB within five miles.
Plants			
Jepson's onion *Allium jepsonii*	–/–/1B.2	Open, serpentine or volcanic slopes, flats. Blooms April- August. Elevation 300-600m.	**Unlikely.** Suitable habitat is not present within the project site. Site is outside elevation range of species. There are no recorded observations of this species in the CNDDB within five miles.
Ione manzanita *Arctostaphylos myrtifolia*	FT/--/1B.2	Acidic sandy or clay soils, chaparral, woodland. Blooms January – February. Elevation 70-770m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Stebbin's morning-glory *Calystegia stebbinsii*	FE/SE/1B.1	Chaparral. Blooms April – June. Elevation 185-1,090m.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Chaparral sedge *Carex xerophila*	–/–/1B.2	Dry gabbro or serpentine soils in open forest, scrub, thicket edges, chaparral. Fruits March – June. Elevation 450-770m.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Pine Hill ceanothus *Ceanothus roderickii*	FE/SR/1B.1	Rocky, gabbro-derived substrates, chaparral, oak/pine woodland. Blooms March – June. Elevation 260-630m.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Red Hills soaproot *Chlorogalum grandiflorum*	--/--/1B.2	Serpentine or gabbro outcrops, open shrubby or wooded hills. Blooms May – June. Elevation 300-500m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Bisbee Peak rush rose *Crocanthemum suffrutescens*	–/–/3.2	Shallow soils on Ione formations within in chaparral. Blooms April – June. Elevation 100-700m.	**Unlikely.** Suitable habitat is not present within the project site. There are three recorded observations of this species in the CNDDB within five miles.
Dwarf downingia *Downingia pusilla*	--/--/2B.2	Vernal pools, roadside ditches. Blooms March – May. Elevation up to 150m.	**Moderate.** Suitable habitat present in the vernal pools and some seasonal wetlands present in the project site. There are no recorded observations of this species in the CNDDB within five miles.
Starved daisy *Erigeron miser*	--/--/1B.3	Rocky sites. Blooms July – October. Elevation 1,900-2,300m.	**Unlikely.** Suitable habitat is not present within the project site. Site is outside elevation range of species. There is one recorded observation of this species in the CNDDB within five miles.
Ione buckwheat *Eriogonum apricum* var. *apricum*	FE/SE/1B.1	Clay soils on Ione formations. Blooms June – October. Elevation 80-200m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Irish Hill buckwheat *Eriogonum apricum* var. *prostratum*	FE/SE/1B.1	Clay soils on Ione formations. Blooms June – July. Elevation 90-120m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Tuolumne button-celery *Eryngium pinnatisectum*	–/–/1B.2	Vernal pools, swales, intermittent streams. Blooms May – August. Elevation 70-950m.	**Moderate.** Suitable habitat present in the vernal pools, seasonal wetlands, swales and intermittent streams present in the project site. There are no recorded observations of this species in the CNDDB within five miles.
Pine Hill flannelbush *Fremontodendron decumbens*	FE/SR/1B.2	Gabbro outcrops in chaparral or pine woodland. Blooms April – July. Elevation 425-7 60m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
El Dorado bedstraw *Galium californicum* subsp. *sierrae*	FE/SR/1B.2	Oak pine, oak forests, chaparral. Blooms March – July. Elevation 100-500m.	**Unlikely.** Suitable habitat is not present within the project site. There is one recorded observation of this species in the CNDDB within five miles.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	--/SE/1B.2	Shallow water, margins of vernal pools. Blooms April – September. Elevation up to 1,600m.	**Moderate.** Suitable habitat present in the vernal pools and some seasonal wetlands present in the project site. There is one recorded observation of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site
Parry's horkelia *Horkelia parryi*	–/–/1B.2	Chaparral or woodland. Blooms April – September. Elevation 80-1,070m.	**Unlikely.** Suitable habitat is not present within the project site. There are no recorded observations of this species in the CNDDB within five miles.
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	–/–/1B.2	Vernal pool margins, grassland swales, and gopher mounds. Fruits March – May. Elevation 30-90m.	**Moderate.** Suitable habitat present in the vernal pools, seasonal wetlands, and swales present in the project site. There are no recorded observations of this species in the CNDDB within five miles.
Legenere *Legenere limosa*	–/–/1B.1	Wet areas, vernal pools, ponds. Blooms March – June. Elevation up to 950m.	**Moderate.** Suitable habitat present in the vernal pools and some seasonal wetlands present in the project site. There is one recorded observation of this species in the CNDDB within five miles.
Pincushion navarretia *Navarretia myersii* subsp. *myersii*	–/–/1B.1	Vernal pools. Blooms April – May. Elevation 20-90m.	**Moderate.** Suitable habitat present in the vernal pools and some seasonal wetlands present in the project site. There are no recorded observations of this species in the CNDDB within five miles.
Slender Orcutt grass *Orcuttia tenuis*	FT/SE/1B.1	Vernal pools, often gravelly soils. Species requires prolonged inundation period. Species known from larger pools (>0.2 acre). Blooms May – October. Elevation 36-1,760m.	**Unlikely.** Although the project site supports vernal pool habitat, the vernal pools in the site are not large enough nor do they remain inundated long enough to support this species. There are no recorded observations of this species in the CNDDB within five miles.
Sacramento Orcutt grass *Orcuttia viscida*	FE/SE/1B.1	Vernal pools. Species requires prolonged inundation period. Species known from larger pools (>0.1 acre). Blooms April – July. Elevation up to 100m.	**Unlikely.** Although the project site supports vernal pool habitat, the vernal pools in the site are not large enough nor do they remain inundated long enough to support this species. There are no recorded observations of this species in the CNDDB within five miles.
Layne's ragwort *Packera layneae*	FT/SR/1B.2	Serpentine or gabbroic soils within openings in chaparral or woodlands. Blooms April – August. Elevation 200-1,085m.	**Unlikely.** Suitable habitat is not present within the project site. There are three recorded observations of this species in the CNDDB within five miles.
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Ponds, ditches. Blooms May – November. Elevation up to 300m.	**Low.** Most of the aquatic habitats do not inundate long enough to support this species. There is limited habitat in some of the aquatic habitats that receive warm-season irrigation runoff from nearby development. There is one recorded observation of this species in the CNDDB within five miles, but most records are in the Central Valley and not the foothills.
El Dorado County mule ears *Wyethia reticulata*	–/–/1B.2	Wooded slopes, chaparral, coniferous forest, clay or gabbroic soils. Blooms April – August. Elevation 150-630m.	**Unlikely.** Suitable habitat is not present within the project site. There are two recorded observations of this species in the CNDDB within five miles.

TABLE 3
REGIONAL SPECIAL-STATUS SPECIES

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/ CNPS	General Habitat Requirements	Potential for Species Occurrence at the Project Site

STATUS CODES:

FEDERAL (U.S. Fish and Wildlife Service):

FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FPT = Federally proposed as Threatened
FC = Candidate for Federal Listing
MBTA = Migratory Bird Treaty Act (used when other designations absent)

STATE (California Department of Fish and Wildlife):

SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SCE = Candidate for state Listing
SSC = California species of special concern
CFP = California fully protected bird species

California Native Plant Society (CNPS):

Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere
Rank 2A = Plants presumed extirpated in California but common elsewhere
Rank 2B = Plants rare, threatened, or endangered in California but more common elsewhere
Rank 3 = Plants about which more information is needed
Rank 4 = Plants of limited distribution

CNPS Code Extensions
.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 = Fairly threatened in California (20-80% occurrences threatened)
.3 = Not very threatened in California (less than 20% of occurrences threatened or no current threats known)

SOURCE: CDFW, 2023a; USFWS, 2023a; CNPS, 2023, ESA, 2024b

Regulatory Framework

There are no updates to the regulatory framework from the 2023 BRCR.

Impacts and Mitigation Measures

Significance Criteria

There are no updates to the significance criteria from the 2023 BRCR.

Impact Assessment Methodology

There are no updates to the impact assessment methodology from the 2023 BRCR; however, it should be noted that the updates in the subsequent sections of this memorandum provide a comparison of potential impacts based on the two project alternatives. The revised tables provide for a side-by-side comparison of Proposed Project and the Reduced Impact Alternative impacts. The Proposed Project design included impacts to several biological resources.

Impact Analysis

There are updates to the acreages for habitat impacts from the 2023 BRCR.

Habitat impacts for the two project alternatives are identified in **Table 4**. The impacts on habitats associated with the Proposed Project and Reduced Impact Alternatives are depicted in **Figure 5** and **Figure 6**, respectively. All

the offsite impacts will be in Latrobe Road or adjacent developed/disturbed areas, and those acreage impacts are included in the table below. The impacts for the Proposed Project Area and Reduced Impact Alternative Area include impacts associated with the emergency vehicle access road.

TABLE 4
HABITAT IMPACTS

Habitat Type	Proposed Project Area (acres)[1, 2]	Reduced Impact Alternative Area (acres)[1, 2]
Annual Grassland	180.78	193.86
Blue Oak Woodland	0.20	0.39
Culvert	<0.01	<0.01
Developed/Disturbed	0.54	0.38
Ditch	--	0.014
Ephemeral Drainage (Riverine)	1.91	1.98
Intermittent Drainage (Riverine)	0.67	0.75
Seasonal Wetland[3]	1.33	1.45
Valley Foothill Riparian	0.10	0.54
Vernal Pool	0.07	0.07
Total Impacts[4]	**185.59**	**199.42**

SOURCE: ESA, 2024.

[1] The Proposed Project Area and Reduced Impact Alternative Area includes Project Area impacts related to disturbance and development of the emergency vehicle access road.
[2] Impact acreages to the offsite areas along Latrobe Road and for transportation intersection and sewer improvements are limited to developed/disturbed land covers within the existing roadways and the roadway rights-of-way and are not included in this table.
[3] Seasonal wetland includes seeps, riverine seasonal wetland, and seasonal wetland features.
[4] Totals may not sum due to rounding.

Impact Discussion

a) **Would the project have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of fish and Wildlife or U.S. Fish and Wildlife Service?**

There are updates to the impact discussion on tricolored blackbird, western burrowing owl, northwestern pond turtle, vernal pool tadpole shrimp, and vernal pool fairy shrimp from the 2023 BRCR. Some of these changes may only apply to the Reduce Impact Alternative, while other changes are reflective of both alternatives and universally applicable to the entire site. Updates in this section are focused on the following species:

- *Vernal pool fairy shrimp*
- *Vernal pool tadpole shrimp*
- *Tricolored blackbird*

- *Western burrowing owl*
- *Northwestern pond turtle*

Less than Significant with Mitigation Incorporated. Special-status species and their habitats that may be affected either directly or indirectly through implementation of the alternatives. Each of these potentially affected species is described below.

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Vernal pools and some seasonal wetlands in the project site may provide suitable habitat for the federally listed vernal pool fairy shrimp and vernal pool tadpole shrimp. Most of the waters and wetlands on the project site are not habitat for listed branchiopods because they are either riverine, flow-through channels, or sloped wetlands that do not pond water. A field visit on December 10, 2020 identified potential habitat for listed branchiopods in select aquatic resource features. Other small seasonal wetlands, and one vernal pool (VP-2), were determined based on topography and vegetation to be too infrequently, if ever, inundated to support listed branchiopods. In coordination with the USFWS, ESA biologists completed protocol level surveys of all the potentially suitable aquatic habitat for listed branchiopods (ESA, 2024b).

No vernal pool fairy shrimp nor other fairy shrimp species were observed in any of the aquatic features that retained sufficient water for dipnet surveys.

Dry season soil sampling was also completed in early summer 2024. The soil sample analysis was completed per the USFWS protocol and no fairy shrimp eggs were observed in any of the soil samples. Based on these results, it is unlikely that vernal pool fairy shrimp and vernal pool tadpole shrimp occur in the project site and the project will not adversely affect any branchiopod individuals (ESA, 2024b).

Given the negative results from the wet and dry season surveys for large, listed branchiopods, it was determined that vernal pool fairy shrimp and vernal pool tadpole shrimp are unlikely to occur at the project site. Thus, it was determined there would be a **less than significant** impact on vernal pool fairy shrimp and vernal pool tadpole shrimp.

Special-Status Birds and Common Nesting Migratory Birds and Raptors

The project site and adjacent areas provide suitable habitats for nesting birds, including, but not limited to, special-status species such as tricolored blackbird, grasshopper sparrow, western burrowing owl, and white-tailed kite, as well as more common migratory birds and raptors.

Tricolored Blackbird

The Proposed Project would remove blackberry shrubs located along a riparian wetland corridor known to support tricolored blackbirds nesting colony. ESA conducted a site visit on April 19, 2022 to determine the current status of the tricolored blackbird nesting colony. The nesting colony reported in CNDDB was observed in clusters of Himalayan blackberry in riparian wetlands during the survey. The tricolored blackbird nesting colony was observed again incidentally during the wet season fairy shrimp dipnet surveys in 2024. This nesting colony likely returns to these blackberry thickets most years because it continues to have successful nests.

Both the Proposed Project and the Reduced Impact Alternative would have direct impacts on a portion of tricolored blackbird nesting habitat (e.g., blackberry thicket associated with Riparian Wetland [RW] 11). Impacts associated with the Proposed Project and Reduce Impact Alternative would be similar in location and magnitude.

For the portion of the nesting habitat that would be remain after construction, human disturbances and noise from construction activities have the potential to cause colony abandonment and death of young or loss of reproductive success during nesting season. Nesting birds could be adversely affected if the colony is exposed to a substantial increase in noise or human presence during project construction and operation.

Under both the Proposed Project and Reduced Impact Alternative, potential impacts on tricolored blackbird would be considered a **potentially significant** impact. Both the Proposed Project and Reduced Impact Alternative would implement **Mitigation Measures BIO-2a, BIO-4, BIO-5,** and **BIO-6,** to reduce impacts on tricolored blackbirds to **less than significant**.

Western Burrowing Owl and Grasshopper Sparrow

The grasshopper sparrow is a California species of special concern. The western burrowing owl is a candidate endangered species for listing under the CESA after the California Fish and Game Commission accepted a petition to list it on October 10, 2024.

Suitable annual grassland habitat for these species is present within the project site; however, no burrowing owls or grasshopper sparrows or active nests were observed during the biological surveys. Some soils within the project site are sandy and friable, which could provide suitable burrowing sites. However, there was no California ground squirrel (*Otospermophilus beecheyi*) activity observed within the project site and there were few alternative burrow features observed during the surveys. While no soil mounds were visible during the field survey, surrounding fence posts would provide suitable perches above potential nests within the annual grassland habitat. The annual grassland habitat also provides suitable foraging habitat for these species.

The proposed project could also result in a permanent loss of foraging opportunities for these species under either alternative. The loss of foraging habitat in the project site is not expected to significantly impact these species because these habitats are abundant in the vicinity.

Because the western burrowing owl is a candidate under CESA, if the species is present, and could be impacted by either alternative, then an incidental take permit may be required under CESA. CDFW may require compensatory mitigation, to meet the "fully mitigated" standard (CA Fish and Game Code §2081(b)(2)), a threshold higher than CEQA requirements.

Accordingly, under either alternative could potentially impact individual burrowing owls or grasshopper sparrows if they occupied the project site prior to construction. Indirect impacts to nesting birds during construction could extend up to 500 feet from the limits of construction. Potential impacts could include abandonment of nest sites and the mortality of young. This would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-2a, BIO-2b, BIO-5,** and **BIO-6,** the project's impact to western burrowing owl and grasshopper sparrow would be considered **less than significant**.

Northwestern Pond Turtle

Four CNDDB occurrences occur within five miles of the project site, with the nearest two occurrences(#1316 and 468) respectively from observations in 2016 in Carson Creek 0.5 mile west of the project and 1988 from Deer Creek where it crosses Latrobe Road 0.9 mile southeast of the project site. Potentially suitable aquatic habitat for northwestern pond turtle was determined to occur on the project site within the intermittent drainage when inundated and the annual grasslands near the drainage may provide suitable upland nesting habitat. However, it is unlikely that northwestern pond turtles would occur in intermittent drainage feature and adjacent uplands within 0.25-mile (1,320 feet) because of insufficient water in the drainage feature year-round. To date this species has not been observed within this marginally suitable habitat during numerous survey efforts, including aquatic resource delineation and protocol-level branchiopod surveys. The drainage feature only has sufficient water during the winter and spring and it is typically dry by late spring. Also, the intermittent drainage is narrow (3-5 feet wide at the most), is densely vegetated throughout most of it, and has incised steep banks. Since the aquatic feature is mostly unsuitable habitat for northwestern pond turtle, it is unlikely any individuals would move upstream from the larger creek to the west into the project site. Also, there is no substantial open water upstream from where they may originate.

Given the marginally suitable aquatic habitat present, both alternatives have low potential to directly impact northwestern pond turtle. If present, northwestern pond turtle individuals could be harmed during placement of fill and grading activities during construction, which could crush individuals or occupied nests. Further reduction in habitat quantity and quality could result from hydrological alterations related to culvert or bridge installation, grading, or through construction of impervious surfaces, which could prevent adults from utilizing the affected habitats for nesting. Reduction in water quality could also occur from the creation of exposed areas of bare soil. This would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-3** and **BIO-5** through **BIO-7**, the project's impact to northwestern pond turtle would be considered **less than significant.**

b) **Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

There are no updates or revisions to the 2023 BRCR. The Reduced Impact Alternative has the same impacts on sensitive natural communities as the Proposed Project and would require the same mitigation measures. As described in Table 4, there are minor differences in the acreage of impacts on riparian habitat.

c) **Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Table 5 provides an update to the acreages of impact on state or federally protected wetlands associated with the Proposed Project and Reduced Impact Alternative. These changes are due, in part, to the revised aquatic resource delineation and input from the USACE.

Less than Significant with Mitigation Incorporated. The project site supports wetlands and other waters that may be subject to USACE jurisdiction under Section 404 of the CWA and/or regulation under the Porter-Cologne Act, California Fish and Game Code Section 1600 et seq. and the State Wetland Dredge and Fill Policy.

Development of the Proposed Project and Reduced Impact Alternative would result in the loss of potentially jurisdictional wetlands and other waters of the U.S. or State protected waters/wetlands as summarized in **Table 5**.

These features would be directly affected through grading and placement of fill. The loss of wetlands and other waters of the U.S. or State protected waters/wetlands is considered **potentially significant** impact. With the implementation of **Mitigation Measures BIO-4** through **BIO-7,** the project's impact to state or federally protect wetlands would be considered **less than significant**.

TABLE 5
SUMMARY OF IMPACTS TO AQUATIC RESOURCES

Aquatic Resource	Proposed Project Acres[1, 2]	Reduced Impact Alternative Acres[1, 2]
Culvert	0.003	0.004
Ditch	--	0.014
Ephemeral Drainage	1.906	1.978
Intermittent Drainage	0.671	0.753
Riparian Wetland	0.097	0.479
Riverine Seasonal Wetland	0.165	0.165
Seasonal Wetland	0.016	0.110
Seep	1.151	1.173
Vernal Pool	0.063	0.065
Wetland Swale	–	–
Totals[3]	**4.069**	**4.741**

SOURCE: ESA, 2024.

[1] The Proposed Project Area and Reduced Impact Alternative Area includes Project Area impacts related to disturbance and development of the emergency vehicle access road.
[2] Impact acreages to the offsite areas along Latrobe Road and for transportation intersection and sewer improvements are limited to developed/disturbed land covers within the existing roadways and the roadway rights-of-way and are not included in this table.
[3] Totals may not sum due to rounding

d) **Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Most of the information presented in the 2023 BRCR remains the same. The Reduced Impact Alternative would have similar impacts on tricolored blackbird nesting habitat, a wildlife nursery site, as the Proposed Project.

As discussed above, there is a nesting colony of tricolored blackbirds on the project site. This colony is considered a native wildlife nursery site. Implementation of the Proposed Project and Reduced Impact Alternative would result in the removal of, or disturbance to the nursey site, and would be considered a **potentially significant** impact.

Both the Proposed Project and the Reduced Impact Alternative would remove a portion of tricolored blackbird nursery site (e.g., blackberry thicket associated with Riparian Wetland [RW] 11). Removal of habitat, human disturbances, and noise from construction and operation activities have the potential to cause adverse affects on the nursery site and could lead to colony abandonment and death of young or loss of reproductive success during nesting season.. This would be considered a **potentially significant** impact. With the implementation of **Mitigation Measures BIO-2a, BIO-4, BIO-5**, and **BIO-6,** the Proposed Project and Reduced Impact Alternative 's impact to native nursery sites would be considered **less than significant**.

e) **Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

The Reduced Impact Alternative would impact additional blue oak woodland compared to the Proposed Project .

Less than Significant. The refined boundary of blue oak woodland is approximately 0.45 acre in size and is regulated under the El Dorado County Oak Resources Conservation Ordinance (County Code §130.39). Under the Proposed Project, grading would remove approximately 0.20 acre of the blue oak woodland. In comparison, the Reduce Impact Alternative would remove approximately 0.39 acres of blue oak woodland. The County ordinance requires mitigation at a 1:1 ratio for projects that remove less than 50% of on-site oak woodland. Mitigation may be in the form of an in-lieu fee to the County (used to conserve oak woodland in high priority areas of the County pursuant to the El Dorado County [2017] Oak Resources Management Plan), offsite conservation, replacement planting, or a combination of those methods. The mitigation is included as part of a development application and approved by the County as part of the review process. Both alternatives would remove oak woodland, but would not conflict with the local ordinance because mitigation would be required as part of the local approval process. Therefore, neither alternative would conflict with any other local policies or ordinances protecting biological resources.

f) **Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

Neither the Proposed Project nor the Reduced Impact Alternative would conflict with an adopted Habitat Conservation, Natural Community Conservation or other approved local, regional or state habitat conservation plan.

Mitigation Measures

Some mitigation measures were revised or updated from the biological resources constraints report submitted in 2023. Mitigation Measure BIO-1 was deleted because after conducting wet and dry season surveys for large,

listed branchiopods, it was determined the project would have no impacts on these vernal pool species. The compensatory mitigation for loss of wetlands and other waters of the US is covered in BIO-4.

Mitigation Measure BIO-1: Compensate for the Loss of Habitat for Vernal Pool Species.

This mitigation measure should be removed and is no longer applicable since protocol surveys for these species were negative (ESA, 2024b). Neither the Proposed Project, nor the Reduced Impact Alternative would result in significant impacts on this species and thus no mitigation would be required.

Mitigation Measure BIO-2a: Perform Pre-Construction Surveys for Nesting Special-Status and Common Migratory Birds.

There are no proposed changes to this Mitigation Measure.

Mitigation Measure BIO-2b: Perform Pre-Construction Surveys for Burrowing Owl

There are no proposed changes to this Mitigation Measure. However, it should be noted that due to the recent State Candidate listing status of the species, if western burrowing owls are found in or near the alternative an Incidental Take Permit from CDFW may be required.

Mitigation Measure BIO-3: Perform Pre-Construction Surveys for Northwestern Pond Turtle and Monitoring of In-water Work

There are no proposed changes to this Mitigation Measure. However, it should be noted that relocation of northwestern pond turtles could only be conducted with the expressed consent and incidental take authorization by the USFWS.

Mitigation Measure BIO-4: Compensatory Mitigation for Loss of Regulated Resources

Revisions to this measure are proposed to provide greater flexibility in applying compensatory mitigation to all potential regulated resources, not just aquatic resources.

The project proponent shall demonstrate that there is no net loss of wetlands and other waters of the United States or state and other regulated resources including USFWS or CDFW listed wildlife. The project proponent shall develop a compensatory mitigation plan as a part of the permitting process. Compensatory mitigation shall be implemented provided prior to construction-related impacts to the existing waters/wetlands and protected species. The exact mitigation ratio would be determined in consultation with the applicable permitting agencies, which may include USACE, CDFW, and/or RWQCB. The amount of mitigation will be based on the type and value of the resource affected by the project, and will be determined in consultation with the USACE and/or RWQCB, and/or CDFW during the regulatory permitting process. Compensation shall take the form of preservation, restoration, enhancement, or creation in accordance with USACE and/or RWQCB and/or CDFW mitigation requirements, as required under project permits. Compensatory mitigation obligations may be satisfied through the purchase of credits from an agency-approved mitigation bank, contribution to an established in-lieu fee program, or through permittee responsible mitigation.

Mitigation Measure BIO-5: Conduct Environmental Awareness Training

There are no proposed changes to this Mitigation Measure.

Mitigation Measure BIO-6: Install Temporary Barrier Fencing, and/or Flagging to Protect Environmentally Sensitive Habitat Areas

There are no proposed changes to this Mitigation Measure.

Mitigation Measure BIO-7: Implement Best Management Practices to Protect Water Quality

There are no proposed changes to this Mitigation Measure.

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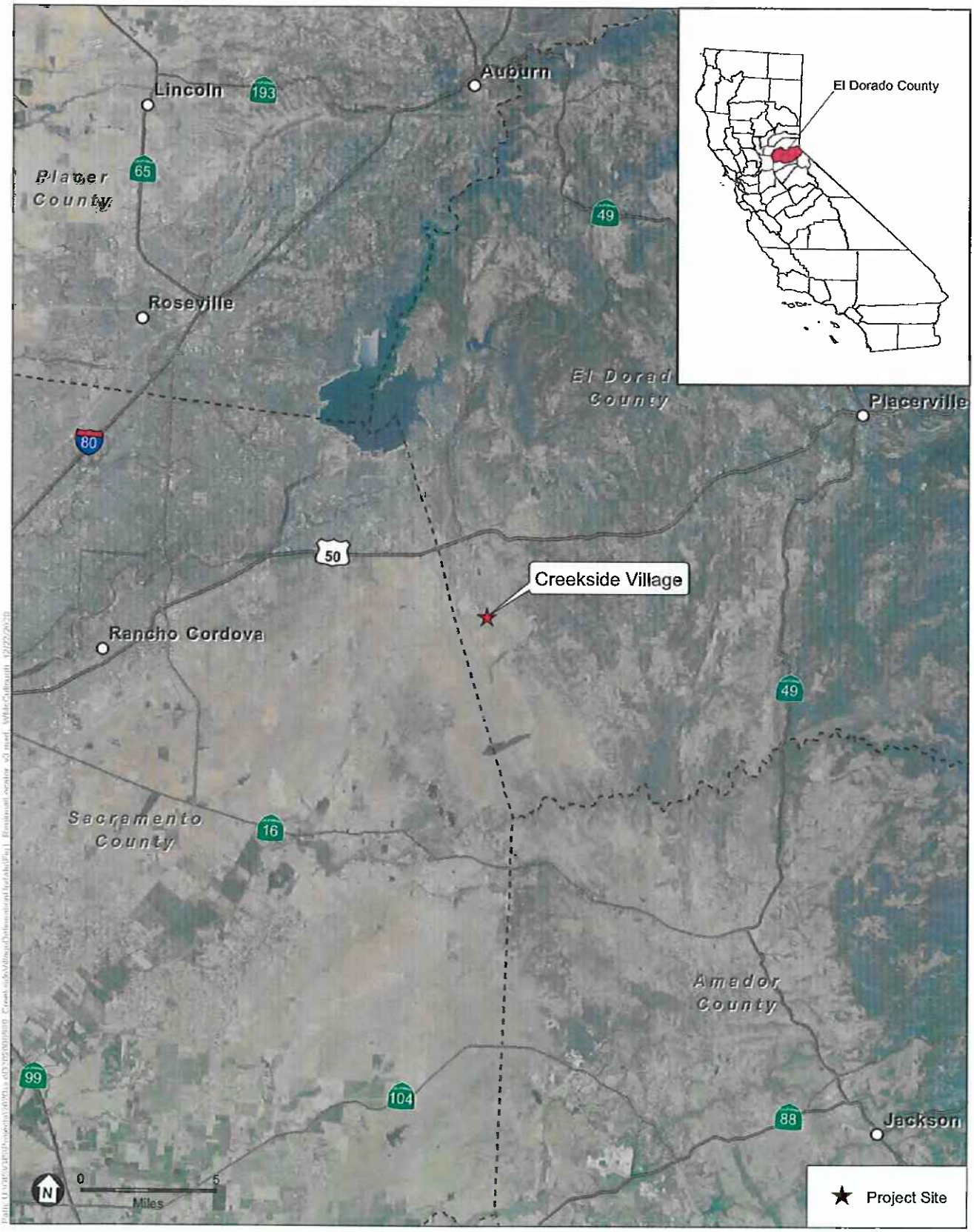
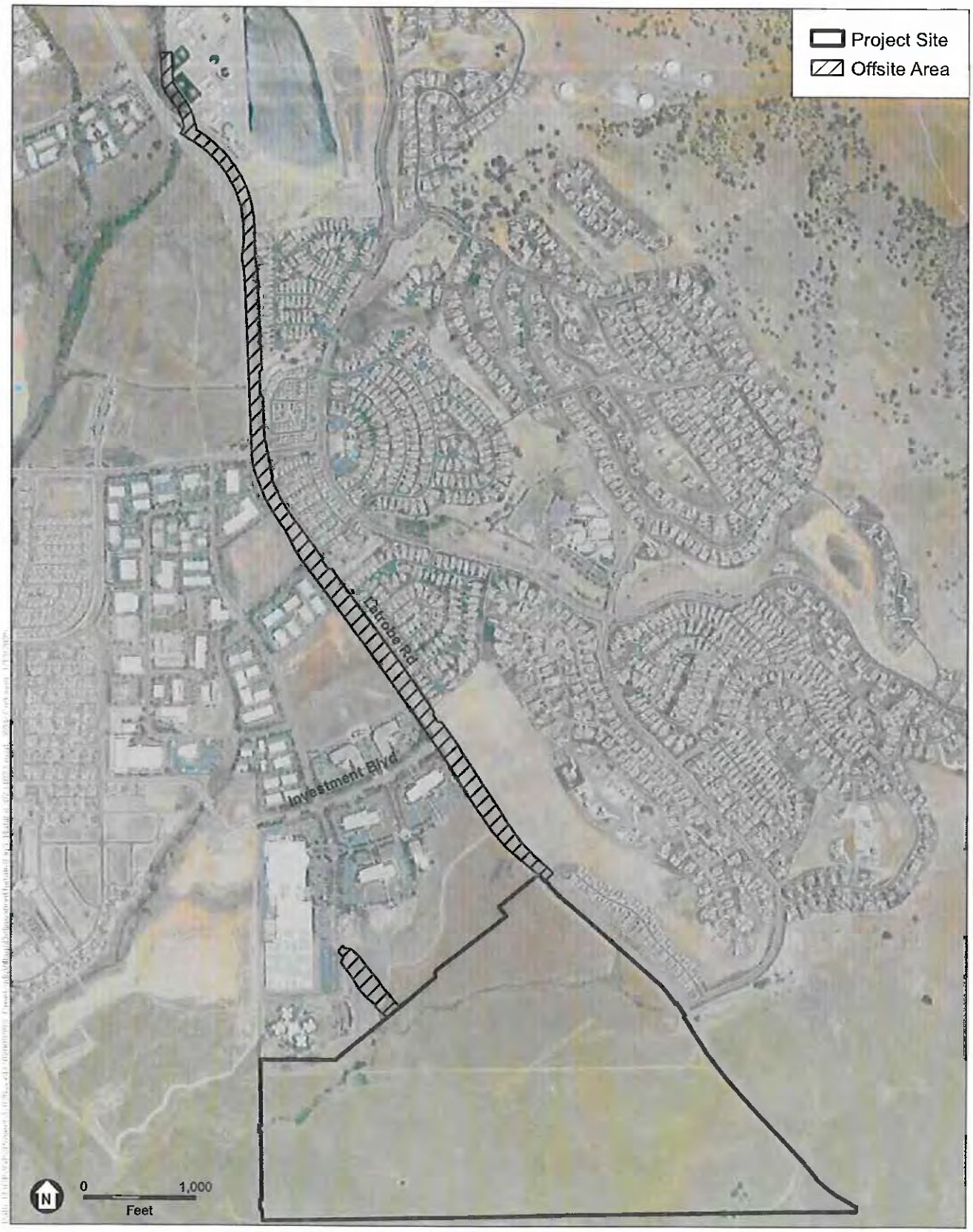
Figures



SOURCE: NAIP, 2018; ESRI, 2012; ESA, 2020

Creekside Village

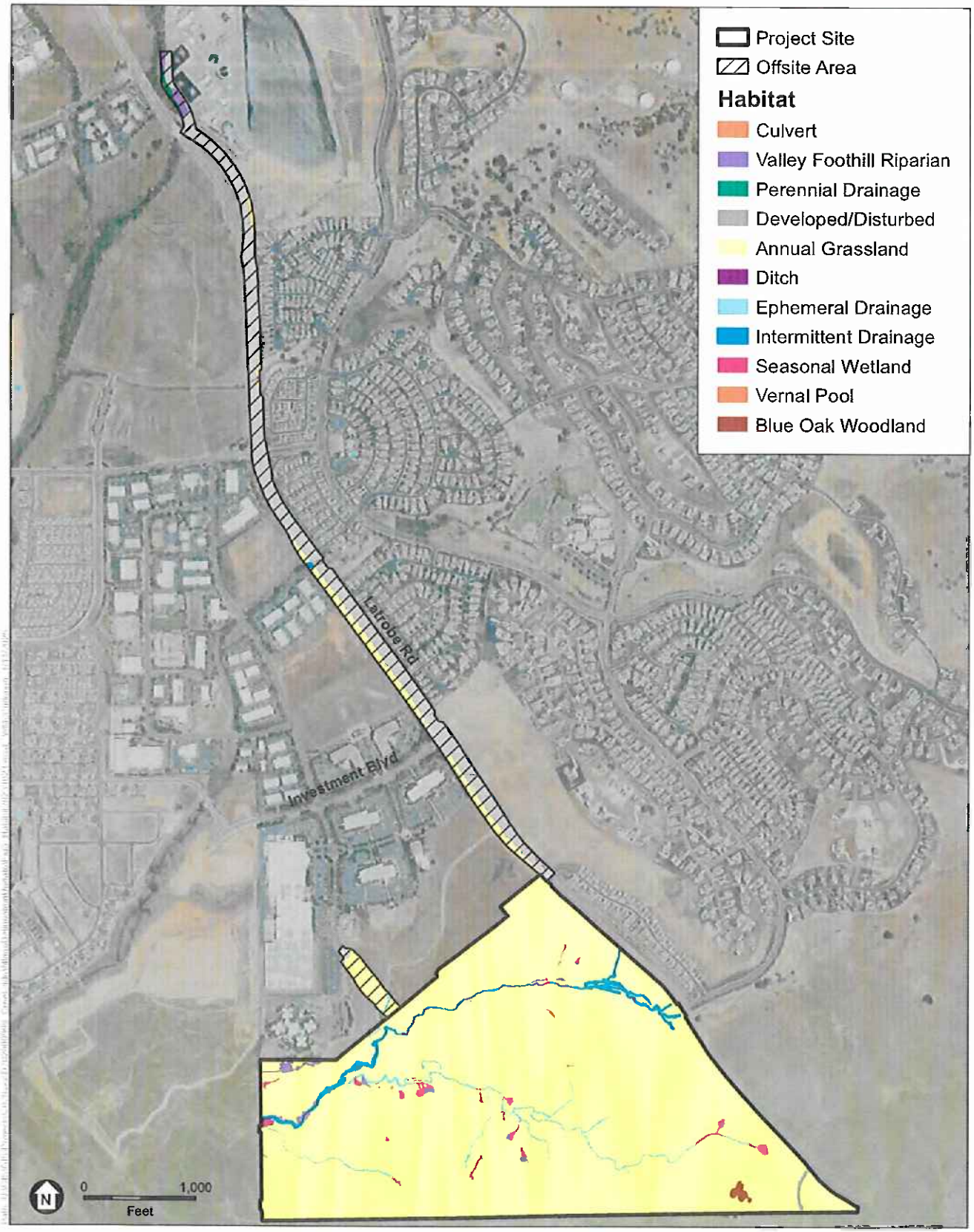
Figure 1
Regional Location



SOURCE: NAIP, 2020; Winn Communities, 2024; ESA, 2024

Creekside Village

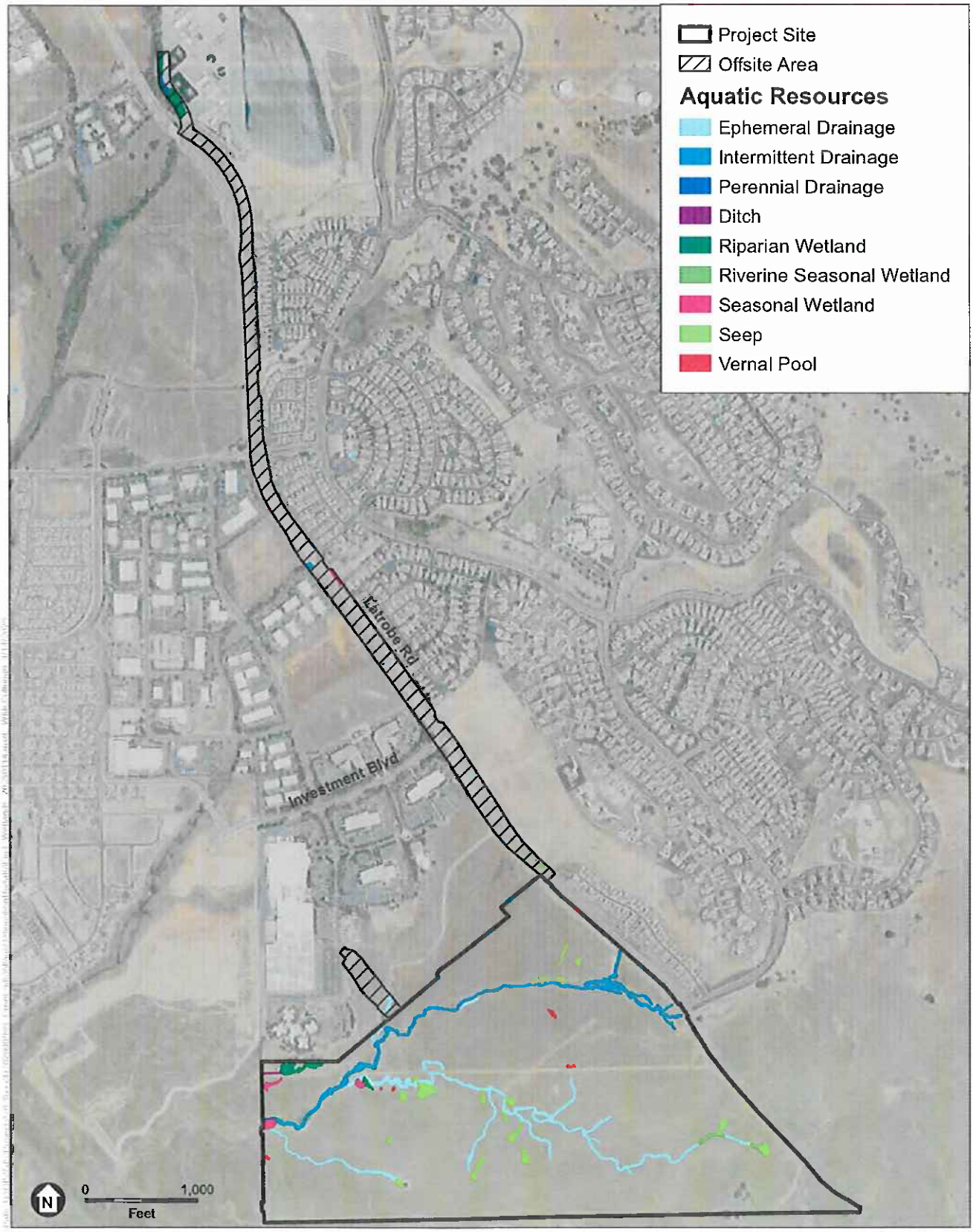
Figure 2
Project Site



SOURCE: NAIP, 2020; Winn Communities, 2024; ESA, 2024

Creekside Village

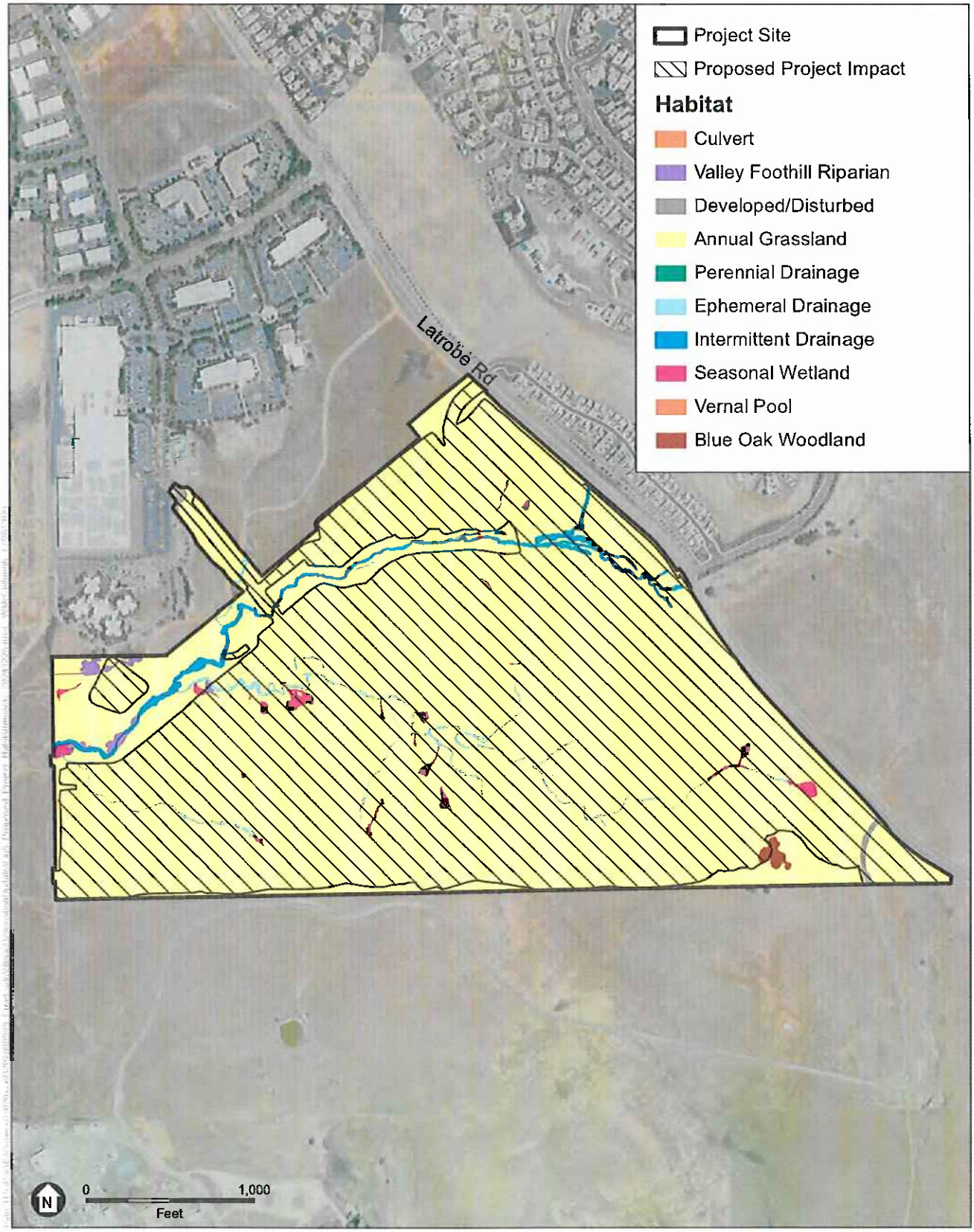
Figure 3
Habitats



SOURCE: NAIP, 2020; Winn Communities, 2024; ESA, 2024

Creekside Village

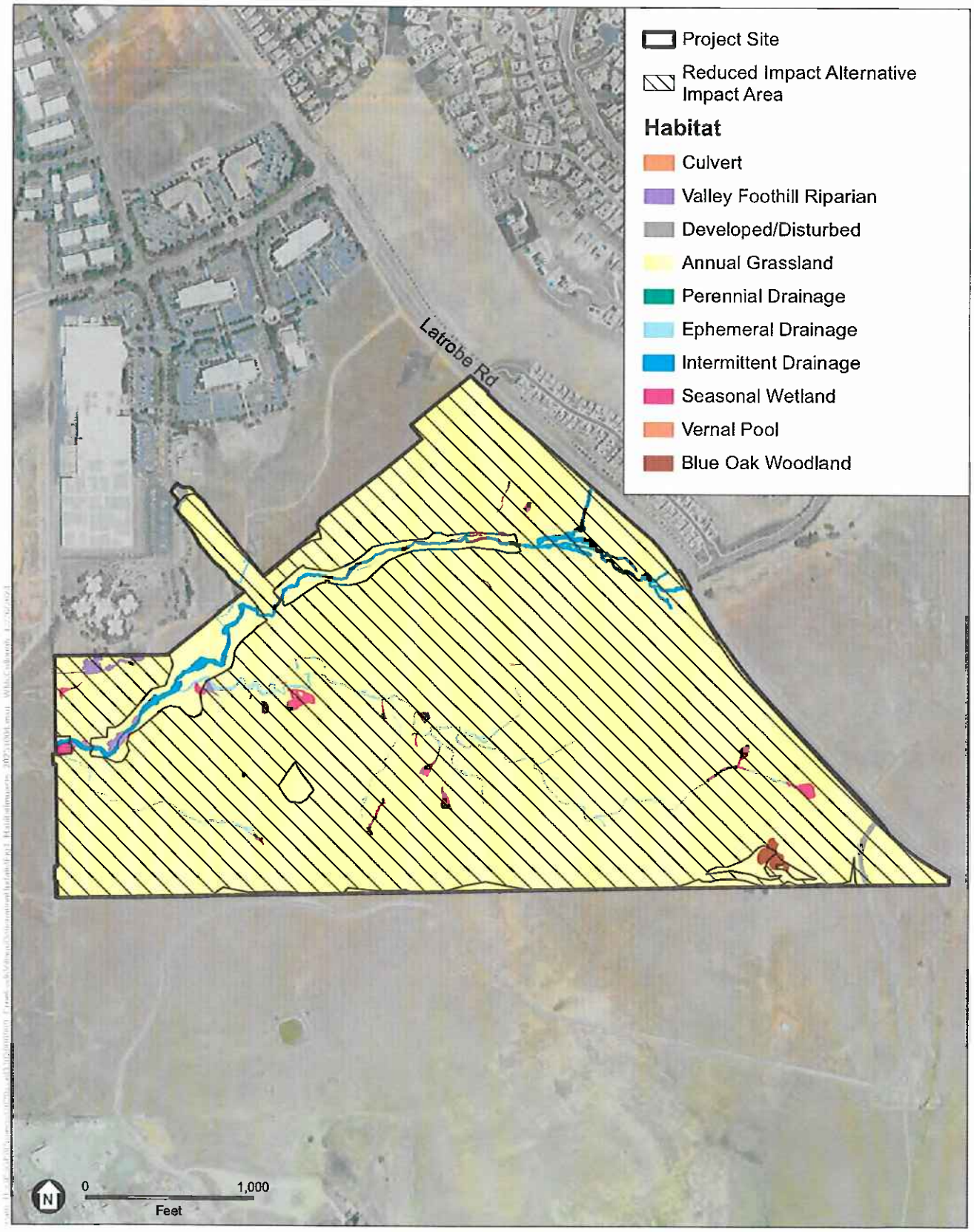
Figure 4
Aquatic Resources



SOURCE: NAIP, 2020; Winn Communities, 2024; ESA, 2024

Creekside Village

Figure 5
Habitat within the Proposed Project Impact Area



SOURCE: NAIP, 2020; Winn Communities, 2024; ESA, 2024

Creekside Village

Figure 6
Habitat within the Reduced Impact Alternative Impact Area

Appendix A Updated Database Queries

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2025-0020559
Project Name: Creekside Village

11/15/2024 23:44:55 UTC

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Project code: 2025-0020559 11/15/2024 23:44:55 UTC

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2025-0020559
Project Name: Creekside Village
Project Type: Residential Construction
Project Description: Creekside Village is a development project in southwestern El Dorado Hills in western El Dorado County, just east of the City of Folsom. The project area is approximately 210-acres and construction is proposed to begin around 2026. The project's design has been modified from its original design to avoid and minimize impacts to sensitive biological resources.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.61388595,-121.0505398119451,14z

Counties: El Dorado County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Project code: 2025-0020559 11/15/2024 23:44:55 UTC

REPTILES

NAME	STATUS
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
Foothill Yellow-legged Frog *Rana boylii* Population: South Sierra Distinct Population Segment (South Sierra DPS) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5133	Endangered
Western Spadefoot *Spea hammondii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Project code: 2025-0020559

11/15/2024 23:44:55 UTC

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

Project code: 2025-0020559 11/15/2024 23:44:55 UTC

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Joseph Huang
Address: 2600 Capitol Ave, Ste 200
City: Sacramento
State: CA
Zip: 95816
Email jhuang@esassoc.com
Phone: 9165644500

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Folsom SE (3812151) OR Latrobe (3812058) OR Shingle Springs (3812068) OR Clarksville (3812161) OR Folsom (3812162) OR Buffalo Creek (3812152) OR Sloughhouse (3812142) OR Carbondale (3812141) OR Irish Hill (3812048))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Actinemys marmorata northwestern pond turtle	ARAAD02031	Proposed Threatened	None	G2	SNR	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Allium jepsonii Jepson's onion	PMLIL022V0	None	None	G2	S2	1B.2
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S1	
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos myrtifolia Ione manzanita	PDERI04240	Threatened	None	G1	S1	1B.2
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Athene cunicularia burrowing owl	ABNSB10010	None	Candidate Endangered	G4	S2	SSC
Bombus crotchii Crotch's bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
Calycadenia spicata spicate calycadenia	PDAST1P090	None	None	G3?	S3	1B.3
Calystegia stebbinsii Stebbins' morning-glory	PDCON040H0	Endangered	Endangered	G1	S1	1B.1
Carex xerophila chaparral sedge	PMCYP03M60	None	None	G2	S2	1B.2
Ceanothus roderickii Pine Hill ceanothus	PDRHA04190	Endangered	Rare	G1	S1	1B.1
Central Valley Drainage Hardhead/Squawfish Stream Central Valley Drainage Hardhead/Squawfish Stream	CARA2443CA	None	None	GNR	SNR	
Chlorogalum grandiflorum Red Hills soaproot	PMLIL0G020	None	None	G3	S3	1B.2
Clarkia biloba ssp. brandegeeae Brandegee's clarkia	PDONA05053	None	None	G4G5T4	S4	4.2
Crocanthemum suffrutescens Bisbee Peak rush-rose	PDCIS020F0	None	None	G2?Q	S2?	3.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T3	S3	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Dumontia oregonensis hairy water flea	ICBRA23010	None	None	G1G3	S1	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum apricum var. apricum Ione buckwheat	PDPGN080F1	Endangered	Endangered	G2T1	S1	1B.1
Eriogonum apricum var. prostratum Irish Hill buckwheat	PDPGN080F2	Endangered	Endangered	G2T1	S1	1B.1
Eryngium pinnatisectum Tuolumne button-celery	PDAPI0Z0P0	None	None	G2	S2	1B.2
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Fremontodendron decumbens Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1	S1	1B.2
Galium californicum ssp. sierrae El Dorado bedstraw	PDRUB0N0E7	Endangered	Rare	G5T1	S1	1B.2
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Horkelia parryi Parry's horkelia	PDROS0W0C0	None	None	G2	S2	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Ione Chaparral Ione Chaparral	CTT37D00CA	None	None	G1	S1.1	
Juncus leiospermus var. ahartii Ahart's dwarf rush	PMJUN011L1	None	None	G2T1	S1	1B.2
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G3	S3	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Nannopterum auritum double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Navarretia myersii ssp. myersii pincushion navarretia	PDPLM0C0X1	None	None	G2T2	S2	1B.1
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Northern Volcanic Mud Flow Vernal Pool Northern Volcanic Mud Flow Vernal Pool	CTT44132CA	None	None	G1	S1.1	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	SSC
Orcuttia tenuis slender Orcutt grass	PMPOA4G050	Threatened	Endangered	G2	S2	1B.1
Orcuttia viscida Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1
Packera layneae Layne's ragwort	PDAST8H1V0	Threatened	Rare	G2	S2	1B.2
Pekania pennanti Fisher	AMAJF01020	None	None	G5	S2S3	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G4	S4	SSC
Rana boylii pop. 5 foothill yellow-legged frog - south Sierra DPS	AAABH01055	Endangered	Endangered	G3T2	S2	

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S3	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Spea hammondii western spadefoot	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Wyethia reticulata El Dorado County mule ears	PDAST9X0D0	None	None	G2	S2	1B.2

Record Count: 68

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

37 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3812048:3812058:3812068:3812141:3812151:3812162:3812161:3812142:3812152]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Allium jepsonii	Jepson's onion	Alliaceae	perennial bulbiferous herb	Apr-Aug	None	None	G2	S2	1B.2	Yes	1994-01-01	© 2019 Steven Perry
Arctostaphylos myrtifolia	Ione manzanita	Ericaceae	perennial evergreen shrub	Nov-Mar	FT	None	G1	S1	1B.2	Yes	1974-01-01	© 2006 Steve Matson
Brodiaea rosea ssp. vallicola	valley brodiaea	Themidaceae	perennial bulbiferous herb	Apr-May(Jun)	None	None	G4G5T3	S3	4.2	Yes	2019-01-07	© 2011 Steven Perry
Bryum chryseum	brassy bryum	Bryaceae	moss		None	None	G5	S3	4.3		2014-05-05	No Photo Available
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	None	None	G4	S4	4.2		1994-01-01	No Photo Available
Calycadenia spicata	spicate calycadenia	Asteraceae	annual herb	May-Sep	None	None	G3?	S3	1B.3		2023-04-05	© 2023 Christopher Bronny
Calystegia stebbinsii	Stebbins' morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jul	FE	CE	G1	S1	1B.1	Yes	1980-01-01	No Photo Available
Carex xerophila	chaparral sedge	Cyperaceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	Yes	2016-06-06	© 2023 Steven Perry

Ceanothus fresnensis	Fresno ceanothus	Rhamnaceae	perennial evergreen shrub	(Apr)May-Jul	None	None	G4	S4	4.3	Yes	1980-01-01	No Photo Available
Ceanothus roderickii	Pine Hill ceanothus	Rhamnaceae	perennial evergreen shrub	Apr-Jun	FE	CR	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Chlorogalum grandiflorum	Red Hills soaproot	Agavaceae	perennial bulbiferous herb	(Apr)May-Jun	None	None	G3	S3	1B.2	Yes	1974-01-01	No Photo Available
Clarkia biloba ssp. *brandegeeae*	Brandegee's clarkia	Onagraceae	annual herb	(Mar)May-Jul	None	None	G4G5T4	S4	4.2	Yes	2001-01-01	No Photo Available
Crocanthemum suffrutescens	Bisbee Peak rush-rose	Cistaceae	perennial evergreen shrub	Apr-Aug	None	None	G2?Q	S2?	3.2	Yes	1974-01-01	No Photo Available
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2		1980-01-01	© 2013 Aaron Arthur
Eriogonum apricum var. *apricum*	Ione buckwheat	Polygonaceae	perennial herb	Jul-Oct	FE	CE	G2T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Eriogonum apricum var. *prostratum*	Irish Hill buckwheat	Polygonaceae	perennial herb	Jun-Jul	FE	CE	G2T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Eriogonum tripodum	tripod buckwheat	Polygonaceae	perennial deciduous shrub	May-Jul	None	None	G4	S4	4.2	Yes	1974-01-01	©2008 Steven Perry
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	Apr-Jun	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
Eryngium pinnatisectum	Tuolumne button-celery	Apiaceae	annual/perennial herb	May-Aug	None	None	G2	S2	1B.2	Yes	1974-01-01	© 2007 Robert E. Preston, Ph.D.
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	perennial evergreen shrub	Apr-Jul	FE	CR	G1	S1	1B.2	Yes	1974-01-01	No Photo Available

Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	© 2016 Aaron Schusteff
Galium californicum ssp. *sierrae*	El Dorado bedstraw	Rubiaceae	perennial herb	May-Jun	FE	CR	G5T1	S1	1B.2	Yes	1974-01-01	© 2019 John Doyen
Githopsis pulchella ssp. *serpentinicola*	serpentine bluecup	Campanulaceae	annual herb	May-Jun	None	None	G4T3	S3	4.3	Yes	2001-01-01	© 2019 Barry Breckling
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2		1974-01-01	©2004 Carol W. Witham
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001-01-01	© 2017 John Doyen
Horkelia parryi	Parry's horkelia	Rosaceae	perennial herb	Apr-Sep	None	None	G2	S2	1B.2	Yes	1974-01-01	© 2009 Barry Breckling
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May(Jun)	None	None	G3	S3	4.2	Yes	2006-10-12	© 2014 Aaron Schusteff
Juncus leiospermus var. *ahartii*	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	None	None	G2T1	S1	1B.2	Yes	1984-01-01	© 2004 Carol W. Witham
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	©2000 John Game

Navarretia heterandra	Tehama navarretia	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3		1974-01-01	©2021 Scot Loring
Navarretia myersii ssp. *myersii*	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	None	None	G2T2	S2	1B.1	Yes	1994-01-01	© 2020 Leigh Johnson
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	G2	S2	1B.1	Yes	1974-01-01	© 2013 Justy Leppert
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	FE	CE	G1	S1	1B.1	Yes	1974-01-01	© Rick York and CNPS
Packera layneae	Layne's ragwort	Asteraceae	perennial herb	Apr-Aug	FT	CR	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	Yes	1984-01-01	©2013 Debra L. Cook
Trichostema rubisepalum	Hernandez bluecurls	Lamiaceae	annual herb	Jun-Aug	None	None	G4	S4	4.3	Yes	1974-01-01	No Photo Available
Wyethia reticulata	El Dorado County mule ears	Asteraceae	perennial herb	Apr-Aug	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available

Showing 1 to 37 of 37 entries

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Aquatic Resources Delineation Report (November 2023)

CREEKSIDE VILLAGE PROJECT

Aquatic Resources Delineation Report

Prepared for
Winn Communities

November 2023

ESA

CREEKSIDE VILLAGE PROJECT

Aquatic Resources Delineation Report

Prepared for
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November 2023

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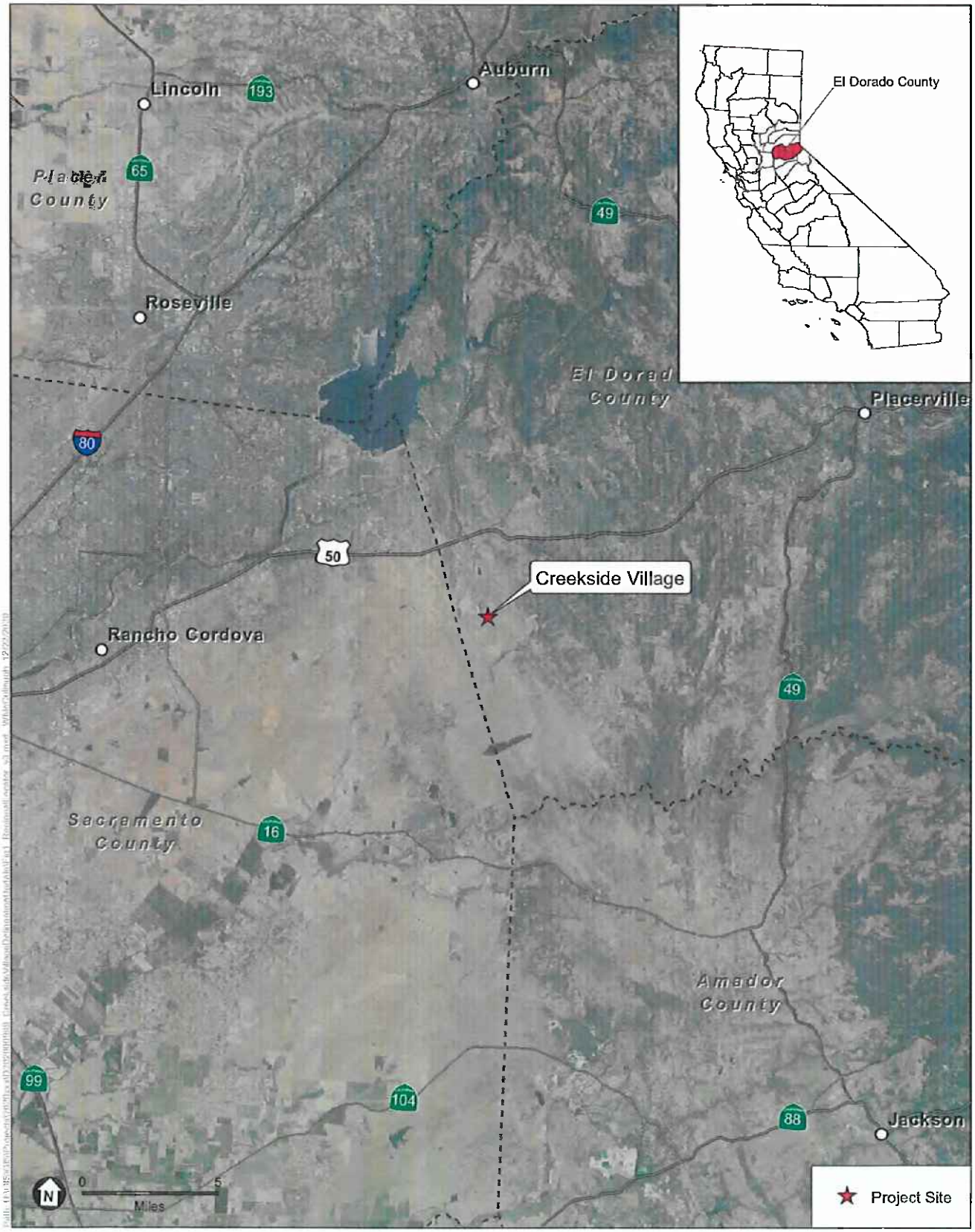
CHAPTER 1
Introduction

This Aquatic Resources Delineation report (report) has been prepared to document the results and conclusions of an aquatic resources delineation and field survey conducted in August 2019 and January 2021 for Creekside Village Project (project). On behalf of Winn Communities, Environmental Science Associates (ESA) investigated the extent of aquatic resources within the project study area that may be subject to Federal regulation under Section 404 of the Clean Water Act (CWA) as well as state of California regulations under the Porter-Cologne Water Quality Control Act, State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (State Wetlands Procedures), and California Fish and Game Code (FGC) Section 1600. The purpose of this report is to (1) identify features within the project study area (i.e., areas that could be directly affected by construction of the project) that may be regulated under federal or state laws and regulations and (2) provide necessary background information to support required permit applications under said regulations.

The aquatic resource delineation process involves determining the boundaries between wetlands, waters, and surrounding uplands through the investigation of the three parameters that define a wetland: vegetation, soils, and hydrology, as well as those parameters that define non-wetland waters (other waters). This delineation is based on the best professional judgment of ESA investigators. All aquatic resources and the extent of boundaries identified in this report are considered preliminary, pending verification from the appropriate regulatory agencies.

1.1 Survey Location

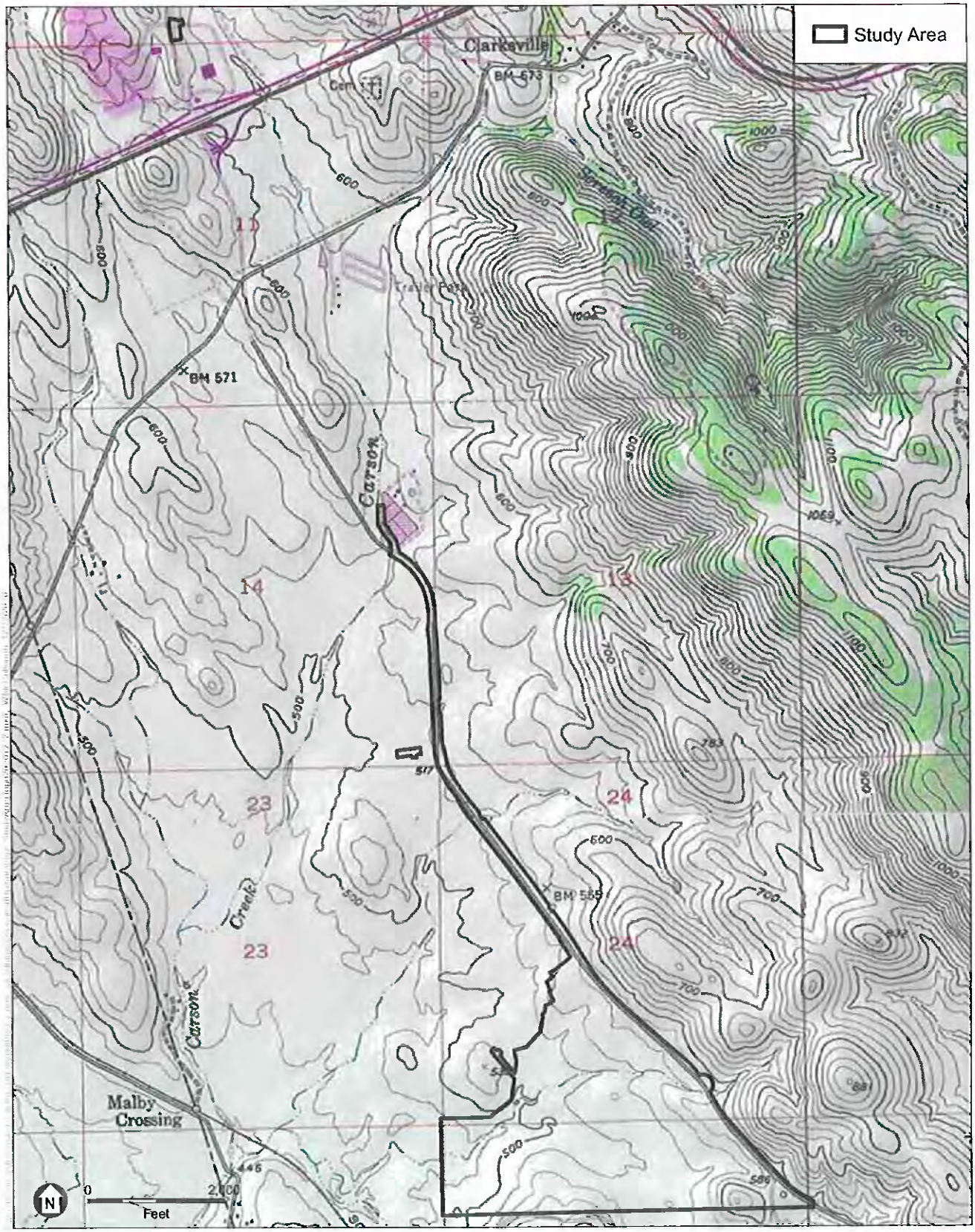
The approximately 271.81-acre study area is located south of the unincorporated community of El Dorado Hills in in western El Dorado County, just east of the City of Folsom, California (**Figures 1** through **3**). The study area for this report comprises the main project footprint (234.43 acres) and offsite locations (37.38 acres) including the sewer force main alignment along Latrobe Road, and three offsite intersections. The Specific Plan Area and Community Park are located south of the intersection of Latrobe Road and Investment Boulevard and corresponds to the Folsom SE, California U.S. Geological Survey (USGS) 7.5-minute series quadrangle. The project also includes the installation of a sewer force main within the alignment of Latrobe Road and offsite improvements at three intersections in El Dorado Hills. These intersections are located at El Dorado Hills Boulevard and Saratoga Way; Golden Foothill Parkway and Robert J. Mathews Parkway; and Latrobe Road and Royal Oaks Drive.



SOURCE: NAIP, 2018; ESRI, 2012; ESA, 2020

Creekside Village

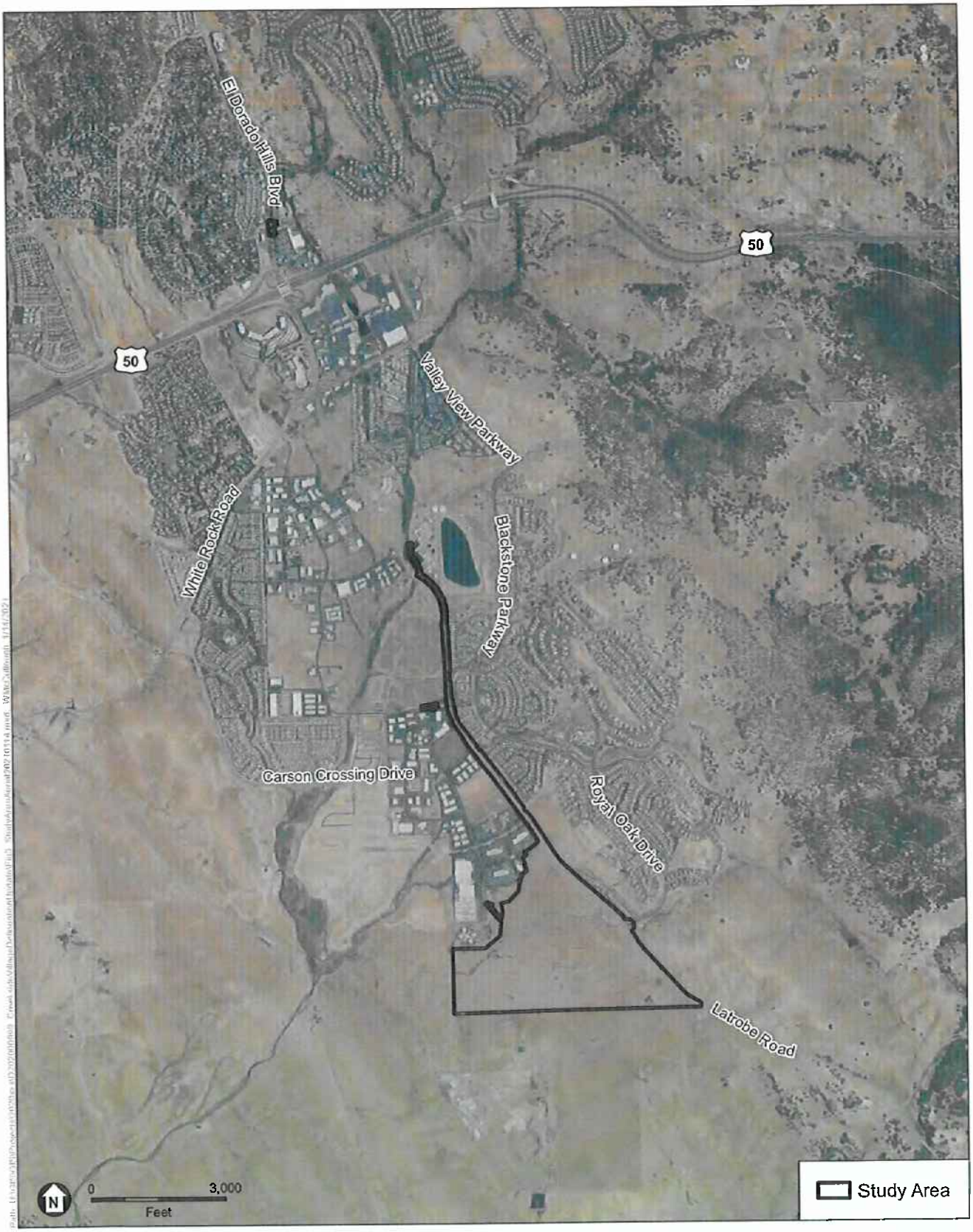
Figure 1
Regional Location



SOURCE: USGS, 1980; Winn Communities, 2020; ESA, 2020

Creekside Village

Figure 2
Study Area (topo)
Clarksville Quad and Folsom SE Quad



SOURCE: NAIP, 2018; Winn Communities, 2020; ESA, 2020

Creekside Village

Figure 3
Study Area (aerial)

1.1.1 Directions to the Survey Area

Please contact Winn Communities for access to the study area, as access is controlled by locked gates. Directions to the study area from Sacramento:

- Take US-50 east from Sacramento;
- Take exit 30A for Latrobe Road;
- Continue on Latrobe Road south to Investment Boulevard;
- Continue west on Investment Boulevard to Robert J. Mathews Parkway;
- Continue south on Robert J Mathews Parkway to the study area.

1.2 Contact Information

1.2.1 Applicant

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CHAPTER 2
Existing Conditions

2.1 Aquatic Resources Delineation Survey Area

The study area is in western El Dorado County south of the community of El Dorado Hills. Regionally, the site is located in the low Sierra Nevada foothills, just west of the Sierra Nevada Range, within the northern Sierra Nevada Foothills District of the California Floristic Province (Baldwin et al., 2012). Regional natural vegetation communities in the vicinity of the study area include those that are prevalent to the Sierra Nevada foothills, such as annual grasslands, blue oak woodlands, chamise chaparral, and mixed oak/foothill pine woodlands. Topography throughout the study area drains generally from east to west and is characterized by rolling hills and slopes. The elevation within the study area ranges from approximately 476 feet in the west to 642 feet on an isolated hill in the south and 662 feet at the intersection of El Dorado Hills Boulevard and Saratoga Way in the north.

2.2 Vegetation Communities and Wildlife Habitats

Wildlife habitats are generally described in terms of vegetation types along with landform, disturbance regime, and other unique environmental characteristics. Vegetation communities are assemblages of plant species that occur together in the same area, are repeated across landscapes, and are defined by species composition and relative abundance. Wildlife habitats generally correspond to vegetation communities. The wildlife habitat types described in this document were classified using the California Department of Fish and Wildlife's (CDFW) *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988), a habitat classification scheme that was developed to support the CDFW's California Wildlife Habitat Relationship (CWHR) System. The CWHR System is a wildlife information system and predictive model for California's regularly-occurring wildlife species. The vegetation types described in this report were classified according to *A Manual of California Vegetation, 2nd Edition* (Sawyer et al., 2009). Plant nomenclature follows *The Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin et al., 2012) as revised by the Jepson eFlora (Jepson Flora Project, 2021). Common names of plant species are derived from the Jepson Manual or Calflora (2021). A list of plant species observed during the surveys and their wetland indicator status is provided in **Appendix A**.

2.2.1 Aquatic Habitat Types

Valley Foothill Riparian

The vegetation of riparian habitats is quite variable and often structurally diverse. Usually, riparian habitat occurs along streambanks and lakeshores as a narrow, often dense grove of broad-

leaved, winter deciduous trees with an overstory tree layer and an understory shrub layer. In the study area, characteristic species of riparian wetlands include Goodding's black willow (*Salix gooddingii*), Fremont cottonwood (*Populus fremontii* subsp. *fremontii*), and red willow (*Salix laevigata*) trees in the overstory. The understory consists of sandbar willow (*Salix exigua*) and Himalayan blackberry (*Rubus armeniacus*), and a variety of grasses and forbs, including miner's lettuce (*Claytonia perfoliata*) and rye grass (*Festuca perennis*).

Seasonal Wetlands

Seasonal Wetland/Seep/Wetland Swale/Riverine Seasonal Wetland

These habitat types are discussed collectively due to the similarities in their vegetation composition, substrate, and hydrologic conditions. These communities exhibit variable hydrologic conditions but annually pond surface water or maintain saturated soils at the ground surface for long enough each year to support facultative or obligate wetland plant species. These wetlands support ponded or saturated soil conditions during winter and spring and are typically dry through the summer and fall. Vegetation is characterized by both annual and perennial species including native and non-native grasses and forbs. Plant species found within these wetlands are adapted to withstand intermittent periods of inundation, and typically initiate growth as aquatic or semi-aquatic plants and transition to a dry-land environment as the wetlands dries. Upland grasses and forbs often establish after wetland species desiccate and features become dry. Within the study area, these wetlands occur in depressions, swales, drainages, seeps, or low areas within annual grassland habitat. These communities are dominated by Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum*), rye grass, rabbitsfoot grass (*Polypogon monspeliensis*), curly dock (*Rumex crispus*), and common toad rush (*Juncus bufonius*).

Riverine seasonal wetlands have a similar hydroperiod to the wetland communities described above, exhibiting variable hydrologic conditions but annually pond surface water or maintain saturated soils at the ground surface for long enough each year to support facultative or obligate wetland plant species. Riverine seasonal wetlands are contained within natural or man-made drainage channels. In the study area, these wetlands support a variety of wetland plant species, ranging from facultative wetland species such as rye grass and Mediterranean barley, to obligate wetlands species such as broad-leaved cattail (*Typha latifolia*).

Vernal Pool

Vernal pools are seasonal wetlands that occur in grasslands. These wetlands are typically found in slight depressions that form over bedrock or hardpan soils that allow water to pool during winter and spring rains. Vernal pools typically have an impervious layer of silicate-based hardpan underlying them that prevents water from percolating into the soil. Vernal pools are considered unique habitat and often support species that are endemic to vernal pools or other shallow pools in that particular geographic region. Vernal pool communities have been greatly reduced due to conversion of grasslands to agriculture or urban development. In the study area, vernal pools are dominated by coyote-thistle (*Eryngium castrense*), common toad rush (*Juncus bufonius*), and popcornflower (*Plagiobothrys* sp.).

Riverine

Riverine habitats are distinguished by intermittent or continually running water, and occur in association with a variety of terrestrial habitats. Carson Creek, a perennial channel, is the dominant riverine habitat feature within the study area. This feature flows year-round under typical climatic conditions. All features in the study area eventually drain to Carson Creek. The remaining drainage features in the study area are intermittent or ephemeral in nature and do not support flowing water year-round. Drainage features in the project site consist of perennial, intermittent, and ephemeral channels as well as man-made ditches and culverts. A perennial channel is a stream, or stream portion, that flows continuously during the calendar year. An intermittent channel has flowing water during certain times of the year, when precipitation or groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. In the study area, intermittent channels generally flow throughout the winter season and into the late spring or early summer. An ephemeral channel has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow. This habitat type also includes a man-made drainage ditch located in the northwestern corner of the main project site. This shallow, graded ditch drains the adjacent parking lots to the north. Culverted portions of natural stream channels are also included in this habitat type.

2.2.2 Upland Habitats

Annual Grassland

Annual grassland, the most abundant habitat type in the study area, is an annual herbaceous plant community characterized mostly by naturalized annual grasses. In the study area, annual grassland is dominated by naturalized herbaceous annual grasses and forbs, with smaller patches with relatively high proportions of native grasses and forbs. The most abundant species in this community include non-native grasses such as wild oats (*Avena barbata*, *A. fatua*, *A. sativa*), bromes (*Bromus diandrus*, *B. hordeaceus*), barleys (*Hordeum marinum* subsp. *gussoneanum*, *H. murinum*), and fescues (*Festuca myuros*, *F. perennis*); non-native weedy herbaceous species including yellow star-thistle (*Centaurea solstitialis*), tall sock-destroyer (*Torilis arvensis*), Italian thistle (*Carduus pycnocephalus* subsp. *pycnocephalus*), vetch (*Vicia villosa*, *V. sativa* subsp. *sativa*), California burclover (*Medicago polymorpha*), broad-leaf filaree (*Erodium botrys*), black mustard (*Brassica nigra*), and shortpod mustard (*Hirschfeldia incana*); and native herbaceous species such as narrow tarplant (*Holocarpha virgata* subsp. *virgata*), yarrow (*Achillea millefolium*), and spikeweed (*Centromadia fitchii*). The native perennial purple needle grass (*Stipa pulchra*) was observed in the study area but was not present in sufficient density to be considered a separate habitat.

Blue Oak Woodland

There is a small grove of blue oaks (*Quercus douglasii*) in the southeast corner of the site. Annual grassland is found in the understory of this grove and surrounds the grove on all sides. The grove is located on the top of a steep rise, approximately 100 feet above the rest of the site. The trees

were generally in fair to good condition and ranged in size from 18 to 24 inches in diameter at breast height (DBH).

Developed/Disturbed

Developed portions of the study area include paved roads, sidewalks, parking lots, buildings, and associated infrastructure. These areas are paved or otherwise developed and generally lack natural vegetation. Vegetation associated with developed areas consists of ornamental shrubs and trees. Disturbed areas include roadsides and other areas with continuous disturbance which limits the establishment of vegetation. Plant species adapted to frequent disturbance observed in the disturbed areas include: stinkwort (*Dittrichia graveolens*), Russian thistle (*Salsola tragus*), short-pod mustard (*Hirschfeldia incana*), and yellow star-thistle (*Centaurea solstitialis*). Plant cover is extremely sparse; few individuals are established within the disturbed area.

2.3 Soils

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey was consulted to determine the soil units occurring within the delineation study area. The *Custom Soil Resource Report for El Dorado Area* (NRCS, 2021; included as **Appendix B**) shows six soil units occurring within the study area (**Table 1**). Two of these six units contain components that are listed by the NRCS on the national hydric soils list for El Dorado County, California (NRCS, 2021). A brief description of each soil unit is provided below. Please see Appendix B for a soils map showing the soil units in the study area, as well as a source for the following descriptions.

- **Argonaut very rocky loam, 3 to 30 percent slopes**, may have hydric components in the mapping unit on fan remnants. This soil unit occurs on ridges with parent material comprised of residuum weathered from andesite and/or residuum weathered from metasedimentary rock. This is a well-drained soil with a low available water capacity of about 3.9 inches. This map unit is composed of 75 percent Argonaut and similar soils, 15 percent rock outcrops, and 10 percent minor components. Minor components include Auburn and unnamed soils. The unnamed inclusions are listed as hydric.
- **Auburn silt loam, 2 to 30 percent slopes**, is not listed as a hydric soil. This soil unit occurs on hills with parent material comprised of residuum weathered from basic igneous rock and/or basic residuum weathered from metamorphic rock. This is a well-drained soil with a very low available water capacity of about 2.3 inches. This map unit is composed of 85 percent Auburn and similar soils, and 15 percent minor components. Minor components include Perkins, Sobrante, and Argonaut soils.
- **Auburn very rocky silt loam, 2 to 30 percent slopes**, is not listed as a hydric soil. This soil unit occurs on hills with parent material comprised of residuum weathered from basic igneous rock and/or basic residuum weathered from metamorphic rock. This is a well-drained soil with a very low available water capacity of about 2.3 inches. This map unit is composed of 75 percent Auburn and similar soils, 15 percent rock outcrops, and 10 percent minor components. Minor components include Boomer, Sobrante, Argonaut, and Unnamed soils.
- **Perkins gravelly loam, moderately deep variant, 2 to 5 percent slopes**, is not listed as a hydric soil. This soil unit occurs on hillslopes with parent material comprised of consolidated gravelly alluvium derived from igneous, metamorphic, and sedimentary rock. This is a

moderately well-drained soil with a low available water capacity of about 4.3 inches. This map unit is composed of 85 percent Perkins variant and similar soils, and 15 percent minor components. Minor components include Argonaut, Auburn, and Whiterock soils.

- **Placer diggings** may have hydric components in channels. This soil unit occurs in channels with parent material comprised of alluvium derived from mixed sources. This map unit is composed of 90 percent Placer diggings and 10 percent minor components. Minor components consist of unnamed soils. The unnamed inclusions are listed as hydric.
- **Whiterock gravelly silt loam, 3 to 50 percent slopes**, is not listed as a hydric soil. This soil unit occurs on hillslopes with parent material comprised of residuum weathered from slate. This is a somewhat excessively-drained soil with a very low available water capacity of about 1.0 inches. This map unit is composed of 85 percent Whiterock and similar soils, and 15 percent minor components. Minor components include Argonaut, Auburn, and rock outcrop soils.

TABLE 1
STUDY AREA SOIL UNITS

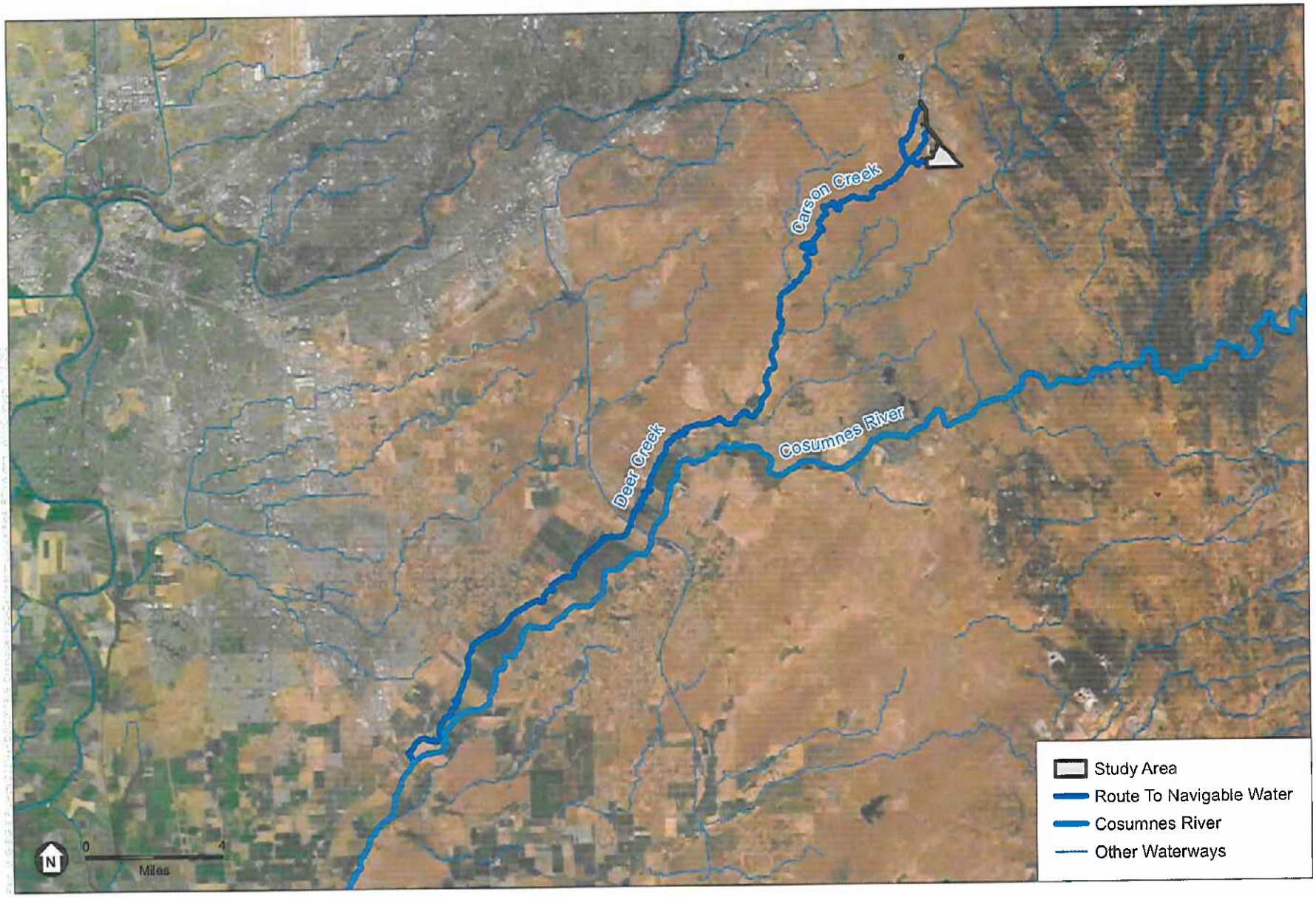
Soil Map Unit Name	Hydric Status	Landforms
AmD: Argonaut very rocky loam, 3 to 30 percent slopes	Hydric*	Ridges
AwD: Auburn silt loam, 2 to 30 slopes	Non-hydric	Hills
AxD: Auburn very rocky silt loam, 2 to 30 percent slopes	Non-hydric	Hills
PgB: Perkins gravelly loam, moderately deep variant, 2 to 5 percent slopes	Non-hydric	Hillslopes
PrD: Placer diggings	Hydric*	Channels
WhE: Whiterock gravelly silt loam, 3 to 50 percent slopes	Non-hydric	Hillslopes

NOTE:
* Soil unit contains minor component(s) that is (are) hydric, but the major component of the soil unit is not hydric.

SOURCE: NRCS, 2021

2.4 Hydrology

The study area is located in the Lower Cosumnes watershed. The main project site generally drains from east to west though a series of intermittent and ephemeral channels. These channels merge into a single channel just west of the study area boundary, which then flows to Carson Creek approximately 3,000 feet west of the study area. Latrobe Road and the three offsite improvement locations all drain to roadside swales or stormwater collection systems and eventually to Carson Creek. Carson Creek flows southwest to Deer Creek, which eventually joins the Cosumnes River. The Cosumnes River empties into the Mokelumne River in the Sacramento-San Joaquin Delta. The Mokelumne River is considered a traditional navigable water of the United States (TNW) from its mouth to Frandy Gage (3.5 miles upstream from New Hope Road) (**Figure 4**).



SOURCE: Maxar, 2019; Winn Communities, 2020; ESA, 2020

Creekside Village

Figure 4
Route To Navigable Water

ESA

2.5 Climate

The overall Northern California climate is Mediterranean in nature, which is characterized by warm, dry summers and cool, wet winters, with the bulk of precipitation occurring as rain in the winter months. The climate in the El Dorado Hills area is temperate with mean annual precipitation of 25.80 inches and mean annual temperatures ranging from a high of 74 to a low of 50 degrees Fahrenheit (Western Regional Climate Center, 2021). The field investigation for this aquatic resources delineation was conducted on August 20, 2019 and January 13, 2021. According to the National Oceanic and Atmospheric Administration (NOAA), no rain had fallen in the study area in the seven days prior to any of the survey dates (NOAA, 2021). **Table 2** summarizes monthly total precipitation at the Folsom 1.2 SSE, CA weather station for recent years. The annual precipitation total through May 2020 for the region was below average according to the mean precipitation totals for the years 2015-2020. The USACE Antecedent Precipitation Tool (APT) was run for January 13, 2021, the day most of the datapoints were taken (**Appendix C**). According to the APT, the study area had drier than normal conditions during the 2020–2021 wet season. The Drought Index (PDSI) for the study area was categorized as "severe drought".

TABLE 2
MONTHLY TOTAL PRECIPITATION FOR FOLSOM 1.2 SSE, CA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2015	T	2.65	0.17	2.00	1.57	0.11	0.01	T	0.01	0.28	2.04	3.22	12.06
2016	5.84	1.08	6.53	1.60	0.40	0.00	0.00	0.00	T	6.96	3.10	4.88	30.39
2017	11.64	10.89	3.43	4.62	0.21	0.32	0.00	T	T	0.25	5.05	0.52	36.93
2018	5.52	0.62	8.09	2.74	0.71	0.00	T	0.00	T	0.87	3.50	2.88	24.66
2019	5.84	10.43	4.24	M	5.01	0.00	0.00	0.00	0.50	0.00	0.62	5.18	M
2020	1.94	0.00	3.32	3.03	1.03	0.04	0.00	T	0.00	0.00	0.98	2.02	12.36
2021	4.30	1.91	2.00	0.02	0.02	M	M	M	M	M	M	M	M
Mean	4.12	3.60	4.23	2.30	1.08	0.23	0.00	T	0.14	1.48	2.44	4.03	20.50

NOTES:

T = trace amounts of precipitation
M = missing and is used when more than one day of data is missing for a month.

SOURCE: NOAA, 2021.

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CHAPTER 3
Regulatory Framework

3.1 Waters of the U.S.

3.1.1 Clean Water Act

The CWA establishes the basic structure for regulating discharges of pollutants into waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972.

Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resources projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill material maybe discharged into waters of the United States, unless the activity is exempt from Section 404 regulations (e.g., certain farming and forestry activities).

Wetlands are defined by USACE as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (33 CFR §328.3[c][1]; 40 CFR §120.2[c][1]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by site investigation, must be present for a site to be classified as a wetland by USACE (Environmental Laboratory 1987).

Section 401 of the CWA gives the state authority to grant, deny, or waive certification of proposed federally licensed or permitted activities resulting in discharge to waters of the U.S. The state Water Resources Control Board (State Water Board) directly regulates multi-regional projects and supports the Section 401 certification and wetlands program statewide. The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the federal CWA, which specifies that certification from the State is required for any applicant requesting a federal license or permit to conduct any activity including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State or appropriate interstate water pollution control agency in/where the discharge originates or will originate. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

3.1.2 Waters of the U.S.

Since its inception, the definition of the Waters of the U.S. has been a litigious issue. Most recently, the Supreme Court, ruling in *Sackett v. Environmental Protection Agency*, sharply limited the scope of the federal Clean Water Act's protection for the nation's waters. As a result of this decision, on August 29, 2023, the U.S. Environmental Protection Agency (EPA) and the USACE issued a final rule that amends the "Revised Definition of 'Waters of the United States'" to conform key aspects of the regulatory text to the U.S Supreme Court's decision.

Under the amended Revised Definition of "Waters of the United States," the term "waters of the United States" was defined as follows (33 CFR 328.3(a)):

(1) Waters which are:

(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(ii) The territorial seas; or

(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section; To meet this category, you must be able to demonstrate that the current impoundment would have met the criteria of a water of the U.S. at the time of impoundment. Meaning that prior to the impoundment the feature would have met a(1), a(3), a(4) or a(5). This usually requires using historic aerial photos/maps or historic topo maps.

(3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

(i) Waters identified in paragraph (a)(1) of this section; or

(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

In addition, the amended regulations include eight types of excluded waters (33 CFR 328.3(b)) which are not ''waters of the United States'' even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;

(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

3.2 Waters of the State

3.2.1 Porter-Cologne Water Quality Control Act of 1969

Most projects involving water bodies or drainages are regulated by the RWQCB, the principal State agency overseeing water quality of the State at the local/regional level. The survey area is located within the region of the Central Valley RWQCB. RWQCBs are responsible for implementing Section 401 of the CWA as described above under the Clean Water Act.

In the absence of waters of the U.S., waters may be regulated under the Porter-Cologne Water Quality Control Act if project activities, discharges, or proposed activities or discharges could affect California's surface, coastal, or ground waters. The permit submitted by the applicant and issued by RWQCB is either a Water Quality Certification in the presence of waters of the U.S. or a Waste Discharge Requirement (WDR) in the absence of waters of the U.S.

The State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (State Wetland Definition and Procedures), as prepared by the State Water Resources Control Board, was adopted April 2, 2019, and revised April 6, 2021. The State Wetland Definition and Procedures include a definition for wetland waters of the state as well as exclusions for certain artificial wetlands, as listed below.

The Water Code defines "waters of the state" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state." "Waters of the state" includes all "waters of the U.S." The following wetlands are waters of the state:

1. Natural wetlands,
2. Wetlands created by modification of a surface water of the state, and
3. Artificial wetlands that meet any of the following criteria:
    a. Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b. Specifically identified in a water quality control plan as a wetland or other water of the state;
    c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or
    d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b):
        i. Industrial or municipal wastewater treatment or disposal,
        ii. Settling of sediment,
        iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,
        iv. Treatment of surface waters,
        v. Agricultural crop irrigation or stock watering
        vi. Fire suppression,
        vii. Industrial processing or cooling,
        viii. Active surface mining – even if the site is managed for interim wetlands functions and values,
        ix. Log storage,
        x. Treatment, storage, or distribution of recycled water, or
        xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or
        xii. Fields flooded for rice growing.

3.3 Rivers, Streams, and Lakes

Pursuant to Division 2, Chapter 6, Section 1600 et seq. of the FGC, California Department of Fish and Wildlife (CDFW) regulates all diversions, obstructions, or changes to the natural flow or bed, channel or bank of any river, stream, or lake which supports fish or wildlife. A notification of a Lake or Streambed Alteration must be submitted to CDFW for "any activity that may

substantially change the bed, channel, or bank of any river, stream, or lake." In addition, CDFW has authority under FGC over wetland and riparian habitats associated with lakes and streams. The CDFW reviews proposed actions, and if necessary, submits to the applicant a proposal that includes measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the applicant is the Lake or Streambed Alteration Agreement (LSAA).

Fish and Game Code Section 2785 defines riparian habitat as "lands which contain habitat which grows close to and depends upon soil moisture from a nearby freshwater source." Additionally, the CDFW Notification Instructions and Process guide characterizes the riparian zone as "the area that surrounds a channel or lake and supports (or can support) vegetation that is dependent on surface or subsurface flow." Furthermore, this CDFW guide calls for the analysis of impacts to the riparian zone up to the outer landward edge of the drip line of riparian vegetation.

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CHAPTER 4
Methodology

4.1 Pre-Field Review

Prior to conducting the field investigation, ESA biologists performed the following pre-field investigations:

- Review of the Folsom SE, CA U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map;
- Review of Google Earth aerial photographs of the study area for vegetative, topographic, and hydrographic signatures (Google Earth, 2021) (historic aerial photographs from 1993 – 2019 were reviewed as well as 2020 aerial photographs);
- Review of the *Custom Soil Resource Report for El Dorado Area, California*, for information about soils and geomorphology (NRCS, 2021);
- Review of the National Wetlands Inventory (U.S. Department of the Interior, 2021); and
- Review of the Arid West Regional Wetland Plant List (USACE, 2018).

4.2 Field Survey Methods

A delineation of aquatic resources within the survey area was conducted on August 20, 2019, and January 13, 2021, by ESA Biologists ESA biologists Joshua Boldt and Erich Fischer. The delineation was conducted by walking throughout the survey area to selected areas where potential jurisdictional features were identified during the literature review. Features that were identified as potentially jurisdictional included, but were not limited to, drainages that had an OHWM and defined channels with bed and bank, as well as potential wetlands evidenced by visible hydrologic indicators and/or hydrophytic vegetation. Additional data, such as landforms, vegetation, hydrology, and soils, were noted where these characteristics were pertinent to identification of features.

Potential jurisdictional features were identified and delineated following current federal and state methodology and guidelines, including waters of the U.S., waters of the State and FGC Section 1600 resources. Survey data forms are included in **Appendix D**.

4.2.1 Waters of the U.S.

Wetlands

The delineation used the "Routine Determination Method" as described in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), hereafter called the "1987 Manual." The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008), hereafter called the "Arid West Supplement." For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed. Wetlands and waters were classified using commonly accepted habitat types; however, the Cowardin classification (Cowardin et al. 1979) of each feature type is noted in the discussion in Chapter 5.

To determine the extent of potential jurisdictional wetlands on a project site, the 1987 Manual and Arid West Supplement were used as a guide for identifying wetland characteristics. Three positive wetland parameters must normally be present for an area to be considered a wetland: 1) a dominance of wetland vegetation, 2) presence of hydric soils, and 3) presence of wetland hydrology. Presence or absence of positive indicators for wetland vegetation, soils and hydrology was assessed per the 1987 Manual and Arid West Supplement guidelines. Data points were taken within suspected wetlands and a paired point was taken (where applicable) in nearby upland areas. Data points were recorded on Arid West Region wetland determination data forms, which are provided in Appendix D.

At each data point, a visual assessment of the dominant plant species within the vegetation community was made. Dominant species were assessed using the recommended "50/20" rule per the Arid West Supplement. Plants were identified to species using the *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012) .The *Arid West 2020 Regional Wetland Plant List* (USACE, 2020) was used to determine the wetland indicator status of all plants.

Hydric soils were identified using soil indicators presented in the *Regional Supplement to the* Arid West Supplement and the *Field Indicators of Hydric Soils in the United States*, Version 7.0, 2010 (NRCS 2010). Soils at each data point were characterized by color, texture, organic matter accumulation, and the presence or absence of hydric soil indicators. The coloration of the soil samples, matrix, and mottles is assessed using the *Munsell Soil Color Charts* (Munsell, 2000).

Presence of wetland hydrology was determined at each data point by presence of one or more of the primary and/or secondary indicators, per guidance of the Arid West Supplement.

Non-Wetland (Other) Waters of the U.S.

Non-wetland waters of the U.S. extend to the OHWM, defined in 33 CFR 328.3 as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, or the presence of litter and debris. In the Arid West region of the United States, waters are variable and include ephemeral, intermittent and perennial channel forms. The most problematic ordinary high-water delineations are associated with the commonly occurring ephemeral and intermittent channel forms that dominate the Arid West landscape.

Delineation methods were completed in accordance with *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (USACE, 2008b) and *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Curtis and Lichvar, 2010). OHWM data sheets are provided in Appendix D.

4.2.2 Waters of the State

Waters of the State outside of CWA Section 401 jurisdiction and subject to Porter-Cologne Water Quality Cologne Act and State Wetland Definition and Procedures were delineated to also include aquatic features up to the [ordinary high water mark OR top of bank OR the outer edge of riparian areas] per the delineation guidance provided by the Central Valley RWQCB.

4.2.3 Rivers, Streams, and Lakes

FGC Section 1600 resources were delineated to include bed, bank, and channel up to the top of bank, and/or associated wetlands and riparian vegetation to the outer drip line, whichever is wider.

4.2.4 Mapping and Acreage Calculations

All features, including wetland sample points, wetland boundaries, OHWM intervals, and stream channel courses were recorded using a global positioning system (GPS) with sub-meter accuracy or hand-recorded on aerial images of the study area. All sample points were also recorded using a Trimble GeoExplorer GPS. In the office, GPS data were downloaded and aquatic features mapped using Geographic Information System (GIS) software (ArcGIS 10.6.1) on an overlay of both topography and geo-referenced aerial photography. GPS-determined wetland boundaries and data points were visually confirmed. Acreages of wetland and waters of the U.S. polygons and the length of linear features were determined using ArcGIS.

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CHAPTER 5
Results

5.1 Aquatic Resources

The aquatic resources delineation identified approximately 7.585 acres of aquatic resources in the study area. Aquatic habitats in the study area were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013) ("Cowardin Classification"). In the following aquatic resource descriptions, the Cowardin habitat type will follow the general habitat type in each habitat type header. A summary of the aquatic resources within the study area is presented in **Table 3** and described below (see **Table 4** in Section 5.2 for further details of on the individual aquatic features). **Figures 5-1** through **5-8** show the location and extent of the aquatic resources within the study area. The Aquatic Resources Spreadsheet is provided in **Appendix E**. Study area photographs are provided in **Appendix F**.

TABLE 3
SUMMARY OF AQUATIC RESOURCES

Aquatic Feature	Cowardin Classification	Total Acres
Wetlands		
Riparian Wetland	Palustrine Forested Wetland (Seasonally Flooded)	1.251
Riverine Seasonal Wetland	Palustrine Emergent Wetland (Seasonally Flooded)	0.620
Seasonal Wetland	Palustrine Emergent Wetland (Seasonally Flooded)	0.271
Seep (Seasonal Wetland)	Palustrine Emergent Wetland (Seasonally Flooded)	1.119
Vernal Pool	Palustrine Emergent Wetland (Seasonally Flooded)	0.071
Wetland Swale (Seasonal Wetland)	Palustrine Emergent Wetland (Seasonally Flooded)	1.116
Waters		
Perennial Drainage	Riverine Lower Perennial	0.297
Intermittent Drainage	Riverine Intermittent	1.201
Ephemeral Drainage	Riverine Ephemeral	1.579
Culvert	N/A	0.044
Ditch	N/A	0.014
Total Area of Aquatic Resources:		**7.585**

NOTE: Total may not sum due to rounding.
SOURCE: ESA, 2021

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SOURCE: Maxar, 2020; Dermody Properties, 2020; ESA, 2021

Creekside Village

Coordinate System: CA State Plane Zone II NAD83
Projection: Lambert Conformal Conic
Datum: North America Datum 1983]

Survey Area (271.81 ac.)
Project Footprint
RefPoints

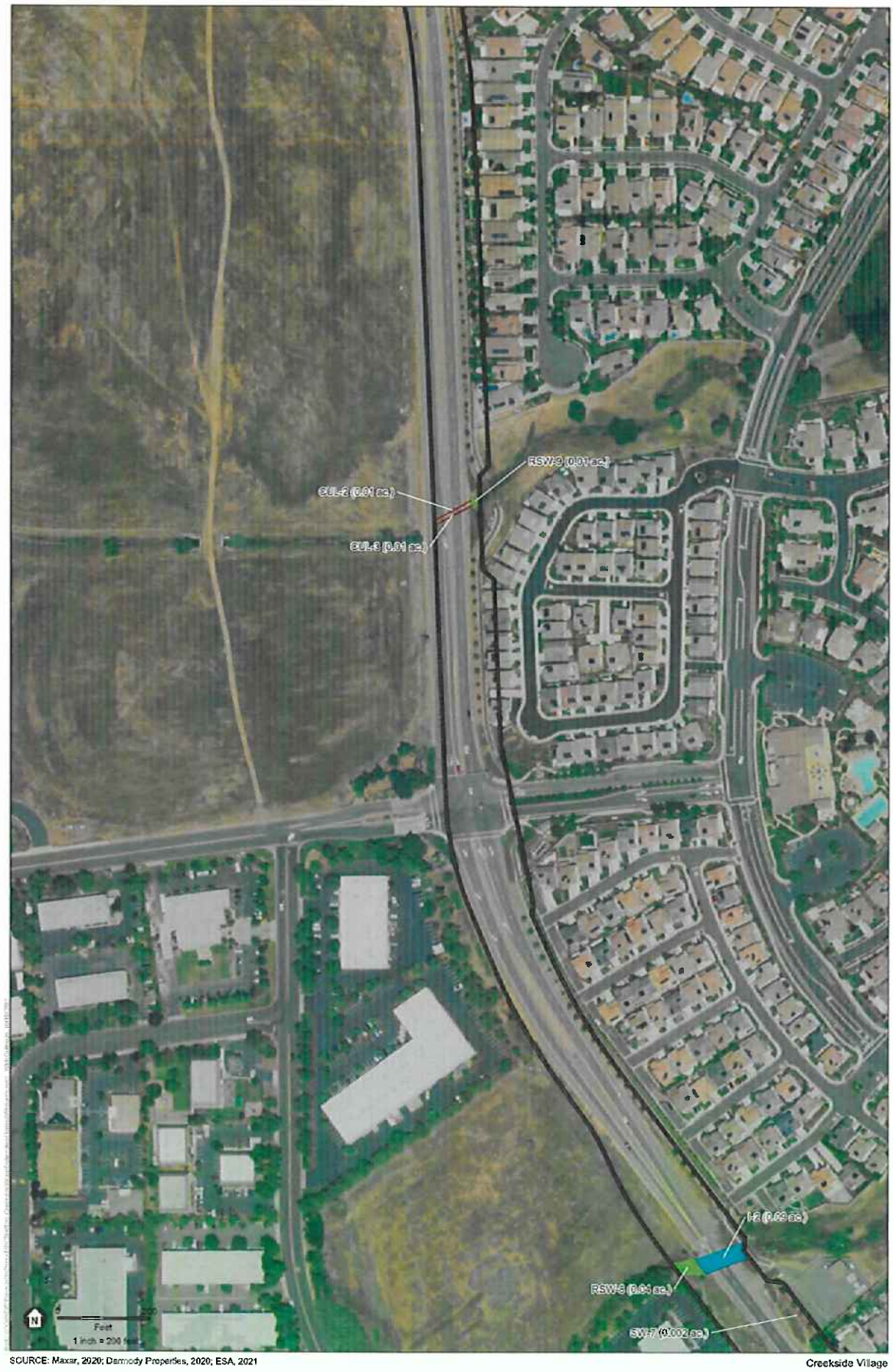
Sampling Points
Upland
Wetland

Other Waters (3.14 ac.)
Ephemeral Drainage (1.58 ac.)
Intermittent Drainage (1.20 ac.)
Perennial Drainage (0.30 ac.)
Ditch (0.01 ac.)
Culvert (0.04 ac.)

Wetlands (4.45 ac.)
Riparian Wetland (1.25 ac.)
Riverine Seasonal Wetland (0.62 ac.)
Seasonal Wetland (0.27 ac.)
Seep (1.12 ac.)
Vernal Pool (0.07 ac.)
Wetland Swale (1.12 ac.)

Figure 5-1
Delineation of Aquatic Resources
(1 of 7)

Delineated by: Josh Boldt
Mapping by: Josh Boldt and Wes McCullough
Created on: 4/15/2021; Revised on: 4/16/2021


RSW-9 (0.01 ac.)
CUL-2 (0.01 ac.)
CUL-3 (0.01 ac.)
I-8 (0.03 ac.)
RSW-8 (0.01 ac.)
SW-7 (0.002 ac.)
N
Feet
1 inch = 200 feet
SOURCE: Maxar, 2020; Dermody Properties, 2020; ESA, 2021
Creekside Village
Coordinate System: CA State Plane Zone II NAD83
Projection: Lambert Conformal Conic
Datum: North America Datum 1983
Survey Area (271.81 ac.)
Project Footprint
RefPoints
Sampling Points
Upland
Wetland
Other Waters (3.14 ac.)
Ephemeral Drainage (1.56 ac.)
Intermittent Drainage (1.20 ac.)
Perennial Drainage (0.30 ac.)
Ditch (0.01 ac.)
Culvert (0.04 ac.)
Wetlands (4.45 ac.)
Riparian Wetland (1.25 ac.)
Riverine Seasonal Wetland (0.62 ac.)
Seasonal Wetland (0.27 ac.)
Seep (1.12 ac.)
Vernal Pool (0.07 ac.)
Wetland Swale (1.12 ac.)
Figure 5-2
Delineation of
Aquatic Resources
(2 of 7)
Delineated by: Josh Boldt
Created on: 1/15/2021, Revised on: 1/19/2021

SOURCE: Maxar, 2020; Dermody Properties, 2020; ESA, 2021

Creekside Village

Coordinate System: CA State Plane Zone II; NAD83
Projection: Lambert Conformal Conic
Datum: North America Datum 1983]

Survey Area (271.81 ac.)
Project Footprint
RefPoints

Sampling Points
Upland
Wetland

Other Waters (3.14 ac.)
Ephemeral Drainage (1.58 ac.)
Intermittent Drainage (1.20 ac.)
Perennial Drainage (0.30 ac.)
Ditch (0.01 ac.)
Culvert (0.04 ac.)

Wetlands (4.45 ac.)
Riparian Wetland (1.25 ac.)
Riverine Seasonal Wetland (0.52 ac.)
Seasonal Wetland (0.27 ac.)
Seep (1.12 ac.)
Vernal Pool (0.07 ac.)
Wetland Swale (1.12 ac.)

Figure 5-3
Delineation of Aquatic Resources
(3 of 7)

Delineated by: Josh Boldt
Mapping by: Josh Boldt and Wes McCullough
Date: 11/20/2020 Revised: 12/2/2020

SOURCE: Maxar, 2020; Dermody Properties, 2020; ESA, 2021

Creekside Village

Coordinate System: CA State Plane Zone II NAD83
Projection: Lambert Conformal Conic
Datum: North America Datum 1983

Survey Area (271.81 ac.)
Project Footprint
RefPoints

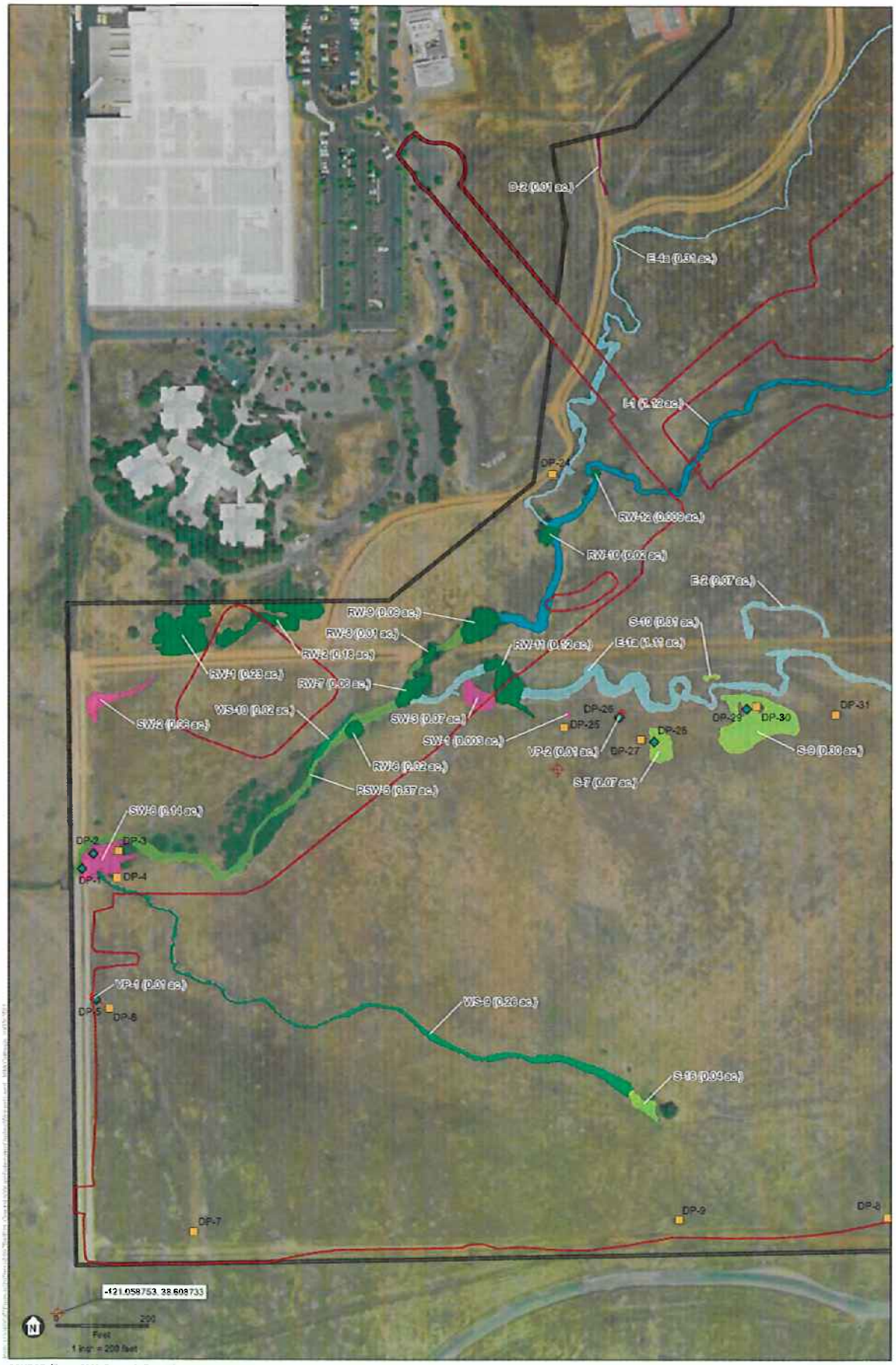
Sampling Points
Upland
Wetland

Other Waters (3.14 ac.)
Ephemeral Drainage (1.58 ac.)
Intermittent Drainage (1.20 ac.)
Perennial Drainage (0.30 ac.)
Ditch (0.01 ac.)
Culvert (0.04 ac.)

Wetlands (4.45 ac.)
Riparian Wetland (1.25 ac.)
Riverine Seasonal Wetland (0.52 ac.)
Seasonal Wetland (0.27 ac.)
Seep (1.12 ac.)
Vernal Pool (0.07 ac.)
Wetland Swale (1.12 ac.)

Figure 5-4
Delineation of Aquatic Resources
(4 of 7)

Delineated by: Josh Boldt
Mapping by Josh Boldt and Wes McCullough
Created on: 4/14/2021, Revised on: 7/16/2021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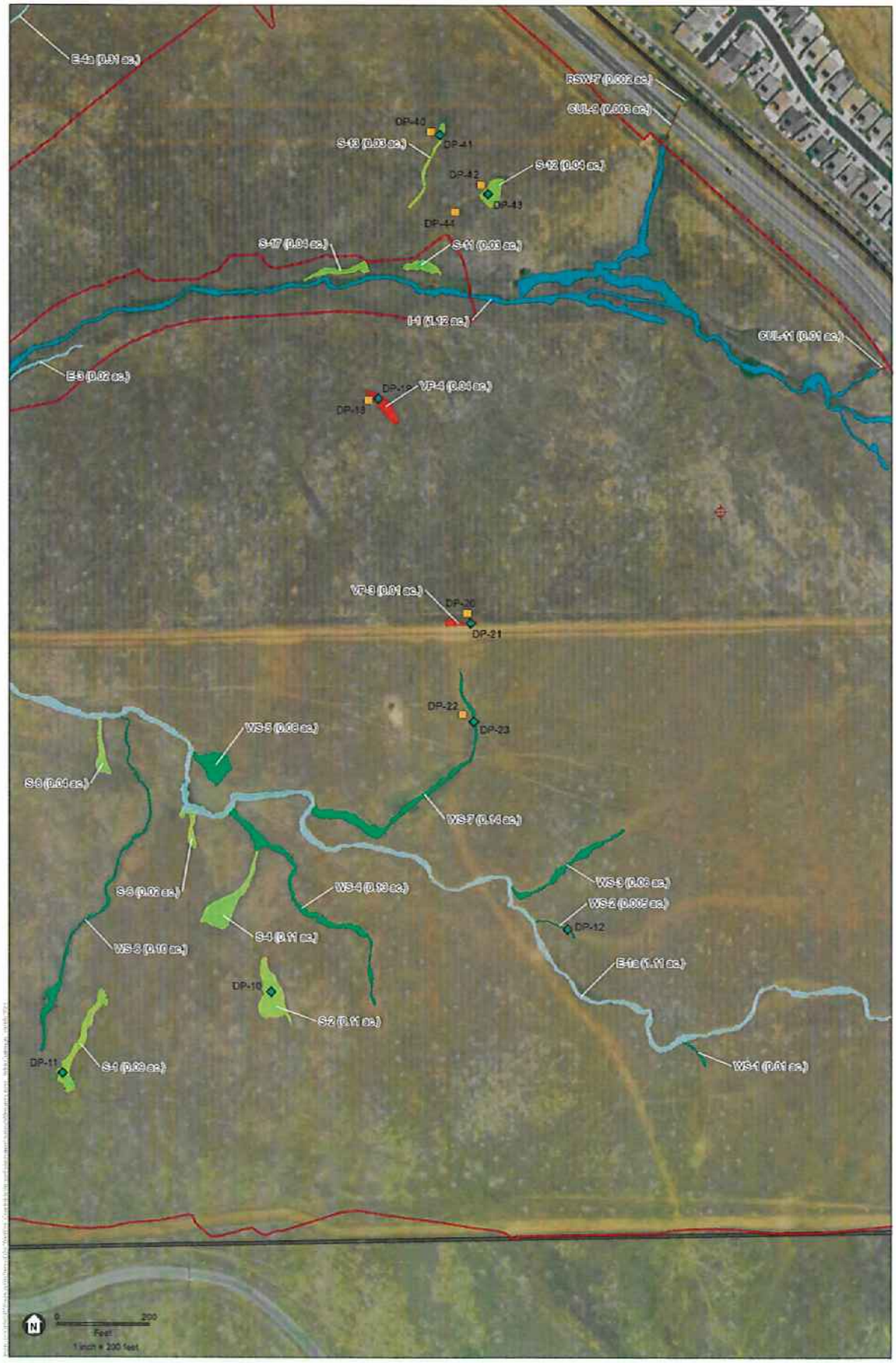
E-4a (0.01 ac.)
I-1 (1.12 ac.)
DP-24
RW-12 (0.009 ac.)
RW-10 (0.02 ac.)
E-2 (0.07 ac.)
RW-9 (0.09 ac.)
RW-8 (0.01 ac.)
RW-2 (0.18 ac.)
RW-11 (0.12 ac.)
E-1a (1.11 ac.)
S-10 (0.01 ac.)
RW-1 (0.23 ac.)
RW-7 (0.03 ac.)
WS-10 (0.02 ac.)
SW-2 (0.03 ac.)
SW-3 (0.07 ac.)
DP-25
DP-29
DP-30
DP-31
SW-1 (0.009 ac.)
VP-2 (0.01 ac.)
DP-27
DP-26
S-9 (0.30 ac.)
RW-6 (0.02 ac.)
RSW-5 (0.37 ac.)
S-7 (0.07 ac.)
SW-4 (0.14 ac.)
DP-2
DP-3
DP-1
DP-4
VP-1 (0.01 ac.)
DP-5
DP-6
WS-9 (0.26 ac.)
S-11 (0.04 ac.)
DP-7
DP-9
DP-8
-121.058753, 38.608733
200
Feet
1 inch = 200 feet
N
SOURCE: Maxar, 2020; Dermody Properties, 2020; ESA, 2021
Creekside Village
Coordinate System: CA State Plane Zone II NAD83
Projection: Lambert Conformal Conic
Datum: North America Datum 1983
Survey Area (271.81 ac.)
Project Footprint
RefPoints
Sampling Points
Upland
Wetland
Other Waters (3.14 ac.)
Ephemeral Drainage (1.58 ac.)
Intermittent Drainage (1.20 ac.)
Perennial Drainage (0.30 ac.)
Ditch (0.01 ac.)
Culvert (0.04 ac.)
Wetlands (4.45 ac.)
Riparian Wetland (1.25 ac.)
Riverine Seasonal Wetland (0.62 ac.)
Seasonal Wetland (0.27 ac.)
Seep (1.12 ac.)
Vernal Pool (0.07 ac.)
Wetland Swale (1.12 ac.)
Figure 5-5
Delineation of
Aquatic Resources
(5 of 7)
Delineated by: Josh Boldt
Created on: 7/15/2021, Revised on: 7/15/2021



SOURCE: Maxar, 2020; Dermody Properties, 2020; ESA, 2021

Creekside Village

Coordinate System: CA State Plane Zone II NAD83
Projection: Lambert Conformal Conic
Datum: North America Datum 1983]

Survey Area (271.81 ac.)
Project Footprint
RefPoints

Sampling Points
Upland
Wetland

Other Waters (3.14 ac.)
Ephemeral Drainage (1.53 ac.)
Intermittent Drainage (1.20 ac.)
Perennial Drainage (0.30 ac.)
Ditch (0.01 ac.)
Culvert (0.04 ac.)

Wetlands (4.45 ac.)
Riparian Wetland (1.25 ac.)
Riverine Seasonal Wetland (0.62 ac.)
Seasonal Wetland (0.27 ac.)
Seep (1.12 ac.)
Vernal Pool (0.07 ac.)
Wetland Swale (1.12 ac.)

Figure 5-6
Delineation of Aquatic Resources
(6 of 7)

Delineated by: Josh Boldt
Mapped by: Josh Boldt and Wes McDonough
Created on: 4/13/2021, Revised on: 7/15/2021

Figure 5-7
Delineation of Aquatic Resources
(7 of 7)

Delineated by: Josh Bokit
Created on: 7/13/2021, Revised on: 7/19/2021

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5.1.1 Wetlands

Seasonal Wetlands/Palustrine Emergent Wetland (Seasonally Flooded)

Seasonal Wetland/Seep/Wetland Swale/Riverine Seasonal Wetland

The seasonal wetlands within the study area are classified as Palustrine Emergent Wetland (Seasonally Flooded) using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013). Seasonal wetland habitats in the study area include seasonal wetland (five features totaling 0.271 acre), seep (15 features totaling 1.119 acres), wetland swale (10 features totaling 1.116 acres), and riverine seasonal wetland (10 features totaling 0.620 acre). Seasonal wetlands are ephemeral wetlands that pond water or remain saturated for extended periods during a portion of the year, often throughout the wet season, then dry up in spring or early summer. Dominant plant species include rye grass (FAC[1]), Mediterranean barley (FAC), rabbitsfoot grass (FACW), curly dock (FAC), lesser hawkbit (FACU), toad rush (FACW), broad-leaved cattail (OBL), and hyssop loosestrife (OBL). Surface water was present in some of the seasonal wetlands in the study area at the time of the survey (December 2020) (Indicator A1 from the Arid West Supplement[2]), with saturation (Indicator A3) and high water table (Indicator A2) also noted. In addition, inundation visible in aerial imagery (Indicator B7), oxidized rhizospheres (Indicator C3, and saturation visible on aerial imagery (Indicator C9) were indicators of wetland hydrology observed in these wetlands. These features exhibited hydric soil indicators including soils with a depleted matrix (Indicator F3 from the Arid West Supplement[3]) and redox depressions (Indicator F8). Sample points 1, 4, 5, 6, 7, 8, 9, and 10 reflect the conditions observed in the seasonal wetlands during the field investigation and the surrounding upland areas are represented by sample points 12 and 14.

Vernal Pool/Palustrine Emergent Wetland (Seasonally Flooded)

Five vernal pools, totaling approximately 0.071 acre, were identified in the study area. This wetland type is characterized by shallow depressions that pond water throughout the winter and spring due to a restrictive soil layer that acts as a barrier preventing water percolation to deeper soil layers. Vernal pools are found within a larger grassland vegetation community and typically collect rainwater runoff from the adjacent upland areas. The pools are very different from the nearby upland grasslands both in their topography and soil characteristics as well as species composition. The annual cycle of inundation and drying of vernal pools has facilitated the evolution of plant species uniquely adapted to these conditions. In the study area, vernal pools are dominated by coyote-thistle (FACW), toad rush (FACW), and popcornflower (FACW). Wetland hydrology indicators observed in these features include inundation (Indicator A1), a high water table (10 inches below the surface) (Indicator A2), saturation (6 inches below the surface) (Indicator A3), and sediment deposits (Indicator B2). Hydric soils were indicated in this feature by the presence of a redox dark surface (Indicator F6) and redox depressions (Indicator F8).

1 FAC = facultative (occurs in wetlands and non-wetlands); FACW = facultative wetland (usually occurs in wetlands, but may occur in non-wetlands); OBL = obligate wetland (almost always occurs in wetlands under natural conditions); NL = not listed.

2 Wetland hydrology indicators are presented in four groups in the Arid West Supplement. Group A: Observation of Surface Water or Saturated Soils. Group B: Evidence of Recent Inundation. Group C: Evidence of Current or Recent Soil Saturation. Group D: Evidence from Other Site Conditions or Data.

3 Hydric soil indicators are presented in three groups in the Arid West Supplement. Group A: Indicators for All Soils. Group F: Indicators for Loamy and Clayey Soils. Group S: Indicators for Sandy Soils.

Sample points DP 2, 13, 18, and 20 reflect the conditions observed in the freshwater seasonal wetlands during the field investigation and the surrounding upland areas are represented by sample points DP-3, 14, 19, and 21 (Appendix D).

Riparian Wetland/Palustrine Forested Wetland (Seasonally Flooded)

Thirteen riparian wetlands, totaling approximately 1.251 acres, were identified in the study area. Riparian wetlands in the study area are classified as Palustrine Forested Wetlands (Seasonally Flooded) using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013). Palustrine forested wetlands in the study area are dominated by woody vegetation, mainly willows and cottonwood trees. Three riparian wetlands occur along Carson Creek, a perennial channel, and the other riparian wetlands occur in a depression on the northwestern border of the main project site. The overstory of these wetlands include Goodding's black willow (FACW), Fremont cottonwood (NL), and red willow (FACW) trees in the overstory. The understory consists of sandbar willow (FACW) and Himalayan blackberry (FAC), and a variety of grasses and forbs, including miner's lettuce (FAC) and rye grass (FAC). Wetland hydrology indicators observed in these features include inundation (Indicator A1), a high water table (10 inches below the surface) (Indicator A2), saturation (6 inches below the surface) (Indicator A3), and sediment deposits (Indicator B2). Hydric soils were indicated in these features by the presence of a redox dark surface (Indicator F6) and redox depressions (Indicator F8). Sample points DP 2, 13, 18, and 20 reflect the conditions observed in the freshwater seasonal wetlands during the field investigation and the surrounding upland areas are represented by sample points DP 3, 14, 19, and 21 (Appendix D).

5.1.2 Other Waters

Perennial Channel/Riverine Perennial

Perennial channels are classified as "riverine perennial" using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013). A perennial channel is a stream, or stream portion, that flows continuously during the calendar year. One perennial channel segment (P-1, Carson Creek), totaling approximately 0.297 acre, was identified in the study area. Bed material consists of cobbles, mud, and sand. Carson Creek supports sporadic patches of freshwater emergent wetland species within the channel and riparian species along its lower and upper banks.

Intermittent Channel/Riverine Intermittent

Intermittent channels are classified as Riverine Intermittent using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013). An intermittent channel has flowing water during certain times of the year, when precipitation or groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. In the study area, intermittent channels generally flow throughout the winter season and into the late spring or early summer. Two intermittent channel segments (I-1 and I-2), totaling approximately 1.201 acres, were identified in the study area. In general, these channels are medium to low gradient and are bordered by annual grasslands. Bed material consists of sand, fine and medium gravel, and cobbles, but the beds are typically not vegetated.

Ephemeral Channel/Riverine Ephemeral

Ephemeral channels are classified as Riverine Ephemeral using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013). An ephemeral channel has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow. The study area contains nine ephemeral channel segments (E-1a, E-1b, E-2, E-3, E-4a, E-4b, and E-5 through E-7), totaling approximately 1.579 acres. Ephemeral channels in the study area are typically medium to high-gradient and flow through annual grassland. Bed material consists of soil, sand, and gravel, and the beds are typically not vegetated.

Culverted Streams

Because a portion of the study area consists of the right-of-way of Latrobe Road, many of the stream segments delineated are partially or completely culverted within the study area. Culverted streams do not have a classification under the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013). Twelve culverted stream segments (CUL-1 through CUL-12), totaling approximately 0.044 acre, were identified in the study area.

Ditches

Ditches do not have a classification under the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013). One ditch segment (D-2), totaling approximately 0.014 acre, was identified in the study area. This ditch is a constructed feature built for the purpose of draining the adjacent parking lots to the north. This feature was excavated in uplands and is not a traditional navigable water, not a relocated tributary, and is not constructed in adjacent wetlands.

5.2 Analysis of Waters of the United States

As defined under Section 3.1, under the Revised Definition of Waters of the U.S, there are five categories that are considered jurisdictional waters of the U.S. These categories include (a)(1) territorial seas and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide, and interstate waters, including interstate wetlands; (a)(2) impoundments of waters of the U.S; (a)(3) tributaries of waters of the U.S that are RPWs; (a)(4) wetlands adjacent to RPWs or maintain a continuous surface connection to RPWs; and (a)(5) intrastate lakes and ponds that are RPWs or maintain a continuous surface connection to RPWs. See Table 4, below, for an evaluation of the aquatic resources in the survey area that meet the Revised Definition of Waters of the U.S.

The mapped 2.824 acres of wetlands and other waters are expected to be waters of the United States pursuant to 33 CFR 328.3(a)(3) and (a)(4). Thus, these features are expected to be subject to USACE and Central Valley Regional Water Quality Control Board jurisdiction under CWA Sections 404 and 401, and/or the Porter-Cologne Water Quality Control Act.

TABLE 4
POTENTIAL WATERS OF THE UNITED STATES

Aquatic Feature ID	Feature Type	Cowardin Type [a]	Rational	Acreage Waters of the U.S.	Acreage Non-Jurisdictional
Wetlands					
RW-1	Riparian Wetland	RP1FO	No continuous surface connection to a relatively permanent water (RPW)	--	0.232
RW-2	Riparian Wetland	RP1FO	No continuous surface connection to RPW	--	0.178
RW-3	Riparian Wetland	RP1FO	(a)(4)(ii)	0.313	--
RW-4	Riparian Wetland	RP1FO	(a)(4)(ii)	0.045	--
RW-5	Riparian Wetland	RP1FO	(a)(4)(ii)	0.115	--
RW-6	Riparian Wetland	RP1FO	(a)(4)(ii)	0.025	--
RW-7	Riparian Wetland	RP1FO	(a)(4)(ii)	0.060	--
RW-8	Riparian Wetland	RP1FO	(a)(4)(ii)	0.012	--
RW-9	Riparian Wetland	RP1FO	(a)(4)(ii)	0.092	--
RW-10	Riparian Wetland	RP1FO	(a)(4)(ii)	0.024	--
RW-11	Riparian Wetland	RP1FO	No continuous surface connection to RPW	--	0.119
RW-12	Riparian Wetland	RP1FO	(a)(4)(ii)	0.009	--
RW-13	Riparian Wetland	RP1FO	(a)(4)(ii)	0.028	--
			Riparian Wetland Subtotal	0.723	*0.529*
RSW-1	Riverine Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.078
RSW-2	Riverine Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.087
RSW-3	Riverine Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.001
RSW-4	Riverine Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.014
RSW-5	Riverine Seasonal Wetland	PEM	(a)(4)(ii)	0.372	--
RSW-6	Riverine Seasonal Wetland	PEM	(a)(4)(ii)	0.018	--
RSW-7	Riverine Seasonal Wetland	PEM	(a)(4)(ii)	0.002	--
RSW-8	Riverine Seasonal Wetland	PEM	(a)(4)(ii)	0.039	--
RSW-9	Riverine Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.008
RSW-10	Riverine Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.001
			Riverine Seasonal Wetland Subtotal	*0.431*	*0.189*

TABLE 4 (CONTINUED)
POTENTIAL WATERS OF THE UNITED STATES

Aquatic Feature ID	Feature Type	Cowardin Type [a]	Rational	Acreage Waters of the U.S.	Acreage Non-Jurisdictional
SW-1	Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.003
SW-2	Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.062
SW-3	Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.066
SW-6	Seasonal Wetland	PEM	(a)(4)(ii)	0.136	--
SW-7	Seasonal Wetland	PEM	No continuous surface connection to RPW	--	0.004
			Seasonal Wetland Subtotal	0.136	0.135
S-1	Seep	PEM	No continuous surface connection to RPW	--	0.091
S-2	Seep	PEM	No continuous surface connection to RPW	--	0.110
S-3	Seep	PEM	No continuous surface connection to RPW	--	0.108
S-4	Seep	PEM	No continuous surface connection to RPW	--	0.106
S-5	Seep	PEM	No continuous surface connection to RPW	--	0.100
S-6	Seep	PEM	No continuous surface connection to RPW	--	0.022
S-7	Seep	PEM	No continuous surface connection to RPW	--	0.069
S-8	Seep	PEM	No continuous surface connection to RPW	--	0.036
S-9	Seep	PEM	No continuous surface connection to RPW	--	0.297
S-10	Seep	PEM	No continuous surface connection to RPW	--	0.007
S-11	Seep	PEM	No continuous surface connection to RPW	--	0.029
S-12	Seep	PEM	No continuous surface connection to RPW	--	0.042
S-13	Seep	PEM	No continuous surface connection to RPW	--	0.026
S-16	Seep	PEM	No continuous surface connection to RPW	--	0.038
S-17	Seep	PEM	No continuous surface connection to RPW	--	0.037
			Seep Subtotal	--	*1.119*
VP-1	Vernal Pool	PEM	No continuous surface connection to RPW	--	0.007
VP-2	Vernal Pool	PEM	No continuous surface connection to RPW	--	0.007
VP-3	Vernal Pool	PEM	No continuous surface connection to RPW	--	0.012
VP-4	Vernal Pool	PEM	No continuous surface connection to RPW	--	0.038
VP-5	Vernal Pool	PEM	No continuous surface connection to RPW	--	0.006

TABLE 4 (CONTINUED)
POTENTIAL WATERS OF THE UNITED STATES

Aquatic Feature ID	Feature Type	Cowardin Type [a]	Rational	Acreage Waters of the U.S.	Acreage Non-Jurisdictional
			Vernal Pool Subtotal	--	*0.071*
WS-1	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.009
WS-2	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.005
WS-3	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.061
WS-4	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.135
WS-5	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.078
WS-6	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.097
WS-7	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.144
WS-8	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.303
WS-9	Wetland Swale	PEM	No continuous surface connection to RPW	--	0.260
WS-10	Wetland Swale	PEM	(a)(4)(ii)	0.024	--
			Wetland Swale subtotal	*0.024*	*1.092*
			Wetlands Total	**1.314**	**3.134**
Other Waters					
P-1	Perennial Drainage (Carson Creek)	R2	(a)(3)	0.297	--
			Perennial Drainage Subtotal	*0.297*	--
I-1	Intermittent Drainage	R4	(a)(3)	1.115	--
I-2	Intermittent Drainage	R4	(a)(3)	0.086	--
			Intermittent Drainage Subtotal	*1.201*	--
E-1a	Ephemeral Drainage	R6	Non-RPW	--	1.110
E-1b	Ephemeral Drainage	R6	Non-RPW	--	0.052
E-2	Ephemeral Drainage	R6	Non-RPW	--	0.066
E-3	Ephemeral Drainage	R6	Non-RPW	--	0.021
E-4a	Ephemeral Drainage	R6	Non-RPW	--	0.315
E-4b	Ephemeral Drainage	R6	Non-RPW	--	0.012
E-5	Ephemeral Drainage	R6	Non-RPW	--	0.004

TABLE 4 (CONTINUED)
POTENTIAL WATERS OF THE UNITED STATES

Aquatic Feature ID	Feature Type	Cowardin Type [a]	Rational	Acreage Waters of the U.S.	Acreage Non-Jurisdictional
E-6	Ephemeral Drainage	R6	Non-RPW	--	<0.001
E-7	Ephemeral Drainage	R6	Non-RPW	--	0.001
			Ephemeral Drainage Subtotal	--	*1.579*
CUL-1	Culvert	N/A	Non-RPW	--	0.004
CUL-2	Culvert	N/A	Non-RPW	--	0.005
CUL-3	Culvert	N/A	Non-RPW	--	0.005
CUL-4	Culvert	N/A	Non-RPW	--	0.001
CUL-5	Culvert	N/A	Non-RPW	--	<0.001
CUL-6	Culvert	N/A	Non-RPW	--	0.003
CUL-7	Culvert	N/A	Non-RPW	--	0.001
CUL-8	Culvert	N/A	Non-RPW	--	0.002
CUL-9	Culvert	N/A	RPW	0.003	--
CUL-10	Culvert	N/A	RPW	0.007	--
CUL-11	Culvert	N/A	RPW	0.006	--
CUL-12	Culvert	N/A	Non-RPW	--	0.007
			Culvert Subtotal	*0.016*	*0.028*
D-2	Ditch	N/A	Ditch Dug in and Draining Only Uplands	--	0.014
			Ditch Subtotal	--	*0.014*
			Other Waters Total:	**1.514**	**1.623**
			Wetlands and Other Waters Total	**2.828**	**4.756**

NOTE: Differences between values and totals are due to minor rounding differences.

5.2.1 Potentially Jurisdictional Wetlands

There are 1.314 acres of wetlands (riparian wetlands RW-3 through RW-10, RW-12, and RW-13, riverine seasonal wetlands RSW-5 through RSW-8, wetland swale SW-6, and WS-10) are adjacent to other jurisdictional waters and have direct hydrologic surface connections to another jurisdictional non-wetland relatively permanent water (RPW). Therefore, these wetlands are expected to be subject to Corps' jurisdiction.

5.2.2 Potentially Jurisdictional Other Waters

There are 1.514 acres of other waters (perennial drainage P-1, intermittent channels I-1 and I-2, and culvert features (CUL-9, CUL-10, CUL-11) are RPWs that flow directly or indirectly into a TNW, and are therefore waters of the United States. Carson Creek (P-1) is a perennial tributary (during a typical year this feature flows year-round) that contributes surface water flow in a typical year to a downstream jurisdictional water (Mokelumne River – TNW). Intermittent channels I-1 and I-2 are intermittent tributaries (during a typical year these features flow continuously during certain times of the year and more than in direct response to precipitation) that contribute surface water flow to a downstream jurisdictional water (Mokelumne River – TNW). Portions of I-1 are culverted (CUL-9, CUL-10, CUL-11) under Latrobe Road and convey the perennial or intermittent features described above. Therefore, these other waters features are expected to be subject to Corps' jurisdiction.

5.2.3 Non-Jurisdictional Wetlands

Wetland features including riparian wetlands RW-1, RW-2 and RW 11; riverine seasonal wetland RSW-1 through RSW-4, RSW9 and RSW-10; seasonal wetland SW-1 through SW-5 and SW-7; all seep features S-1through S-17; all vernal pools VP 1 through VP-5; wetland swales WS-1 through WS-9 are not expected to be waters of the U.S. These features are wetlands that are not RPWs, and they do not have a continuous hydrologic surface connection to RPWs. Therefore, these wetlands totaling 3.133 acres are not considered waters of the U.S. under the 2023 NWPR (33 CFR Section 328.3(a)(4) waters).

5.2.4 Non-Jurisdictional Non-Wetland Features

Non-RPWs that lack a continuous surface connection to a water of the U.S. do not qualify as waters of the United States. A total of 1.623 acres of non-wetland features identified within the study area are not expected to be subject to Corps' jurisdiction under the 2023 NWPR and supporting rationale is provided below.

All ephemeral channels (E-1 through E-7) flow only in direct response to precipitation and are not RPWs. These features lack a continuous surface connection to RPWs and are not considered waters of the U.S. under the 2023 Navigable Waters Protection Rule (NWPR) (33 CFR Section 328.3(a)(3) waters).

The ditch (D-2) feature is a constructed drainage ditch that is not a traditional navigable water, not an RPW, does not have a continuous surface connection to an RPW, not a relocated tributary,

and was not constructed in adjacent wetlands. This feature is not considered waters of the U.S. under the 2023 NWPR (33 CFR Section 328.3(b)(3) waters).

Culverts (CUL-1 through CUL-8, and CUL-12) are considered non-jurisdictional features under the 2023 NWPR (33 CFR Section 328.3(a)(3) waters) since they connect ephemeral channels that are not RPWs and lack a continuous connection to downstream RPWs.

5.3 Analysis of Waters of the State

The State Wetland Definition and Procedures defines "water of the state" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state." All features that are waters of the U.S. are also waters of the state. The State Water Board has not adopted a definition for non-wetland waters of the state, however the Porter-Cologne Water Quality Control Act regulates project activities, discharges, or proposed activities or discharges that could affect California's surface, coastal, or ground waters. Therefore, ephemeral channels that are not expected to qualify as waters of the U.S. are likely to qualify as waters of the state at the discretion of the RWQCB.

All non-wetland features identified, with the exception of ditch D-2, are expected to be considered waters of the state by the RWQCB. Ditch 2 may not qualify as a water of the state given its construction in uplands and degree of isolation. Although the Boards have not adopted a definition of non-wetland waters, the definition used for which wetlands qualify as waters of the state suggests that the RWQCB may not claim jurisdiction over small, artificial features that are subject to ongoing maintenance, such as Ditch 2 (0.014 acre).

All of the wetlands identified in the study area, with the exception of SW-7, are likely to meet the definition of wetlands defined as waters of the state (see Section 3.3.1), because they are either "natural wetlands", wetlands created by a modification of a surface water of the state, or they resulted from historic human activity and are not subject to ongoing operation and maintenance. SW-7 (0.004 acre) is in a constructed swale next to Latrobe Road, does not appear to be a realigned natural feature, and is likely subject to ongoing operation and maintenance by El Dorado County Department of Transportation for road drainage. Therefore, SW-7 (0.004 acre) may not qualify as a water of the state.

Based on the State Wetland Definition and Procedure and the Porter-Cologne Water Quality Control Act, a total of 7.567 acres of wetlands and non-wetland waters are expected to qualify as waters of the state. These features include all wetlands and non-wetlands identified except for ditch D-2 and seasonal wetland SW-7 based on the rationale described above.

5.4 Analysis of Section 1600 Regulated Areas

Pursuant to Division 2, Chapter 6, Section 1600 et seq. of the FGC, CDFW regulates diversions, obstructions, or changes to the natural flow or bed, channel or bank of any river, stream, or lake. Under FGC Section 1602 (Lake and Streambed Alteration Agreements), CDFW will generally include the "stream zone" up to the top of bank or outside extent of riparian vegetation, whichever is the greatest, although CDFW may at their discretion include any project activities

where material may pass into the stream. Features identified expected to be subject to CDFW regulation include riparian wetlands (RW-3 through RW-10, and RW-12 through RW-13), riverine seasonal wetlands (RSW-5 through RSW-8), seasonal wetland SW-6, wetland swale WS-10, perennial drainage P-1, intermittent drainages (I-1 and I-2), ephemeral drainages (E-1a, E-1b, E-2 through E-7), and culverts (CUL-1 through CUL-12), which collectively total 4.437 acres. CDFW is likely to require a 1600 notification of streambed alteration for all of the channels in the study area, regardless of hydrology, including any wetlands that may be connected to the channels during times of high water.

5.5 Conclusions

A total of 7.585 acres of aquatic resources occur within the 271.81-acre study area. This includes approximately 2.828 acres of aquatic resources that qualify as waters of the U.S. The other 4.756 acres of aquatic resources are not expected to qualify as waters of the U.S. due to these features not being RPWs and the lack of a continuous connection with RPWs that drain to the nearest downstream traditional navigable water, the lower Cosumnes River.

A total of 7.567 acres of aquatic resources are expected to qualify as waters of the state subject to regulation under Section 401 of the CWA and/or the Porter-Cologne Water Quality Control Act. Ditch 2 and SW-7 are not expected to qualify as waters of the state. All of the perennial, intermittent, and ephemeral channels and abutting wetlands and riparian features, which total 4.437 acres, are expected to be subject to regulation under Section 1600 of the FGC.

This report documents the boundary delineation for these aquatic features and best professional judgment of ESA investigators. All aquatic resources and extent of potentially jurisdictional boundaries identified in this report are considered preliminary pending verification from the appropriate regulatory agencies.

CHAPTER 6
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Appendix A
Plant Species Observed

TABLE A-1
VASCULAR FLORA RECORDED FROM THE CREEKSIDE VILLAGE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Apiaceae		
Daucus carota	Wild carrot	UPL
Eryngium vaseyi	Coyote-thistle	FACW
Foeniculum vulgare	Fennel	NL
Torilis arvensis	Tall sock-destroyer	NL
Apocynaceae		
Asclepias fascicularis	Narrow leaf milkweed	FAC
Araceae		
Lemna minuta	Least duckweed	OBL
Asteraceae		
Achillea millefolium	Yarrow	FACU
Achyrachaena mollis	Blow-wives	FAC
Artemisia douglasiana	Douglas' milkwort	FAC
Baccharis pilularis	Coyote brush	NL
Baccharis salicifolia	Coyote brush	FAC
Carduus pycnocephalus subsp. *pycnocephalus*	Italian thistle	NL
Centaurea solstitialis	Yellow star-thisIte	NL
Centromadia fitchii	Spikeweed	FACU
Centromadia pungens subsp. *pungens*	Common spikeweed	FAC
Dittrichia graveolens	Stinkwort	NL
Erigeron canadensis	Canada horseweed	FACU
Helminthotheca echioides	Bristly ox-tongue	FAC
Holocarpha virgata subsp. *virgata*	Narrow tarplant	NL
Hypochaeris glabra	Smooth cat's-ear	NL
Hypochaeris radicata	Hairy cat's-ear	FACU
Lactuca serriola	Prickly lettuce	FACU
Leontodon saxatilis	Lesser hawkbit	FACU
Senecio vulgaris	Common groundsel	FACU
Silybum marianum	Milk thistle	NL
Sonchus oleraceus	Common sow thistle	UPL
Xanthium strumarium	Rough cocklebur	FAC
Boraginaceae		
Amsinckia menziesii	Menzies' fiddleneck	NL
Plagiobothrys stipitatus var. *micranthus*	Common vernal pool allocarya	FACW
Brassicaceae		
Brassica nigra	Black mustard	NL
Capsella bursa-pastoris	Shepherd's purse	NL
Hirschfeldia incana	Mustard	NL
Lepidium latifolium	Perennial pepperweed	FAC
Nasturtium officinale	Watercress	OBL
Raphanus sativus	Radish	NL
Convolvulaceae		
Convolvulus arvensis	Bindweed	NL

TABLE A-1
VASCULAR FLORA RECORDED FROM THE CREEKSIDE VILLAGE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Cyperaceae		
Cyperus eragrostis	Tall flatsedge	FACW
Cyperus esculentus	Nut grass	FACW
Eleocharis macrostachya	Common spikerush	FACW
Schoenoplectus acutus var. *occidentalis*	Common tule	OBL
Euphorbiaceae		
Croton setigerus	Turkey-mullein	NL
Euphorbia maculata	Spotted spurge	UPL
Fabaceae		
Acmispon americanus	Spanish lotus	UPL
Medicago polymorpha	California burclover	FACU
Melilotus albus	White sweetclover	NL
Melilotus officinalis	Yellow sweetclover	FACU
Vicia sativa subsp. *sativa*	Spring vetch	FACU
Vicia villosa	Hairy vetch	NL
Fagaceae		
Quercus lobata	Valley oak	FACU
Geraniaceae		
Erodium botrys	Broad-leaf filaree	FACU
Erodium cicutarium	Redstem filaree	NL
Geranium dissectum	Cut leaved geranium	NL
Geranium molle	Crane's bill geranium	NL
Hypericaceae		
Hypericum perforatum subsp. *perforatum*	Klamathweed	FACU
Juncaceae		
Juncus bufonius	Toad rush	FACW
Juncus effusus	Common rush	FACW
Lythraceae		
Lythrum hyssopifolia	Hyssop loosestrife	OBL
Malvaceae		
Malva neglecta	Common mallow	NL
Montiaceae		
Claytonia perfoliata subsp. *perfoliata*	miner's lettuce	FAC
Papaveraceae		
Eschscholzia californica	California poppy	NL
Plantaginaceae		
Plantago major	Common plantain	FAC
Poaceaa		
Avena barbata	Slender wild oat	NL
Avena fatua	Wild oat	NL
Avena sativa	Cultivated oat	UPL
Briza minor	Little rattlesnake grass	FAC
Bromus diandrus	Ripgut grass	NL

TABLE A-1
VASCULAR FLORA RECORDED FROM THE CREEKSIDE VILLAGE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Bromus hordeaceus	Soft chess	FACU
Crypsis schoenoides	Swamp picklegrass	FACW
Cynodon dactylon	Bermuda grass	FACU
Distichlis spicata	Salt grass	FAC
Elymus caput-medusae	Medusa head	NL
Elymus triticoides	Beardless wild-rye	FAC
Festuca myuros	Rattail sixweeks grass	FACU
Festuca perennis	Rye grass	FAC
Hordeum marinum subsp. *gussoneanum*	Mediterranean barley	FAC
Hordeum murinum	Wall barley	FACU
Paspalum dilatatum	Dallisgrass	FAC
Phalaris aquatica	Harding grass	FACU
Poa annua	Annual bluegrass	FAC
Polypogon monspeliensis	Rabbitsfoot grass	FACW
Sorghum halepense	Johnson grass	FACU
Stipa pulchra	Purple needlegrass	NL
Polygonaceae		
Polygonum aviculare	Prostrate knotweed	FAC
Rumex crispus	Curly dock	FAC
Rumex pulcher	Fiddle dock	FAC
Rosaceae		
Rosa californica	Wild rose	FAC
Rubus armeniacus	Himalayan blackberry	FAC
Rubiaceae		
Galium aparine	Goose grass	FACU
Salicaceae		
Populus fremontii subsp. *fremontii*	Fremont cottonwood	NL
Salix exigua	Sandbar willow	FACW
Salix gooddingii	Goodding's black willow	FACW
Salix laevigata	Red willow	FACW
Salix lasiolepis	Arroyo willow	FACW
Sapindaceae		
Acer negundo	Boxelder	FACW
Typhaceae		
Typha latifolia	Broadleaf cattail	OBL
Vitaceae		
Vitis californica	Wild grape	FACU

SOURCE: ESA, 2020

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Appendix B
Soils Report

United States Department of Agriculture

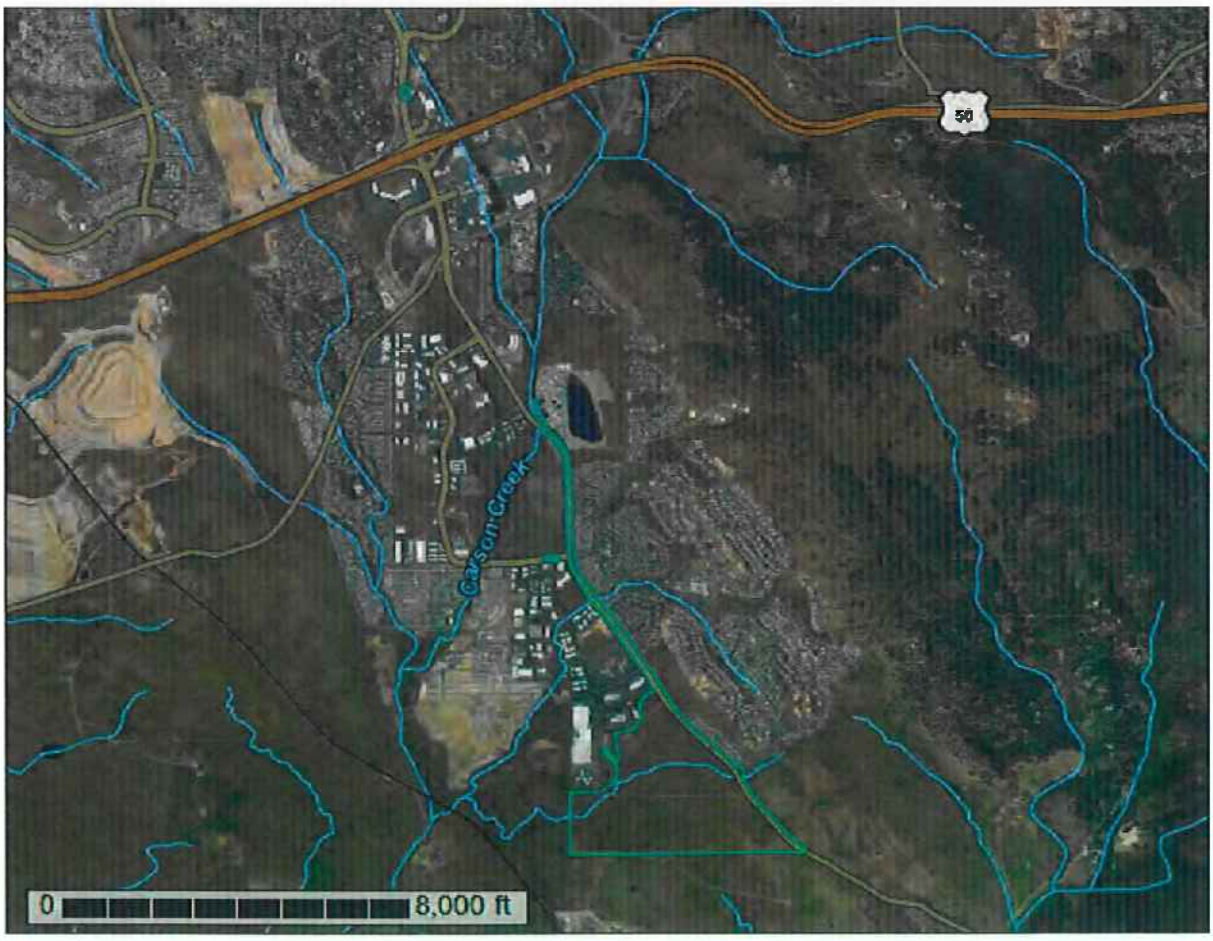
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for El Dorado Area, California

Creekside Village



January 15, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

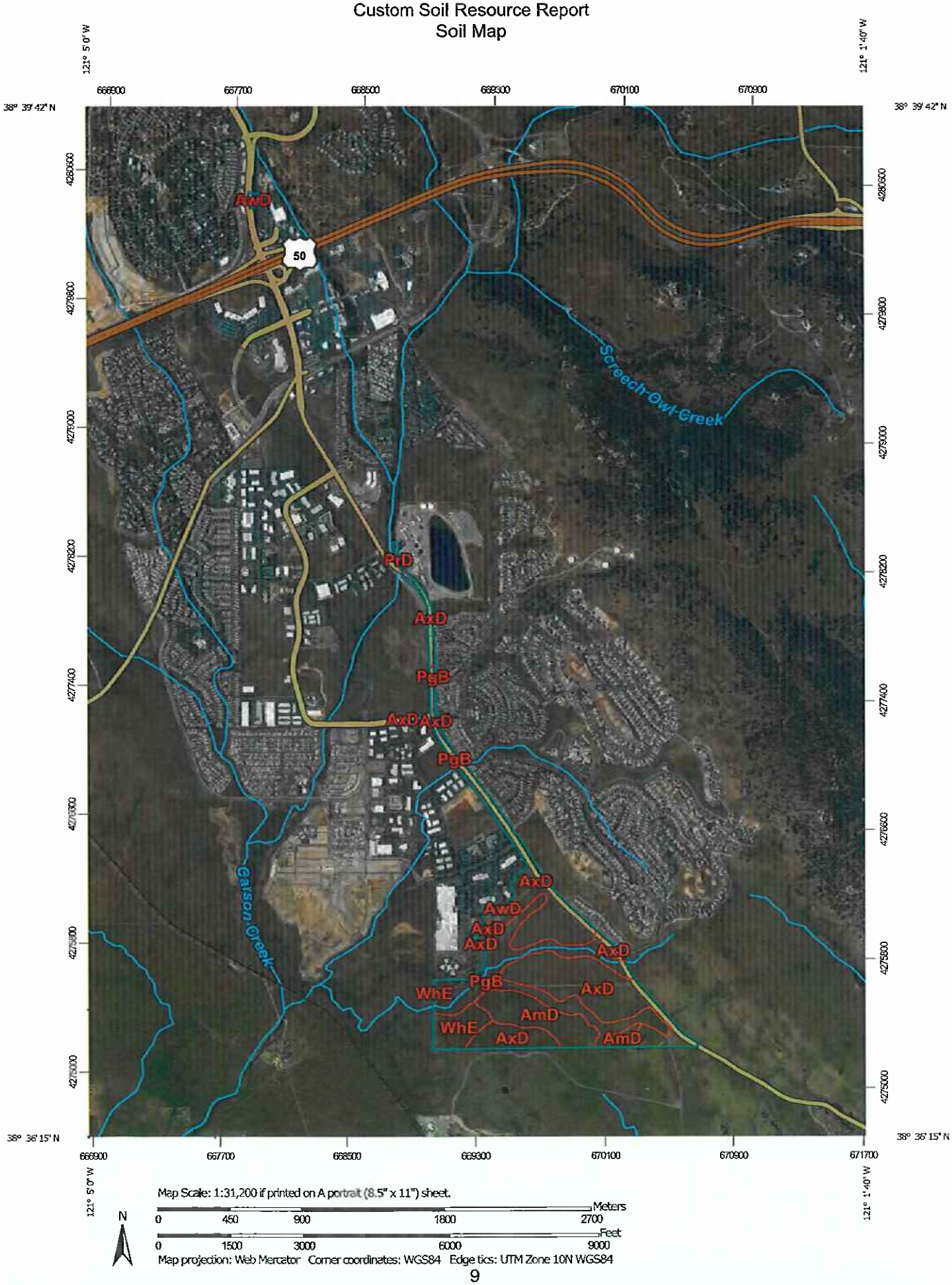
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Dorado Area, California
Survey Area Data: Version 12, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 8, 2019—May 12, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AmD	Argonaut very rocky loam, 3 to 30 percent slopes	37.9	13.7%
AwD	Auburn silt loam, 2 to 30 percent slopes	7.4	2.7%
AxD	Auburn very rocky silt loam, 2 to 30 percent slopes	144.2	52.1%
PgB	Perkins gravelly loam, moderately deep variant, 2 to 5 percent slopes	69.0	24.9%
PrD	Placer diggings	1.5	0.5%
WhE	Whiterock gravelly silt loam, 3 to 50 percent slopes	16.9	6.1%
Totals for Area of Interest		**277.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Dorado Area, California

AmD—Argonaut very rocky loam, 3 to 30 percent slopes

Map Unit Setting

National map unit symbol: hhyd
Elevation: 120 to 2,500 feet
Mean annual precipitation: 20 to 50 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 220 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Argonaut and similar soils: 75 percent
Rock outcrop: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Argonaut

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from andesite and/or residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 10 inches: gravelly loam
H2 - 10 to 30 inches: clay
H3 - 30 to 36 inches: weathered bedrock

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 30 to 36 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F018XI201CA - Moderately Deep Thermic Foothills 22-31 PZ
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Auburn

Percent of map unit: 9 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Fan remnants
Hydric soil rating: Yes

AwD—Auburn silt loam, 2 to 30 percent slopes

Map Unit Setting

National map unit symbol: hhyq
Elevation: 120 to 3,000 feet
Mean annual precipitation: 20 to 40 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 175 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Auburn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Auburn

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from basic igneous rock and/or basic residuum weathered from metamorphic rock

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 18 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: 14 to 18 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F018XI200CA - Low Elevation Foothills 18-25 PZ
Hydric soil rating: No

Minor Components

Perkins

Percent of map unit: 4 percent
Hydric soil rating: No

Sobrante

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Argonaut

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 3 percent
Hydric soil rating: No

AxD—Auburn very rocky silt loam, 2 to 30 percent slopes

Map Unit Setting

National map unit symbol: hhyr
Elevation: 120 to 3,000 feet
Mean annual precipitation: 20 to 40 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 175 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Auburn and similar soils: 75 percent
Rock outcrop: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Auburn

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from basic igneous rock and/or basic residuum weathered from metamorphic rock

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 18 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: 14 to 18 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R018XD076CA - SHALLOW LOAMY
Hydric soil rating: No

Description of Rock Outcrop

Setting

Parent material: Metamorphic rock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Boomer

Percent of map unit: 3 percent
Landform: Mountain slopes, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Argonaut

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sobrante

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Hydric soil rating: No

PgB—Perkins gravelly loam, moderately deep variant, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: hj0v
Elevation: 450 to 700 feet

Mean annual precipitation: 25 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 170 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Perkins variant and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Perkins Variant

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Consolidated gravelly alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

H1 - 0 to 12 inches: gravelly loam
H2 - 12 to 17 inches: clay loam
H3 - 17 to 30 inches: very gravelly sandy clay loam
H4 - 30 to 37 inches: sandy clay
H5 - 37 to 41 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 37 to 41 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F018XI200CA - Low Elevation Foothills 18-25 PZ
Hydric soil rating: No

Minor Components

Argonaut

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Auburn

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Whiterock

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

PrD—Placer diggings

Map Unit Composition

Placer diggings: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placer Diggings

Setting

Parent material: Alluvium derived from mixed sources

Typical profile

H1 - 0 to 60 inches: fine sandy loam, cobbles

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Ecological site: R018XD084CA - PLACER DIGGINGS
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Channels
Hydric soil rating: Yes

WhE—Whiterock gravelly silt loam, 3 to 50 percent slopes

Map Unit Setting

National map unit symbol: hj20
Elevation: 300 to 2,000 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Whiterock and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whiterock

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from slate

Typical profile

H1 - 0 to 8 inches: gravelly silt loam
H2 - 8 to 12 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 50 percent
Depth to restrictive feature: 8 to 12 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R018XD085CA - VERY SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Auburn

Percent of map unit: 7 percent

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Argonaut

Percent of map unit: 6 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Hydric soil rating: No

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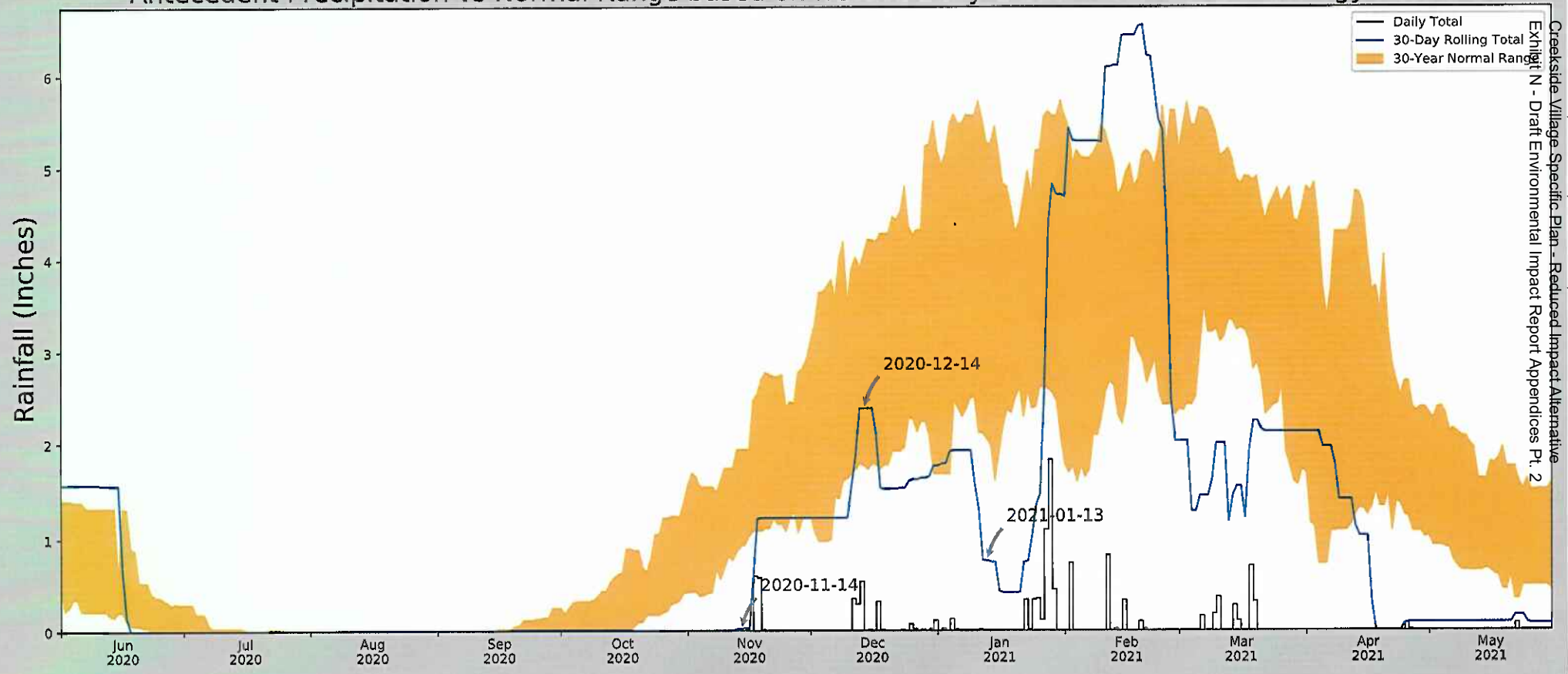
Appendix C
Antecedent Precipitation



Coordinates	38.613366, -121.050502
Observation Date	2021-01-13
Elevation (ft)	533.81
Drought Index (PDSI)	Severe drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2021-01-13	2.051181	5.268898	0.759843	Dry	1	3	3
2020-12-14	1.770866	4.06811	2.38189	Normal	2	2	4
2020-11-14	0.913386	1.944095	0.019685	Dry	1	1	1
Result							Drier than Normal - 8

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
CAMP PARDEE	38.2486, -120.8433	658.137	27.585	124.327	15.843	11025	90
ELECTRA P H	38.3306, -120.6706	714.895	10.946	56.758	5.547	16	0
WALLACE 0.3 NE	38.1967, -120.9728	297.9	7.891	360.237	6.394	239	0
SUTTER CREEK 0.1 WSW	38.3904, -120.8045	1266.076	10.021	607.939	10.602	15	0
SUTTER HILL CDF	38.3772, -120.8008	1585.958	9.179	927.821	12.647	49	0
FOLSOM 3.4 ESE	38.6546, -121.0907	594.16	31.082	63.977	15.975	5	0
ELLIOTT	38.2333, -121.2	91.864	19.386	566.273	19.701	2	0
ACAMPO 5NE	38.2178, -121.2014	86.942	19.551	571.195	19.965	2	0

Appendix D
Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-1
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is seasonal wetland associated with intermittent drainage/riverine wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Cynodon dactylon	20	Yes	FACU
2. Cyperus eragrostis	25	Yes	FACW
3. Polypogon monspelienses	20	Yes	FACW
4. Festuca perennis	15	No	FAC
5. Juncus xiphioides	10	No	OBL
6. Rumex crispus	5	No	FAC
7. Mentha pulegium	5	No	OBL
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	45	x 2 =	90
FAC species	20	x 3 =	60
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	100 (A)		245 (B)

Prevalence Index = B/A = 2.45

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 3/2	75	Gley 1 4/N	10	D	M	silty loam	
			5 YR 4/6	15	C	PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-2

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is seasonal wetland associated with intermittent drainage/riverine wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Eleocharis macrostachya	30	Yes	OBL
2. Cyperus eragrostis	15	Yes	FACW
3. Mentha pulegium	15	Yes	OBL
4. Hordeum marinum	10	No	FAC
5. Festuca perennis	10	No	FAC
6. Acmispon americanus	10	No	UPL
7. Leontodon saxatilis	5	No	FACU
8. _____			
	95	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	15	x 2 =	30
FAC species	20	x 3 =	60
FACU species	5	x 4 =	20
UPL species	10	x 5 =	50
Column Totals:	95 (A)		205 (B)

Prevalence Index = B/A = 2.157894737

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 4/1	90	7.5 YR 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-3

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca perennis	25	Yes	FAC
2. Cynodon dactylon	25	Yes	FACU
3. Bromus hordeaceus	20	Yes	FACU
4. Elymus caput-medusae	20	Yes	NL
5. Zeltnera muehlenbergii	5	No	FAC
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	45	x 4 =	180
UPL species	20	x 5 =	100
Column Totals:	95 (A)		370 (B)

Prevalence Index = B/A = 3.894736842

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 4/2	95	7.5 YR 4/6	5	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-4

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	50	Yes	NL
2. Holocarpha virgata	25	Yes	NL
3. Bromus hordeaceus	10	No	FACU
4. Festuca perennis	5	No	FAC
5. Avena fatua	5	No	NL
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	10	x 4 =	40
UPL species	80	x 5 =	400
Column Totals:	95 (A)		455 (B)

Prevalence Index = B/A = 4.789473684

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 4/4	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-5

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is small vernal pool adjacent to fire break/fence line.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Erynigum vaseyi	25	Yes	OBL
2. Pleuropogon californicus	20	Yes	OBL
3. Lythrum hyssopifolia	20	Yes	OBL
4.			
5.			
	65 = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		65 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 4/1	90	5 YR 4/6	10	C	PL	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-6

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is minor swale but does not meet wetland parameters.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	25	Yes	NL
2. Festuca perennis	20	Yes	FAC
3. Avena fatua	20	Yes	NL
4. Holocarpha virgata	15	No	NL
5. Leontodon saxatilis	10	No	FACU
6. _____			
7. _____			
8. _____			
	90	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	10	x 4 =	40
UPL species	60	x 5 =	300
Column Totals:	90 (A)		400 (B)

Prevalence Index = B/A = 4.444444444

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Dominated by upland plants.

SOIL

Sampling Point: DP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 4/3	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-7

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is minor swale but does not meet wetland parameters.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca perennis	40	Yes	FAC
2. Elymus caput-medusae	20	Yes	NL
3. Bromus hordeaceus	20	Yes	FACU
4. Leontodon saxatilis	10	No	FACU
5. _____			
6. _____			
7. _____			
8. _____			
	90	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	30	x 4 =	120
UPL species	20	x 5 =	100
Column Totals:	90 (A)		340 (B)

Prevalence Index = B/A = 3.77777777

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10 YR 4/3	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-8
Investigator(s): Joshua Boldt Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): C - Mediterranean California Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Festuca perennis	35	Yes	FAC
2. Bromus hordeaceus	25	Yes	FACU
3. Festuca myuros	20	Yes	FACU
4. Rumex crispus	10	No	FAC
5. Leontodon saxatilis	5	No	FACU
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	45	x 3 =	135
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	95 (A)		335 (B)

Prevalence Index = B/A = 3.526315789

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: DP-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 3/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-9
Investigator(s): Joshua Boldt Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): C - Mediterranean California Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No ✓ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No
Hydric Soil Present?	Yes ____ No ____	
Wetland Hydrology Present?	Yes ____ No ____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Avena fatua	20	Yes	NL
2. Elymus caput-medusae	25	Yes	NL
3. Bromus diandrus	10	No	NL
4. Bromus hordeaceus	15	No	FACU
5. Festuca perennis	10	No	FAC
6. Carduus pycnocephalus	5	No	NL
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	15	x 4 =	60
UPL species	60	x 5 =	300
Column Totals:	85 (A)		390 (B)

Prevalence Index = B/A = 4.588235294

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: DP-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 3/3	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-10

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is hillside seep.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca perennis	25	Yes	FAC
2. Juncus bufonius	20	Yes	FACW
3. Lythrum hyssopifolium	15	Yes	OBL
4. Hordeum marinum	10	No	FAC
5. Zeltnera muehlenbergii	10	No	FAC
6. Briza minor	5	No	FAC
7. _____			
8. _____			
	85	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	20	x 2 =	40
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	85 (A)		205 (B)

Prevalence Index = B/A = 2.411764705

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 4/2	90	5 YR 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (**F1**)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-11

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is hillside seep.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca perennis	30	Yes	FAC
2. Lythrum hyssopifolium	15	Yes	OBL
3. Juncus bufonius	15	Yes	FACW
4. Hordeum marinum	10	No	FAC
5. Helminthotheca echioides	5	No	FAC
6. Briza minor	5	No	FAC
7. _____			
8. _____			
	80	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	15	x 2 =	30
FAC species	50	x 3 =	150
FACU species	_____	x 4 =	0
UPL species	_____	x 5 =	0
Column Totals:	80 (A)		195 (B)

Prevalence Index = B/A = 2.4375

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 4/2	90	5 YR 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-12

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is wetland swale.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Eleocharis macrostachya	35	Yes	OBL
2. Mentha pulegium	20	Yes	OBL
3. Cyperus eragrostis	10	No	FACW
4. Paspalum dilatatum	10	No	FAC
5. Gastridium phleoides	5	No	FACU
6. Rumex crispus	5	No	FAC
7. _____			
8. _____			
	85	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55	x 1 =	55
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	85 (A)		140 (B)

Prevalence Index = B/A = 1.647058823

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 2/2	90	5 YR 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-13

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	15	Yes	NL
2. Leontodon saxatilis	15	Yes	FACU
3. Acmispon americanus	10	No	UPL
4. Juncus bufonius	15	Yes	FACW
5. Juncus capitatus	5	No	FACU
6. Briza minor	10	No	FAC
7. Bromus diandrus	15	Yes	NL
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	10	x 3 =	30
FACU species	20	x 4 =	80
UPL species	40	x 5 =	200
Column Totals:	85 (A)		340 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 4/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-14
Investigator(s): Joshua Boldt Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): C - Mediterranean California Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is hillside seep.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Polypogon monspeliensis	20	Yes	FACW
2. Eleocharis macrostachya	15	Yes	OBL
3. Festuca perennis	10	No	FAC
4. Juncus bufonius	10	No	FACW
5. Zeltnera muehlenbergii	10	No	FAC
6.			
7.			
8.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	30	x 2 =	60
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		135 (B)

Prevalence Index = B/A = 2.076923076

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: DP-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 4/2	90	5 YR 4/6	10	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-15
Investigator(s): Joshua Boldt Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): C - Mediterranean California Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Elymus caput-medusae	30	Yes	NL
2. Festuca perennis	15	Yes	FAC
3. Bromus diandrus	15	Yes	NL
4. Erodium botrys	10	No	FACU
5. Juncus bufonius	10	No	FACW
6. Lythrum hyssopifolium	5	No	OBL
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species	10	x 4 =	40
UPL species	45	x 5 =	225
Column Totals:	85 (A)		335 (B)

Prevalence Index = B/A = 3.941176471

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: DP-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 3/4	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-16
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is hillside seep.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Polypogon monspeliensis	25	Yes	FACW
2. Lythrum hyssopifolium	20	Yes	OBL
3. Festuca perennis	20	Yes	FAC
4. Hordeum marinum	10	No	FAC
5. Juncus bufonius	10	No	FACW
6. Acmispon americanus	10	No	UPL
7. Helminthotheca echioides	5	No	FAC
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	35	x 2 =	70
FAC species	35	x 3 =	105
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	100 (A)		245 (B)

Prevalence Index = B/A = 2.45

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 4/1	90	7.5 YR 4/6	10	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-17
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	20	Yes	NL
2. Bromus hordeaceus	15	Yes	FACU
3. Bromus diandrus	15	Yes	NL
4. Leontodon saxatilis	10	No	FACU
5. Avena fatua	10	No	NL
6. Festuca myuros	10	No	FACU
7. Festuca perennis	5	No	FAC
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	35	x 4 =	140
UPL species	45	x 5 =	225
Column Totals:	85 (A)		380 (B)

Prevalence Index = B/A = 4.470588235

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 4/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-18
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Elyumus caput-medusae	30	Yes	NL
2. Avena fauta	15	Yes	NL
3. Bromus hordeaceus	15	Yes	FACU
4. Leontodon saxatilis	10	No	FACU
5. Geranium dissectum	10	No	NL
6. Erodium botrys	10	No	FACU
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	65	x 5 =	325
Column Totals:	100 (A)		465 (B)

Prevalence Index = B/A = 4.65

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5 Y 3/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan/cobbles

Depth (inches): 6

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-19
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is vernal pool.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Eryngium vaseyi	20	Yes	FACW
2. Pogogyne ziziphoroides	5	No	OBL
3. Plagiobothrys stipitatus	15	Yes	FACW
4. Eleocharis macrostachya	15	Yes	OBL
5. Deschampsia elgonata	10	No	FACW
6. Lasthenia fremontii	5	No	OBL
7.			
8.			
	70	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	45	x 2 =	90
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	70 (A)		115 (B)

Prevalence Index = B/A = 1.642857143

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5 Y 4/4	90	7.5 YR 4/6	10	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan/cobbles

Depth (inches): 8

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 2

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-20

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	30	Yes	NL
2. Festuca myuros	15	Yes	FACU
3. Bromus hordeaceus	10	Yes	FACU
4. Leontodon saxatilis	10	Yes	FACU
5. Holocarpha virgata	10	Yes	NL
6. Erodium botrys	5	No	FACU
7. _____			
8. _____			
	80	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	65	x 5 =	325
Column Totals:	80 (A)		385 (B)

Prevalence Index = B/A = 4.8125

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 3/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-21
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is vernal pool adjacent to fence line/fire break.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Eryngium vaseyi	15	Yes	FACW
2. Hordeum marinum	20	Yes	FAC
3. Polypogon monspeliensis	15	Yes	FACW
4. Festuca perennis	15	Yes	FAC
5. Lasthenia fremontii	10	No	OBL
6. Pogogyne ziziphoroides	5	No	OBL
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	30	x 2 =	60
FAC species	35	x 3 =	105
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		180 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5 Y 4/4	90	7.5 YR 4/4	10	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan/cobbles

Depth (inches): 8

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 3

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-22
Investigator(s): Joshua Boldt Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): C - Mediterranean California Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Festuca perennis	10	No	FAC
2. Elymus caput-medusae	15	Yes	NL
3. Lythrum hyssopifolium	20	Yes	OBL
4. Acmispon americanus	15	Yes	UPL
5. Gastridium phleoides	5	No	FACU
6. Hordeum marinum	10	No	FAC
7. Bromus diandrus	10	No	NL
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	5	x 4 =	20
UPL species	40	x 5 =	200
Column Totals:	85 (A)		300 (B)

Prevalence Index = B/A = 3.529411764

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: DP-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5 YR 4/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan

Depth (inches): 8

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-23
Investigator(s): Joshua Boldt Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): C - Mediterranean California Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is wetland swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Polypogon monspeliensis	30	Yes	FACW
2. Festuca perennis	20	Yes	FAC
3. Lythrum hyssopifolium	15	No	OBL
4. Hordeum marinum	15	No	FAC
5. Bromus hordeaceus	10	No	FACU
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	30	x 2 =	60
FAC species	35	x 3 =	105
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	90 (A)		220 (B)

Prevalence Index = B/A = 2.444444444

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: DP-23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 4/2	90	7.5 YR 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-24

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	60	Yes	NL
2. Festuca perennis	10	No	FAC
3. Avena fatua	10	No	NL
4. Bromus hordeaceus	10	No	FACU
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	70	x 5 =	350
Column Totals:	90 (A)		420 (B)

Prevalence Index = B/A = 4.666666666

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 3/4	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-25
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	30	Yes	NL
2. Festuca perennis	10	No	FAC
3. Hordeum marinum	10	No	FAC
4. Bromus hordeaceus	15	Yes	FACU
5. Erodium botrys	10	No	FACU
6. Geranium dissectum	10	No	NL
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	25	x 4 =	100
UPL species	40	x 5 =	200
Column Totals:	85 (A)		360 (B)

Prevalence Index = B/A = 4.235294117

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 3/2	95	7.5 YR 4/4	5	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-26
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is seasonal wetland adjacent to drainage.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Festuca perennis	25	Yes	FAC
2. Lythrum hyssopifolia	20	Yes	OBL
3. Hordeum marinum	15	Yes	FAC
4. Leontodon saxitilis	10	No	FACU
5. Helminthotecha echioides	10	No	FAC
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	10	x 4 =	40
UPL species		x 5 =	0
Column Totals:	80 (A)		210 (B)

Prevalence Index = B/A = 2.625

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 3/1	95	7.5 YR 4/4	5	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-27

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	20	Yes	NL
2. Festuca perennis	25	Yes	FAC
3. Acmispon americanus	15	Yes	UPL
4. Leontodon saxatilis	15	Yes	FACU
5. Trichostema lanceoloata	5	No	FACU
6. Juncus bufonius	5	No	FACW
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	25	x 3 =	75
FACU species	20	x 4 =	80
UPL species	35	x 5 =	175
Column Totals:	85 (A)		340 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 4/2	95	7.5 YR 3/4	5	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-28

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is hillside seep.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca perennis	30	Yes	FAC
2. Juncus bufonius	20	Yes	FACW
3. Zeltnera muehlenbergii	10	No	FAC
4. Acmispon americanus	15	No	UPL
5. Leontodon saxatilis	10	No	FACU
6. Helminthotheca echioides	10	No	FAC
7. _____			
8. _____			
	95	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	50	x 3 =	150
FACU species	10	x 4 =	40
UPL species	15	x 5 =	75
Column Totals:	95 (A)		305 (B)

Prevalence Index = B/A = 3.210526315

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	5 YR 4/2	90	5 YR 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-29

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is hillside seep.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Festuca perennis	30	Yes	FAC
2. Zeltnera muehlenbergii	15	Yes	FAC
3. Hordeum marinum	15	Yes	FAC
4. Juncus bufonius	15	Yes	FACW
5. Trichostema lanceolata	10	No	FACU
6. Juncus capitatus	5	No	FACU
7. _____			
8. _____			
	90	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	60	x 3 =	180
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	90 (A)		270 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	5 YR 3/1	95	5 YR 3/4	5	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-30
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	20	Yes	NL
2. Festuca perennis	20	Yes	FAC
3. Acmispon americanus	20	Yes	UPL
4. Leontodon saxatilis	15	No	FACU
5. Trichostema lanceolata	5	No	FACU
6. Lactuca serriola	5	No	FACU
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	25	x 4 =	100
UPL species	40	x 5 =	200
Column Totals:	85 (A)		360 (B)

Prevalence Index = B/A = 4.235294117

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	5 YR 3/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-31
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Festuca perennis	30	Yes	FAC
2. Elymus caput-medusae	15	Yes	NL
3. Acmispon americanus	15	Yes	UPL
4. Leontodon saxitilis	10	No	FACU
5. Bromus hordeaceus	10	No	FACU
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	20	x 4 =	80
UPL species	30	x 5 =	150
Column Totals:	80 (A)		320 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5 YR 3/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-37
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Bromus hordeaceus	20	Yes	FACU
2. Festuca myuros	20	Yes	FACU
3. Polypogon monspeliensis	20	Yes	FACW
4. Eleocharis macrostachya	10	No	OBL
5. Lythrum hyssopifolium	5	No	OBL
6. Bromus diandrus	5	No	NL
7.			
8.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	5	x 5 =	25
Column Totals:	80 (A)		240 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	5 YR 4/4						silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-38
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is vernal pool adjacent to wetland swale.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Erynigium vaseyi	40	Yes	OBL
2. Polypogon monspeliensis	15	Yes	FACW
3. Eleocharis macrostachya	15	Yes	OBL
4. Festuca perennis	5	No	FAC
5. Hordeum marinum	5	No	FAC
6. _____			
7. _____			
8. _____			
	80	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55	x 1 =	55
FACW species	15	x 2 =	30
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		115 (B)

Prevalence Index = B/A = 1.4375

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10 YR 4/2	90	5 Yr 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan/cobbles

Depth (inches): 8

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-39
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is wetland swale.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Eleocharis macrostachya	30	Yes	FACW
2. Eryngium vaseyi	15	Yes	OBL
3. Polypogon monspeliensis	15	Yes	FAC
4. Juncus bufonius	10	No	OBL
5. Festuca perennis	10	No	FAC
6. Hordeum marinum	5	No	FAC
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	30	x 2 =	60
FAC species	30	x 3 =	90
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	85 (A)		175 (B)

Prevalence Index = B/A = 2.058823529

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-39

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 4/2	80	7.5 YR 4/6	10	C	M	silty loam	
			10 YR 4/1	10	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21

Applicant/Owner: Winn Communities State: CA Sampling Point: DP-40

Investigator(s): Joshua Boldt Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Elumus caput-medusae	40	Yes	NL
2. Bromus hordeaceus	10	Yes	FACU
3. Avena fatua	15	Yes	NL
4. Bromus diandrus	15	Yes	NL
5. _____			
6. _____			
7. _____			
8. _____			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	70	x 5 =	350
Column Totals:	80 (A)		390 (B)

Prevalence Index = B/A = 4.875

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-40

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5 YR 4/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-41
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is hillside seep.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Polypogon monspeliensis	25	Yes	FACW
2. Eleocharis macrostachya	20	Yes	OBL
3. Festuca perennis	15	Yes	FAC
4. Cyperus eragrostis	10	No	FACW
5. Lythrum hyssopifolium	10	No	OBL
6. Briza minor	5	No	FAC
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	35	x 2 =	70
FAC species	20	x 3 =	60
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	85 (A)		160 (B)

Prevalence Index = B/A = 1.882352941

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-41

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5 YR 3/3	100					silty loam	
6-12	7.5 YR 4/1	90	7.5 YR 3/4	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 4

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-42
Investigator(s): Joshua Boldt Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): C - Mediterranean California Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Elymus caput-medusae	60	Yes	NL
2. Avena fatua	15	No	NL
3. Bromus hordeaceus	15	No	FACU
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	75	x 5 =	375
Column Totals:	90 (A)		435 (B)

Prevalence Index = B/A = 4.833333333

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: DP-42

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5 Y 3/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-43
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is hillside seep.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Juncus xiphioides	100	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		100 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: DP-43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5 YR 3/3	100					silty loam	
5-14	7.5 YR 4/1	90	7.5 YR 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 2

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-44
Investigator(s): Joshua Boldt Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR): C - Mediterranean California Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought".

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Elymus caput-medusae	60	Yes	NL
2. Avena fatua	10	No	NL
3. Bromus hordeaceus	15	No	FACU
4.			
5.			
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	75	x 5 =	375
Column Totals:	85 (A)		415 (B)

Prevalence Index = B/A = 4.882352941

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: DP-44

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5 Y 3/4	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Creekside Village City/County: El Dorado County Sampling Date: 1/13/21
Applicant/Owner: Winn Communities State: CA Sampling Point: DP-45
Investigator(s): Joshua Boldt Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): C - Mediterranean California Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:
Climatic/hydrologic conditions were not typical as the 2020-2021 wet season was drier than normal. The PDSI for the study area was categorized as "severe drought". Feature is riparian wetland associated with perennial creek.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. Salix gooddingii	25	Yes	FACW
2.			
3.			
4.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Rubus armeniacus	45	Yes	FAC
2.			
3.			
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Typha latifolia	5	Yes	OBL
2. Cyperus eragrostis	5	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	25	x 2 =	50
FAC species	45	x 3 =	135
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		195 (B)

Prevalence Index = B/A = 2.4375

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: DP-45

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10 YR 4/1	85	7.5 YR 4/6	15	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix E

ORM Aquatic Resources Spreadsheet

Waters_Name	State	Cowardin_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
RW-1	CALIFORNIA	RP1FO	Area	0.232	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
RW-2	CALIFORNIA	RP1FO	Area	0.178	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
RW-3	CALIFORNIA	RP1FO	Area	0.313	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-4	CALIFORNIA	RP1FO	Area	0.045	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-5	CALIFORNIA	RP1FO	Area	0.115	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-6	CALIFORNIA	RP1FO	Area	0.025	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-7	CALIFORNIA	RP1FO	Area	0.060	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-8	CALIFORNIA	RP1FO	Area	0.012	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-9	CALIFORNIA	RP1FO	Area	0.092	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-10	CALIFORNIA	RP1FO	Area	0.024	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-11	CALIFORNIA	RP1FO	Area	0.119	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
RW-12	CALIFORNIA	RP1FO	Area	0.009	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RW-13	CALIFORNIA	RP1FO	Area	0.028	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RSW-1	CALIFORNIA	PEM	Area	0.078	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
RSW-2	CALIFORNIA	PEM	Area	0.087	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
RSW-3	CALIFORNIA	PEM	Area	0.001	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
RSW-4	CALIFORNIA	PEM	Area	0.014	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
RSW-5	CALIFORNIA	PEM	Area	0.372	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RSW-6	CALIFORNIA	PEM	Area	0.018	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RSW-7	CALIFORNIA	PEM	Area	0.002	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RSW-8	CALIFORNIA	PEM	Area	0.039	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
RSW-9	CALIFORNIA	PEM	Area	0.008	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
RSW-10	CALIFORNIA	PEM	Area	0.001	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
SW-1	CALIFORNIA	PEM	Area	0.003	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
SW-2	CALIFORNIA	PEM	Area	0.062	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
SW-3	CALIFORNIA	PEM	Area	0.066	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
SW-6	CALIFORNIA	PEM	Area	0.136	ACRE	RPWWD	38.61260900	-121.04876000	Carson Creek
SW-7	CALIFORNIA	PEM	Area	0.004	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-1	CALIFORNIA	PEM	Area	0.091	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-2	CALIFORNIA	PEM	Area	0.110	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-3	CALIFORNIA	PEM	Area	0.108	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-4	CALIFORNIA	PEM	Area	0.106	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-5	CALIFORNIA	PEM	Area	0.100	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-6	CALIFORNIA	PEM	Area	0.022	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-7	CALIFORNIA	PEM	Area	0.069	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-8	CALIFORNIA	PEM	Area	0.036	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-9	CALIFORNIA	PEM	Area	0.297	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-10	CALIFORNIA	PEM	Area	0.007	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-11	CALIFORNIA	PEM	Area	0.029	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
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S-13	CALIFORNIA	PEM	Area	0.026	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-16	CALIFORNIA	PEM	Area	0.038	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
S-17	CALIFORNIA	PEM	Area	0.037	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
VP-1	CALIFORNIA	PEM	Area	0.007	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
VP-2	CALIFORNIA	PEM	Area	0.007	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
VP-3	CALIFORNIA	PEM	Area	0.012	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
VP-4	CALIFORNIA	PEM	Area	0.038	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
VP-5	CALIFORNIA	PEM	Area	0.006	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek
WS-1	CALIFORNIA	PEM	Area	0.009	ACRE	ISOLATE	38.61260900	-121.04876000	Carson Creek

WS-2	CALIFORNIA	PEM	Area	0.005 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
WS-3	CALIFORNIA	PEM	Area	0.061 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
WS-4	CALIFORNIA	PEM	Area	0.135 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
WS-5	CALIFORNIA	PEM	Area	0.078 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
WS-6	CALIFORNIA	PEM	Area	0.097 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
WS-7	CALIFORNIA	PEM	Area	0.144 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
WS-8	CALIFORNIA	PEM	Area	0.303 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
WS-9	CALIFORNIA	PEM	Area	0.260 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
WS-10	CALIFORNIA	PEM	Area	0.024 ACRE	RPWWD	38.61260900 -121.04876000 Carson Creek
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I-1	CALIFORNIA	R4	Area	1.115 ACRE	RPW	38.61260900 -121.04876000 Carson Creek
I-2	CALIFORNIA	R4	Area	0.086 ACRE	RPW	38.61260900 -121.04876000 Carson Creek
E-1a	CALIFORNIA	R6	Area	1.110 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
E-1b	CALIFORNIA	R6	Area	0.052 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
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E-5	CALIFORNIA	R6	Area	0.004 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
E-6	CALIFORNIA	R6	Area	0.000 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
E-7	CALIFORNIA	R6	Area	0.001 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
CUL-1	CALIFORNIA		Area	0.004 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
CUL-2	CALIFORNIA		Area	0.005 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
CUL-3	CALIFORNIA		Area	0.005 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
CUL-4	CALIFORNIA		Area	0.001 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
CUL-5	CALIFORNIA		Area	0.000 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
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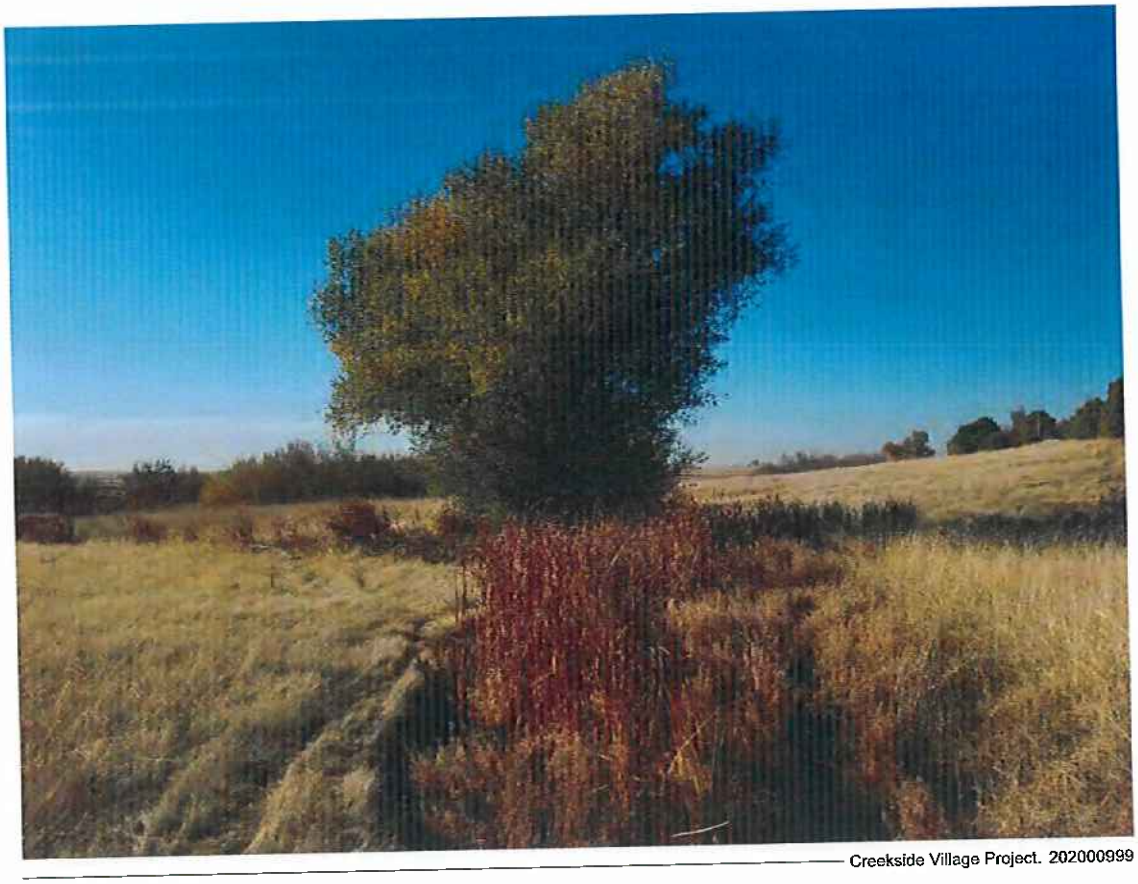
CUL-9	CALIFORNIA		Area	0.003 ACRE	NRPW	38.61260900 -121.04876000 Carson Creek
CUL-10	CALIFORNIA		Area	0.007 ACRE	NRPW	38.61260900 -121.04876000 Carson Creek
CUL-11	CALIFORNIA		Area	0.006 ACRE	NRPW	38.61260900 -121.04876000 Carson Creek
CUL-12	CALIFORNIA		Area	0.007 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek
D-2	CALIFORNIA		Area	0.014 ACRE	ISOLATE	38.61260900 -121.04876000 Carson Creek

Appendix F
Study Area Photographs

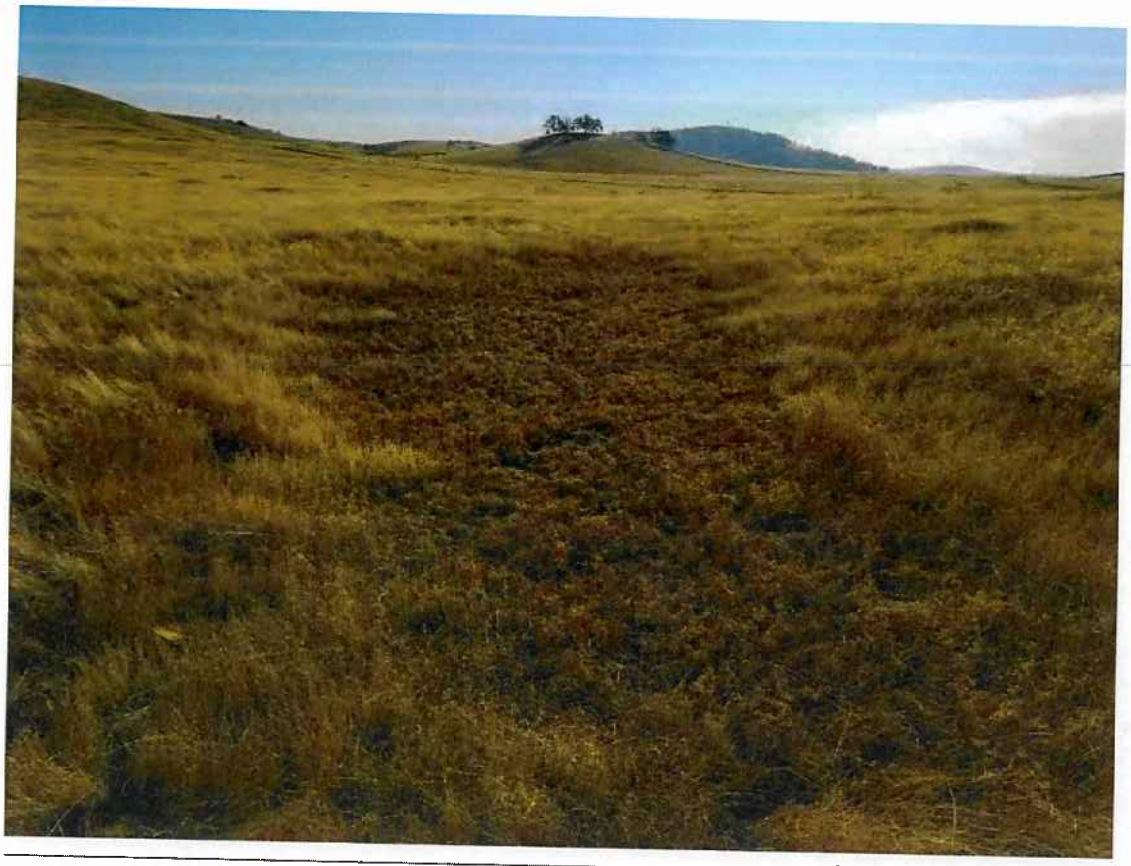


Creekside Village Project. 202000999

Photo 1
I-1. December 10, 2020

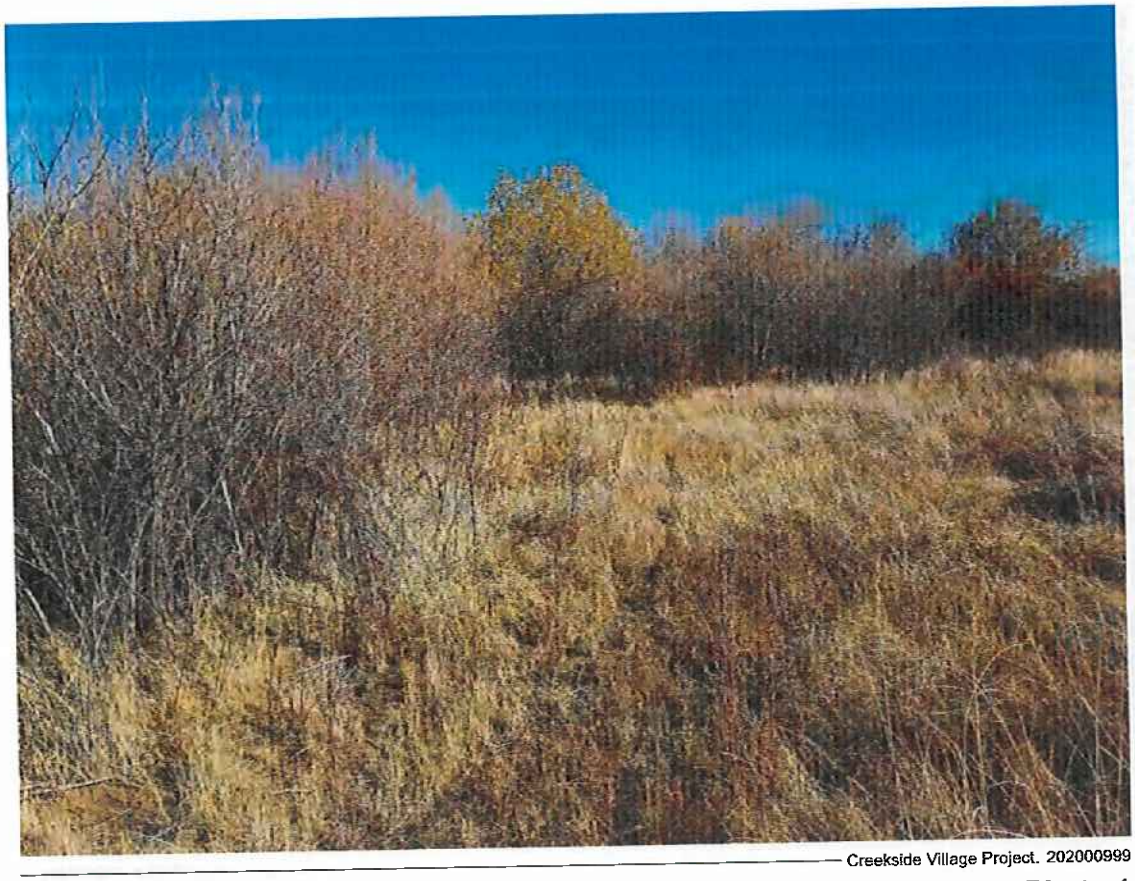
Creekside Village Project. 202000999

Photo 2
E-3 is in the foreground and I-1 is I the background. December 10, 2020



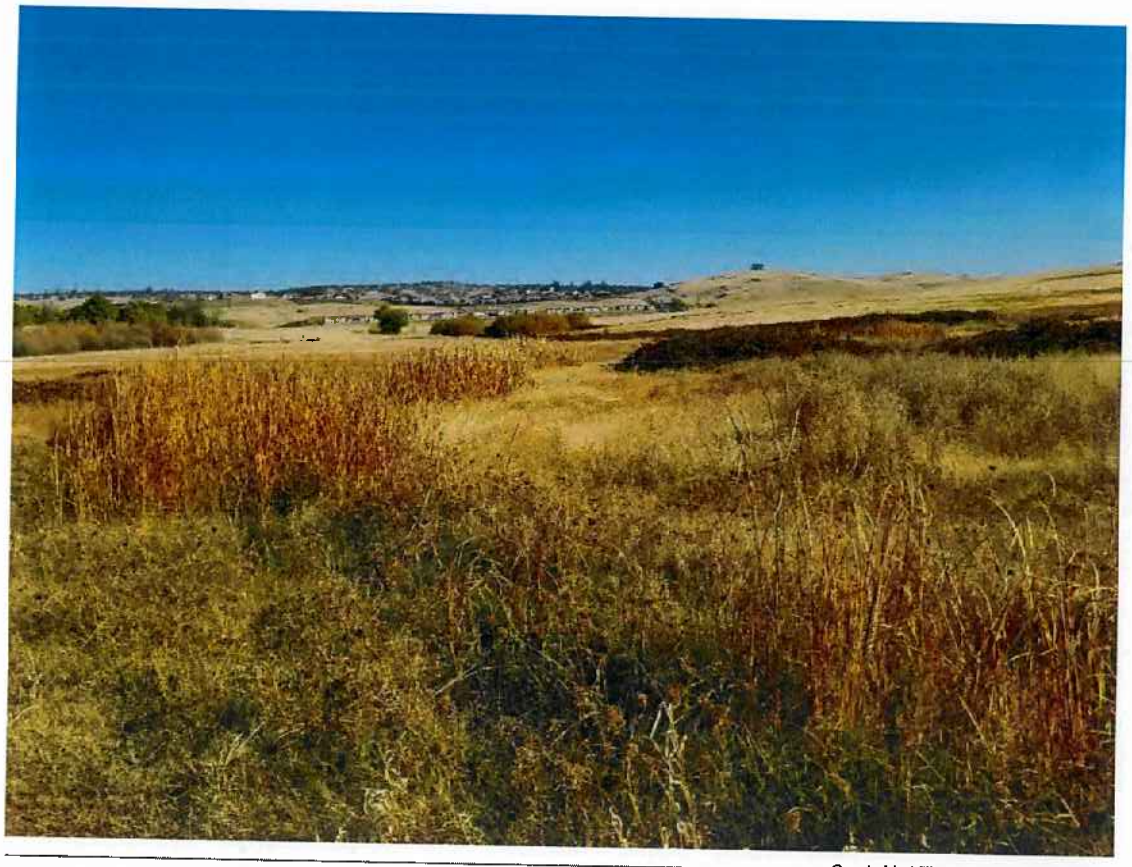
Creekside Village Project. 202000999

Photo 3
VP-4. December 10, 2020



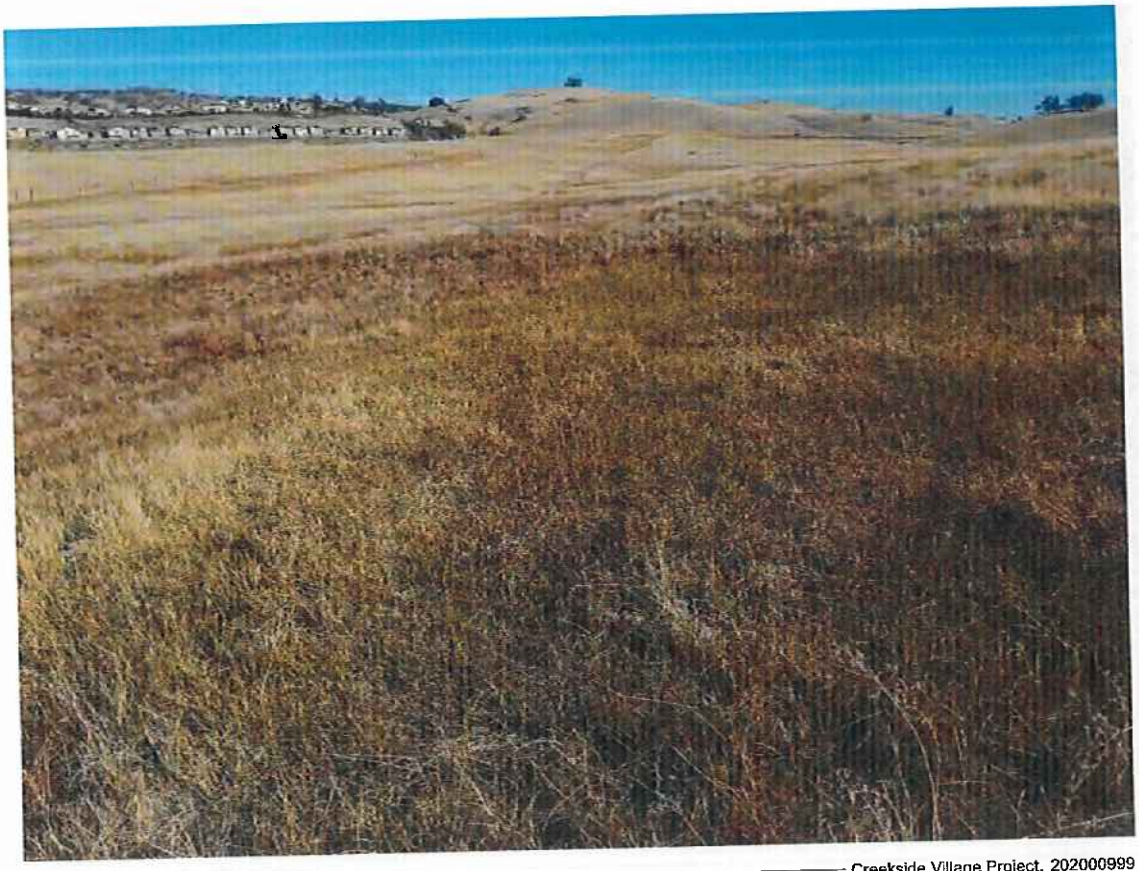
Creekside Village Project. 202000999

Photo 4
RW-2. December 10, 2020



Creekside Village Project. 202000999

Photo 5
RSW-5. December 10, 2020

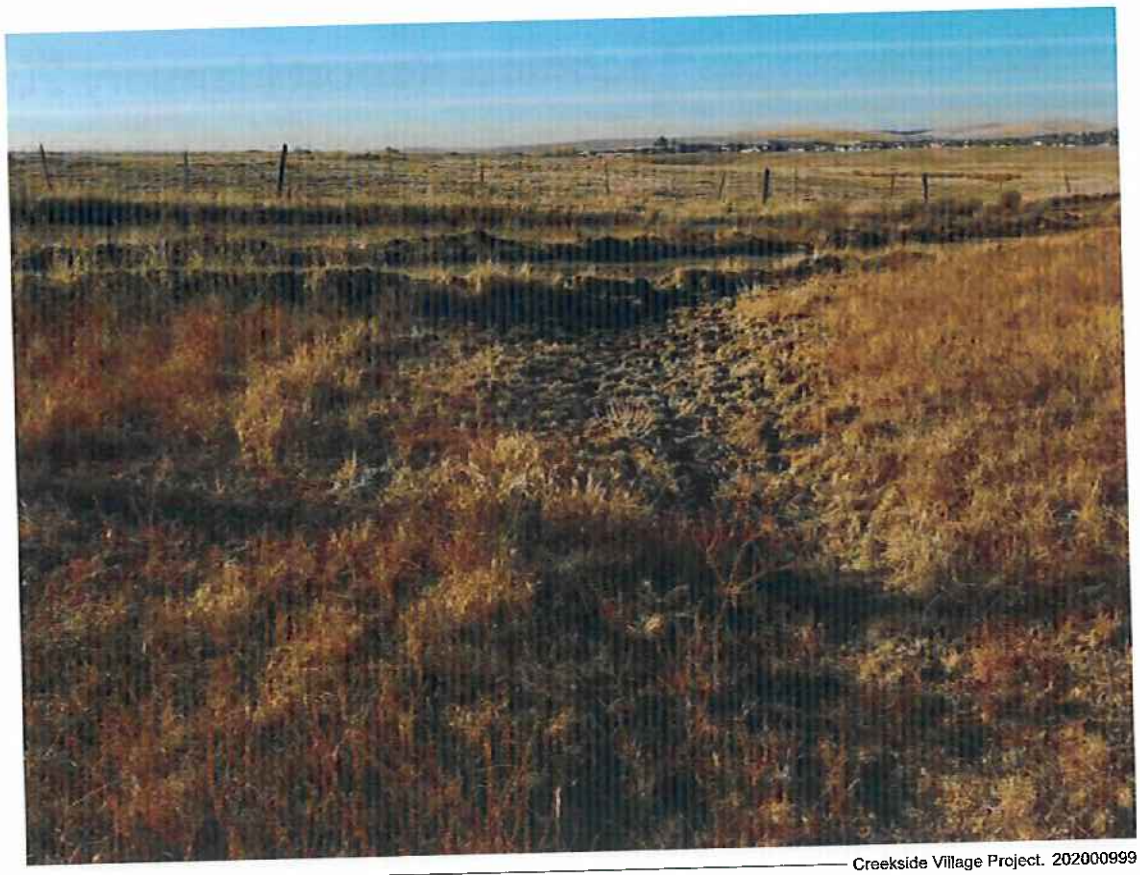


Creekside Village Project. 202000999

Photo 6
S-9. December 10, 2020

Creekside Village Project. 202000999

Photo 7
WS-5. December 10, 2020



Creekside Village Project. 202000999

Photo 8
VP-1. December 10, 2020

Oak Resources Technical Report (January 2019)

Oak Resources Technical Report

Creekside Village (aka DST Property) ±240-Acre Site
El Dorado County, California

Prepared for:

Winn Communities

Date:

January 4, 2019

Prepared by:

FOOTHILL ASSOCIATES

© 2019

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1.0 INTRODUCTION

This report presents the results of an oak resources survey conducted for the ±240-acre Creekside Village (aka DST Property) site (Study Area) located within El Dorado County, California. The purpose of this report is to present information on the species, size, and condition of protected oak trees on the site, map the extent and location of oak woodland, provide an analysis of potential impacts to oak resources from the proposed project, provide mitigation requirements consistent with the County of El Dorado Oak Resources Management Plan, and tree protection recommendations for trees to be preserved onsite.

The Study Area is located along and west of Latrobe Road, approximately three air miles south of U.S. Route 50, El Dorado County, California, within Sections 24 and 25 of Township 9 North, Range 8 East of the *Folsom SE* US Geological (USGS) quadrangle. The approximate location of the center of the Study Area is 38° 36' 45.123" North, 121° 3' 2.532" West (**Figure 1**).

The proposed project will construct a residential development with approximately 99 acres of low-density housing, 30.5 acres of medium-density housing, and five acres of high-density housing. Additionally, three parks, totaling approximately eight acres, and approximately 44 acres of open space are proposed.

2.0 OAK RESOURCES MANAGEMENT PLAN

The County of El Dorado (County) adopted the *El Dorado County Oak Resources Management Plan* (ORMP) on October 24, 2017 and the ORMP went into effect on November 23, 2017. The ORMP designates three classes of protected oak resources: oak woodlands, Heritage oak trees, and individual native oak trees. According to the ORMP, there are six primary native oak tree species in El Dorado County, which include blue oak (*Quercus douglasii*), interior live oak (*Quercus wislizeni*), valley oak (*Quercus lobata*), California black oak (*Quercus kelloggii*), canyon live oak (*Quercus chrysolepis*), and Oregon oak (*Quercus garryana*). Additionally, one hybrid, known as oracle oak (*Quercus* x *morehus*) also occurs within the County. These species comprise the County's oak woodlands and also occur as isolated individual trees or small groups of trees. Woodland habitats include biological communities that range in structure and density. Major oak woodland habitats within El Dorado County include blue oak-foothill pine, blue oak woodland, montane hardwood, montane hardwood-conifer, and valley oak woodland. Additionally, any oak stand that either currently or historically supports a greater than 10 percent oak canopy cover is considered an oak woodland, even if it is located within a larger non-woodland habitat.

A Heritage tree is a protected oak tree that has a single main trunk that measures 36 inches diameter at breast height (DBH) or greater, or a multiple trunk with an aggregate DBH measuring 36 inches or greater. Trees of this size are regulated individually whether located within or outside of an oak woodland. An individual oak tree located outside of an oak woodland is regulated under the ORMP if it has a single main trunk that measures greater than six inches in DBH as measured at four feet six inches from the ground, or a multiple trunk with an aggregate DBH measuring greater than ten inches in DBH and is not a Heritage tree.

A permit is required prior to impacting or removing protected oak resources. Impacts to oak trees include pruning, grading within the root zone, or any other disturbance to the tree. Oak woodland is considered impacted by any development activity, such as clearing, grading, and other modifications for roads, buildings, landscaping, or other development activities.

Mitigation is required for impacts to protected oak resources. Mitigation for individual oak trees is based on an inch-for-inch basis; Heritage tree replacement is required at a 3:1 ratio. Oak woodland mitigation requirements depend on the percentage of oak woodland impacted as follows: 1:1 replacement of canopy acreage, where 50 percent or less of on-site oak woodlands are impacted; 1.5:1 replacement of acreage, where 50.1 to 75 percent of on-site oak woodlands are impacted; and 2:1 replacement of acreage, where 75.1 to 100 percent of on-site oak woodlands are impacted. Additionally, a conservation easement or deed restriction must be placed over any retained on-site woodlands to protect them in perpetuity.

Mitigation under the ORMP may be completed with a combination of the following options: on- or off-site replacement plantings, payment of in-lieu fees, or establishment of an off-site conservation easement for oak woodlands only. Payment of in-lieu fees are currently set at $8,285 per acre for oak woodlands, $153 per trunk inch for individual trees, and $459 per trunk

inch for Heritage trees. Replacement planting is limited to 50 percent of the total required mitigation. Various plant sizes may be used in mitigation planting, as shown in **Table 1**, below.

TABLE 1 — MITIGATION TREE REPLACEMENT RATIOS

Replacement Tree Size	# of Trees Required
Oak Woodland	
1-gallon / TreePot 4	1 per tree required*
Acorn	3 per tree required*
Individual / Heritage Trees	
15-gallon	1 per inch removed
5-gallon	1.5 per inch removed (rounded up)
1-gallon / TreePot 4	2 per inch removed
Acorn	3 per inch removed

* Number of trees required based on actual density of trees removed

Mitigation planting density is based on the actual tree density of the oak woodland removed, with a maximum planting density of 200 trees per acre. All mitigation trees shall be maintained and monitored for a period of seven years following the initial planting. Overplanting is acceptable in order to achieve the required density and acreage at the end of the 7-year monitoring period. If mitigation planting is implemented then a Replacement Planting Plan is required and the planting area must be protected in perpetuity through deed restrictions or a conservation easement.

3.0 METHODOLOGY

The Study Area was surveyed by International Society of Arboriculture (ISA) Certified Arborist, Zachary Neider (WE-11615A) on September 25, 2018. All oak resources within and overhanging the project footprint were inventoried. A diameter tape was used to verify the DBH of each inventoried tree. The measurement from the trunk to the end of the longest lateral limb was estimated, and used as the dripline radius (DLR). All surveyed trees were identified with an aluminum tag that corresponds to the numbering in **Appendix A**. Approximate tree locations were mapped using a Trimble GeoXT Global Positioning System (GPS) hand-held unit with sub-meter accuracy. Tree data was combined with habitat data developed by aerial photo interpretation and field observations in ArcGIS 10.4. Approximate oak tree locations, oak woodland habitat, and potential project impacts to oak resources are identified in **Figure 2.**

The health and structural condition of each tree was rated according to **Table 2,** below. The health rating considers factors such as the size, color, and density of the foliage; the amount of deadwood within the canopy; bud viability; evidence of wound closure; and the presence or evidence of stress, disease, nutrient deficiency, and insect infestation. The structural rating reflects the trunk and branch configuration; canopy balance; the presence of included bark and other structural defects such as decay; and the potential for structural failure. In cases where conditions fall between the Good, Fair, and Poor ratings, intermediate ratings Fair-Good and Poor-Fair were used.

TABLE 2 — TREE RATING SYSTEM

Rating	Tree Health
Good	There is an average or below-average amount of deadwood/dieback with respect to the tree's size and growing environment; leaf size, color, and density are typical for the species; buds are normal size, viable, abundant, and uniform throughout the canopy; current and past growth increments are generally average or better; any callusing is vigorous. This health rating indicates that there is very little, if any, evidence of stress, disease, nutrient deficiency, and/or insect infestation.
Fair	There is an above-average amount of deadwood/dieback with respect to the tree's size and growing environment; leaf size, color, and density may be below what is typically expected for the species; buds are normal size and viable, but slightly sparse throughout the canopy; current and past growth increments may be below average; tree may be slow to callus around old wounds. This health rating indicates that there is moderate evidence of stress, disease, nutrient deficiency, and/or insect infestation.
Poor	There is an extreme amount of deadwood/dieback with respect to the tree's size and growing environment; leaf size, color, and density are clearly compromised; very few viable buds are present throughout the canopy; current and past growth increments are meager; no evidence of callusing around old wounds. This health rating indicates that there is widespread evidence of stress, disease, nutrient deficiency, and/or insect infestation.

Rating	Tree Structure
Good	No wounds, cavities, decay, or indication of hollowness are evident in the root crown, trunk, or primary and secondary limbs; no anchor roots are exposed; no codominant branching or multiple trunk attachments are present; very little included bark at branch attachments exists; no dead primary or secondary limbs are present in canopy; there have been no major limb failures; limbs are not overburdened; branching structure is appropriate for species; any decay is limited to small dead branches/stubs. This structure rating represents a low potential for failure.
Fair	With respect to the size of the tree, small to moderate wounds, cavities, decay, and indication of hollowness may be evident in the root crown, trunk, and/or primary and secondary limbs; some anchor roots may be exposed; codominant branching or multiple trunk attachments may be present, but included bark does not exist or is not well developed; minor to moderate amounts of included bark at branch attachments may exist; there may be small to moderate amounts of large dead limbs in canopy, but there is no evidence of large limb failures; limbs may be slightly overburdened; branching structure and/or canopy balance may be moderately altered by the tree's growing environment. This structure rating represents a moderate potential for failure.
Poor	With respect to the size of the tree, significant wounds, cavities, decay, and/or indication of hollowness may be evident in the root crown, trunk, and/or primary and secondary limbs; anchor roots may be exposed and/or the tree may have lost anchorage; codominant branching or multiple trunk attachments may be present; significant amounts of included bark may exist in trunk and branch attachments; there may be significant amounts of large dead limbs in the canopy; there may be evidence of trunk or large limb failures; limbs may be severely overburdened; branching structure and/or canopy balance may be drastically altered by the tree's growing environment. This structure rating represents a high potential for failure.

4.0 RESULTS AND DISCUSSION

The Study Area contains approximately 0.96 acres of blue oak woodland habitat (**Figure 2**). This particular biological community is characterized by an overstory composed of exclusively blue oak. The herbaceous understory consists of species such as wild oat (*Avena fatua*), medusahead (*Elymus caput-medusae*), vetch (*Vicia sativa*), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), and prickly lettuce (*Lactuca serriola*).

A total of seven oak trees, all Heritage blue oaks, were surveyed. Two trees (#1295 and #1296) were rated as Fair or better for both health and structure, two trees (#1297 and #1300) were rated as having Poor-Fair health, but Fair structure, and the remaining three trees fell below the Fair category in both health and structure. The majority of the inventoried trees are overmature and in decline in regards to health and structure, with common issues in trees of that age such as trunk wounds, rot, dieback, sloughing bark, and broken limbs. Detailed tree data for all surveyed trees is included in **Appendix A**.

5.0 OAK RESOURCE IMPACTS AND MITIGATION

Winn Communities is responsible for implementation of mitigation, if applicable. All oak resources within the Study Area exist within a portion of the proposed open space (**Figure 2**). Therefore, the project is expected to avoid impacts to all oak resources. Best management practices (BMP's), as described in **Section 6.0**, should be implemented for the duration of construction to ensure that existing oak resources are not inadvertently impacted by construction activities. Because the project will avoid all oak resources, no mitigation for individual oak trees, Heritage trees, or oak woodland is expected to be required.

6.0 TREE PROTECTION MEASURES

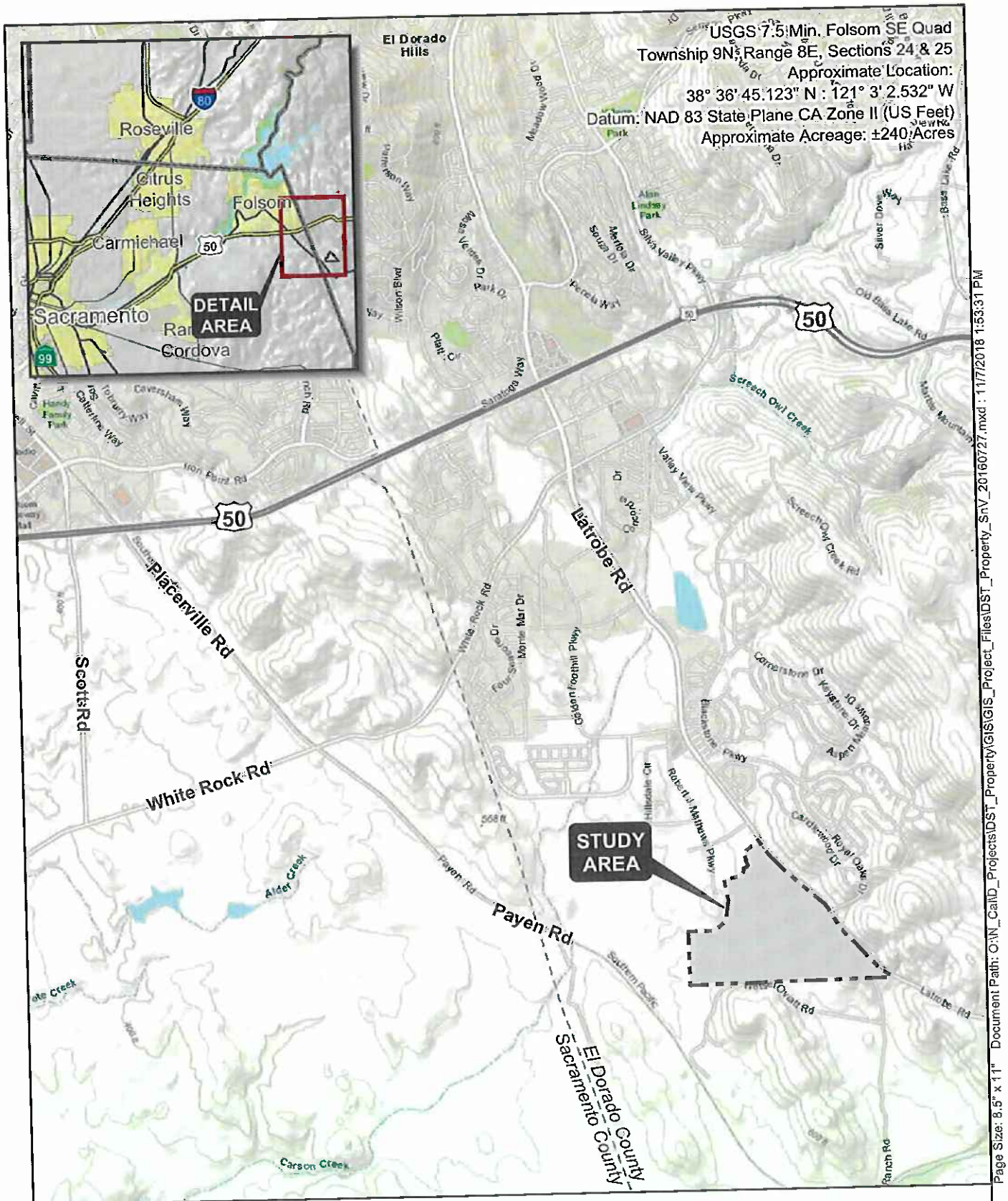
Although the existing oak resources are located in open space areas and no impacts are anticipated, if site improvements occur within 50 feet of the oak trees, the following BMP's should be integrated into the project plans to avoid impacts to protected oak resources within the Study Area:

- Install Tree Protection Fencing, consisting of a minimum 4-foot tall high-visibility fence (orange plastic snow fence or similar) on steel posts placed a maximum of 8-feet on center, shall be placed at the edge of the woodland habitat and around the perimeter of the root protection zone (RPZ) (dripline radius x 1.3) for the trees to remain, whichever is greater. The RPZ is the minimum distance for placing protective fencing, but tree protection fencing should be placed as far outside of the RPZ as possible. Signs shall be placed along the fence at approximately 50-foot intervals. Each sign shall be a minimum of 2 feet by 2 feet and shall include the following:

  TREE PROTECTION ZONE
  DO NOT MOVE OR RELOCATE FENCE
  UNTIL PROJECT COMPLETION WITHOUT
  PERMISSION OF PROJECT ARBORIST
  OR EL DORADO COUNTY

- If permanent site improvements (e.g. paving, buildings, and structures) encroach into the protected area, install fence at limit of work. If temporary impacts (e.g. grading, utility installation) require encroachment into the protected area, move fence to limit of work during active construction of item and return to edge of protected area once work is completed.
- Protection fencing shall not be moved without prior authorization from the Project Arborist or County of El Dorado or as detailed on approved plans.
- Avoid paving within protected area. If paving cannot be avoided, porous materials will be used.
- No parking, portable toilets, dumping or storage of any construction materials, including oil, gas, or other chemicals, or other infringement by workers or domesticated animals is allowed in the protected area.
- No signs, ropes, cables, metal stakes, or any other items shall be attached to a protected tree, unless recommended by an ISA-Certified Arborist.
- Grading, excavation, or trenching within the tree protection zone (TPZ) of existing native oaks should be avoided to the greatest extent possible. Under no circumstances should fill soil be placed against the trunk of an existing tree.
- Underground utilities should be avoided in the TPZ, but if necessary shall be bored or drilled. No trenching is allowed within the TPZ unless specifically approved by the Project Arborist.

- Drains shall be installed according to County specifications to avoid harm to existing oak trees due to excess watering.
- Pruning of living limbs or roots shall be done under the supervision of an ISA-Certified Arborist. All pruning should be done by hand, air knife, or water jet, in accordance with ISA standards using tree maintenance best practices. Climbing spikes should not be used on living trees. Limbs should be removed with clean cuts just outside the crown collar.
- Cover exposed roots or cut root ends in trenches with damp burlap to prevent drying out.
- Minimize disturbance to the native ground surface (grass, leaf, litter, or mulch) under preserved trees to the greatest extent feasible.
- Native woody plant material (trees and shrubs to be removed) may be chipped or mulched on site and placed in a 4 to 6-inch deep layer around existing trees to remain. Do not place mulch in contact with the trunk of preserved trees.
- Deep water preserved trees that have had roots cut during project activities once a month throughout the summer as needed or as recommended by the Project Arborist.
- Appropriate fire prevention techniques shall be employed around all trees to be preserved. This includes cutting tall grass, removing flammable debris within the TPZ, and prohibiting the use of tools that may cause sparks, such as metal-bladed trimmers or mowers.
- No open flames shall be permitted within 15 feet of the tree canopy.
- Damage to any protected tree during construction shall be immediately reported to County of El Dorado Planning Services. Damage shall be corrected as required by the County representative.



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SITE AND VICINITY

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE
© 2019

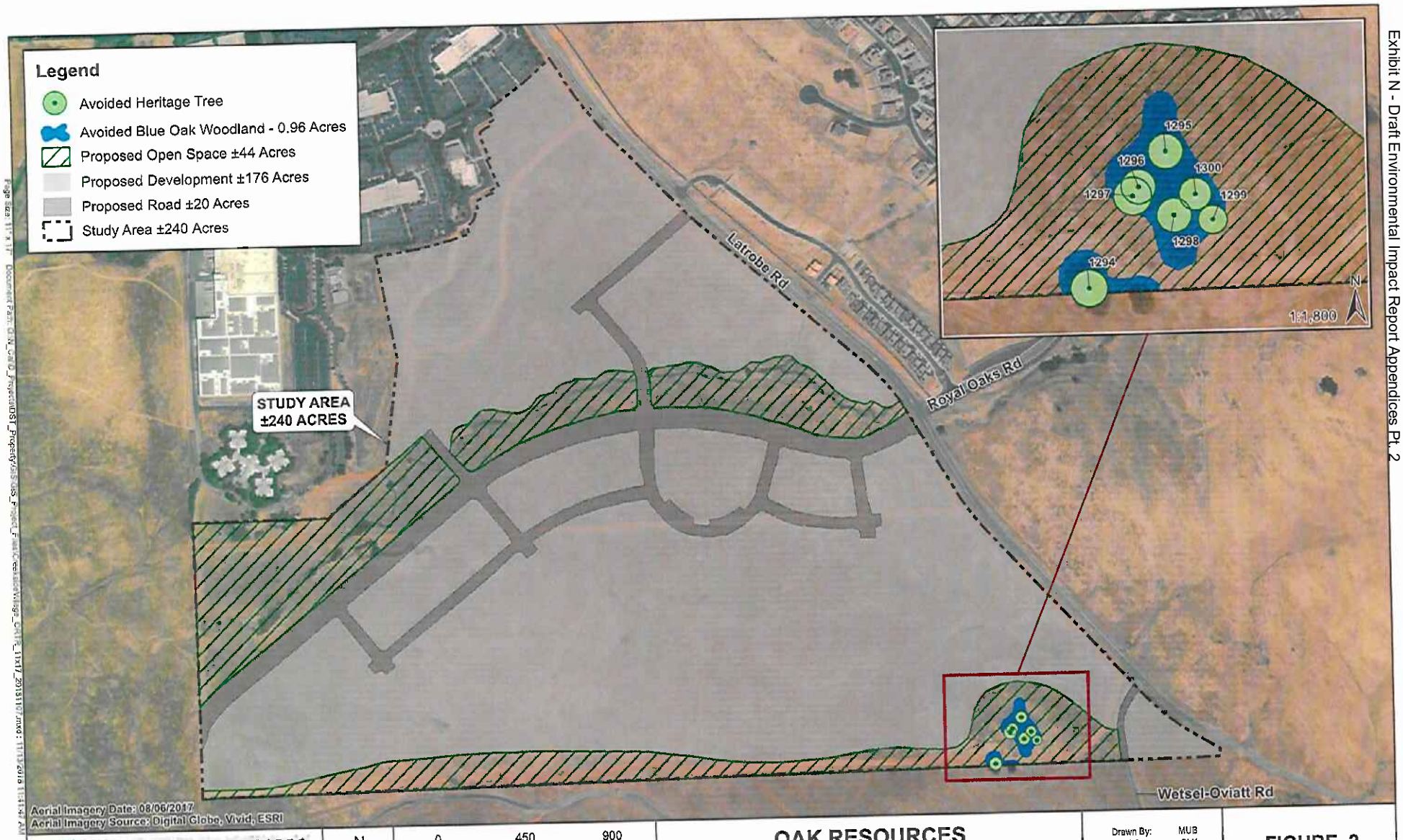
N

0 1750 3500
Feet
1 : 42,000

Drawn By: MUB
QA/QC: SLK
Date: 11/7/2018

FIGURE 1

CREEKSIDE VILLAGE (DST PROPERTY)



CREEKSIDE VILLAGE (DST PROPERTY)

Appendix A — Oak Tree Survey Data

Appendix A — Oak Tree Survey Data

Tree #	Species	# of Trunks	DBH (inches)	DLR (feet)	Height (feet)	Condition		Notes	Impacts
						Health	Structure		
1295	Blue Oak	1	36	30	45	Fair	Fair-Good	dieback, limb wound	None
1296	Blue Oak	1	33	30	42	Poor-Fair	Poor-Fair	dieback, lean, trunk wound, trunk rot, limb wound, overmature	None
1296	Blue Oak	1	38	32	42	Fair	Fair	embedded fence, dieback, limb wound	None
1297	Blue Oak	1	31	33	40	Poor-Fair	Fair	dieback, trunk wound, pruning cuts, limb wound	None
1298	Blue Oak	1	27	30	45	Poor	Poor-Fair	dieback, lean, overmature, trunk wound, trunk rot	None
1299	Blue Oak	1	30	25	36	Poor	Poor-Fair	dieback, limb wound, limb rot, asymmetrical canopy, sparse canopy, overmature	None
1300	Blue Oak	1	37	28	38	Poor-Fair	Fair	dieback, limb wound, overmature	None

Appendix B — Oak Resources Technical Report Checklist

COMMUNITY DEVELOPMENT SERVICES
PLANNING AND BUILDING DEPARTMENT
2850 Fairlane Court, Placerville, CA 95667
Phone: (530) 621-5355 www.edcgov.us/Planning/

OAK RESOURCES TECHNICAL REPORT CHECKLIST

The following information is required for all Oak Resources Technical Reports consistent with Section 2.5 (Oak Resources Technical Reports) of the Oak Resources Management Plan (ORMP):

FORMS AND MAPS REQUIRED

Place a check (√) on the "Applicant" lines for those items completed. The planner receiving the application will check (√) the "County" line.

Check (√) Applicant	County	
☑	☐	1) Identify, locate, and quantify all oak resources on the property, as applicable:

a) Oak woodlands shall be mapped and assessed in accordance with the CDFG 2009 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* and subsequent updates, and the *List of Vegetation Alliances and Associations* (CDFG 2010) and subsequent updates;

b) Data collected for individual native oak trees and Heritage Trees shall include: location, species, trunk diameter (dbh), height, canopy radius, and general health and structural condition.

☑	☐	2) Identify and quantify project-related impacts to oak resources
☑	☐	3) Measures identifying how specific trees and woodlands (or retained portions thereof) shall be protected during development and related work

Check (√) Applicant	County		
☒ n/a	☐	4)	Proposed actions to mitigate impacts to oak resources, consistent with the requirements included in the ORMP:

a) For replacement planting, the report shall provide detail regarding the quantity, location, planting density, replacement tree size(s), and acorn/seedling source consistent with the definition of Replacement Planting included in the ORMP;

b) For conservation easement placement/acquisition and/or land acquisition in fee title, the report shall provide documentation of easement placement on-site and/or documentation of easement or land acquisition off-site to the satisfaction of the County;

c) For in-lieu fee payment, the report shall document the quantity of impacts (acreage of oak woodlands and/or total diameter inches of individual native oak trees/Heritage Trees) and the total in-lieu fee payment necessary (presented separately for oak woodlands, individual native oak trees, and Heritage Trees, where applicable).

☑	☐	5)	Identification of responsible parties
☒ n/a	☐	6)	Identification of maintenance, monitoring, and reporting requirements
☒ n/a	☐	7)	Analysis of non-PCA conservation easement areas, where applicable
☑	☐	8)	Site map(s) depicting:

a) location of all oak woodlands, individual native oak trees, and Heritage Trees;

b) location of all proposed project-related improvements (including, but not limited to, the limits of grading, fuel modification/defensible space areas, and above- and below-ground infrastructure);

c) Site map(s) shall also clearly identify impacted oak resources.

☑	☐	9)	Planning and Building Department Summary Data Sheet of Oak Resources Impacts for Oak Tree/Oak Woodland Removal Permits.

SUPPLEMENTAL DATA FOR INDIVIDUAL NATIVE OAK TREES WITHIN OAK WOODLANDS:

The ORMP and Oak Resources Conservation Ordinance (No. 5061) was adopted on October 24, 2017 and the Board of Supervisors will review implementation within 12 months after adoption. The Board requested the following supplemental information:

☒ n/a	☐	10)	Provide an inventory (species and size) of impacted Individual Native Oak Trees greater than 24 inches and less than 36 inches (dbh) in oak woodlands.

COMMUNITY DEVELOPMENT SERVICES
PLANNING AND BUILDING DEPARTMENT

2850 Fairlane Court, Placerville, CA 95667

Phone: (530) 621-5355 www.edcgov.us/Planning/

Summary Data Sheet of Oak Resources Impacts for Oak Tree/Oak Woodland Removal Permits

Description		Blue *(Quercus douglasii)*	California Black *(Quercus kelloggii)*	Canyon Live *(Quercus chrysolepis)*	Interior Live *(Quercus wislizeni)*	Oregon White *(Quercus garryana)*	Valley *(Quercus loabata)*	Oracle (hybrid) *(Quercus x morehus)*
Individual Native Oak Trees								
Quantity (number of trees) of individual native oak trees to be removed, by species								
Quantity (number of trees) of individual native oak trees to be removed, greater than 24 inches and less than 36 inches (dbh), by species								
Total trunk diameter inches (dbh) to be removed*	0							
Heritage Trees								
Quantity (number of trees) of Heritage Trees to be removed, by species								
Total trunk diameter inches (dbh) to be removed*	0							
Oak Woodlands								
Total Acreage of existing oak woodlands**	0.96							
Acreage of existing oak woodlands to be removed	0							
Percentage of existing oak woodlands to be removed*	0							

Information used for purposes of calculating in-lieu mitigation fee payment.
****If Heritage Trees occur within oak woodlands, the area of impacted Heritage Tree(s) should be included in oak woodland acreage calculations.***

Revised 11/22/2017

Updated Oak Resources Technical Report (December 2024)

ESA

2600 Capitol Avenue
Suite 200
Sacramento, CA 95816
916.564.4500 phone
916.564.4501 fax

esassoc.com

December 17, 2024

Anthony Gon
Project Manager
Winn Communities
555 University Avenue, Suite 180
Sacramento, CA 95825

Subject: Oak Resources Technical Report Update for the Creekside Village Project, El Dorado County, California.

Dear Tony:

In September 2018, an International Society of Arboriculture (ISA) Certified Arborist from Foothill Associates conducted a survey of oak resources at the Creekside Village project site in El Dorado County, California. The results are documented in an *Oak Resource Technical Report* dated January 4, 2019. The report documents the oak tree locations, tree size and health, potential impacts, mitigation options required by the El Dorado County *Oak Resources Management Plan* (ORMP), and tree protection recommendations for trees preserved onsite. At the time the 2019 report was prepared, no impacts to oak resources were anticipated as part of project development. This *Oak Resources Technical Report Update* summarizes the findings of an updated survey of the oak trees on the project site. This report includes updates to the tree sizes, health conditions, and potential impacts.

The Creekside Village project is located along the west side of Latrobe Road, approximately three air miles south of Highway 50 (**Figure 1**). Habitat on the project site primarily consists of annual grassland with scattered seasonal wetlands and ephemeral drainages. A creek flows east to west through the northern portion of the project site. Blue oak woodland occurs in the southeast corner, near the intersection of Latrobe Road and Wetsel-Oviatt Road. The project proposes to construct a residential development with a mix of low and medium density housing.

El Dorado County Oak Resources Management Plan

As described in the 2019 Foothills Associates report, the El Dorado County ORMP was adopted on October 24, 2017. The ORMP regulates and defines mitigation requirements for impacts to oak woodlands, individual native oak trees, and heritage trees on privately-owned lands within the unincorporated area of the County at or below 4,000 feet elevation. The policy of the County is to preserve oak woodlands when feasible, through the review of all proposed development activities where woodlands are present, while at the same time recognizing individual rights to develop private property in a reasonable manner. As such, the County requires mitigation for impacts to oak woodlands and requires a permit prior to removal.

Oak woodlands are defined as "an oak stand with greater than ten percent canopy cover or that may have historically supported greater than ten percent canopy cover." Native oak trees comprising El Dorado County's oak woodlands are blue oak (*Quercus douglasii*), valley oak (*Q. lobata*), California black oak (*Q. kelloggii*), interior live oak (*Q. wislizeni*), canyon live oak (*Q. chrysolepis*), Oregon oak (*Q. garryana*), and oracle oak (*Quercus x morehus*) which is a native hybrid between California black oak and interior live oak. A heritage tree

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is defined as a live native oak tree with a single main trunk 36 inches diameter at breast height (DBH) or greater, or with a multiple trunk with an aggregate DBH 36 inches or greater. Individual native oak trees consist of any live native oak tree with a single main trunk greater than six inches DBH, or with a multiple trunk with an aggregate trunk DBH greater than 10 inches and is not a heritage tree.

The ORMP requires mitigation for permitted oak tree removal. To encourage on-site retention of oak woodlands, the ORMP requires increasing mitigation ratios based on the amount of oak woodland removed. Removing 50 percent or less requires a 1-to-1 ratio of mitigation, removing up to 75 percent requires a 1.5-to-1 ratio of mitigation, and removing up to 100 percent requires a 2-to-1 ratio of mitigation. A deed restriction or conservation easement is required to be placed over any retained on-site woodlands and those woodlands retained on site shall not be counted towards the impacted amount or towards the required mitigation. Mitigation for impacted oak woodlands shall occur at the required ratio using one or more of the following options:

1. Off-site deed restriction or conservation easement acquisition and/or acquisition in fee title by a land conservation organization for purposes of off-site oak woodland conservation;

2. In-lieu fee payment to be either used by the County to acquire off-site deed restrictions and/or conservation easements or to be given by the County to a land conservation organization to acquire off-site deed restrictions and/or conservation easements;

3. Replacement planting on-site within an area subject to a deed restriction or conservation easement;

4. Replacement planting off-site within an area subject to a conservation easement; or

5. A combination of numbers 1 through 4 above.

Mitigation for removal of heritage trees is based on an inch for inch replacement standard at a 3-to-1 ratio. Mitigation options for impacts to heritage trees and individual native oak trees consist of the following:

1. Replacement planting on-site within an area subject to a deed restriction or conservation easement;

2. Replacement planting off-site within an area subject to a conservation easement or acquisition in fee title by a land conservation organization;

3. In-lieu fee payment to be either used by the County to plant oak trees or to be given by the County to a land conservation organization to plant oak trees; or

4. A combination of numbers 1 through 3 above.

A security deposit is required for all discretionary projects proposing on-site oak tree/oak woodland retention and/or replacement planting as mitigation. No grading or other on-site work shall be permitted until the security deposit is posted. Additionally, replacement planting may not account for more than 50 percent of the mitigation requirement.

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The ORMP provides an exemption to mitigation for removal of dead, dying, or diseased native oak trees. This exemption applies when the tree is documented as dead, dying, or diseased in writing by a Certified Arborist or Registered Professional Forester; and/or when the tree exhibits high failure potential with the potential to injure persons or damage property and documented in writing by a Certified Arborist or Registered Professional Forester.

The current in-lieu fee for removal of oak woodlands is calculated based on total cost per acre which is currently set at $8,285. The in-lieu fee for removal of individual oak trees is calculated on a total cost per inch which is currently set at $153 for a non-heritage tree and $459 per inch for a heritage tree at a 3-to-1 ratio. The per-inch fee shall be multiplied by the total number of trunk diameter inches removed. The in-lieu fees collected will be deposited in the County's Oak Woodland Conservation Fund. That fund will be used to acquire land and/or conservation easements to conserve oak woodlands, provide for native oak tree planting, and for ongoing conservation area monitoring and management activities.

Methods

ESA's ISA Certified Arborist and Tree Risk Assessment Qualified, Jessica Orsolini (ISA No. WE-7845A) conducted a survey of the oak trees on November 6, 2024. All oak trees on the project site and oak trees with canopies overhanging the project site were surveyed. The location of each tree was recorded using Geographic Positioning System (GPS) technology. Trees were numbered consistent with their numbering from the Foothill survey. No new or additional tags were placed on the trees. The boundary of the blue oak woodland was refined to more accurately represent the outer edge of the oak tree canopy and distinguish individual oak trees per the ORMP. The Project site, inventoried trees, and blue oak woodland are shown in **Figure 2**.

The DBH of each tree was measured using a diameter tape. The height of each tree was visually estimated; the dripline was estimated by pacing out the distance on the ground below the canopy. The health and structural condition of each tree was assessed and rated. Tree health was rated based on the tree's vigor, crown density and dieback, leaf color and size, defects, disease, and evidence of wound closure (callusing). Structural health was rated based on the tree's structural stability and failure potential based on the presence of co-dominant trunks, included bark, branch configuration, decay, abnormal lean, one-sided canopy, and history of failure.

The health and structure of each tree was assigned to one of six categories for tree condition. The six categories were good (G; no defects or minor defects), fair to good (F-G; defects), fair (F; more serious defects), fair to poor (F-P; severe or compounding defects), and poor (P; severe or compounding defects, and short-term death or structural failure of the tree is expected). Condition was judged based on an external inspection of each tree from the ground.

Results and Discussion

The survey for this *Oak Resources Technical Report Update* included the same seven blue oak trees that were surveyed for the 2019 *Oak Resources Technical Report* conducted by Foothill Associates. One additional blue oak not included in the 2019 report was added for this report update (numbered 0000). The added oak tree is rooted on a parcel to the south but overhangs the project site. The refined blue oak woodland boundary totals 0.45 acre. The two blue oaks located along the southern property line are not part of the oak woodland but are considered individual oaks per the ORMP. The results of the tree survey are in the table in **Attachment A**.

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Of the seven trees surveyed for the 2019 report, one (tree number 1298) is now dead and has fallen over. Four of the trees surveyed have DBH's of 36 inches or greater, qualifying them as heritage trees under the ORMP (tree numbers 1294, 1295, 1296, and 1300). Of the remaining seven standing trees surveyed, three have a fair health condition, two have a fair-poor health condition, and two have a poor health condition. Structural ratings also range from fair to fair-poor to poor condition. As noted in the 2019 report, all the trees are overmature and in decline. Most have a history of medium to large branch failure and over half (four) have substantial rot in the main trunk.

Impacts and Mitigation

Project construction impacting oak trees consists of construction of a graded slope at the back of houses and installation of a walking path. Construction to create the slope area will require the removal of two blue oak trees (Trees 1295 and 1300), both of which are heritage trees (**Figure 2**). The proposed new walking path crosses through the area of Tree 1298, a non-heritage blue oak tree, however this tree has died and fallen over. Removal of dead trees does not require mitigation.

Prior to project construction, the project proponent must obtain a tree removal permit and mitigate in accordance with the ORMP. The project proponent proposes payment of the in-lieu fee to satisfy the mitigation requirements. Mitigation for removal of heritage trees is based on an inch for inch replacement standard at a 3-to-1 ratio. The in-lieu fee for removal of heritage trees is $459 per inch (3-to-1 ratio of the standard inch cost of $153). Removal of Trees 1295 and 1300 will require payment of $34,425. **Table 1** shows the required mitigation. No other heritage oaks, individual oaks, or oak woodlands will be removed as a result project construction. In accordance with the ORMP, a deed restriction or conservation easement will be placed over the retained on-site woodlands. Tree protection measures specified in the 2019 *Oak Resource Technical Report* will be implemented for oak resources not removed by the project.

TABLE 1
SUMMARY OF OAK TREE REMOVAL MITIGATION REQUIREMENTS

Tree #	Species	DBH (inches)	In-Lieu Fee per Inch	Mitigation Ratio	Total Mitigation Required
1295	Blue oak	39	$153	3:1	$17,901
1298	Blue oak	N/A – DEAD/ FALLEN OVER	N/A - DEAD/ FALLEN OVER	N/A - DEAD/ FALLEN OVER	N/A - DEAD/ FALLEN OVER
1300	Blue oak	36	$153	3:1	$16,524
				Grand Total	**$34,425**

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The El Dorado County Oak Resources Technical Report Checklist is included as **Attachment B** and the El Dorado County Community Development Services Summary Data Sheet of Oak Resources Impacts for Oak Tree/Oak Woodland Removal Permits is included at **Attachment C**.

We appreciate the opportunity to provide arborist services for the Creekside Village Project. Please contact me with any questions or comments.

Sincerely,

Jessica Orsolini
Senior Biologist/ ISA Certified Arborist #WE-7845A

ATTACHMENT A
2024 OAK TREE SURVEY DATA

Tree #	Species	DBH (inches)	Dripline (feet)	Height (feet)	Health	Structure	Heritage Tree [a] (Yes/No)	Removed (Yes/No)	Notes
1294	Blue oak	43	38	45	Fair	Fair	Yes	No	Located on property line. Barbwire fence growing through trunk. 1- to 4-inch dead branches particularly in lower canopy, some broken. Bulge in trunk at base.
1295	Blue oak	39	24	50	Fair	Fair-Poor	Yes	Yes	No tree tag present. Canopy dieback. 1- to 5-inch dead branches, some broken (old breaks of 12- and 10-inch branches); fungus fruiting body at old branch break; 7-foot-long open wound with rot in trunk; several large live branches laying on ground though not broken.
1296	Blue oak	41.5	35	45	Fair-Poor	Poor	Yes	No	No tree tag present. Recent break of 12-inch branch. Substantial rot in trunk. Honeybees using rotted center. Torsion crack in trunk with trunk lean. Many 4- to 8-inch dead branches in canopy, many broken. Thinning canopy. Swing attached to large branch.
1297	Blue oak	33	30	40	Fair-Poor	Poor	No	No	No tree tag present. Large trunk wound; hollow; numerous dead broken branches in canopy 4- to 8-inches diameter; one-sided canopy due to adjacent tree.
1298	Blue oak	N/A	N/A	N/A	Dead	Dead	No	N/A	Dead and fallen over.
1299	Blue oak	31	25	25	Poor	Poor	No	No	13-inch branch comprising half the canopy broke off, small dead branches in remaining canopy; 5- and 8-inch broken and rotted branches; 6-foot-long open trunk wound with rot likely from prior codominant trunk failure.
1300	Blue oak	36	24	35	Poor	Fair-Poor	Yes	Yes	Substantial dieback and thinning canopy. Many 2- to 4-inch dead branches. Several small wounds at trunk base with rot present.
0000	Blue oak	26	18	34	Fair	Fair	No	No	Tree offsite with limb overhanging project. DBH estimated. 1- to 2-inch dead branches throughout canopy, some old branch breaks.

SOURCE: ESA 2024

NOTES:

a. The El Dorado County *Oak Resources Management Plan* defines a heritage tree as a live native oak tree with a single main trunk 36 inches DBH or greater, or with a multiple trunk with an aggregate DBH 36 inches or greater.

Attachment B

El Dorado County Oak Resources Technical Report Checklist

COMMUNITY DEVELOPMENT SERVICES
PLANNING AND BUILDING DEPARTMENT
2850 Fairlane Court, Placerville, CA 95667
Phone: (530) 621-5355 www.edcgov.us/Planning/

OAK RESOURCES TECHNICAL REPORT CHECKLIST

The following information is required for all Oak Resources Technical Reports consistent with Section 2.5 (Oak Resources Technical Reports) of the Oak Resources Management Plan (ORMP):

FORMS AND MAPS REQUIRED

Place a check (√) on the "Applicant" lines for those items completed. The planner receiving the application will check (√) the "County" line.

Check (√) Applicant	County	
☑	☐	1) Identify, locate, and quantify all oak resources on the property, as applicable:

a) Oak woodlands shall be mapped and assessed in accordance with the CDFG 2009 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* and subsequent updates, and the *List of Vegetation Alliances and Associations* (CDFG 2010) and subsequent updates;

b) Data collected for individual native oak trees and Heritage Trees shall include: location, species, trunk diameter (dbh), height, canopy radius, and general health and structural condition.

☑	☐	2) Identify and quantify project-related impacts to oak resources
☑	☐	3) Measures identifying how specific trees and woodlands (or retained portions thereof) shall be protected during development and related work

Revised 11/22/2017

Check (√) Applicant	County		
☑	☐	4)	Proposed actions to mitigate impacts to oak resources, consistent with the requirements included in the ORMP:

a) For replacement planting, the report shall provide detail regarding the quantity, location, planting density, replacement tree size(s), and acorn/seedling source consistent with the definition of Replacement Planting included in the ORMP;

b) For conservation easement placement/acquisition and/or land acquisition in fee title, the report shall provide documentation of easement placement on-site and/or documentation of easement or land acquisition off-site to the satisfaction of the County;

c) For in-lieu fee payment, the report shall document the quantity of impacts (acreage of oak woodlands and/or total diameter inches of individual native oak trees/Heritage Trees) and the total in-lieu fee payment necessary (presented separately for oak woodlands, individual native oak trees, and Heritage Trees, where applicable).

☑	☐	5)	Identification of responsible parties
☒ N/A	☐	6)	Identification of maintenance, monitoring, and reporting requirements
☒ N/A	☐	7)	Analysis of non-PCA conservation easement areas, where applicable
☑	☐	8)	Site map(s) depicting:

a) location of all oak woodlands, individual native oak trees, and Heritage Trees;

b) location of all proposed project-related improvements (including, but not limited to, the limits of grading, fuel modification/defensible space areas, and above- and below-ground infrastructure);

c) Site map(s) shall also clearly identify impacted oak resources.

☑	☐	9)	Planning and Building Department Summary Data Sheet of Oak Resources Impacts for Oak Tree/Oak Woodland Removal Permits.

SUPPLEMENTAL DATA FOR INDIVIDUAL NATIVE OAK TREES WITHIN OAK WOODLANDS:

The ORMP and Oak Resources Conservation Ordinance (No. 5061) was adopted on October 24, 2017 and the Board of Supervisors will review implementation within 12 months after adoption. The Board requested the following supplemental information:

☒ N/A	☐	10)	Provide an inventory (species and size) of impacted Individual Native Oak Trees greater than 24 inches and less than 36 inches (dbh) in oak woodlands.

Revised 11/22/2017

Attachment C

Summary Data Sheet of Oak Resources Impacts for Oak Tree/Oak Woodland Removal Permits

COMMUNITY DEVELOPMENT SERVICES
PLANNING AND BUILDING DEPARTMENT

2850 Fairlane Court, Placerville, CA 95667

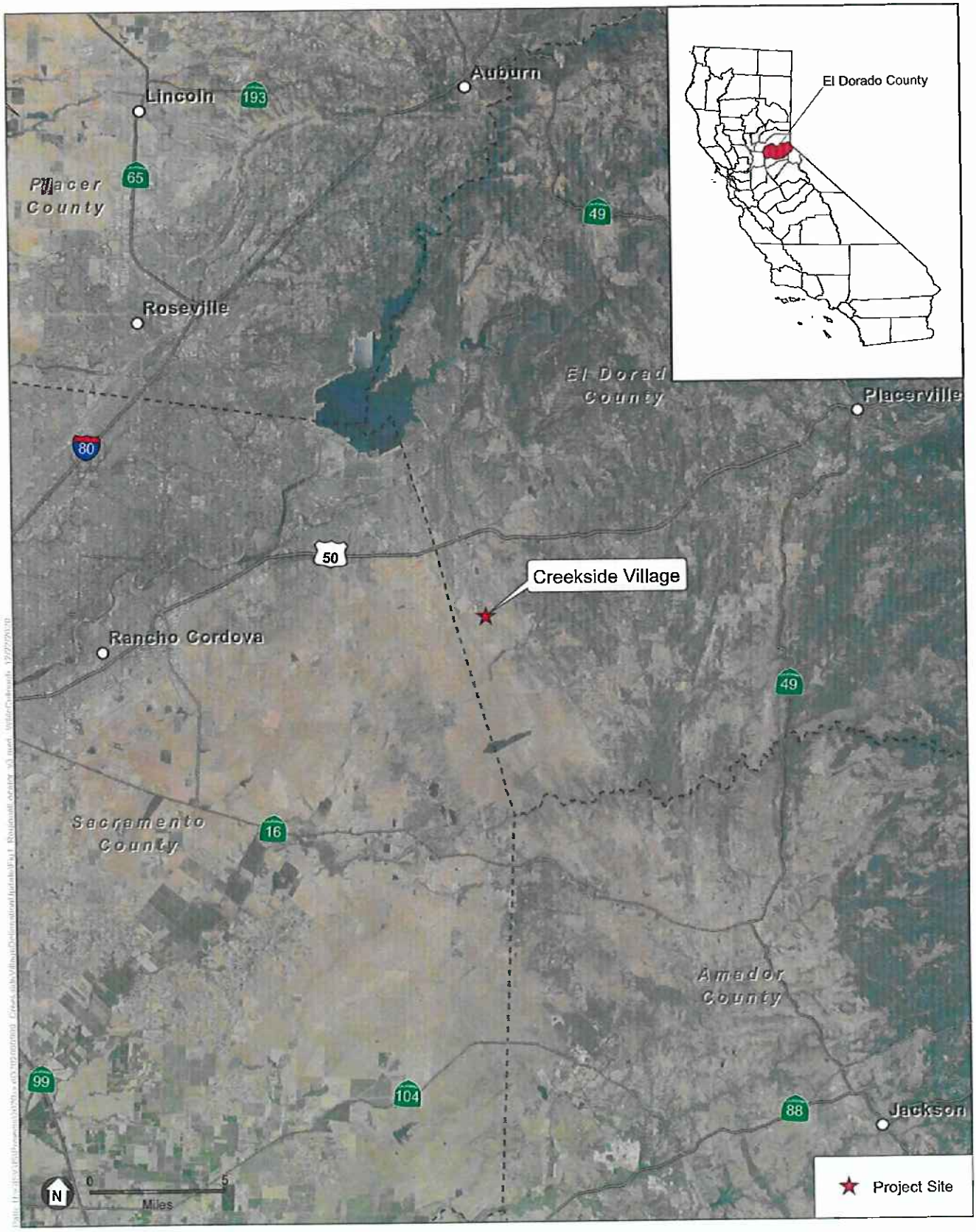
Phone: (530) 621-5355 www.edcgov.us/Planning/

Summary Data Sheet of Oak Resources Impacts for Oak Tree/Oak Woodland Removal Permits

Description		Blue (*Quercus douglasii*)	California Black (*Quercus kelloggii*)	Canyon Live (*Quercus chrysolepis*)	Interior Live (*Quercus wislizeni*)	Oregon White (*Quercus garryana*)	Valley (*Quercus lobata*)	Oracle (hybrid) (*Quercus x morehus*)
Individual Native Oak Trees								
Quantity (number of trees) of individual native oak trees to be removed, by species		0						
Quantity (number of trees) of individual native oak trees to be removed, greater than 24 inches and less than 36 inches (dbh), by species		0						
Total trunk diameter inches (dbh) to be removed*	0							
Heritage Trees								
Quantity (number of trees) of Heritage Trees to be removed, by species		2						
Total trunk diameter inches (dbh) to be removed*	75							
Oak Woodlands								
Total Acreage of existing oak woodlands**	0.45							
Acreage of existing oak woodlands to be removed	0	All oaks to be removed are heritage trees and included in the calculations above.						
Percentage of existing oak woodlands to be removed*	0							

Information used for purposes of calculating in-lieu mitigation fee payment.
****If Heritage Trees occur within oak woodlands, the area of impacted Heritage Tree(s) should be included in oak woodland acreage calculations.***

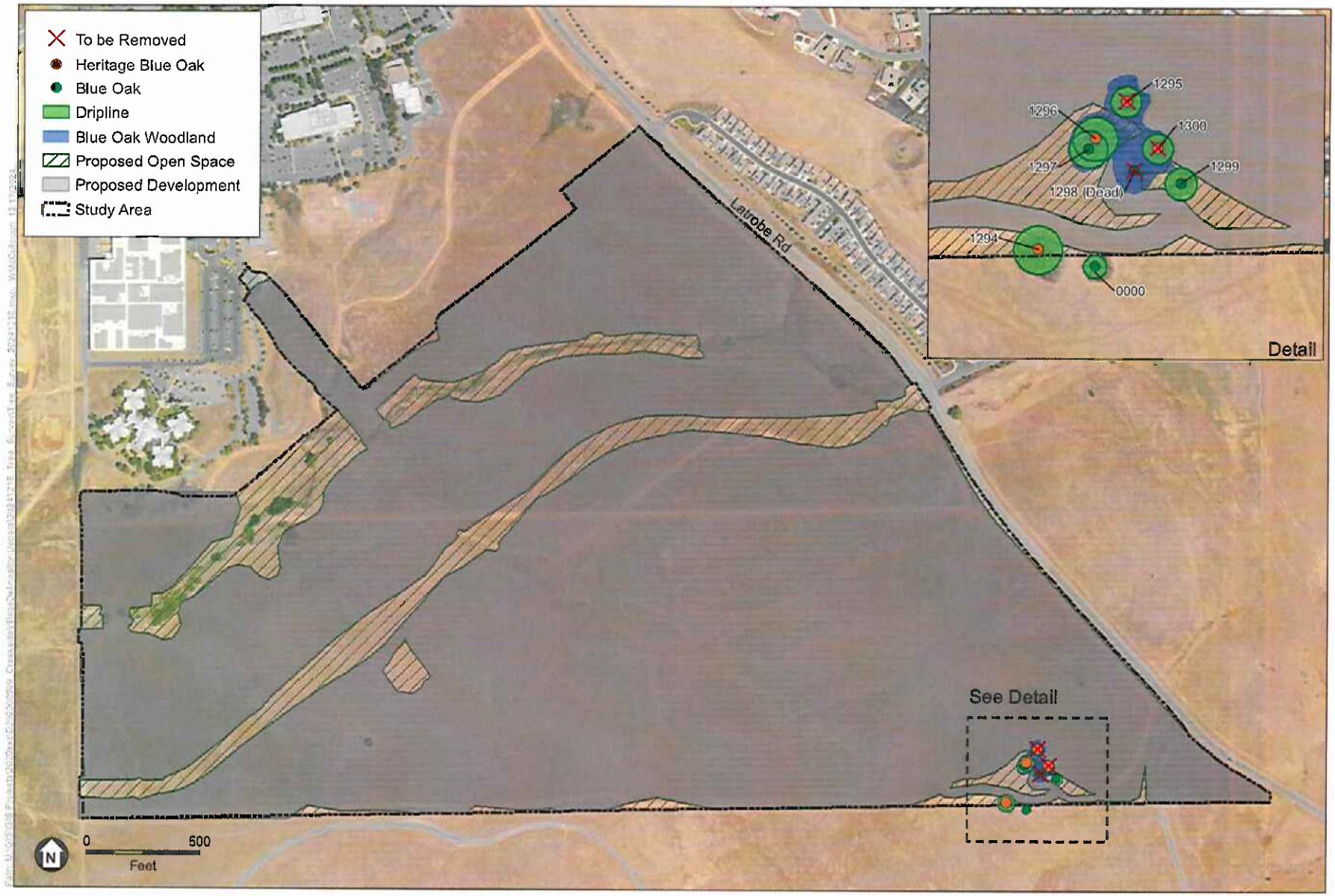
Revised 11/22/2017



SOURCE: NAIP, 2018; ESRI, 2012; ESA, 2020

Creekside Village

Figure 1
Regional Location



SOURCE: Winn Communities, 2024; ESA, 2024

Creekside Village

Figure 2
Blue Oak Survey Results

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Appendix D
Geotechnical Study

GEOTECHNICAL FEASIBILITY STUDY
FOR
CREEKSIDE VILLAGE

Latrobe Road, APN 117-010-012
El Dorado Hills, California

Project No. E20064.000
March 2020

YOUNGDAHL
ESTABLISHED 1984

YOUNGDAHL CONSULTING GROUP, INC.
ESTABLISHED 1984
1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net

Winn Communities
3001 I Street, Suite 300
Sacramento, California 95816

Project No. E20064.000
16 March 2020

Attention: Mr. Anthony Gon

Subject: **CREEKSIDE VILLAGE**
Latrobe Road, APN 117-010-012, El Dorado Hills, California
GEOTECHNICAL FEASIBILITY STUDY

Reference: Proposal and Executed Contract for Creekside Village, prepared by Youngdahl Consulting Group, Inc., dated 11 February 2020 (Proposal No. PE20-070).

Dear Mr. Gon:

In accordance with your authorization, Youngdahl Consulting Group, Inc. has performed a Geotechnical Feasibility Study for the project site located at APN 117-010-012 on Latrobe Road in El Dorado Hills, California. The purpose of this study was to address the feasibility, from a geotechnical standpoint, of constructing the proposed development. Our scope was limited to a site reconnaissance, review of available published archival geotechnical data, and preparation of this report per the referenced proposal.

Based upon our site reconnaissance and geotechnical data review, it is our opinion that the primary geotechnical issues to be addressed consist of excavations into bedrock and drainage related to the anticipated shallow bedrock conditions. Due to the non-uniform nature of soils, other geotechnical issues may become more apparent during grading operations which are not listed above. The descriptions, findings, and conclusions provided in this report are formulated as a whole; specific conclusions should not be derived or used out of context. Please review the limitations and uniformity of conditions section of this report.

This report has been prepared for the exclusive use of Winn Communities and their consultants, for specific application to this project, in accordance with generally accepted geotechnical engineering practice. Should you have any questions or require additional information, please contact our office at your convenience.

Very truly yours,
Youngdahl Consulting Group, Inc.

Kyle J. Martinez, P.E.
Project Engineer

Distribution: PDF to Client

Attachments: Figure 1 - Vicinity Map
Figure 2 - Site Map

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4.0 ANTICIPATED DESIGN CRITERIA 5
5.0 CLOSURE 7

GEOTECHNICAL FEASIBILITY STUDY
FOR
CREEKSIDE VILLAGE

1.0 INTRODUCTION

This report presents the results of our Geotechnical Feasibility Study performed for the proposed residential housing development planned to be constructed at APN 117-010-012 on Latrobe Road in El Dorado Hills, California. Annotated vicinity and site maps are provided on attached Figures 1 and 2 to identify the approximate project location.

Purpose and Scope

The scope of work for the geotechnical feasibility study included an initial geotechnical site reconnaissance, review of available published and Youngdahl Consulting Group, Inc. archival geotechnical data for the approximate project area, and assessment of potential geotechnical constraints. The study is based, in part, upon information provided by the client.

The purpose of the geotechnical feasibility study was to assess the major geotechnical issues that could potentially affect the project, thus providing a framework for continued project planning. The intent of this report is to provide information regarding general site characteristics, including identification of any geotechnical characteristics that could constitute a constraint to the use of the land for the proposed residential development, and to provide guidance for a future geotechnical engineering study. This report is not intended to fulfill the criteria for geotechnical reports outlined in Chapter 18 of the 2019 California Building Code (CBC) or other jurisdictional requirements; investigations fulfilling those criteria will still need to be completed when the project reaches its appropriate stage. This report is intended to be used by the client in planning the project.

In the event that there are any changes in the proposed development concept, or if any of the assumptions used in the preparation of this report prove to be incorrect, the conclusions contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report verified or modified by this firm in writing. The conclusions presented in this report are considered qualitative until such time as they are modified or verified by additional study such as that performed during a design-level geotechnical engineering investigation.

Project Understanding

We understand that Winn Communities is currently seeking entitlements for development of a future master planned community at the above referenced site. The planned community will likely consist of 700 to 800 residential units, a community gathering place, parks, trails, and open space. The residential units will likely consist of one to two-story wood framed structures, supported by conventional shallow foundations and slab-on-grade floors. Additional improvements will consist of asphalt and concrete roadways, sitework retaining walls, underground utilities, and pedestrian flatwork.

Background

Based on a limited review of aerial photography, the project site has remained undeveloped. If studies or plans pertaining to the site exist and are not cited as a reference in this report, we should be afforded the opportunity to review and modify our conclusions and recommendations as necessary.

2.0 SITE CONDITIONS

The following section describes our findings regarding the site conditions that we observed during our site reconnaissance, and the anticipated subsurface and groundwater conditions based upon our experience in the area.

Surface Observations

The project site is generally located on the west side of Latrobe Road in El Dorado Hills, California. Specifically, the area of development extends west from the southwest intersection of Avanti Drive and Latrobe Road to approximately 3000 feet southwest and as far south as the northwest intersection of Wetsel Oviatt Drive and Latrobe Road The site is bounded to the north by a commercial business park development, to the west by a new residential development, to the south by Wetsel-Oviatt Road, and the east by Latrobe Road fronting a large planned residential development eastward. The undeveloped site is approximately 174 acres in size, an irregularly shaped polygon, and generally slopes to the west.

The terrain consists of gently rolling hills with broad valleys and low gradient drainages and generally slopes toward the west at varying gradients with a maximum gradient of approximately 5H:1V (Horizontal:Vertical). The elevation ranges from a low of approximately 470 feet above mean sea level (AMSL) in the west to a maximum of 640 feet AMSL in the southeast. Occasional depressions and hills were observed throughout the site which appears to have served as mining prospect pits and springs. The vegetation throughout the project generally consisted of seasonal tall grasses with sparse trees and riparian type plants near the seasonal drainage courses.

These drainages cross the site and converge near the northwest corner of the site. Several near-vertical cut banks of the drainages were observed across the site. In general, the soils observed in cut banks were very steep to near vertical and extended to shallow bedrock in the streambed.

Shallow bedrock was observed across the site with numerous outcrops and “headstones” protruding out of the ground along the northeastern side of the project site. Most of the bedrock appears to be very moderately weathered to fresh in a moderately to widely spaced fractured condition.

Anticipated Subsurface Conditions

Our firm has performed several subsurface explorations near the vicinity of the project site. Based upon these explorations, we anticipate that the subsurface conditions will consist of soil overlying bedrock. The surface soils will likely entail silty clay and clayey silt in a soft to medium stiff condition. Underlying the soil, soft to hard metavolcanic bedrock in a highly to slightly weathered condition is expected. A thorough subsurface investigation is recommended once the project reaches its appropriate stage to more accurately determine the subsurface conditions.

Anticipated Groundwater Conditions

Based upon our review of the California Department of Water Resources website, permanently elevated groundwater is anticipated to be in excess 100 feet below the existing ground surface. Generally, subsurface water conditions vary in the region because of many factors such as, the proximity to bedrock, topographic elevations, and proximity to surface water. Some evidence of past repeated exposure to subsurface water may include black staining, clay deposits, and surface markings indicating previous seepage. Based on our experience in the area, perched water conditions are *highly anticipated* near the soil and bedrock contact at the site.

3.0 CONCLUSIONS

In our opinion, the site appears suitable, from a geotechnical standpoint, for the proposed

resdidential housing project. No conditions were observed that would constitute a sufficiently severe geotechnical constraint that constructing the proposed project would be precluded. The primary geotechnical concerns anticipated at this site are excavations into bedrock and drainage related to the anticipated shallow bedrock condition. The potential for excessive total and differential settlement, liquefaction, slope stability, soil expansion, asbestos, and excavation considerations are also discussed below. The degree to which the above constraints will affect the project should be assessed within a design-level investigation and report once the project reaches its appropriate stage.

Excavations into Bedrock

Based on our experience in the area, we expect that the site soils can be excavated using conventional earthmoving equipment such as a Caterpillar D6 to D8 for grading and rubber tired backhoe for trench excavations not extending to the underlying bedrock materials. The underlying bedrock materials can likely be excavated to depths of several feet using a Caterpillar D9, equipped with a single or multiple shank rippers, or similar equipment. However, blasting cannot be ruled out in areas of resistant rock. Pre-ripping during mass grading may be beneficial and should be considered with the Geotechnical Engineer prior to, or during mass grading.

Utility trenches will likely encounter hard rock excavation conditions especially in deeper cut areas. Utility contractors should be prepared to use special rock trenching equipment such as large excavators (Komatsu PC400 or CAT 345 or equivalent). Blasting to achieve utility line grades, especially in planned cut areas, cannot be precluded. Water inflow into any excavation approaching the hard rock surface is very likely to be experienced in all but the driest summer and fall months.

Drainage

Proper application of drainage practices is considered to be of paramount concern for the effective development of the project site and to provide long term stability of the structural improvements. It has been our experience that sites constructed within this area generally have an increased potential for moisture related issues related to water perched on the bedrock horizon and/or present in the fractures of the bedrock as well as moisture transmission through utility trenches. Potential sources of groundwater may not be present or observed during the site grading procedures, but can appear later as more persistent seepage as water becomes perched or flows through fractures of the bedrock. These conditions generally become more prevalent following up gradient development and the addition of moisture sources (i.e. landscape irrigation, run-off, etc.).

To reduce the potential of these issues, application of the drainage provisions provided in the 2019 CBC are imperative, as well as additional drainage improvements. Swales and natural hillside drainage at the site which is to receive engineered fill will likely require the installation of canyon style drains. Additionally, in developments with the potential for a perched groundwater condition, underground utilities can become collection points for subsurface water. Therefore, we will likely recommend that plug and drains be installed within the utility trenches to collect and convey water to the storm drain system or other approved outlet. Temporary dewatering measures may be necessary and could include the installation of submersible pumps and/or point wells. Lastly, proper surface drainage, and careful installation of subdrains and back of retaining wall drains will be necessary to provide long term stability of the structural improvements as well as mitigate nuisance seepage. Once plans are developed, the civil engineer should coordinate with us to discuss the locations of plug and drains.

Total and Differential Settlement

Total and differential settlement under static conditions can occur when foundations span materials having variable compression and/or low density characteristics. Based upon the subsurface conditions anticipated and our experience in the area, the upper soils at the site are expected to be in a soft to medium stiff condition. When subjected to additional loading, soft soils tend to settle more than soils in a stiff condition or bedrock, and are more susceptible to higher amounts of total and differential settlement, which can stress and possibly damage foundations, often resulting in cracks and displacement. To reduce the potential for excessive total and differential settlement under static conditions, a program of overexcavation and recompaction in the building and other improvement areas will likely be necessary. Typically, mass grading operations for foothill subdivisions generally mitigate these conditions; however, professional observation during grading operations will be necessary.

Liquefaction

Liquefaction is the sudden loss of soil shear strength and sudden increase in porewater pressure caused by shear strains, as could result from an earthquake. Research has shown that saturated, loose to medium-dense sands with a silt content less than about 25 percent and located within the top 40 feet are most susceptible to liquefaction and surface rupture/lateral spreading.

Due to the anticipated absence of permanently elevated groundwater table, the relatively low seismicity of the area and the relatively shallow depth to rock, the potential for seismically induced damage due to liquefaction, surface ruptures, and settlement is considered negligible. For the above-mentioned reasons mitigation for these potential hazards is not considered necessary for the development of this project.

Slope Stability

The existing slopes on the project site were observed to be shallow, have adequate vegetation on the slope face, appropriate drainage away from the slope face, and no apparent tension cracks or slump blocks in the slope face or at the head of the slope. No other indications of slope instability such as seeps or springs were observed. Additionally, due to the absence of permanently elevated groundwater table, the relatively low seismicity of the area, and the relatively shallow depth to rock, the potential for seismically induced slope instability for the existing slopes is considered negligible.

Expansive Soils

The materials at the site are anticipated to be generally non-plastic (rock, sand, and non-plastic silt), which are considered to be nonexpansive; however, occasional pockets of plastic materials (clay soils) may be encountered. Expansive soils tend to swell with seasonal increases in soil moisture and shrink during the dry season as soil moisture decreases. The volume changes that the soils undergo in this cyclical pattern can stress and damage slabs, foundations, and other improvements if precautionary measures are not incorporated into the design and construction procedure.

To reduce the potential for damage related to expansive soils, if present at the site, special design considerations may be necessary. These may include the mixing of expansive and nonexpansive soils during mass grading operations, focused clay excavations, and/or special foundation and slab preparation recommendations. Typically, mass grading operations for foothill subdivisions generally mitigate expansive soil conditions; however, professional observation during grading operations will be necessary.

Naturally Occurring Asbestos

Asbestos is classified by the EPA as a known human carcinogen. Naturally occurring asbestos (NOA) has been identified as a potential health hazard. El Dorado County published a map dated 24 August 2018 that qualitatively indicates the likelihood for NOA in western El Dorado County. The project site is not identified as being in a NOA review zone based on the published map. Therefore, NOA mitigation is not anticipated to be necessary for development of the site.

Summary

The site is considered feasible for the planned residential project. In our opinion, no significant geotechnical engineering constraints are apparent. It will be necessary to provide additional geotechnical work for this site (exploratory test pits, laboratory testing, analyses, etc.) in order to complete the final geotechnical engineering study. The geotechnical engineering study should provide specific preliminary geotechnical recommendations pertaining to the design and construction of the earthwork, structures, and improvements associated with this site.

4.0 ANTICIPATED DESIGN CRITERIA

The following anticipated design criteria are intended to be used by the architect/engineer for cost estimation purposes only. Additional field and laboratory work is needed to provide preliminary geotechnical recommendations for site preparation, grading, utility trenches, foundations, interior slabs-on-grade and pedestrian flatwork, retaining walls, pavement sections, and drainage.

Seismic Criteria

Based on the 2019 California Building Code, Chapter 16, and our experience in the area, the following seismic parameters may be utilized for preliminary structural design.

Table 1: Seismic Design Parameters

Reference		Seismic Parameter	Recommended Value
ASCE 7-16	Table 20.3-1	Site Class	C
	Figure 22-7	Maximum Considered Earthquake Geometric Mean (MCE_C) PGA	0.169g
	Table 11.8-1	Site Coefficient F_{PGA}	1.231
	Equation 11.8-1	PGAM = F_{PGA} PGA	0.208g
2019 CBC	Figure 22-1 **	Short-Period MCE at 0.2s, S_S	0.396g
	Figure 22-2 **	1.0s Period MCE, S_1	0.205g
	Table 1613.2.3(1)	Site Coefficient, F_a	1.300
	Table 1613.2.3(2)	Site Coefficient, F_v	1.500
	Equation 16 -36	Adjusted MCE Spectral Response Parameters, $S_{MS} = F_a S_s$	0.515g
	Equation 16 -37	Adjusted MCE Spectral Response Parameters, $S_{M1} = F_v S_1$	0.308g
	Equation 16-39	Design Spectral Acceleration Parameters, $S_{DS} = ⅔ S_{MS}$	0.344g
	Equation 16-40	Design Spectral Acceleration Parameters, $S_{D1} = ⅔ S_{M1}$	0.205g
	Table 1613.2.5(1)	Seismic Design Category (Short Period), Occupancy I to III	C
	Table 1613.2.5(1)	Seismic Design Category (Short Period), Occupancy IV	D
	Table 1613.2.5(2)	Seismic Design Category (1-Sec Period), Occupancy I to IV	D

*Based on the online calculator available at https://earthquake.usgs.gov/ws/designmaps/
** Section 1613.1 of the CBC indicates that either Section 1613 or ASCE 7-16 may be used for determination of seismic design categories.

Shallow Conventional Foundations

Shallow conventional foundation systems are anticipated to be suitable for construction of the planned structures. An allowable dead plus live load bearing pressure of 2,500 psf may be used for preliminary design purposed of conventional shallow foundations. An ultimate passive

equivalent fluid pressure of 300 pcf and a coefficient of friction of 0.35 are anticipated for the foundations. These are ultimate values that may require application of appropriate safety factors, load factors, depth factors, and/or other factors as deemed appropriate by the architect/engineer.

A total settlement of less than 1 inch is anticipated; a differential settlement of 0.5 inches in 25 feet is anticipated where foundations are bearing on like materials. The settlement criteria are based upon the assumption that foundation will be sized and loaded in accordance with the recommendations in this report.

Conventional shallow foundations may be planned to be a minimum of 12 inches wide and founded a minimum of 12 inches below the lowest adjacent soil grade for buildings up to two-stories in height. Isolated pad (spread) footings should be a minimum of 24 inches square and founded a minimum of 12 inches below the lowest adjacent soil grade.

Retaining Walls

Retaining walls may be designed to resist lateral pressure exerted from a soil media having an equivalent fluid weight provided in the table below. In accordance with Section 1803.5.12.1 of the 2109 California Building Code, application of the seismic design values for earthquake loading are required for retaining walls supporting more than 6 feet of backfill. The values presented below are for conditions when engineered fill is used within the zone behind the wall defined as twice the height of the retaining wall.

Table 2: Retaining Wall Pressures

Wall Type	Wall Slope Configuration	Equivalent Fluid Weight (pcf)	Lateral Pressure Coefficient	Earthquake Loading (plf)**	
Free Cantilever	Flat	35	0.28	$4H^2$	Applied 0.6H above the base of the wall
	2H:1V	50	0.41		
Restrained*	Flat	50	0.41	$12H^2$	

* Restrained conditions shall be defined as walls which are structurally connected to prevent flexible yielding, or rigid wall configurations (i.e. walls with numerous turning points) which prevent the yielding necessary to reduce the driving pressures from an at-rest state to an active state.

** Section 1803.5.12 of the 2019 California Building Code states that a determination of lateral pressures on basement and retaining walls due to earthquake loading shall be provided for structures to be designed in Seismic Design Categories D, E or F (Load value derived from Wood (1973) and modified by Whitman (1991)).

If keyed or interlocking non-mortared walls such as Keystone, Baselite, Allen Block, or rockery walls are utilized, the following soil parameters may be applicable for design within on-site, native materials:

Table 3: Modular Retaining Wall Design Parameters

Internal Angle of Friction	Cohesion	Bulk Unit Weight
32°	0 psf	125 psf

Asphalt Concrete Pavement Design

The pavement sections listed in the table below were based upon an assumed soil resistance value, or “R-Value,” of 35, and were calculated in accordance with the methods presented in the Sixth Edition of the California Department of Transportation Highway Design Manual.

Table 4: Asphalt Pavement Section Recommendations

Design Traffic Indices	Alternative Pavement Sections (Inches)	
	Asphalt Concrete *	Aggregate Base **
5.0	2.5 3.0	6.0 4.5
5.5	3.0 3.5	6.0 5.0
6.0	3.0 3.5	7.5 6.5
6.5	3.5 4.0	8.0 7.0
7.0	4.0 4.5	8.5 7.5
7.5	4.5 5.0	9.0 8.0
8.0	4.5 5.0	10.0 9.5
8.5	5.0 5.5	10.5 10.0
9.0	5.5 6.0	11.0 10.5

* Asphalt Concrete: must meet specifications for Caltrans Hot Mix Asphalt Concrete
** Aggregate Base: must meet specifications for Caltrans Class II Aggregate Base (R-Value = minimum 78)

Portland Cement Concrete Pavement Design

The pavement sections listed in the table below were based upon an assumed soil resistance value, or "R-Value," of 35, and were calculated in accordance with the methods presented in the American Concrete Institute (ACI) Concrete Pavement Design (ACI 330R-08).

Table 5: Concrete Pavement Section Recommendations

Category	ADTT*	Pavement Traffic Description	Thickness (inches)	
			3000 psi**	4000 psi**
A	1	Car parking areas and access lanes	4.0	4.0
A	10	Autos, pickups, and panel trucks only	5.0	4.5
B	25	Shopping center entrance and service lanes	5.5	5.0
B	300	Bus parking areas and interior lanes Single-unit truck parking areas and interior lanes	6.0	5.5
C	100	Roadway Entrances and Exterior Lanes	6.0	6.0
C	300		6.5	6.0
C	700		6.5	6.5

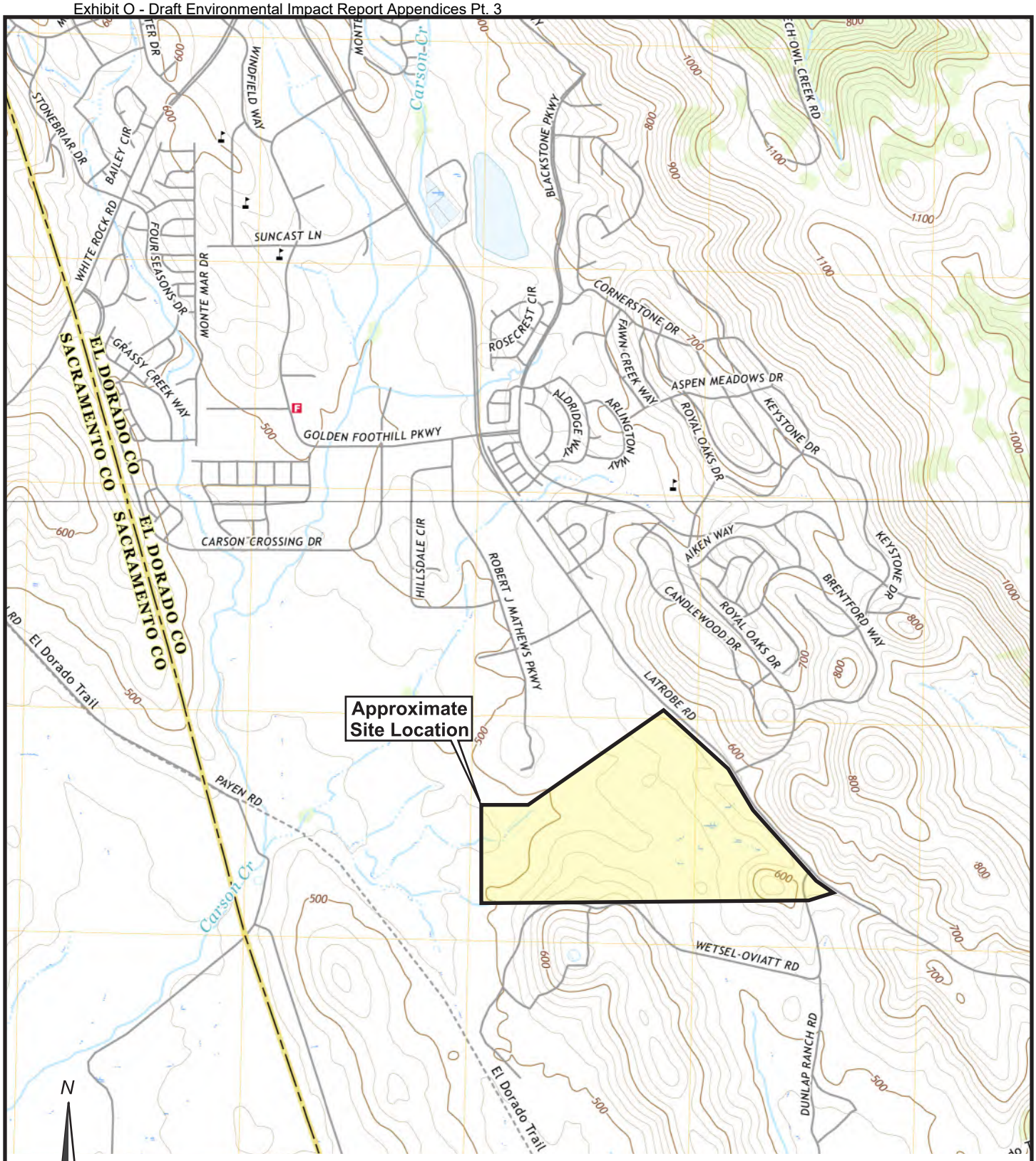
* Average Daily Truck Traffic
** 28-day concrete compressive strength

5.0 CLOSURE

This report is valid for conditions as they exist at this time for planning the type of project described herein. Our intent was to assess the geotechnical feasibility in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions at this time. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client, as discussed in the "Purpose and Scope" section of this report. Application beyond the

stated intent is strictly at the user's risk.

The preliminary opinions and conclusions of this feasibility report are based upon a site reconnaissance, review of available published and Youngdahl Consulting Group, Inc. own archival geotechnical data for the approximate project area, and our knowledge of the area. These opinions and conclusions should be confirmed and augmented by a geotechnical engineering study once the project reaches an appropriate stage.



Scale: 1:24,000

BASE MAP REFERENCE: *U.S.G.S. 7.5 Minute Topographic Series, Clarksville & Folsom SE Quadrangles, Dated 2018*

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E20064.000 **March 2020**	**VICINITY MAP** **Creekside Village** El Dorado Hills, California	**FIGURE 1**

REFERENCE: *Google Earth, Aerial Data Dated 9/12/2019*

YOUNGDAHL CONSULTING GROUP, INC.
ESTABLISHED 1984

Project No.: E20064.000

March 2020

SITE PLAN

Creekside Village
El Dorado Hills, California

FIGURE 2

Appendix E
Greenhouse Gas Emissions Regulatory Setting

Greenhouse Gas Regulatory Setting

State

The statewide GHG emissions regulatory framework is summarized in this subsection by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, water, solid waste, and other state actions. The following text describes EOs, Assembly Bills (ABs), Senate Bills (SBs), and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

California Air Resources Board's Regulations for the Mandatory Reporting of GHG Emissions

CARB's Regulation for the Mandatory Reporting of GHG Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that EPA promulgated in its Final Rule on Mandatory Reporting of GHGs (40 CFR, Section 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that EPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit over 10,000 MT CO_2e per year are required to report annual GHG emissions through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO_2e per year threshold are required to have their GHG emissions report verified by a CARB-accredited third party.

Executive Order B-18-12

EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the Governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also identified goals for existing state buildings for reducing grid-based energy purchases and water use.

Senate Bill 605 and Senate Bill 1383

SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of SLCPs in the state (California Health and Safety Code Section 39730) and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018 (California Public Resources Code Sections 42652–43654). SB 1383 also establishes specific targets for the reduction of SLCPs (40% below 2013 levels by 2030 for CH_4 and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon) and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its SLCP Reduction Strategy in March 2017 (CARB 2017). The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases (CARB 2017).

Assembly Bill 1757

AB 1757 (September 2022) requires the CNRA to determine a range of targets for natural carbon sequestration, and for nature-based climate solutions that reduce GHG emissions for future years 2030,

2038, and 2045. These targets are to be determined by no later than January 1, 2024, and are established to support the state's goals to achieve carbon neutrality and foster climate adaptation and resilience.

Heavy-Duty Diesel

CARB adopted the final Heavy-Duty Truck and Bus Regulation on December 31, 2014, to reduce DPM, a major source of black carbon, and NO_x emissions from heavy-duty diesel vehicles (13 CCR, Part 2025). The rule requires that DPM filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxics Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR, Part 2485).

Water

Senate Bill X7-7, Executive Order B-29-15, and Executive Order N-10-21

SB X7-7, or the Water Conservation Act of 2009, required that all water suppliers increase their water use efficiency with an overall goal of reducing per capita urban water use by 20% by December 31, 2020. Each urban water supplier was required to develop water use targets to meet this goal.

In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

In response to a state of emergency due to severe drought conditions, EO N-10-21 (July 2021) called on all Californians to voluntarily reduce their water use by 15% from their 2020 levels. Actions suggested in EO N-10-21 include reducing landscape irrigation, running dishwashers and washing machines only when full, finding and fixing leaks, installing water-efficient showerheads, taking shorter showers, using a shut-off nozzle on hoses, and taking cars to commercial car washes that use recycled water.

Solid Waste

Assembly Bill 939, Assembly Bill 341, Assembly Bill 1826, and Senate Bill 1383

In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code Section 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board (replaced in 2010 by the California Department of Resources Recycling and Recovery, or CalRecycle), which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required

to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by the year 2000.

AB 341 (2011) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. In addition, AB 341 required CalRecycle to develop strategies to achieve the state's policy goal. CalRecycle has conducted multiple workshops and published documents that identify priority strategies that it believes would assist the state in reaching the 75% goal by 2020.

AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires businesses to recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. The minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

SB 1383 (2016) requires a 50% reduction in organic waste disposal from 2014 levels by 2020 and a 75% reduction by 2025—essentially requiring the diversion of up to 27 million tons of organic waste—to reduce GHG emissions. SB 1383 also requires that not less than 20% of edible food that is currently disposed be recovered for human consumption by 2025.

References

CARB (California Air Resources Board). 2017. Short-Lived Climate Pollutant Reduction Strategy. March 2017. Accessed May 2019. https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final_slcp_report.pdf.

Appendix F
Drainage Report

DRAINAGE REPORT

CREEKSIDE VILLAGE

Prepared: August 2021

Prepared Under The Direction Of:

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Appendix E – CARSON CREEK REGIONAL DRAINAGE STUDY 2005 UPDATE

1.0 - INTRODUCTION

Creekside Village is a proposed 208-acre community in the south part of El Dorado Hills, El Dorado County, California. Creekside Village lies on the west side of Latrobe Road approximately two miles south of the Latrobe Road/White Rock Road intersection.

2.0 - EXISTING CONDITIONS

The project site is currently undeveloped land consisting of non-native grasslands with drainage flows from east to west. The project site is situated on relatively flat terrain considering that the surrounding region marks the first foothills of the Sierra Nevada on the east margin of the Sacramento Valley. The Carson Creek watershed encompasses approximately 15 square miles (9,600 acres), mostly located in the El Dorado Hills community of western El Dorado County, from the origins of Carson Creek north of US Highway 50 to the El Dorado/Sacramento County line. The project lies within the larger drainage shed CY5E of the Carson Creek watershed. Drainage shed CY5E encompasses 280 acres and the proposed project takes up 208 of those acres. There is an unnamed creek that flows through the project site from the east to the west. This creek ultimately reaches the Carson Creek.

3.0 - PROPOSED CONDITIONS

The proposed project will be a master planned neighborhood featuring a mix of home types, a community center, parks, trails and open space, which will allow connections to the Business Park and surrounding communities. Proposed conditions retain the existing drainage pattern through the project site. The proposed grading would increase the drainage area at Point D by 7.6 acres. The project will result in an approximate impervious area of 97.4 acres including roads.

4.0 - DESIGN RUNOFF

Design runoff was computed using HEC-HMS computer program. These computations also validate the effectiveness of on-site detention storage. Proposed facilities operate in concert so that the 2-year flows do not exceed pre-project levels as required by “Hydromodifications Project” of the *West Slope Development and Redevelopment Standards and Post Construction Storm Water Plan Requirements*. HEC-HMS computations simulate the rainfall-runoff process for a 24-hour storm assumed to occur uniformly over the study area. The computations utilize the SCS dimensionless unit hydrograph method to transform precipitation excess, defined as rainfall *not* lost to surface retention by vegetation, cracks and crevices, local depressions, etc., or infiltrated into the ground, into runoff. Precipitation losses are computed within the program on the basis of a runoff curve number (CN) assigned to each shed. CN values reflect land usage and the runoff potential of underlying soils. Input datum required for the development of a unit hydrograph for each sub basin is the estimated lag time, defined as the time between the center of mass of precipitation excess and the unit hydrograph peak, and simplified as 0.6X time of concentration. Input parameters used for each contributing shed in hydrograph computations are: a runoff curve number used in the computation of precipitation losses, and; a lag time, from which the SCS dimensionless unit hydrograph is constructed.

5.0 – HYDROMODIFICATION

As required by “Hydromodifications Project” of the *West Slope Development and Redevelopment Standards and Post Construction Storm Water Plan Requirements,* this project requires verification showing post project flows will not exceed pre-project flow rate for the 2-year, 24-hour storm. A preliminary study was conducted to confirm that this requirement is achievable. A portion of the project will be directed to the pond where it can be detained and released at pre development flows. See Appendix C for Hydromodification Shed Map. The shed map depicts the general areas that will be draining to the pond. Hydrograph calculations show a more detailed breakdown of the areas within the shed that are contributing to the pond. See Appendix C for hydrograph calculations.

Table 1 – Flow Summary

SHED/KEY POINT	***2-YEAR RUNOFF***	
	PRE-DEVEL	***POST-DEVEL***
D	68.85 cfs	68.84 cfs

6.0 –WATER QUALITY

Water quality considerations will be reviewed at the project improvement plan stage and appropriate analyses will be included in a subsequent drainage report. The El Dorado County Storm Water Management Plan (SWMP), dated August 2004, serves as a regulatory document related to reducing the discharge of pollutants associated with storm water drainage systems. There are 4 Post Construction Water Quality (PCSWQ) lots that will be used for water quality treatment.

The final water quality methods and details will be worked out at improvement plans stage.

The following Treatment Control BMPs also may be incorporated into final design of the project if a project proponent would like to reduce water quality flow (WQF) requirements:

1. Incorporation within the site's plan or design, land use planning measures to minimize water quality impacts, including stream buffers and restoration activities.

2. Reduction of the site's imperviousness, conserving natural resources and areas, maintaining and using natural drainage courses in the storm water conveyance system and minimizing clearing and grading.

3. When landscaping is required or proposed, provision of runoff storage measures dispersed uniformly throughout the site's landscape with the use of a variety of detention, retention, and runoff practices.

4. Implementation of on-site hydrologically functioning landscape design and management practices.

5. Minimize project's impervious footprint and conserve natural areas. Minimize directly connected impervious areas.

6. Where landscaping is proposed in or adjacent to parking areas, to the extent feasible, incorporate landscaped areas into a site drainage design that minimizes runoff.

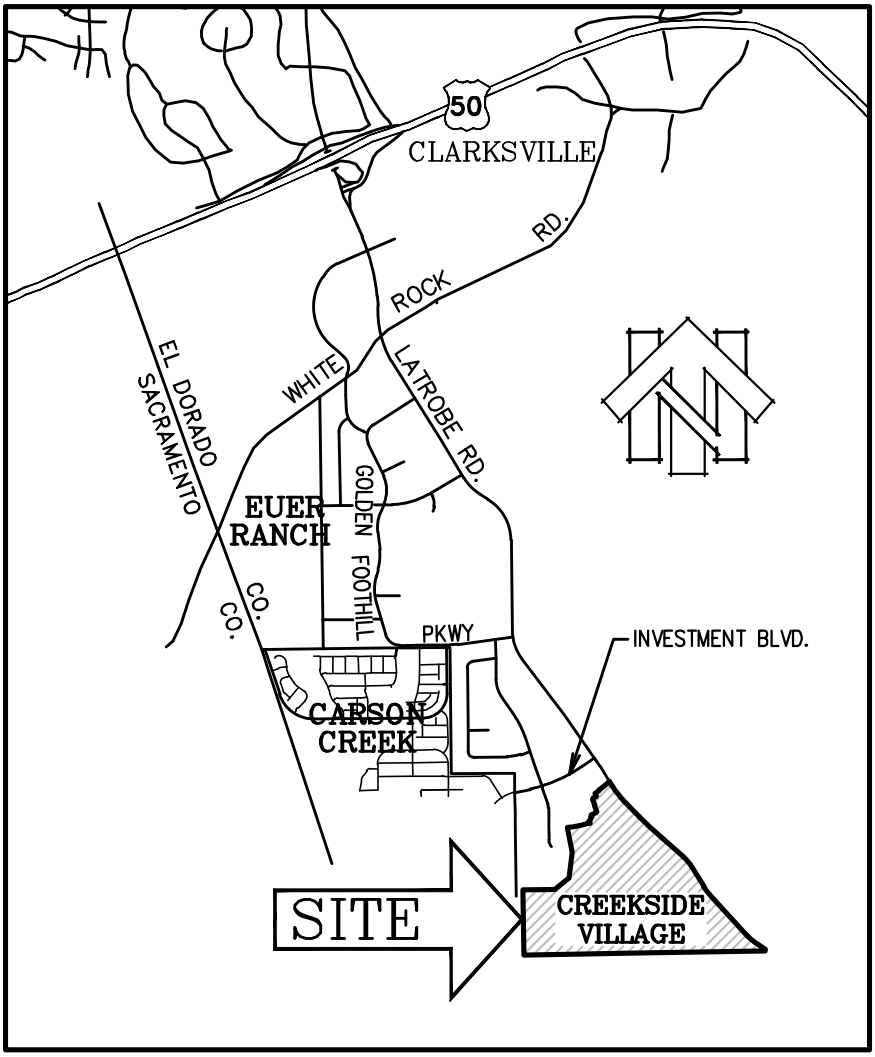
7.0 –CONCLUSIONS

The 10 and 100 year flows for this site were evaluated with the *Carson Creek Regional Drainage Study 2005 Update* and that the study shows that additional storage (detention ponds) would provide no notable mitigation of peak flows. The Shed CY5E was analyzed with a CN value of 84 which equates to residential 1 acre lots but the project proposes a higher residential density. However, Key node 10, which is downstream of the project, shows a decrease of flow by 400cfs. Refer to the *Carson Creek Regional Drainage Study 2005 Update* for more information and data analysis in the Appendix E. The project is located on the lower end of the Carson Creek Regional shed. The objective with this property is to discharge the runoff from this development before the upstream drainage area reaches the property. The detention pond as proposed is designed to meet the hydromodification requirements that mitigate the 2-year, 24 hour storm alone. No detention is needed nor proposed to provide mitigation for the 10 and 100 year flows as noted hereinbefore.

APPENDIX A

VICINITY MAP

CREEKSIDE VILLAGE
VICINITY MAP
EL DORADO COUNTY, CALIFORNIA
AUGUST, 2021



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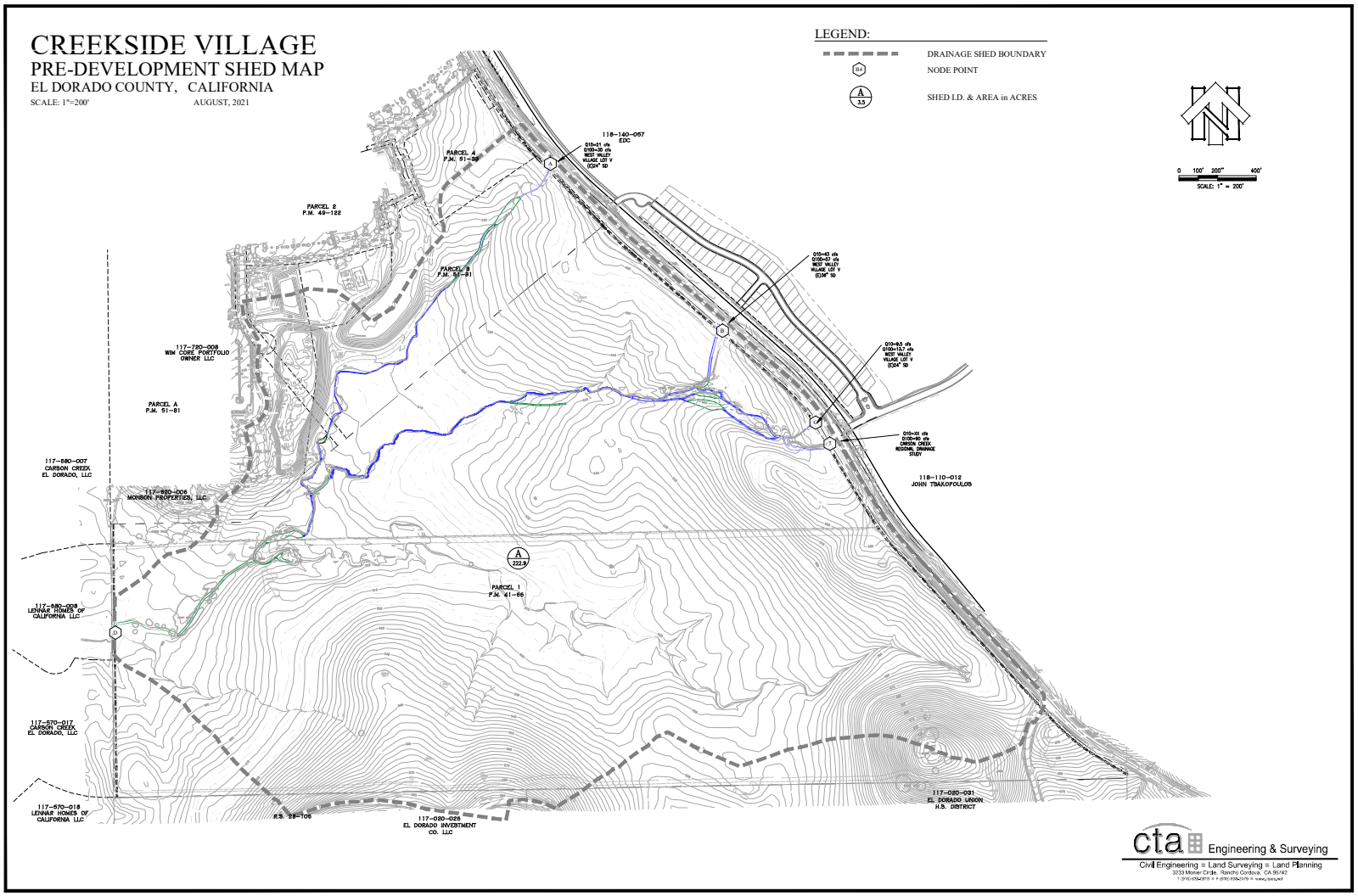
APPENDIX B

PRE-DEVELOPMENT SHED MAP


CREEKSIDE VILLAGE
PRE-DEVELOPMENT SHED MAP
EL DORADO COUNTY, CALIFORNIA
SCALE: 1"=200'
AUGUST, 2021
LEGEND:
DRAINAGE SHED BOUNDARY
NODE POINT
SHED I.D. & AREA in ACRES
0 100' 200' 400'
SCALE: 1" = 200'
PARCEL A P.M. 51-81
PARCEL B P.M. 51-81
PARCEL C P.M. 49-122
PARCEL 1 P.M. 41-66
117-780-008 WM CORE PORTFOLIO OWNER LLC
117-580-007 CARSON CREEK EL DORADO, LLC
117-580-008 MONSOON PROPERTIES, LLC
117-580-009 LENNAR HOMES OF CALIFORNIA LLC
117-570-017 CARSON CREEK EL DORADO, LLC
117-570-018 LENNAR HOMES OF CALIFORNIA LLC
118-140-057 EDC
118-110-012 JOHN TSAKOPOULOS
117-020-031 EL DORADO UNION H.S. DISTRICT
117-020-026 EL DORADO INVESTMENT CO. LLC
H.S. 28-105
cta Engineering & Surveying
Civil Engineering ■ Land Surveying ■ Land Planning

APPENDIX C

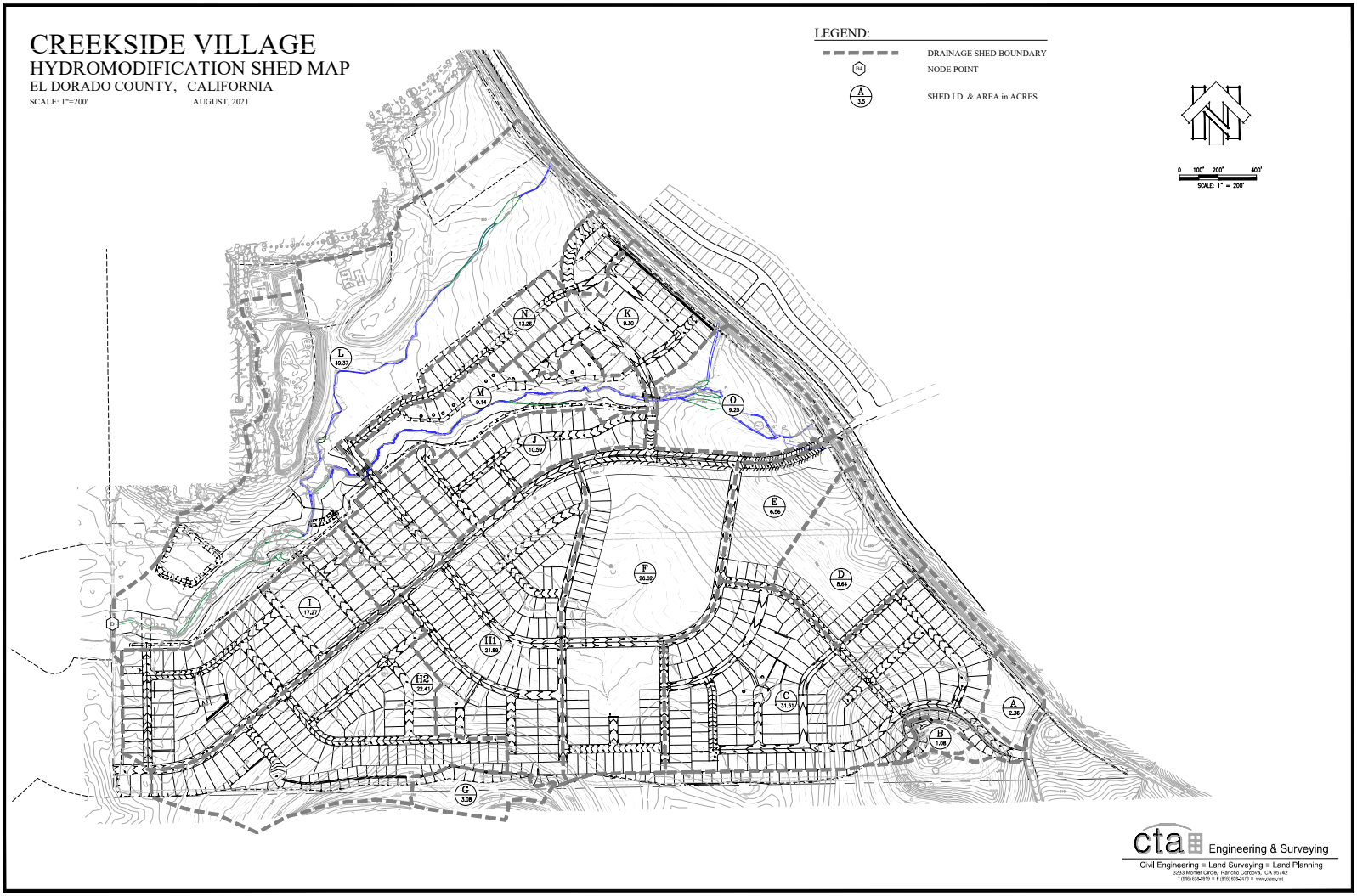
HYDROMODIFICATION SHED MAP

CREEKSIDE VILLAGE

HYDROMODIFICATION SHED MAP

EL DORADO COUNTY, CALIFORNIA

SCALE: 1"=200' AUGUST, 2021



APPENDIX D

HYDROGRAPH ANALYSES

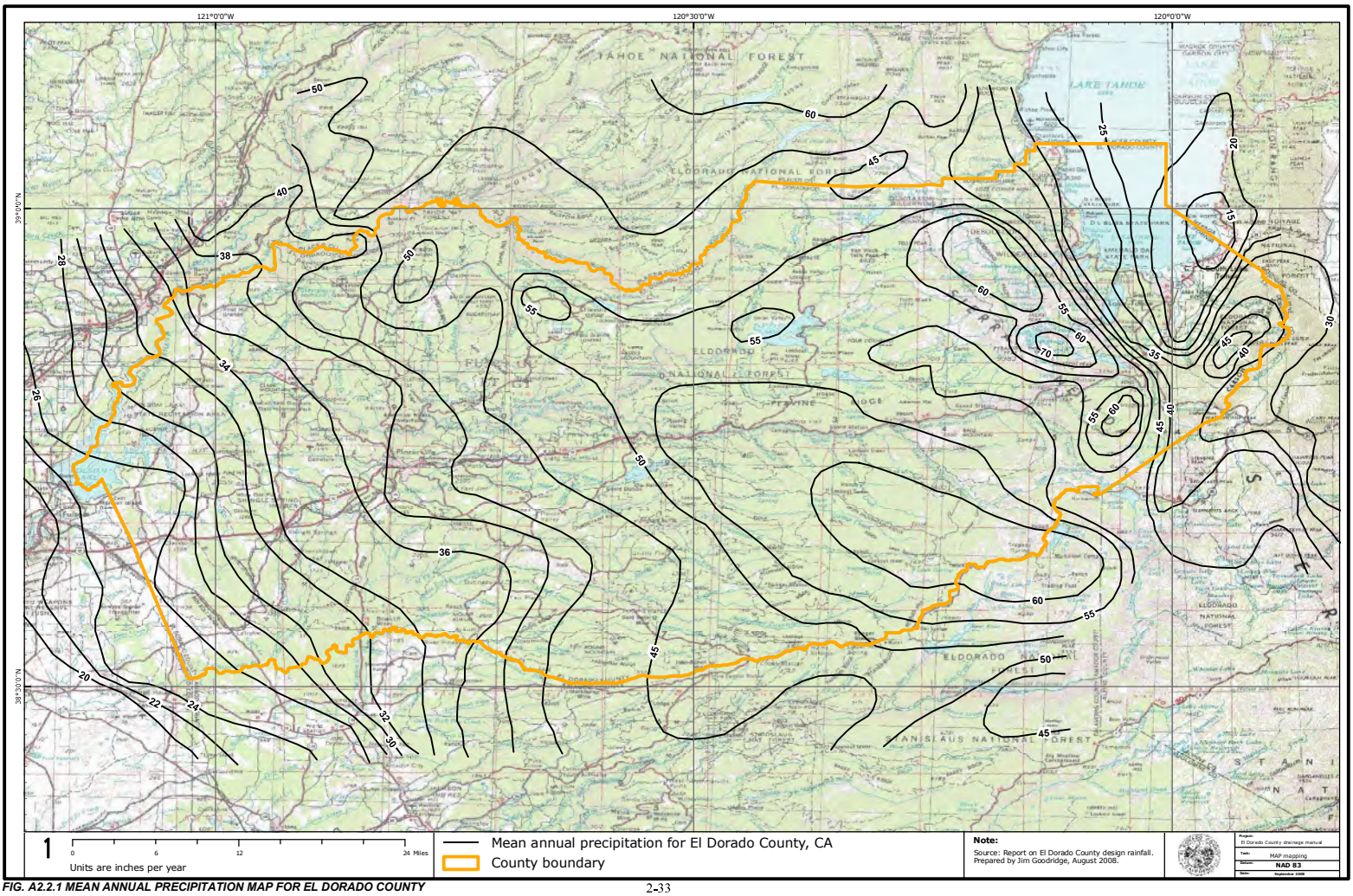


FIG. A2.2.1 MEAN ANNUAL PRECIPITATION MAP FOR EL DORADO COUNTY

Table A2.2.1 Rainfall Depth Table with Return Period of 2 Years

El Dorado County Design Rainfall
Precipitation Depth Duration Frequency
Return Period 2 Years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hour	2 Hour	3 Hour	6 Hour	12 Hour	1 Day	2 Day	3 Day	4 Day	5 Day	6 Day	8 Day	10 Day	15 Day	20 Day	30 Day	60 Day	365 Day
8	0.04	0.06	0.07	0.10	0.14	0.19	0.23	0.33	0.46	0.65	0.87	1.01	1.11	1.20	1.27	1.44	1.60	1.93	2.18	2.69	3.91	7.81
10	0.05	0.07	0.09	0.12	0.17	0.24	0.29	0.41	0.58	0.81	1.09	1.26	1.39	1.50	1.59	1.80	2.00	2.41	2.72	3.36	4.89	9.76
12	0.06	0.08	0.10	0.14	0.20	0.29	0.35	0.49	0.69	0.98	1.31	1.51	1.67	1.81	1.91	2.16	2.40	2.89	3.26	4.03	5.87	11.71
14	0.07	0.10	0.12	0.17	0.24	0.33	0.41	0.57	0.81	1.14	1.53	1.77	1.94	2.11	2.23	2.52	2.80	3.38	3.81	4.70	6.85	13.66
16	0.08	0.11	0.14	0.19	0.27	0.38	0.47	0.66	0.93	1.30	1.75	2.02	2.22	2.41	2.55	2.88	3.21	3.86	4.35	5.38	7.83	15.61
18	0.09	0.13	0.15	0.22	0.31	0.43	0.52	0.74	1.04	1.47	1.97	2.27	2.50	2.71	2.86	3.24	3.61	4.34	4.90	6.05	8.81	17.57
20	0.10	0.14	0.17	0.24	0.34	0.48	0.58	0.82	1.16	1.63	2.19	2.52	2.78	3.01	3.18	3.60	4.01	4.82	5.44	6.72	9.78	19.52
22	0.11	0.15	0.19	0.26	0.37	0.53	0.64	0.90	1.27	1.79	2.40	2.78	3.06	3.31	3.50	3.96	4.41	5.30	5.98	7.39	10.76	21.47
24	0.12	0.17	0.21	0.29	0.41	0.57	0.70	0.99	1.39	1.95	2.62	3.03	3.33	3.61	3.82	4.32	4.81	5.79	6.53	8.06	11.74	23.42
26	0.13	0.18	0.22	0.31	0.44	0.62	0.76	1.07	1.50	2.12	2.84	3.28	3.61	3.91	4.14	4.68	5.21	6.27	7.07	8.73	12.72	25.37
28	0.14	0.20	0.24	0.34	0.47	0.67	0.82	1.15	1.62	2.28	3.06	3.53	3.89	4.21	4.45	5.04	5.61	6.75	7.62	9.41	13.70	27.33
30	0.15	0.21	0.26	0.36	0.51	0.72	0.87	1.23	1.74	2.44	3.28	3.78	4.17	4.51	4.77	5.40	6.01	7.23	8.16	10.08	14.68	29.28
35	0.17	0.24	0.30	0.42	0.59	0.84	1.02	1.44	2.02	2.85	3.83	4.42	4.86	5.26	5.57	6.30	7.01	8.44	9.52	11.76	17.12	34.16
40	0.20	0.28	0.34	0.48	0.68	0.95	1.17	1.64	2.31	3.26	4.37	5.05	5.56	6.02	6.36	7.20	8.01	9.64	10.88	13.44	19.57	39.04
45	0.22	0.31	0.38	0.54	0.76	1.07	1.31	1.85	2.60	3.67	4.92	5.68	6.25	6.77	7.16	8.10	9.02	10.85	12.24	15.12	22.02	43.92
50	0.25	0.35	0.43	0.60	0.85	1.19	1.46	2.05	2.89	4.07	5.47	6.31	6.94	7.52	7.95	9.00	10.02	12.06	13.60	16.80	24.46	48.80
55	0.27	0.38	0.47	0.66	0.93	1.31	1.60	2.26	3.18	4.48	6.01	6.94	7.64	8.27	8.75	9.91	11.02	13.26	14.96	18.48	26.91	53.68
60	0.30	0.42	0.51	0.72	1.02	1.43	1.75	2.46	3.47	4.89	6.56	7.57	8.33	9.03	9.54	10.81	12.02	14.47	16.32	20.16	29.35	58.55
65	0.32	0.45	0.56	0.78	1.10	1.55	1.90	2.67	3.76	5.29	7.10	8.20	9.03	9.78	10.34	11.71	13.02	15.67	17.68	21.84	31.80	63.43
70	0.35	0.49	0.60	0.84	1.19	1.67	2.04	2.87	4.05	5.70	7.65	8.83	9.72	10.53	11.13	12.61	14.02	16.88	19.04	23.52	34.25	68.31

Source: Design Rainfall Tables for El Dorado County prepared by Jim Goodridge, August 30, 2008

Urban Hydrology for Small Watersheds, US Department of Agriculture, Natural Resources Conservation Service – Technical Release 55

Table 2-2a. – Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group -			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)……		68	79	86	89
Fair condition (grass cover 50% to 75%)……..		49	69	79	84
Good condition (grass cover > 75%)…….....		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)…….		98	98	98	98
Paved; open ditches (including right-of-way)…….		83	89	92	93
Gravel (including right of way)……..		76	85	89	91
Dirt (including right-of-way)…….....		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]……		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)……		96	96	96	96
Urban districts:					
Commercial and business……	85	89	92	94	95
Industrial……..	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)……..	65	77	85	90	92
1/4 acre……	38	61	75	83	87
1/3 acre……	30	57	72	81	86
1/2 acre……	25	54	70	80	85
1 acre……	20	51	68	79	84
2 acres……	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]……..		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1]Average runoff condition, and $I_a = 0.2S$.
[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figures 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

TABLE B-1 - CN VALUES

SHED	AREA (AC)	LOT TYPE (AC) [1/]			S TREETS[2/] (AC)	LAND-SCAPE (AC)	OPEN SPACE (AC)	CN [3/]
		TYPE 1	TYPE 2	TYPE 3				
PRE DEVELOPMENT								
A	222.8	CN value from Carson Creek Regional Drainage Study 2005 Update.						84.0
POST DEVELOPMENT								
A	2.36	0.00	0.00	0.00	0.32	0.00	2.04	82.4
B	1.08	0.00	0.00	0.00	0.00	0.00	1.08	80.0
C	31.51	31.51	0.00	0.00	0.00	0.00	0.00	92.0
D	8.64	7.44	0.00	0.00	0.31	0.00	0.89	91.0
E	6.56	4.97	0.00	0.00	0.84	0.75	0.00	91.4
F	26.62	22.41	0.00	0.00	0.00	4.21	0.00	90.1
G	3.08	0.00	0.00	0.00	0.00	0.00	3.08	80.0
H1	21.89	19.86	0.00	0.00	0.00	2.03	0.00	90.9
H2	22.41	16.24	2.86	0.00	0.00	0.00	3.31	89.6
I	17.27	15.92	1.35	0.00	0.00	0.00	0.00	91.6
J	8.56	0.00	8.56	0.00	0.00	0.00	0.00	87.0
K	9.30	9.30	0.00	0.00	0.00	0.00	0.00	92.0
L	49.37	0.00	0.00	0.00	2.55	0.00	46.82	80.9
M	9.14	0.00	0.00	0.00	0.00	0.00	9.14	80.0
N	13.26	13.26	0.00	0.00	0.00	0.00	0.00	92.0
O	9.25	0.00	0.00	0.00	0.00	0.00	9.25	80.0

[1/] TYPICAL LOT DEVELOPMENT - (AREAS IN AC)

LOT TYPE	
1	Residential, average lot size .125 acre - CN=92
2	Residential, average lot size .25 acre - CN=87
3	Residential, average lot size 2 acre - CN=82
LS	Landscape lot - CN=80
OS*	Undeveloped open space area - CN=80

[2/] TYPICAL ROADWAY WIDTH = 32' EP TO EP

[3/] Weighted CN

TABLE B-2 SHED PARAMETERS

				SHEET FLOW TRAVEL TIME					CONCENTRATED FLOW TIME								
DRAINAGE ID #	Shed Area (AC)	Shed Area (Mi^2)	L1 (ft)	n	P (IN)	S1	Tt1 (HR)	Tt1 (MIN)	Unpaved Flow Length (FT)	S2	V2 (FT/SEC)	Tt2 (MIN)	Channel Flow Length (FT)	S3	V3 (FT/SEC)	Tt3 (MIN)	SUM Tt
PRE DEVELOPMENT																	
A	222.80	0.3481	300	0.24	2.16	0.05	0.50	29.8	540	0.056	3.82	2.4	3290		6.00	9.1	41.3
POST DEVELOPMENT																	
A	2.4	0.003688															15.0
B	1.1	0.001688	182	0.24	2.16	0.18	0.19	11.6	68	0.440	10.70	0.1			0.00	0.0	11.8
C	31.5	0.049234															10.0
D	8.6	0.013500															10.0
E	6.6	0.010250															10.0
F	26.6	0.041594															10.0
G	3.1	0.004813	252	0.24	2.16	0.17	0.26	15.5	255	0.117	5.52	0.8					16.2
H1	21.9	0.034203															10.0
H2	22.4	0.035016															10.0
I	17.3	0.026984															10.0
J	8.6	0.013375															10.0
K	9.3	0.014531															10.0
L	49.4	0.077141	300	0.24	2.16	0.06	0.45	27.0	189	0.063	4.05	0.8	3189		6.00	8.9	36.6
M	9.1	0.014281															10.0
N	13.3	0.020719															10.0
O	9.3	0.014453															15.0

$$T_{sh} = \frac{0.007 \times (nL)^{0.8}}{[(P_2)^{0.5} \times (S)^{0.4}]} \quad \text{Eq 2.4.7}$$

Where,

n = overland flow roughness

L = length of overland flow surface

P_2 = 2-yr, 24 hr rainfall depth

(For MAP = 26.5"/yr, P_2=2.16")

S = land slope (ft/ft)

$T_{sc} = L/V$

Where,

$V_{UNPAVED} = 16.1345\ S^{0.5}$ Eq 2.4.8

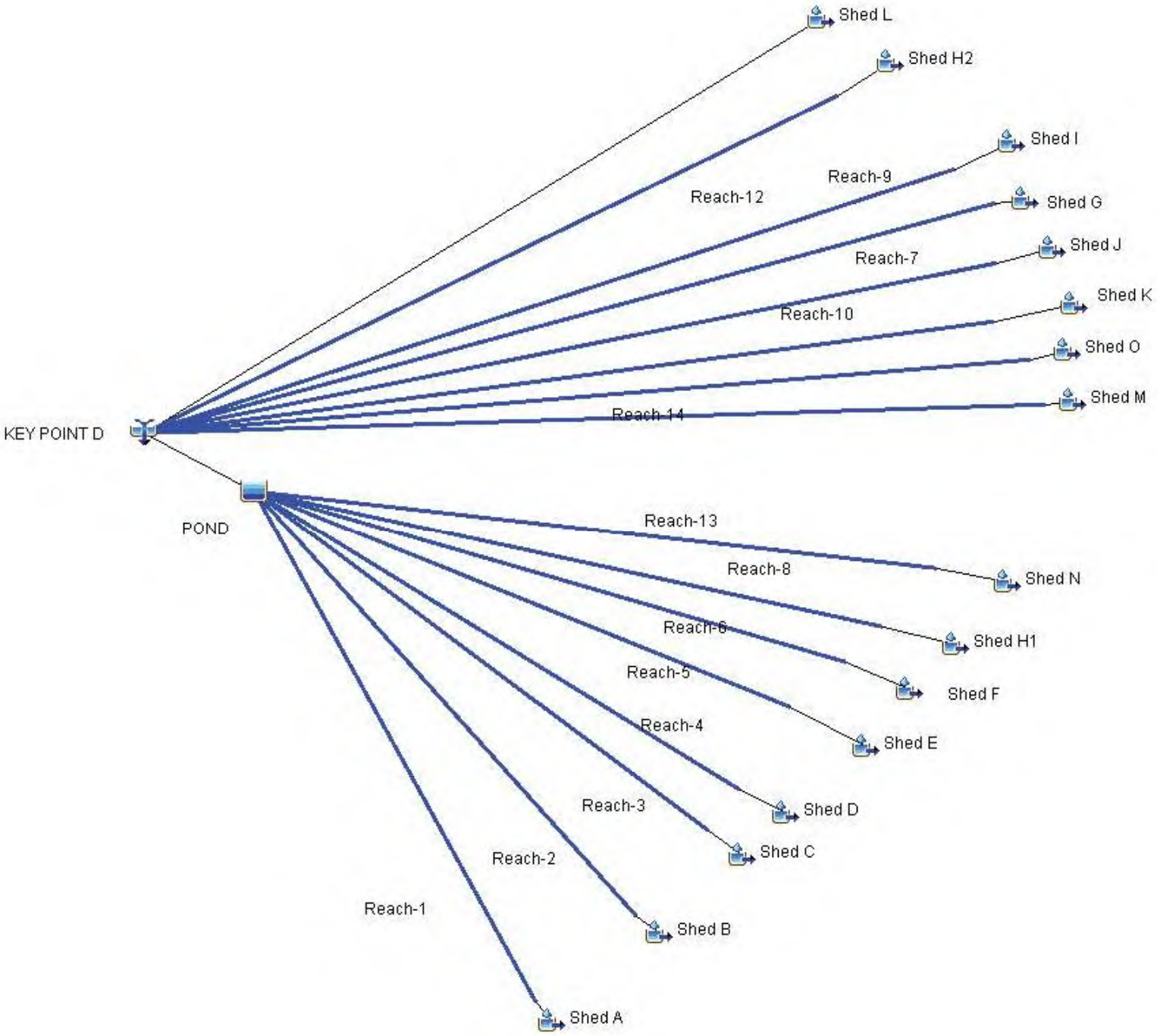
PRE-DEVELOPMENT SCHEMATIC

Project: Creekside Update Simulation Run: Pre-2YR

Start of Run: 01Jan2020, 00:00 Basin Model: PRE-DEV
End of Run: 02Jan2020, 12:00 Meteorologic Model: 2-YEAR
Compute Time: 07Jun2021, 15:19:53 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
SHED A	0.348125	68.85	01Jan2020, 10:19	0.86
KEY POINT D	0.348125	68.85	01Jan2020, 10:19	0.86

POST DEVELOPMENT SCHEMATIC



Project: Creekside Village Update Simulation Run: Post-2YR

Start of Run: 01Jan2020, 00:00 Basin Model: POST-DEV
End of Run: 02Jan2020, 12:00 Meteorologic Model: 2-YEAR
Compute Time: 02Aug2021, 10:29:23 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Shed C	0.049234	32.39	01Jan2020, 09:59	1.38
Reach-3	0.049234	32.22	01Jan2020, 10:04	1.38
Shed F	0.041594	24.21	01Jan2020, 09:59	1.24
Reach-6	0.041594	24.12	01Jan2020, 10:02	1.24
Shed H1	0.034203	20.98	01Jan2020, 09:59	1.30
Reach-8	0.034203	20.89	01Jan2020, 10:01	1.30
Shed N	0.020719	13.63	01Jan2020, 09:59	1.38
Reach-13	0.020719	13.58	01Jan2020, 10:00	1.38
Shed D	0.013500	8.34	01Jan2020, 09:59	1.30
Reach-4	0.013500	8.31	01Jan2020, 10:04	1.30
Shed E	0.010250	6.49	01Jan2020, 09:59	1.33
Reach-5	0.010250	6.48	01Jan2020, 10:04	1.33
Shed A	0.003688	1.05	01Jan2020, 10:03	0.78
Reach-1	0.003688	1.05	01Jan2020, 10:13	0.78
Shed B	0.001688	0.41	01Jan2020, 10:01	0.66
Reach-2	0.001688	0.41	01Jan2020, 10:13	0.67
POND	0.174876	9.87	01Jan2020, 12:30	1.20

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Shed L	0.077141	12.22	01Jan2020, 10:17	0.70
Shed H2	0.035016	19.70	01Jan2020, 09:59	1.20
Reach-12	0.035016	19.64	01Jan2020, 10:01	1.20
Shed I	0.026984	17.31	01Jan2020, 09:59	1.35
Reach-9	0.026984	17.26	01Jan2020, 10:00	1.35
Shed K	0.014531	9.56	01Jan2020, 09:59	1.38
Reach-11	0.014531	9.55	01Jan2020, 10:01	1.38
Shed O	0.014453	3.26	01Jan2020, 10:03	0.66
Reach-15	0.014453	3.26	01Jan2020, 10:15	0.66
Shed M	0.014281	3.66	01Jan2020, 10:00	0.66
Reach-14	0.014281	3.65	01Jan2020, 10:06	0.66
Shed J	0.013375	6.25	01Jan2020, 09:59	1.03
Reach-10	0.013375	6.24	01Jan2020, 10:02	1.03
Shed G	0.004813	1.05	01Jan2020, 10:04	0.66
Reach-7	0.004813	1.05	01Jan2020, 10:10	0.66
KEY POINT D	0.375470	68.84	01Jan2020, 10:02	1.06

Project: Creekside Village Update Simulation Run: Post-2YR
Reservoir: POND

Start of Run:	01Jan2020, 00:00	Basin Model:	POST-DEV
End of Run:	02Jan2020, 12:00	Meteorologic Model:	2-YEAR
Compute Time:	02Aug2021, 10:29:23	Control Specifications:	Control 1

Volume Units: IN

Computed Results

Peak Inflow:	103.50 (CFS)	Date/Time of Peak Inflow:	01Jan2020, 10:02
Peak Discharge:	9.87 (CFS)	Date/Time of Peak Discharge	01Jan2020, 12:30
Inflow Volume:	1.30 (IN)	Peak Storage:	4.87 (AC-FT)
Discharge Volume	1.20 (IN)	Peak Elevation:	481.54 (FT)

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2010 by Autodesk, Inc. v9.25 — Monday, Jun 7, 2021

Pond No. 1 - CREEKSIDE POND

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 477.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	477.00	41,028	0	0
1.00	478.00	43,463	42,235	42,235
2.00	479.00	45,956	44,699	86,934
3.00	480.00	48,505	47,220	134,154
4.00	481.00	51,111	49,797	183,952
5.00	482.00	53,773	52,431	236,383
6.00	483.00	56,493	55,122	291,504

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .000	.000	.000	n/a
Orifice Coeff.	= 0.00	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 0	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	477.00	---	---	---	---	---	---	---	---	---	---	0.000
1.00	42,235	478.00	---	---	---	---	---	---	---	---	---	---	0.000
2.00	86,934	479.00	---	---	---	---	---	---	---	---	---	---	0.000
3.00	134,154	480.00	---	---	---	---	---	---	---	---	---	---	0.000
4.00	183,952	481.00	---	---	---	---	---	---	---	---	---	---	0.000
5.00	236,383	482.00	---	---	---	---	---	---	---	---	---	---	0.000
6.00	291,504	483.00	---	---	---	---	---	---	---	---	---	---	0.000

APPENDIX E

CARSON CREEK REGIONAL DRAINAGE STUDY 2005 UPDATE

SHAR1

CARSON CREEK REGIONAL DRAINAGE STUDY

2005 UPDATE

DECEMBER, 2005

Prepared by:

cta

Civil Engineering
Land Surveying
Land Planning

3233 Monier Circle
Rancho Cordova
(916) 638-0919

CARSON CREEK REGIONAL DRAINAGE STUDY

2005 UPDATE

DECEMBER, 2005

Prepared by:
CTA ENGINEERS / SURVEYORS
3233 Monier Circle
Rancho Cordova, CA 95742
(916) 638-0919

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2005 UPDATE
CARSON CREEK REGIONAL DRAINAGE STUDY

INTRODUCTION

The January 1996 *Carson Creek Regional Drainage Study* provided a "unified plan for stormwater management within the portion of the watershed that lies in El Dorado County." The *CCRDS* study area encompasses approximately 15 square miles, mostly located in the El Dorado Hills community of western El Dorado County, from the origins of Carson Creek north of US Highway 50 to the El Dorado / Sacramento County line. The original study offered an assessment of projected impacts due to development within areas draining to Carson Creek and its tributaries, resulting from a 100-year, 24-hour storm event.

Under natural, undeveloped conditions within the Carson Creek watershed, there is little infiltration into area soils and a high proportion of rainfall results in direct runoff to the main channel and its tributaries. The upper reaches of the stream network are characterized by relatively steep, incised channels, with minimal overbank floodplain areas. However, the stream gradient flattens between US Highway 50 and the Sacramento County line, and as a result the lower reaches of Carson Creek and its tributaries may overflow during major rainfall events. The introduction of additional impervious area and alteration of existing soil cover resulting from new development can be expected to produce increased stormwater runoff, with possible effects on the frequency and magnitude of overflowing.

Since the time the *CCRDS* was adopted by DOT, significant improvements have been constructed within the watershed area south of US Highway 50. These projects include, but are not necessarily limited to: Town Center East, Town Center West, Creekside Greens, Valley View White Rock Village, and Carson Creek Phase 1. Additional growth is projected, as plans for Valley View West Valley Village and Carson Creek Phase 2 are implemented.

PURPOSE OF STUDY UPDATE

Hydrologic and hydraulic computations included in the *CCRDS* reflect the best information available at the time of study completion. The projects noted above were then in the initial design stages, and the level of detail used in representing the rainfall-runoff process for the affected shed areas was necessarily limited. Analyses included in the *CCRDS* indicate that flow in the lower reaches of Carson Creek can be particularly sensitive to the timing of runoff hydrographs from these project locales.

The purpose of the *CCRDS* update is to incorporate revised shed parameters for the lower portion of the Carson Creek watershed into the regional model. As in the *CCRDS*, a primary concern of the updated study is consideration of flow in

Carson Creek at the El Dorado / Sacramento County line, as well as at project-specific locations within the watershed.

The methods used in updating the *CCRDS* are consistent with guidelines and procedures of *County of El Dorado Drainage Manual*, adopted March 15, 1995.

OTHER STUDIES

The 2005 update to the *CCRDS* is based, in part, on information obtained from the following reports:

- *Carson Creek Regional Drainage Study Volumes 1 and 2,* January 1996, prepared for El Dorado County Department of Transportation by Shari Bottorff
- *Drainage Study for Euer Ranch (Carson Creek Phase 1),* January 13, 2003 (Revised), Cooper, Thorne & Associates, Inc.
- *Drainage Analysis for Town Center East Development,* September 2002, Wood-Rodgers, Inc.
- *Storm Drainage Improvements Associated With West Valley Village Phases 1 & 2 (Units 1-8) Rough Grading Plans,* November 30, 2004, Cooper, Thorne & Associates, Inc.
- *An Addendum to Storm Drainage Improvements Associated With West Valley Village Phases 1 & 2 (Units 1-8) Rough Grading Plans,* March 15, 2005, Cooper, Thorne & Associates, Inc.
- *Addendum No. 2 to Storm Drainage Improvements Associated With West Valley Village Phases 1 & 2 (Units 1-8) Rough Grading Plans,* August 2005, Cooper, Thorne & Associates, Inc.
- *Drainage Report for West Valley Major Roadways,* March 7, 2005, R.E.Y. Engineers, Inc.
- *Drainage Study for West Valley Village Phase 2 Units 1A & 1B,* February 2005, Cooper, Thorne & Associates, Inc.
- *Drainage Report for West Valley Unit 2,* March 28, 2005, R.E.Y. Engineers, Inc.
- *Drainage Improvements Associated With West Valley Village – Unit 3,* June 22, 2005, Carlton Engineering, Inc.
- *Drainage Report for West Valley Unit 4,* March 7, 2005, R.E.Y. Engineers, Inc.
- *Drainage Improvements Associated With West Valley Village – Unit 5A,* February 10, 2005, Carlton Engineering, Inc.
- *Drainage Study for West Valley Village Phase 2 Unit 5B,* September 2005 (Revised), Cooper, Thorne & Associates, Inc.
- *Drainage Study for West Valley Village Phase 2 Units 6A – 6C,* September 2005 (Revised), Cooper, Thorne & Associates, Inc.
- *Drainage Report for West Valley Unit 7A,* March 7, 2005, R.E.Y. Engineers, Inc.

- *Drainage Report for West Valley Unit 7B,* March 14, 2005, R.E.Y. Engineers, Inc.
- *Drainage Improvements Associated With West Valley Village – Unit 8,* February 10, 2005, Carlton Engineering, Inc.
- *Drainage Study for West Valley Village Phase 2 Unit 18,* August 2005 (Revised), Cooper, Thorne & Associates, Inc.
- *Preliminary Drainage Study for West Valley Village Lots 6 & 7,* September 2005, Cooper, Thorne & Associates, Inc.
- *Comprehensive Drainage Report for West Valley Village,* November 2005, Cooper, Thorne & Associates, Inc.
- *El Dorado Hills Business Park Master Drainage Plan,* January 1991, Gene E. Thorne & Associates, Inc.

HYDROLOGIC ANALYSES

The rainfall-runoff process for anticipated build out of the Carson Creek watershed was replicated by means of the HEC-1 computer model, developed by the US Army Corps of Engineers Hydrologic Engineering Center. In the HEC-1 simulation, the stream basin is represented by a series of interconnected hydrologic and hydraulic components, i.e. sub basin sheds, channel routing reaches, detention sites. The model depicts the surface runoff response of the watershed to a precipitation event of specified intensity and duration, by means of streamflow hydrographs computed for specified locations throughout the network.

Shed Areas

Segmentation of the Carson Creek watershed into smaller shed areas determines the number and types of network components used in the computational process. In general, shed boundaries are based on natural topography, but may be modified to represent piped storm drain systems, or to reflect flows at key locations such as hydraulic structures or geo-political limits. It is assumed that model parameters within each shed reflect average conditions, and that precipitation and infiltration are uniform over the shed. This assumption is less accurate as shed sizes increase.

Much of the shed area north of US Highway 50 is unchanged since completion of the original *CCRDS;* input data for those sheds were adopted directly from *CCRDS* computer file FUTHEC1.DAT for use herein.

The present study focuses on the area south of Highway 50, where major growth is underway. Sheds within this portion of the Carson Creek watershed have been redefined to more realistically characterize existing and proposed improvements. Modifications to the HEC-1 input model, reflective of recent

development plans, were obtained from drainage studies completed subsequent to adoption of the *CCRDS,* notably *Drainage Study for Euer Ranch (Carson Creek Phase 1),* January 13, 2003 (Revised), Cooper, Thorne & Associates, Inc. and *Drainage Analysis for Town Center East Development,* September 2002, Wood-Rodgers, Inc.

Improvement plans for the West Valley Village segment of Valley View are currently in progress. Shed boundaries within this portion of the watershed were obtained from drainage plans for individual Units within West Valley, as cited in a preceding section of this report.

Flow in Tributary '4' originates from the ridgeline just east of West Valley Village, and is collected and conveyed through the project to several points of discharge along Latrobe Road. Project runoff thence crosses Latrobe Road via several culverts, identified as key points in the hydrologic computations, and enters the El Dorado Hills Business Park storm system.

Drainage facilities serving the Business Park consist primarily of open drainage swales and cross culverts, with minimal amounts of piped storm sewers. The Business Park shed area used in the *CCRDS* has been subdivided for the current analysis to reflect additional key locations at culverts crossings or outfall points. Shed parameters within the Business Park are consistent with the *El Dorado Hills Business Park Master Drainage Plan,* January 1991, Gene E. Thorne & Associates, Inc., as field-verified in September 2005.

Exhibit A presents redefined shed boundaries, consistent with existing and proposed improvement plans, used in the updated hydrograph computations.

Precipitation

Precipitation data applied to the study area were obtained from the *Drainage Manual.* Mean annual precipitation over the Carson Creek watershed averages approximately 26 inches; the corresponding 24-hour precipitation depth for a storm of 100-year return frequency is 5.26 inches. The average elevation within the study area is below 1640', resulting in temporal distribution of the 24-hour precipitation total characterized by the SCS Type 1 pattern. It is assumed that the specified precipitation is evenly distributed over the watershed.

Precipitation Losses

Interception and depression storage occurs as the result of surface retention of precipitation water by vegetation, local depressions, in cracks and crevices in impervious cover, or in areas where water is not free to move as overland flow. Infiltration is the movement of water to areas beneath the land surface. In the HEC-1 computations, such precipitation losses represent rainfall that does not contribute to the runoff process, and is therefore lost to the system.

Precipitation losses in the Carson Creek watershed are computed within HEC-1 by the SCS Curve Number method. A runoff curve number (CN) is assigned to each shed on the basis of ultimate land usage and the runoff potential of underlying soils. Soils within the study area are predominantly of the Auburn series, in shallow layers over nearly impermeable bedrock, characterized by high runoff potential. These soils are categorized in hydrologic soil group 'D'.

CN's assigned to shed areas redefined for the present study are summarized in Table A-1, located in Appendix A. The CN's, consistent with rational formula 'C' values used in pertinent drainage studies, are based on the following land use descriptions, or combinations thereof, found in the *Drainage Manual*.

Residential w/ 2 acre lot size – CN = 82
Residential w/ 1 acre lot size – CN = 84
Residential w/ 0.5 acre lot size – CN = 85
Residential w/ 0.25 acre lot size – CN = 87
Open space – CN = 80
Grassland – CN = 77
Impervious surfaces – CN = 98

Lag Times

HEC1 runoff computations transform precipitation excess into runoff by means of the unit hydrograph technique. For this study, the SCS dimensionless unit hydrograph method was used. The input datum for each shed consists of a single parameter, lag time, which is equal to the lag in hours between the center of mass of rainfall excess and the peak of the unit hydrograph. Lag time is expressed in simplified terms as 0.6 x Time of Concentration (Tc).

Lag times assigned to shed areas redefined for the present study are summarized in Table A-1, located in Appendix A. These values were derived from rational formula times of concentration reported in applicable drainage studies, where available, or computed in accordance with Section 2.4.2 of the *Drainage Manual*.

DETENTION STORAGE

Detention storage temporarily impounds runoff, with resultant delay in timing and reduction of the peak value of the outflow hydrograph. The same volume of water that enters detention is released, but outflow occurs over a longer period of time and at a lesser rate than inflow.

Existing detention facilities in Serrano, Rancho Dorado, Springfield Meadows, and Town Center East are represented in the updated HEC-1 runoff model,

based on stage-storage-discharge relationships developed by others and detailed in previous drainage studies.

The West Valley project contains in-channel wetlands mitigation ponds at two locations, as shown on Exhibit A. These ponds, currently in place, also provide limited volumes of detention storage during the design storm event. Pond outflow ratings for these facilities, based on field survey data, are incorporated into the updated HEC-1 model.

Additional peak flow attenuation may occur in certain reaches of the Carson Creek channel, where outflow is limited due to backwater effects at bridge or culvert constrictions. Temporary flood plain storage in the channel upstream of Golden Foothills Parkway, as simulated in the *CCRDS*, is included in the present analysis.

The tentative map for Carson Creek Phase 2 establishes wetland preserve and open space boundaries adjacent to the Carson Creek channel within the project. Potential channel storage reflecting proposed development up to these limits was evaluated by means of the US Army Corps of Engineers Hydrologic Engineering Center *Training Document No. 30* (TD 30), "River Routing With HEC1 and HEC2", for reaches between the Southern Pacific Railroad crossing and Carson Crossing Drive, and between Carson Crossing Drive and Golden Foothill Parkway. Storage-outflow relationships developed for the two reaches using TD30, as detailed in Appendix B, are included in the updated HEC-1 analysis.

Incidental detention storage that may occur due to debris blockage or backwater effects at minor crossings was not considered in the present study.

HEC-1 RESULTS

Table 1 shows a comparison of 100-year runoff computed in the updated hydrograph model at key points shown on Exhibit A, as compared to outcomes of the original *CCRDS* simulation of future conditions. Table 2 presents flows at additional key points. The HEC-1 summary output file is included in Appendix C.

TABLE 1 - CARSON CREEK REGIONAL DRAINAGE STUDY 2005 UPDATE FLOW COMPARISONS AT KEY POINTS

KEY POINT	LOCATION / DESCRIPTION	100-YEAR RUNOFF	
		CCRDS	2005 UPDATE
1	Carson Creek @ Latrobe Road	4600 cfs	4900 cfs
1a	Carson Creek west of Latrobe Road, @ confluence w/ 'CR' Tributary	5100 cfs	5500 cfs
2	Unnamed tributary @ Latrobe Road, below Wetlands Mitigation Pond 3	500 cfs	300 cfs
3	Carson Creek @ Golden Foothill Parkway	5600 cfs	5900 cfs
4	Carson Creek @ confluence w/ Tributary '3', below Carson Crossing Drive	6500 cfs	6900 cfs
5	Tributary '4' @ Latrobe Road, below Wetlands Mitigation Ponds 1 & 2	700 cfs	600 cfs
6	Tributary '4' @ confluence w/ Tributary '5'	1000 cfs	900 cfs
7	Tributary '5' @ Latrobe Road	70 cfs	90 cfs
8	Tributary '5' @ confluence w/ Tributary '4'	400 cfs	500 cfs
9	Combined flow in Tributaries '4' and '5'	1400 cfs	1400 cfs
10	Carson Creek @ study limit	7500 cfs	7100 cfs

Flow comparisons shown in Table 1 indicate apparent flow increases of less than 10% at Key Points 1, 1a, 3, and 4 in Carson Creek, and a 10% flow decrease at Point 10. Hydrologic studies of the nature undertaken for the updated Carson Creek analysis are necessarily based on certain empirical data and other generalized assumptions. The accepted level of accuracy of such analyses is generally +/- 10%. Since the divergence of computed flow values is within this range, it is considered negligible.

Flows crossing Latrobe Road at Key Points 2 and 5 show significant decreases as compared to *CCRDS* values. However, existing wetlands mitigation ponds in West Valley Village, upstream from these key points, provide limited detention volumes for attenuation of 100-year peak runoff. The apparent flow reductions at these crossings is due to redefinition of shed boundaries in the updated study, rather than to significant peak flow reduction due to detention routing.

The updated hydrograph model was re-run to simulate additional storage volume at either of the two West Valley Village wetlands mitigation pond locations. Based on the configurations of the ponds, adjacent site grading, and the proximity of the ponds to proposed Con/Span crossings on Blackstone Parkway, it was estimated that the maximum attainable volume increase at either site is about 20%. HEC-1 analyses of this scenario produced flow reductions of less than 3% at Key Point 1, 1a, 3, or 4 in Carson Creek. Since the additional storage would have insignificant impacts on peak flows in Carson Creek, further consideration is not recommended.

TABLE 2 - CARSON CREEK REGIONAL DRAINAGE STUDY 2005 UPDATE
100-YEAR FLOW AT KEY POINTS

KEY POINT	LOCATION / DESCRIPTION	100-YEAR Q
A	Latrobe Road north of West Valley Unit 18	95 cfs
B	Latrobe Road south of West Valley entry	17 cfs
C	Latrobe Road below Shed XQ	31 cfs
D	Latrobe Road south of Investment Boulevard, below Shed XP	14 cfs
E	Latrobe Road below Shed XN	26 cfs
F	Latrobe Road below Shed XM	53 cfs
G	Tributary '4' @ Robert J Mathews Parkway	610 cfs
H	Robert J Mathews Parkway north of Investment Boulevard	60 cfs
J	Tributary '4' @ Business Park boundary	770 cfs
K	South Fork of Tributary '4' @ Business Park boundary	90 cfs
L	Tributary '5' @ Business Park boundary	440 cfs
XL'	Latrobe Road below Shed XL'	5 cfs
Z'	Latrobe Road below Shed Z' (part of Shed Z)	<1 cfs

LATROBE ROAD CROSSINGS

The County of El Dorado Department of Transportation is currently processing project plans for the construction of Latrobe Road improvements. The realignment and widening projects include bridge construction at the Carson Creek crossing location, and extensions of existing culverts at other key locations identified in Tables 1 and 2. (Refer to Department of Transportation, El Dorado County California, *Project Plans for Construction of Improvements in El Dorado County for Latrobe Road and White Rock Road Realignment, Widening, and Bridge Project Phase II,* prepared by Dokken Engineering.)

Culvert capacities based on proposed Latrobe Road improvements at key locations were estimated from hydraulic design charts. Culverts were assumed to operate under inlet control utilizing all available head under the 100-year runoff scenario, with flow values as summarized in Tables 1 and 2. The findings are summarized in Table 3. The Carson Creek crossing at Key Point 1 was identified as undersized in the original *CCRDS;* bridge hydraulics for the replacement structure are not addressed herein.

TABLE 3 – CARSON CREEK REGIONAL DRAINAGE STUDY 2005 UPDATE
LATROBE ROAD CULVERT CAPACITIES

KEY POINT	100-YR Q (CFS)	CULVERT CAPACITY *		COMMENTS
		HW/D	Q	
A	95	3.5	90	Road overtops
2	300	1.6	190	Road overtops
B	17	3.6	>30	Passes 100 yr w/ >2' f.b.
5	600	1.9	260 (total)	Road overtops
Z	< 1	1.8	>20 (total)	Passes 100 yr w/ >2' f.b.
C	31	1.9	>40	Passes 100 yr w/ >2' f.b.
D	14	3.2	16	Passes 100 yr w/ <1' f.b.
E	26	3.1	>50	Passes 100 yr w/ >2' f.b.
F	53	4.5	>100	Passes 100 yr w/ >2' f.b.
XL	5	1.9	>12	Passes 100 yr w/ >2' f.b.
* Utilizing all available head (no freeboard)				

BUSINESS PARK STORM DRAIN SYSTEM

The El Dorado Hills Business Park receives drainage from the ridge to the east of Latrobe Road, as well as from watershed area north of Highway 50. The study update focuses on runoff into tributary channels originating from the ridgeline within Valley View, which enter the Business Park drainage system via Latrobe Road culvert crossings identified in Tables 1 and 2. Storm drainage is conveyed through the Business Park in open drainage ways and cross culverts, with limited piped storm sewers.

It is recognized that sizing of existing storm drainage within the Business Park adheres to design standards pre-dating adoption of the *Drainage Manual*. The *CCRDS* update defines the level of service provided by existing facilities, when evaluated under current criteria. The *El Dorado Hills Business Park Master Drainage Plan,* prepared by Gene E. Thorne & Associates, Inc., July, 1991, was used as a basis for the evaluations, supplemented by review of a sampling of storm drain as-built plans and limited field observations. More detailed assessment is beyond the scope of the present study.

It was concluded that existing storm drainage facilities located within the Business Park south of Golden Foothills Parkway are, in general, capable of conveying 50-75% of 100-year runoff computed herein. The extent of possible flooding resulting from system deficiencies during the 100-year design storm is not addressed. However, the duration of such occurrences can be estimated by inspection of the runoff hydrographs generated in the HEC-1 computation process for selected locations within the Business Park system. These

hydrographs, representing the time distribution of runoff at selected locations in the Business Park, are included in the detailed HEC-1 output file included in Appendix C, and excerpted in Appendix D. Assuming storm drain system capacity of 50% to 75% of peak runoff, graphical interpretation of the runoff hydrographs indicates that system capacity is exceeded for a *maximum* of one hour during the 100-year, 24-hour design storm event. Because potential system overloading is of limited duration, it is felt that upgrades within the Business Park storm system are not warranted at this time.

BACKWATER COMPUTATIONS

The *CCRDS* included 100-year flood profiles for Carson Creek and its tributaries south of US Highway 50. Subsequent project-specific drainage studies have included updated flood plain delineations for selected stream segments impacted by those developments.

The present update includes re-analysis of the 100-year flood profile for the stream reaches specified below, based on revised HEC-1 results reported herein, and reflective of proposed development of the Carson Creek Phase 2 project.

- Carson Creek, from the Southern Pacific Railroad crossing to Golden Foothill Parkway.
- Tributary '3', from the confluence with Carson Creek to the Carson Creek Phase 1 / Phase 2 project boundary.
- Tributary '4', from the confluence with Carson Creek to the Carson Creek Phase 2 project limit, adjacent to the El Dorado Hills Business Park.
- Tributary '5', from the confluence with Tributary '4' to the Carson Creek Phase 2 project limit, adjacent to the El Dorado Hills Business Park.

The HEC-RAS computer program, developed by the US Army Corps of Engineers Hydrologic Engineering Center, was used to produce revised profiles resulting from 100-year runoff computed as part of the present study update. The backwater analyses were begun downstream of the railroad crossing, utilizing cross section data from the *CCRDS*. Cross sections within the Carson Creek Phase 2 project were digitized from 1-foot contour interval topography generated from April 2004 aerial photography. The cross sections represent proposed development limits coincident with field-identified wetlands boundaries.

Backwater computations are based on sub-critical flow analysis. Manning's "n" values reflect unmaintained channel and overbank areas. It is also assumed that channel flow is unrestricted by debris accumulation or other blockages within the streambeds or at culvert locations. The 100-year flow peak was assumed to be concurrent in the main Carson Creek channel as well as in its tributaries. Thus the downstream boundary condition for tributary profiles is the computed 100-year water surface elevation at the confluence with Carson Creek.

Computed 100-year base flood elevations and limits of inundation for the selected study reaches are shown on Exhiit B. HEC-RAS output data are detailed in Appendix E.

SUMMARY AND RECOMMENDATIONS

- The 2005 update to the *CCRDS* reflects the most current development scenario within the lower portion of the watershed, south of US Highway 50. Flows at key points common to the hydrograph analyses in both the original and the updated study are compared in Table 1. Computed 100-year flows at key points in Carson Creek are substantially unchanged from the original study.

- Existing culvert crossings along Latrobe Road are inadequately sized to pass computed 100-year flows. See Tables 1, 2, and 3. It is recommended that improvement plans for the realignment of Latrobe Road include analyses of culvert capacities based on flows reported herein, and that the plans be revised, as necessary, to assure the passage of 100-year runoff with a minimum of two feet of freeboard.

- It is estimated that storm drainage facilities within the El Dorado Hills Business Park are able to handle flows equivalent to at least 50% of 100-year design runoff computed herein. At this level of service, localized flooding along open channel drainage ways or at inlets to the piped system may occur for a maximum duration of 60 minutes during the 100-year, 24-hour design storm. Improvements to the existing system are not recommended based on the level of risk involved.

- The HEC-RAS computer program was used to generate new water surface profiles for stream channels within the future Carson Creek Phase 2 project. Revised flood plain delineations, shown in Exhibit B, reflect development limits established through field-identification of wetlands boundaries.

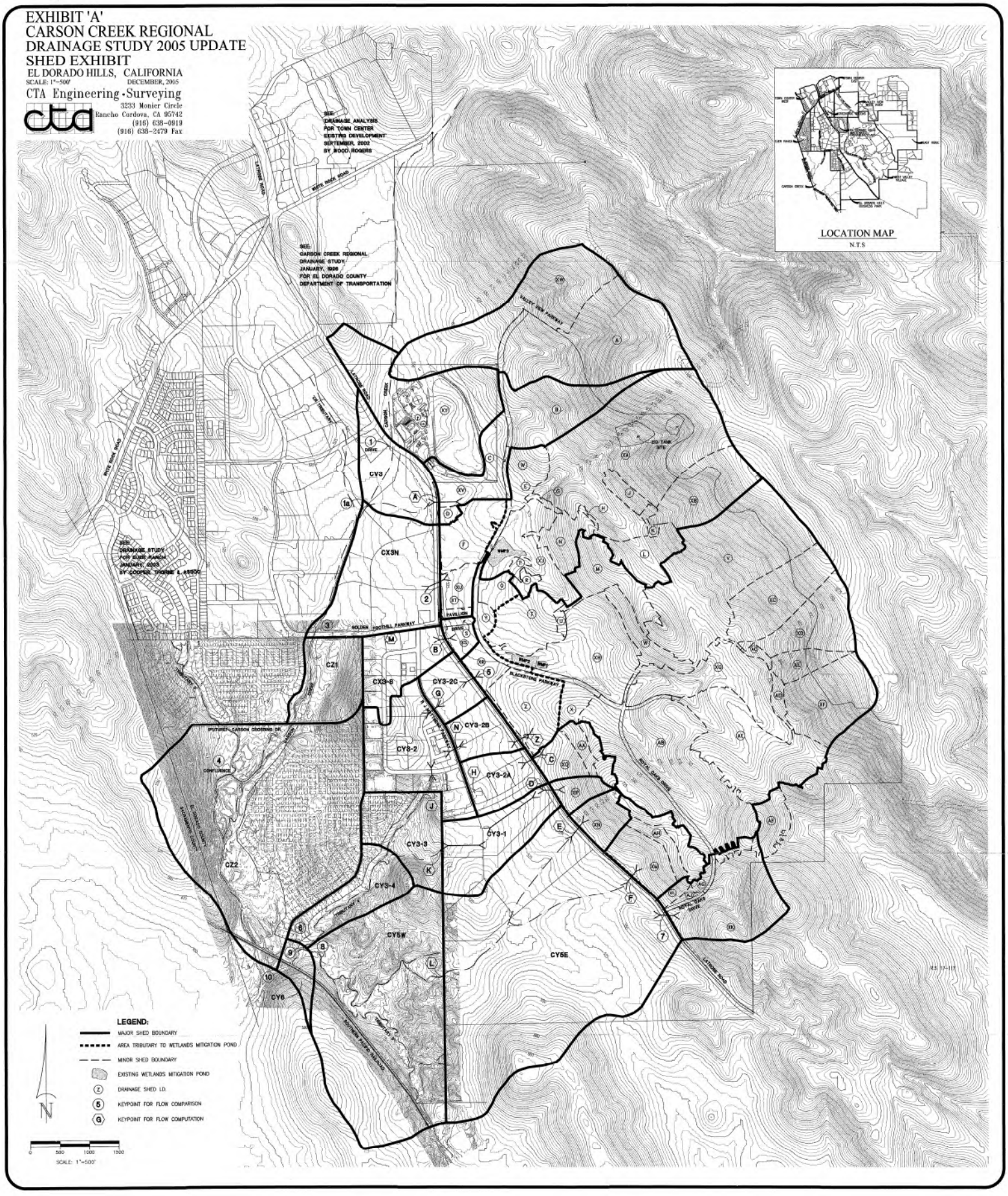
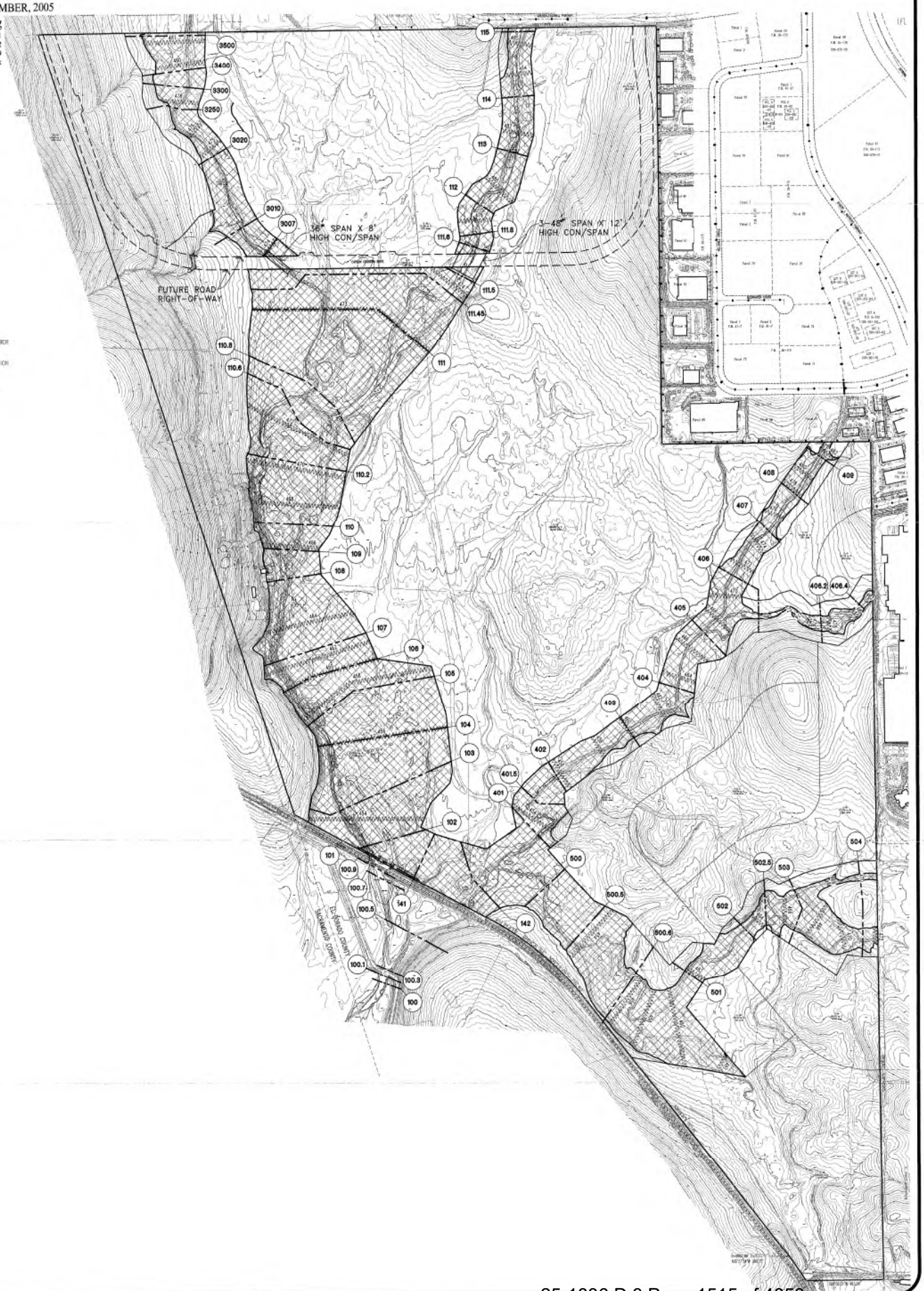


EXHIBIT 'A'
CARSON CREEK REGIONAL
DRAINAGE STUDY 2005 UPDATE
SHED EXHIBIT
EL DORADO HILLS, CALIFORNIA
SCALE: 1"=500' DECEMBER, 2005
CTA Engineering • Surveying
3233 Monier Circle
Rancho Cordova, CA 95742
(916) 638-0919
(916) 638-2479 Fax
SEE: DRAINAGE ANALYSIS FOR TOWN CENTER EXISTING DEVELOPMENT SEPTEMBER, 2002 BY WOOD RODGERS
SEE: CARSON CREEK REGIONAL DRAINAGE STUDY JANUARY, 1995 FOR EL DORADO COUNTY DEPARTMENT OF TRANSPORTATION
SEE: DRAINAGE STUDY FOR SUMMER RANCH JANUARY, 2003 BY COOPER, THORNE & ASSOC.
LOCATION MAP
N.T.S
LEGEND:
MAJOR SHED BOUNDARY
AREA TRIBUTARY TO WETLANDS MITIGATION POND
MINOR SHED BOUNDARY
EXISTING WETLANDS MITIGATION POND
DRAINAGE SHED I.D.
KEYPOINT FOR FLOW COMPARISON
KEYPOINT FOR FLOW COMPUTATION
SCALE: 1"=500'
CY3
CX3N
CZ1
CX3-6
CY3-2C
CY3-2B
CY3-2
CY3-2A
CY3-1
CY3-3
CY3-4
CZ2
CY5W
CY5E
CY6
GOLDEN FOOTHILL PARKWAY
BLACKSTONE PARKWAY
LATROBE ROAD
WHITE ROCK ROAD
VALLEY VIEW PARKWAY
EL DORADO HILLS BLVD.
PAVILION
CONFLUENCE
SOUTHERN PACIFIC RAILROAD

EXHIBIT 'B'
CARSON CREEK REGIONAL DRAINAGE STUDY 2005 UPDATE
100 YEAR FLOOD BOUNDARIES

EL DORADO COUNTY, CALIFORNIA
SCALE: 1"=200' DECEMBER, 2005

CTA Engineering • Surveying
3233 Monier Circle, Suite 1
Rancho Cordova, CA 95742
(916) 638-0919
(916) 638-2479 Fax



ATTACHMENTS

APPENDIX A

SHED PARAMETERS

VALLEY VIEW COMPOSITE SHED MAP

SHED PARAMETERS*

SHED ID	Shed Area (AC)	Shed Area (MI^2)	C	CN	SHEET FLOW TRAVEL TIME						SHALLOW CONCENTRATED				SUM Tt (MIN)	LAG (HR)
					L1 (ft)	n	P (IN)	S1	Tt1 (HR)	Tt1 (MIN)	Unpaved Flow Length (FT)	S2	V2 (FT/SEC)	Tt2 (MIN)		
A	87	0.136		84	300	0.3	2.52	0.060	0.50	29.8	3100	0.200	7.22	7.2	37.0	0.370
B	38	0.059		84	300	0.3	2.52	0.085	0.43	26.0	2400	0.145	6.14	6.5	32.5	0.325
C	2.67	0.004	0.66	98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.3	0.123
D	2.13	0.003	0.53	85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.4	0.104
E	14.64	0.023	0.57	83	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.0	0.130
F	20.85	0.033	0.53	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.2	0.142
G	0.9	0.001	0.66	98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.3	0.103
H	0.69	0.001	0.49	98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.0	0.050
J	5.79	0.009	0.55	85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17.0	0.170
K	1.7	0.003	0.54	85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.0	0.150
L	19.28	0.030	0.53	85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.0	0.150
M	18.12	0.028	0.53	84	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26.9	0.269
N	15.96	0.025	0.51	85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.8	0.168
P	1.9	0.003	0.57	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.2	0.102
Q	7.06	0.011	0.57	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.3	0.113
R	2.82	0.004	0.59	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.9	0.119
S	2.24	0.004	0.66	98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.0	0.120
T	23.36	0.037	0.57	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.9	0.139
U	1.61	0.003	0.59	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.0	0.110
V	101	0.158	0.58	82.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23.4	0.234
W	7.63	0.012	0.65	85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.0	0.130
X	9.4	0.015	0.53	88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.5	0.125
Y	0.58	0.001	0.66	98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.0	0.100
Z	29.51	0.046	0.57	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.2	0.142
AA	5.85	0.009	0.58	85	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19.4	0.194
AB	57.21	0.089	0.57	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	22.2	0.222
AC	2.1	0.003	0.57	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.8	0.108
AD	3.39	0.005	0.57	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.9	0.109
AE	3.2	0.005	0.57	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17.5	0.175
AF	11.43	0.018	0.57	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.0	0.130

083005 SB SHED PARAMETERS.xls

	AC	MI²	C	CN												
AG	4.83	0.008	0.61	90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.5	0.125
AH	11.24	0.018	0.58	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25.6	0.256
AJ	1.81	0.003	0.66	98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.0	0.100
XA	119	0.186		82	300	0.3	2.52	0.100	0.41	24.3	3200	0.165	6.55	8.1	32.5	0.325
XB	33	0.052		80	300	0.4	2.52	0.100	0.51	30.6	1750	0.150	6.25	4.7	35.28	0.353
XC	35	0.055		80	300	0.4	2.52	0.115	0.48	28.9	2000	0.125	5.70	5.8	34.79	0.348
XD	35	0.055		80	300	0.4	2.52	0.125	0.47	28.0	2050	0.125	5.70	6.0	33.99	0.340
XE	11	0.017		80	300	0.4	2.52	0.100	0.51	30.6	1300	0.250	8.07	2.7	33.30	0.333
XF	38	0.059		80	300	0.4	2.52	0.115	0.48	28.9	1600	0.275	8.46	3.2	32.10	0.321
XG	39	0.061		81	300	0.4	2.52	0.050	0.67	40.4	3500	0.035	3.02	19.3	59.72	0.597
XH	45	0.070		81	300	0.4	2.52	0.150	0.43	26.0	2000	0.150	6.25	5.3	31.36	0.314
XJ	30	0.047		82	300	0.35	2.52	0.085	0.49	29.4	2500	0.030	2.79	14.9	44.27	0.443
XK	65	0.102		80	300	0.4	2.52	0.135	0.45	27.1	2100	0.070	4.27	8.2	35.35	0.353
XL	3	0.005		86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.00	0.200
XM	26	0.041		80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.00	0.200
XN	18.4	0.029		81	300	0.2	2.52	0.075	0.33	19.7	650	0.130	5.82	1.9	21.59	0.216
XP	9.4	0.015		81	250	0.2	2.52	0.125	0.23	13.9	800	0.085	4.70	2.8	16.73	0.167
XQ	16	0.025		81	300	0.2	2.52	0.100	0.29	17.6	2000	0.100	5.10	6.5	24.12	0.241
XR	8	0.013		86	300	0.11	2.52	0.030	0.29	17.6	400	0.015	1.98	3.4	21.01	0.210
XS	5.5	0.009		92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.00	0.150
XT	1.6	0.003		92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.00	0.150
XU	9	0.014		88	300	0.35	2.52	0.030	0.74	44.5	750	0.050	3.61	3.5	47.99	0.480
XV	30	0.047		83	300	0.2	2.52	0.250	0.20	12.2	3000	0.050	3.61	13.9	26.0	0.260
XW	70	0.109		82	300	0.25	2.52	0.235	0.25	14.9	4800	0.175	6.75	11.9	26.8	0.268
XY	80	0.125		80	300	0.25	2.52	0.165	0.29	17.2	1750	0.060	3.95	7.4	24.6	0.246
* Based on fully developed shed, both on- and off-site																

CCRDS SHED MAP

SHED PARAMETERS*

SHED ID	Shed Area (AC)	Shed Area (MI^2)	C	CN	SHEET FLOW TRAVEL TIME						SHALLOW CONCENTRATED				SUM Tt (MIN)	LAG (HR)
					L1 (ft)	n	P (IN)	S1	Tt1 (HR)	Tt1 (MIN)	Unpaved Flow Length (FT)	S2	V2 (FT/SEC)	Tt2 (MIN)		
CX3N	73	0.114		92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.390
CX3S	31	0.048		92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.0	0.300
CY3-1	46	0.072		92	300	0.2	2.52	0.060	0.36	21.6	2400	0.031	2.84	14.1	35.6	0.356
CY3-2A	19	0.030		92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.0	0.300
CY3-2B	15	0.023		92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.0	0.300
CY3-2C	23	0.036		92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.0	0.300
CY3-2	69	0.108		92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.0	0.300
CY3-3	41	0.064		86	300	0.2	2.52	0.050	0.39	23.2	1000	0.021	2.34	7.1	30.3	0.303
CY3-4	35	0.055		90	300	0.2	2.52	0.080	0.32	19.2	2100	0.010	1.61	21.7	40.9	0.409
CY5E	280	0.438		84	300	0.2	2.52	0.030	0.47	28.5	4700	0.020	2.28	34.3	62.8	0.628
CY5W	180	0.281		84	300	0.2	2.52	0.012	0.68	41.1	3500	0.012	1.77	33.0	74.1	0.741
CY6'	18	0.028		77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.270
CZ1'	32	0.050		84	300	0.3	2.52	0.050	0.53	32.1	1500	0.003	0.88	28.3	60.4	0.604
CZ2'	145	0.227		83	300	0.3	2.52	0.040	0.58	35.1	4200	0.008	1.44	48.5	83.6	0.836

090705 SB CCRDS REV SHED PARAMETERS.xls

APPENDIX B

CHANNEL STORAGE USING TD 30

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7/20/05
TAPE7 FOR CCRKTD30.OUT
FLOODPLAIN STORAGE COMPUTED PER 'TD30'
CARSON CREEK

KK RCH 1                                  CARSON CREEK ABOVE CARSON CROSSING DRIVE
KM      REACH EXTENDS FROM X-SECT.    111.600 TO X-SECT.    115.000
RS
SV     0       7       9      12      15      20      24      28      32      35
SV    39
SQ     0     800    1000    1500    2000    3000    4000    5000    6000    7000
SQ  8000
KK RCH 2                                  CARSON CREEK
KM      REACH EXTENDS FROM X-SECT.    102.000 TO X-SECT.    111.000
RS
SV     0      44      55      78     103     155     205     256     307     356
SV   403
SQ     0     800    1000    1500    2000    3000    4000    5000    6000    7000
SQ  8000
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T1    CARSON CREEK FROM COUNTY LINE TO GOLDEN FOOTHILL PARKWAY
T2    MULTIPLE PROFILE RUN FOR CHANNEL STORAGE - FUTURE CONDITIONS
T3    FILENAME CCRKTD30.*; JULY 2005
J1     0       2       0       0    .006       0       0             448       0
*     BASED ON JULY 2005 HEC-RAS: CARCRKRANCH.PRJ; PLAN 11; GEOMETRY FILE .g08
J2     1       0      -1       0       0       0       0       0       0       0
J4 111.6     115     102     111
J5   -10     -10
NC  .035    .035     .04      .3      .5
QT    10     800    1000    1500    2000    3000    4000    5000    6000    7000
QT  8000
X1   100      18     200     240
GR   450     100   441.5     105   441.5     118     445     120     444     133
GR   443     144     442     165     442     182     440     195     439     200
GR   438     208     434     218     434     225     438     235     439     240
GR   440     256     441     300     442     375
NC   .04     .04    .045
X1 100.1      10     100     154     100     100     100
GR   450       0     442       5     442      27     441     100     435     105
GR 434.2     125     435     139     441     154   441.5     223     444     275
SB   1.2     1.6     2.6       0      54       2     600       0   434.2   434.2
X1 100.2                               25      25      25
X2                     1     440     442
X3    10                                                     442     442
BT    -8       0     450               5     442             100     441
BT             100   444.2             154   444.2             154     441
BT             223   441.5             275     444
X1 100.3                               50      50      50
NC                                  .1      .3
X1 100.5      21     140     165     270     270     300
X3                                             220
GR   445     100     441     140     440     147     436     150     436     153
GR   440     156     441     165     442     190   442.5     220     442     250
GR   441     263   440.2     270   440.2     273     441     280     442     295
GR   442     335   441.5     362     442     382     443     384     444     440
GR   445     466
NC  .055    .055     .06      .3      .5
X1 100.8      19     463     588     390     390     390
X3    10
GR   451       0     448      39     446      47     446     101     448     133
GR   448     165     446     363     444     375   438.2     463   438.2     588
GR   444     645     444     727     442     759     442     783     444     814
GR   446     847     446     963     448    1196     451    1197
X1 100.9                               10      10      10
SB   1.1     1.6     2.6    1197     125    10.7    1700       0   438.2   438.2
X1   101                               15      15      15
X2                     1     451     455
X3    10                                                     455     455
NH     3      10     465    .045     507     .04     575
X1   102      24     465     507      90     140     120
GR   454     100   448.5     113     449     134     450     145     451     165
GR   451     185     450     225     447     245     446     298     445     308
GR 444.3     312     445     329     446     332     446     350     445     360
GR   444     378     444     423     445     440     445     465     443     470
GR   443     490     446     507     450     560     455     575
NH     3     100     835    .045     885     .04    1065
X1   103      38     835     885     290     335     290
GR   456     100   451.5     109     451     140     451     162     451     178
GR   450     200     449     240     449     255     450     260   450.9     383
GR   451     410     451     445   453.7     490     453     520     452     577
GR   450     585     449     600     448     650     447     670     447     680
GR   447     698     446     709     445     732     445     770     446     783
GR   447     795     447     805     446     811     447     820     447     835
GR   445     840     445     863     448     885   448.5     953     449    1008
GR   450    1020     455    1058     456    1065
NH     4     100     615     .04     848    .045     902     .04     969
X1   104      26     848     902     400     405     415
GR   457     100     452     110     452     121   451.6     152     452     179
GR   452     235     453     310     453     330   452.5     340     453     378
GR 453.5     420   453.7     465   453.5     525   453.5     615     453     652
GR 452.5     672     452     715   451.4     755     451     820     450     848
GR   448     853     448     871     449     890     450     902     455     934
GR   460     969
NH     3     100     755    .045     920     .04     993
X1   105      22     920     968     190     125     165
GR   458     100     455     106     455     118     454     135   453.8     155
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GR    454     171     454     240    454.6     380     455     460     455     550
GR    454     628     455     680     455      755     454     850   454.2     885
GR    451     920     450     935     448      945     448     959     450     968
GR    455     980     460     993
NH      3     100     647    .045     710     .04     770
X1    106      21     660     710     280      290     300
GR    461     100     456     110     456      115     458     125     458     175
GR  457.7     215     458     356     457      400     455     415   454.4     508
GR    455     535     455     600     456      612     457     630     457     647
GR    455     660     450     675     450      688     455     710     460     748
GR    465     770
NH      4     100     630     .04     675     .045     710     .04     788
X1    107      18     675     710     210      230     240
GR    464     100   457.8     112   457.8      120   457.7     200     458     265
GR    458     320     458     455   458.7      560     459     610     459     630
GR    458     670     455     675     451      690     451     703     455     710
GR    458     720     460     748     465      788
NH      3     100     290    .045     360     .04     448
X1    108      11     300     360     515      510     600
GR    466     100     460     185     460      290     459     300     455     318
GR    455     338     456     356     457      360     458     380     460     405
GR    465     448
NH      4     100     313    .04      335     .045     390     .04     490
X1    109      19     335     390     175      175     175
GR    468     100     461     114     461      165     460     172     460     180
GR    461     218     461     238     458      280     458     290     460     298
GR    460     313     459     335     456      353     456     375     459     390
GR    460     395     460     410     465      455     470     490
NH      3     100     528    .045     590     .04     620
X1    110      20     535     590     220      250     260
GR    468     100     462     112     462      135     462     252     461     290
GR    458     295     458     305     459      320     461     350     460     360
GR    458     385     458     440     461      480     461     528     460     535
GR    459     555     457     562     457      575     465     590     470     620
NH      3     .04     535    .045     590      100     620
X1  110.2      25     612     660     400      420     420
GR    468     100     466     104     467      170     467     180     467     215
GR    464     234     463     254     462      262     462     275     463     390
GR    463     450     460     505     460      538     461     557     462     565
GR    463     574     463     594     464      602     464     612     460     620
GR    460     640     461     645     462      660     465     680     470     720
NC     .1     .04    .045
X1  110.4      21     600     640     400      520     520
GR    470     100     466     108     466      188     465     192     464     200
GR    463     205     463     215     464      235     464     255     464     292
GR    461     315     461     480     463      495     464     500     464     600
GR    462     610     462     625     463      640     464     675     465     790
GR    470     905
NH      4     .04     270    .045     349     .04      407     100     932
X1  110.6      24     270     349
GR    470     100     467     106     467      232     467     250     466     255
GR    465     270     464     280     463      298     463     322     464     338
GR    465     349     465     407     464      456     463     470     463     520
GR    462     523     461     529     461      537     462     540     464     558
GR    465     745     465     819     466      840     470     932
NH      3     .04     198    .045     240      100    1058
X1  110.8      33     198     240     220      220     220
GR    471     100     465     112     465      116     464     161     464     198
GR  463.3     200   463.3     238     465      240     466     241     466     258
GR    465     263     465     315   465.2      340     465     365   463.3     377
GR    465     390   465.3     425     465      452     464     462     463     480
GR    463     610     464     620     465      635     465     642     464     654
GR    463     668     463     672     464      676     465     683     466     825
GR    467     920     470     995     474     1058
NH      4     .04     173    .045     265     .04      320     100    1390
X1    111      43     173     265     520      520     520
GR    475     100     469     112  468.35      140   468.7     173     468     193
GR    466     205     465     217   464.9      228     465     238     468     240
GR  468.7     265     468     290     468      313     469     320     469     355
GR    468     368     468     380     468      390     469     415     468     439
GR    467     445     467     640     467      685     467     708     468     763
GR    469     800   469.4     842     469      847     466     860     465     870
GR    465     877     466     885     467      900   467.7     998   467.7    1072
GR    468    1112     469    1158     470     1190     471    1252     472    1286
GR    473    1315     474    1351     475     1390
NH      4     100     186    .045     232     .04      255     100     460
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X1 111.4      18     189     232     550     400     500
GR   478     100     471     101     474     107     470     123     470     140
GR   471     147     471     189   470.2     190   470.2     225     471     232
GR 471.7     255     471     275     471     290     472     330     472     360
GR 471.8     380     471     434     484     460
NC                           0.3    0.55
X1 111.5      10     176     210     145     130     140
GR   482     100     472     101   472.5     135     472     160     471     176
GR 470.5     177   470.5     209     472     210     473     260     482     261
SB  1.25       1     2.6       0     160      16     550     0.1   470.9   470.5
X1 111.6                             205     205     205
X2                     1   482.5   485.5
BT   -40      98     486   470.5   98.01     486   473.77   98.67     486   475.95
BT         99.89     486   477.36     103     486   479.02   112.23     486   481.62
BT           122   486.1   482.5   131.77   486.1   481.62     141   486.2   479.02
BT        144.11   486.2   477.36   145.33   486.2   475.95   145.99   486.2   473.77
BT           146   486.2   470.5     149   486.2   470.5   149.01   486.2   473.77
BT        149.67   486.2   475.95   150.89   486.2   477.36     154   486.3   479.02
BT        163.23  486.35   481.62     173   486.4   482.5   182.77  486.35   481.62
BT           192   486.3   479.02   195.11   486.3   477.36   196.33   486.3   475.95
BT        196.99   486.3   473.77     197   486.3   470.5     200   486.3   470.5
BT        200.01   486.3   473.77   200.67   486.3   475.95   201.89   486.3   477.36
BT           205   486.2   479.02   214.23   486.2   481.62     224   486.1   482.5
BT        233.27   486.1   481.62     243   486.1   479.02   246.11   486.1   477.36
BT        247.33   486.1   475.95   247.99   486.1   473.77     248     486   470.5
BT           261   485.5     482
NC                           .1      .3
X1 111.8      12     183     224      90      70      85
GR   483     100     475     116     474     180     473     183     472     195
GR 470.7     202   470.7     215     472     224     473     231     474     255
GR   474     292     483     310
X1   112      13     203     235     180     240     230
GR   479     100     476     106     475     140     475     185     474     203
GR   473     205     472     208     472     228     474     235     475     237
GR 475.2     280     475     304     479     311
X1   113      11     163     240     475     415     460
GR   482     100     478     108     477     163     475     175     474     184
GR   474     190     475     220     477     240     478     252     478     295
GR   482     303
NC   .04     .04     .04
X1   114      12     165     241     365     330     360
GR   484     100     480     108     480     140     479     165     478     195
GR 477.5     200   477.5     229     478     230     479     241     487     265
GR   480     302     484     310
X1   115       9     148     275     410     410     420
GR   487     100     484     106     484     148     480     165     479     185
GR   479     193     480     252     485     275     490     295
EJ
T1    PROFILE 2
J1             3                    .007
J2     2              -1
T1    PROFILE 3
J1             4                    .007
J2     3              -1
T1    PROFILE 4
J1             5                    .007
J2     4              -1
T1    PROFILE 5
J1             6                    .007
J2     5              -1
T1    PROFILE 6
J1             7                    .007
J2     6              -1
T1    PROFILE 7
J1             8                    .007
J2     7              -1
T1    PROFILE 8
J1             9                    .007
J2     8              -1
T1    PROFILE 9
J1            10                    .007
J2     9              -1
T1    PROFILE 10
J1            11                    .007
J2    15              -1
ER
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7/20/05
TAPE 7 FOR RRTD30.OUT
FLOODPLAIN STORAGE COMPUTED PER 'TD30'
TRIBUTARIES '4' AND '5' ADJACENT TO RAILROAD EMBANKMENT
CARSON CREEK PROJECT

'TRIBS' ABOVE CARSON CREEK

KK RCH 1										
KM	REACH EXTENDS FROM X-SECT.			500.000 TO X-SECT.			500.700			
RS										
SV	0	7	12	16	20	23	26	29	31	33
SQ	0	200	400	600	800	1000	1200	1400	1600	1800
KK RCH 2										
KM	REACH EXTENDS FROM X-SECT.			41.000 TO X-SECT.			500.000			
RS										
SV	0	4	6	7	8	9	10	11	13	16
SQ	0	200	400	600	800	1000	1200	1400	1600	1800

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T1    CARSON CREEK PROJECT
T2    MULTIPLE PROFILE RUN FOR CHANNEL STORAGE ADJACENT TO RR EMBANKMENT
T3    FILENAME RRTD30.*; JULY 2005
*     FLOODPLAIN STORAGE PARALLEL TO RAILRAOD EMBANKMENT @ SOUTHERN P.L.
J1     0       2       0       0       0       0       0          444.5       0
J4   500   500.7      41     500
J5   -10     -10
NC   .04     .04    .045      .1      .3
QT     9     200     400     600     800    1000    1200    1400    1600    1800
X1    41      12     115     144
GR   453     100     415     115     443     122   442.4     131     443     139
GR   446     144     447     166     448     320     448     329     447     352
GR   447     424     450     430
NH     4     .04     460    .045     540     .04     640     100     740
X1    42      21     460     540     700     700     700
GR   457     100     456     162     454     220     453     250     452     300
GR   449     360     448     405     447     418   446.5     422     447     427
GR   448     460     448     480     446     510     449     540     449     580
GR   448     640     447     653     447     705     448     718     448     732
GR   452     740
NH     4     .04     346    .045     371     .04     429     100     519
X1   500      15     346     371     400     400     400
GR   457     100     456     131     452     215     451     248   450.5     305
GR   450     338     449     346     448     352     448     370     450     371
GR   450     405   450.8     429     450     452     450     509     455     519
NH     4     .04     252    .045     290     .04     420     100     590
X1 500.5      16     252     290     450     450     450
GR   459     100     457     131     455     176     454     205     453     233
GR   452     252     451     270     450     278     450     278     452     290
GR 452.6     420     452     509     452     528   452.5     555     453     584
GR   456     590
NH     4     100     285     .04     410    .045     443     .04     658
X1 500.6      19     410     443     600     600     600
GR   458     100     454     120     453     129  452.85     130     453     132
GR   454     140     455     153     456     285     455     410     453     420
GR   453     430     454     432     455     443     456     460     457     520
GR   459     612     460     648     460     656     461     658
NH     4     100     448     .04     512    .045     560     .04     770
X1 500.7      24     512     560     600     600     750
GR   462     100     459     106     458     150   457.4     223     458     255
GR   457     270   456.5     280     457     286     458     290     458     350
GR   457     385     457     430     458     448     458     512     456     518
GR 455.8     522     456     526     457     538     458     560     459     605
GR   460     625     461     645     463     695     464     770
EJ
T1    PROFILE 2
J1             3                               0       0       0       0     445
J2     2              -1
T1    PROFILE 3
J1             4                               0                             445.5
J2     3              -1
T1    PROFILE 4
J1             5                               0                               446
J2     4              -1
T1    PROFILE 5
J1             6                               0                             446.3
J2     5              -1
T1    PROFILE 6
J1             7                               0                             446.8
J2     6              -1
T1    PROFILE 7
J1             8                               0                             447.3
J2     7              -1
T1    PROFILE 8
J1             9                               0                             447.6
J2     8              -1
T1    PROFILE 9
J1            10                               0                               448
J2     9              -1
ER
```

APPENDIX C

HEC-1 OUTPUT SUMMARY

```
1****************************************
****************************************
 *                                      *                                        *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                        *    U.S. ARMY CORPS OF
ENGINEERS     *
 *              JUN   1998              *                                        *    HYDROLOGIC ENGINEERING
CENTER    *
 *            VERSION 4.1               *                                        *         609 SECOND
STREET          *
 *                                      *                                        *       DAVIS, CALIFORNIA
95616       *
 *  RUN DATE   18OCT05  TIME  10:16:12  *                                        *            (916) 756-1104
*
 *                                      *                                        *
*
 ****************************************
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```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X         XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   1          ID     AUGUST 2005 REVISION - RUN DATE 9/20/05
   2          ID     MODIFY SHEDS CX1, CX2, CY1, CY2, CY4, CY5, CV1,CV2 PER WEST VALLEY
   3          ID     INCLUDE PROPOSED WEST VALLEY VILLAGE WETLANDS MITIGATION PONDS
   4          ID     CARSON CREEK CHANNEL STORAGE S OF BUSINESS PARK REFLECTS 2005 CARSON CREEK
   5          ID     PROJECT INFO
   6          ID     TOWN CENTER EAST HYDROLOGY PER WOOD RODGERS SEPT 2002 DRAINAGE STUDY
   7          ID     NEW FILE NAME CCFU05.DAT/OUT
   8          ID     WATERSHED ANALYSES ARE BASED ON:
   9          ID     CARSON CREEK REGIONAL DRAINAGE STUDY
  10          ID     CARSON CREEK, FROM HEADWATER TO SACRAMENTO COUNTY LINE
  11          ID     RUNOFF FOR FUTURE CONDITIONS DUE TO 100 YEAR 24-HOUR SCS TYPE I STORM
  12          ID     SCENARIO I - DETENTION @ 19 SITES AS PER EXISTING TENT. MAPS
  13          ID     FOR NON-PARTICIPANTS ASSUME FUTURE RUNOFF IS UNMITIGATED
  14          ID     (CHANNEL ROUTING BY MUSKINGIM CUNGE METHOD)
  15          ID     ANALYSIS OF UPPER BASIN FROM G E THORNE & ASSOC. MASTER DRAINAGE STUDY 8-92
  16          ID     HEC 1 FILES FUTURE.DAT/OUT - S BOTTORFF   4-22-95
  17          IT       5       0       0     300
  18          IO       5       1

  19          KK     CA1  SUBBASIN CA1
  20          KM          SUBBASIN CA1 RUNOFF FOR 100 YEAR STORM
  21          BA    .197
  22          IN     30
  23          PB   5.261
  24          PC       0    .008    .017    .026    .035    .045    .055    .065    .076    .087
  25          PC    .099    .112    .126     .14    .156    .174    .194    .219    .254    .303
  26          PC    .515    .583    .624    .655    .682    .706    .728    .748    .766    .783
  27          PC    .799    .815    .833    .844    .857     .87    .882    .893    .905    .916
  28          PC    .926    .936    .946    .956    .965    .974    .983    .992       1
  29          LS       0      83
  30          UD    .305

  31          KK    PCA1  DETENTION ROUTING - POND CA1 (EDHDC)
  32          KM          POND OUTFLOW AS PER EL DORADO HILLS SPEC PLAN MASTER DRAINAGE STUDY
  33          RS       1    ELEV     100
  34          SV       0    1.21    2.42    3.66     4.9    6.16     7.5     8.9
  35          SQ       0     5.3      15      28      42      59      78     120
  36          SE     100   100.5     101   101.5     102   102.5     103     104

  37          KK    CC-1  CHANNEL ROUTING
  38          KM          SUBBASIN CA1 ROUTED TO SUBBASIN TO CA2
  39          RD    1250    .016     .07            TRAP      10      10

  40          KK     CA2  SUBBASIN CA2
  41          KM          SUBBASIN CA2 RUNOFF FOR 100 YEAR STORM
  42          BA   .1125
  43          LS       0      84
  44          UD    .242

  45          KK   CA1+2  COMBINE HYDROGRAPHS
  46          KM          SUBBASIN CA1, ROUTED + SUBBASIN CA2
  47          HC       2
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1                                        HEC-1 INPUT                                        PAGE  2

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  48          KK    PCA2  DETENTION ROUTING - POND CA2 (EDHDC)
  49          KM          POND OUTFLOW AS PER EL DORADO HILLS SPEC PLAN MASTER DRAINAGE STUDY
  50          RS      1    ELEV     100
  51          SV      0    1.26    2.52    3.81     5.1    6.41    7.71   10.31
  52          SQ      0     6.5      18      33      51      71      93     144
  53          SE    100   100.5     101   101.5     102   102.5     103     104

  54          KK    CC-2 CHANNEL ROUTING
  55          KM         ROUTE CA1 + CA2
  56          RD   1300    .035     .07            TRAP      10       5

  57          KK     CA3  SUBBASIN CA3
  58          KM          SUBBASIN CA3 RUNOFF FOR 100 YEAR STORM
  59          BA    .083
  60          LS      0      83
  61          UD    .279

  62          KK     CA4  SUBBASIN CA4
  63          KM          SUBBASIN CA4 RUNOFF FOR 100 YEAR STORM
  64          BA    .305
  65          LS      0      84
  66          UD     .42

  67          KK   CA1-4  COMBINE HYDROGRAPHS
  68          KM          COMBINE CA1-CA4
  69          HC      3

  70          KK    CC-3  CHANNEL ROUTING
  71          KM          ROUTE CA1-CA4 TO CONFLUENCE
  72          RD   2350    .032     .07            TRAP      15       5

  73          KK     CA5  SUBBASIN CA5
  74          KM          SUBBASIN CA5 RUNOFF FOR 100 YEAR STORM
  75          BA      .1
  76          LS      0      83
  77          UD     .28

  78          KK   CA1-5  COMBINE HYDROGRAPHS
  79          KM          SUBBBASINS CA1-CA5
  80          HC      2

  81          KK     CB1  SUBBASIN CB1
  82          KM          SUBBASIN CB1 RUNOFF FOR 100 YEAR STORM
  83          BA    .105
  84          LS      0      82
  85          UD    .172

  86          KK    PCB1  DETENTION ROUTING - POND CB1 (EDHDC)
  87          KM          OUTFLOW RATING AS PER EL DORADO HILLS SPEC PLAN MASTER DRAINAGE STUDY
  88          RS      1    ELEV      68
  89          SV      0     .27     .55     .82      1.1    1.38    1.66     1.94    2.23
  90          SQ      0     5.4      15      28       43      60      79       99     121
  91          SE     68    68.2    68.4    68.6     68.8      69    69.2     69.4    69.6
1                                        HEC-1 INPUT                                        PAGE  3

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  92          KK   CC-3A  CHANNEL ROUTING
  93          KM          SUBBASIN CB1 ROUTED TO CB2
  94          RD   2500    .048     .07            TRAP      10       5

  95          KK     CB2  SUBBASIN CB2
  96          KM          SUBBASIN CB2 RUNOFF FOR 100 YEAR STORM
  97          BA    .094
  98          LS      0      82
  99          UD    .323

 100          KK   CB1+2  COMBINE HYDROGRAPHS
 101          KM          SUBBASINS CB1 + CB2
 102          HC      2

 103          KK   CA+CB  COMBINE HYDROGRAPHS
 104          KM          TRIBUTARY BASINS CA + CB
 105          HC      2

 106          KK    CC-4  CHANNEL ROUTING - MAIN CHANNEL
 107          KM          ROUTE TRIBUTARY BASINS (CA + CB)
 108          RD   1700    .056    .065            TRAP      20       5

 109          KK      CC  SUBBASIN CC
 110          KM          SUBBASIN CC RUNOFF FOR 100 YEAR STORM
 111          BA    .442
 112          LS      0      80
 113          UD    .595

 114          KK     CD1  SUBBASIN CD1
 115          KM          SUBBASIN CD1 RUNOFF FOR 100 YEAR STORM
 116          BA    .069
 117          LS      0      83
 118          UD    .187

 119          KK    PCD1  DETENTION ROUTING - POND CD1 (EDHDC)
 120          KM          OUTFLOW RATING AS PER MAY'92 GOLF COURSE GRADING REV, THORNE & ASSOC
 121          RS      1    ELEV     100
 122          SV      0     .39     .78    1.18     1.58    1.99    2.40     2.82    3.24
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 123          SQ       0     .25     .71    1.31       2     6.5    14.7    25.4      38
 124          SE     100  100.25   100.5  100.75     101  101.25   101.5  101.75     102

 125          KK   CC-4A  CHANNEL ROUTING
 126          KM          SUBBASIN CD1 ROUTED TO CD2
 127          RD    1900    .026    .065            TRAP      15      10

 128          KK     CD2  SUBBASIN CD2
 129          KM          SUBBASIN CD2 RUNOFF FOR 100 YEAR STORM
 130          BA    .127
 131          LS       0      83
 132          UD    .237
1                                      HEC-1 INPUT                                      PAGE  4

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 133          KK   CD1+2  COMBINE HYDROGRAPHS
 134          KM          SUBBASINS CD1 + CD2
 135          HC       2

 136          KK    PCD2 DETENTION ROUTING - POND CD2 (EDHDC)
 137          KM         POND OUTFLOW AS PER MAY '92 GOLF COURSE GRADING REV, THORNE & ASSOC
 138          RS       1    ELEV     100
 139          SV       0      .2      .4      .6      .8       1     1.5     2.1
 140          SQ       0       8      22      42      64      90     166     254
 141          SE     100   100.2   100.4   100.6   100.8     101   101.5     102

 142          KK   CC-4B  CHANNEL ROUTING
 143          KM          SUBBASINS (CD1 + CD2) ROUTED TO CD3
 144          RD    1100    .036    .065            TRAP      15       5

 145          KK     CD3  SUBBASIN CD3
 146          KM          SUBBASIN CD3 RUNOFF FOR 100 YEAR STORM
 147          BA    .125
 148          LS       0      83
 149          UD    .178

 150          KK   CD1-3  COMBINE HYDROGRAPHS
 151          KM          SUBBASINS CD1 - CD3
 152          HC       2

 153          KK    PCD3  DETENTION ROUTING - POND CD3 (EDHDC)
 154          KM          OUTFLOW RATING AS PER EL DORADO HILLS SPEC PLAN MASTER DRAINAGE STUDY
 155          RS       1    ELEV     100
 156          SV       0     .18     .36     .55     .74     .93    1.44    1.94
 157          SQ       0       8      23      42      64      90     165     255
 158          SE     100   100.2   100.4   100.6   100.8     101   101.5     102

 159          KK   CC-4C  CHANNEL ROUTING
 160          KM          SUBBASINS CD1 - CD3 ROUTED TO CD4
 161          RD    1600    .025    .065            TRAP      15       5

 162          KK     CD4  SUBBASIN CD4
 163          KM          SUBBASIN CD4 RUNOFF FOR 100 YEAR STORM
 164          BA    .075
 165          LS       0      84
 166          UD    .219

 167          KK   CD1-4  COMBINE HYDROGRAPHS
 168          KM          SUBBASINS CD1 - CD4
 169          HC       2

 170          KK    PCD4  DETENTION ROUTING - PONDCD4 (EDHDC)
 171          KM          OUTFLOW RATING AS PER EL DORADO HILLS SPEC PLAN MASTER DRAINAGE STUDY
 172          RS       1    ELEV     950
 173          SV       0     .29     1.2    1.84     2.5    3.19     3.9     4.6
 174          SQ       0      15      45      88     127     178     233     290
 175          SE     950   950.5     951   951.5     952   952.5     953   953.5
1                                      HEC-1 INPUT                                      PAGE  5

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 176          KK   CA-CD  COMBINE HYDROGRAPHS
 177          KM          COMBINE TRIBUTARY BASINS (CA + CB)R + CC + CD - FLOW IN MAIN CHANNEL
 178          HC       3

 179          KK    CC-5  CHANNEL ROUTING - MAIN CHANNEL
 180          KM          ROUTE CA - CD TO POINT 3
 181          RD    1300    .046    .065            TRAP      20       5

 182          KK      CE  SUBBASIN CE
 183          KM          SUBBASIN CE RUNOFF FOR 100 YEAR STORM
 184          BA    .064
 185          LS       0      83
 186          UD     .19

 187          KK      CW  SUBBASIN CW
 188          KM          SUBBASIN CW RUNOFF FOR 100 YEAR STORM
 189          BA    .052
 190          LS       0      82
 191          UD    .117

 192          KK  +CE,CW  COMBINE HYDROGRAPHS
 193          KM          COMBINE CA - CD + CE + CW
 194          HC       3

 195          KK    CC-6  CHANNEL ROUTING - MAIN CHANNEL
 196          KM          ROUTE CA - CE, CW TO POINT 4
 197          RD     800    .037    .065            TRAP      25      10
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347          HC      2

348          KK    WMP4  DETENTION ROUTING - WETLANDS MITIGATION POND #4 (EDHDC)
349          KM          POND OUTFLOW RATING AS PER THORNE & ASSOC 10-92 ANALYSIS
350          RS       1    ELEV     732
351          SV       0    .284    .704   1.262   1.927
352          SE     732     733     734     735     736
353          SQ       0      23     148     407     580
354          SE     732     733     734     735   735.5

355          KK   TR1-6  CHANNEL ROUTING - TRIB 1
356          KM          SUBBASINS CH1 - CH9A ROUTED TO WETLANDS MITIGATION POND #5
357          RM       1   .0162      .3

358          KK    CH9B  SUBBASIN CH9B
359          KM          SUBBASIN CH9B RUNOFF FOR 100 YEAR STORM
360          BA   .0122
361          LS       0      82
362          UD   .0588

363          KK   +CH9B  COMBINE HYDROGRAPHS
364          KM          SUBBASINS CH1 - CH9B @ POND #5
365          HC       2

366          KK    WMP5  DETENTION ROUTING - WETLANDS MITIGATION POND #5 (EDHDC)
367          KM          POND OUTFLOW RATING AS PER THORNE & ASSOC 10-92 ANALYSIS
368          RS       1    ELEV     725
369          SV       0      .3    .704   1.181   1.743   2.382
370          SE     725     726     727     728     729     730
371          SQ       0     8.6      29      72     155     269     413     586
372          SE     725   725.5     726   726.5     727   727.5     728   728.5

373          KK   TR1-7  CHANNEL ROUTING - TRIB 1
374          KM          SUBBASINS CH1 - CH9B ROUTED TO WETLANDS MITIGATION POND #6
375          RM       1   .0162      .3

376          KK    CH10  SUBBASIN CH10
377          KM          SUBBASIN CH10 RUNOFF FOR 100 YEAR STORM
378          BA   .0173
379          LS       0      81
380          UD   .0924

1                                    HEC-1 INPUT                                    PAGE 10

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

381          KK  CH1-10  COMBINE HYDROGRAPHS
382          KM          SUBBASINS CH1 - CH10 AT POND #6
383          HC       2

384          KK    WMP6  DETENTION ROUTING - WETLANDS MITIGATION POND #6 (EDHDC)
385          KM          POND OUTFLOW RATING AS PER THORNE & ASSOC 10-92 ANALYSIS
386          RS       1    ELEV     719
387          SV       0    .347    .860   1.439   2.071   2.752
388          SE     719     720     721     722     723     724
389          SQ       0     8.6      29      72     155     269     413     586
390          SE     719   719.5     720   720.5     721   721.5     722   722.5

391          KK   TR1-8  CHANNEL ROUTING - TRIB 1
392          KM          SUBBASINS CH1 - CH10 ROUTED TO WETLANDS MITIGATION POND #7
393          RM       1    .009      .3

394          KK    CH11  SUBBASIN CH11
395          KM          SUBBASIN CH11 RUNOFF FOR 100 YEAR STORM
396          BA   .0082
397          LS       0      81
398          UD   .0649

399          KK  CH1-11  COMBINE HYDROGRAPHS
400          KM          SUBBASINS CH1 - CH11 @ POND #7
401          HC       2

402          KK    WMP7  DETENTION ROUTING - WETLANDS MITIGATION POND #7 (EDHDC)
403          KM          POND OUTFLOW RATING AS PER THORNE & ASSOC 10-92 ANALYSIS
404          RS       1    ELEV     713
405          SV       0    .228    .547    .938   1.393   1.897
406          SE     713     714     715     716     717     718
407          SQ       0     8.6      29      72     155     269     413     586
408          SE     713   713.5     714   714.5     715   715.5     716   716.5

409          KK   TR1-9  CHANNEL ROUTING - TRIB 1
410          KM          SUBBASINS CH1 - CH11 ROUTED TO CH12
411          RM       1   .0153      .3

412          KK    CH12  SUBBASIN CH12
413          KM          SUBBASIN CH12 RUNOFF FOR 100 YEAR STORM
414          BA   .0052
415          LS       0      81
416          UD    .056

417          KK  CH1-12  COMBINE HYDROGRAPHS
418          KM          SUBBASINS CH1 - CH12 @ CONFLUENCE W/CI TRIB
419          HC       2

420          KK     CI1  SUBBASIN CI1
421          KM          SUBBASIN CI1 RUNOFF FOR 100 YEAR STORM
422          BA       .1
423          LS       0      83
424          UD     .21

1                                    HEC-1 INPUT                                    PAGE 11
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 425      KK  TR1-9A  CHANNEL ROUTING - CI TRIB
 426      KM          SUBBASIN CI1 ROUTED TO CI3
 427      RM       1    .056      .3

 428      KK     CI2  SUBBASIN CI2
 429      KM          SUBBASIN CI2 RUNOFF FOR 100 YEAR STORM
 430      BA    .031
 431      LS       0      83
 432      UD     .13

 433      KK  TR1-9B  CHANNEL ROUTING - CI TRIB
 434      KM          SUBBASIN CI2 ROUTED TO CI3
 435      RM       1    .068      .3

 436      KK     CI3  SUBBASIN CI3
 437      KM          SUBBASIN CI3 RUNOFF FOR 100 YEAR STORM
 438      BA    .067
 439      LS       0      81
 440      UD     .29

 441      KK   CI1-3  COMBINE HYDROGRAPHS
 442      KM          SUBBASINS CI1 + CI2 + CI3 @ CONFLUENCE W/TRIB 1
 443      HC       3

 444      KK   CI+CH  COMBINE HYDROGRAPHS
 445      KM          SUBBASINS CI + CH
 446      HC       2

 447      KK  TR1-10  CHANNEL ROUTING - TRIB 1
 448      KM          ROUTE TRIBUTARY BASINS CH + CI TO HWY. 50
 449      RD    1300    .035    .065           TRAP      20      10

 450      KK      CJ  SUBBASIN CJ
 451      KM          SUBBASIN CJ RUNOFF FOR 100 YEAR STORM
 452      BA    .072
 453      LS       0      80
 454      UD    .273

 455      KK      CK  SUBBASIN CK
 456      KM          SUBBASIN CK RUNOFF FOR 100 YEAR STORM
 457      BA    .033
 458      LS       0      83
 459      UD    .168

 460      KK   CH-CK  COMBINE HYDROGRAPHS
 461      KM          COMBINE SUBBASINS CH - CK @ HWY 50
 462      HC       3

 463      KK  TR1-11  CHANNEL ROUTING - TRIB 1
 464      KM          ROUTE CH - CK TO CP
 465      RD    2000     .02    .055           TRAP      20      10
1                                  HEC-1 INPUT                                  PAGE 12
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 466      KK      CP  SUBBASIN CP
 467      KM          SUBBASIN CP RUNOFF FOR 100 YEAR STORM
 468      BA    .094
 469      LS       0      82
 470      UD    .518

 471      KK   TRIB1  COMBINE HYDROGRAPHS
 472      KM          COMBINE CP + ROUTED CH - CK (TRIBUTARY 1)
 473      HC       2

 474      KK  +TRIB1  COMBINE HYDROGRAPHS
 475      KM          ADD TRIB1 TO FLOW IN MAIN CHANNEL
 476      HC       2

 477      KK     CS1  SUBBASIN CS1
 478      KM          SUBBASIN CS1 RUNOFF FOR 100 YEAR STORM
 479      BA    .577
 480      LS       0      79
 481      UD    .879

 482      KK     CS2  SUBBASIN CS2
 483      KM          SUBBASIN CS2 RUNOFF FOR 100 YEAR STORM
 484      BA    .542
 485      LS       0    79.5
 486      UD    .489

 487      KK   CC-9A  CHANNEL ROUTING - SCREECH OWL CRK
 488      KM          ROUTE SUBBASIN CS2 TO SUBBASIN CS3
 489      RD    4500    .027    .065           TRAP      15       5

 490      KK     CS3  SUBBASIN CS3
 491      KM          SUBBASIN CS3 RUNOFF FOR 100 YEAR STORM
 492      BA    .430
 493      LS       0      78
 494      UD    .582

 495      KK   CS1+2  COMBINE HYDROGRAPHS
 496      KM          COMBINE CS2 + CS3 (SCREECH OWL CRK INFLOW)
 497      HC       2

 498      KK   CS1-3  COMBINE HYDROGRAPHS
 499      KM          COMBINE CS1-CS3
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500          HC       2

501          KK    +SOWL  COMBINE HYDROGRAPHS
502          KM           ADD SCREECH OWL CREEK TO MAIN CHANNEL
503          HC       2

504          KK    CC-10  CHANNEL ROUTING - MAIN CHANNEL
505          KM           ROUTE COMBINED HYDROGRAPH TO SUBBASIN CQ
506          RD
507          RC     .045     .055     .045      900      .03
508          RX        0       75      105      153      168      198      243      328
509          RY      105      100       98       92       92       98      100      105
1                                        HEC-1 INPUT                                                    PAGE 13

           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

510          KK       CQ  SUBBASIN CQ
511          KM           SUBBASIN CQ RUNOFF FOR 100 YEAR STORM
512          BA     .034
513          LS        0       86
514          UD     .183

515          KK      +CQ  COMBINE HYDROGRAPHS
516          KM           COMBINE CQ W/ ROUTED HYDROGRAPH
517          HC       2

518          KK      CT1  SUBBASIN CT1
519          KM           SUBBASIN CT1 RUNOFF FOR 100 YEAR STORM
520          BA     .152
521          LS        0     82.5
522          UD     .315

523          KK     +CT1  COMBINE HYDROGRAPHS
524          KM           ADD CT1 TO MAIN CHANNEL
525          HC       2

526          KK    CC-11  CHANNEL ROUTING - MAIN CHANNEL
527          KM           ROUTE TO CONFLUENCE W/TRIB 2 (THROUGH SUBBASIN CT2)
528          RD
529          RC     .045     .055     .045     2000     .015
530          RX        0       25       50       90      115      140      150      160
531          RY      100       99       98       90       90       98       99      100

532          KK      CM6  SUBBASIN CM6
533          KM           SUBBASIN CM6 RUNOFF FOR 100 YEAR STORM
534          BA     .219
535          LS        0       80
536          UD      .97

537          KK      CM2  SUBBASIN CM2
538          KM           SUBBASIN CM2 RUNOFF FOR 100 YEAR STORM
539          BA     .039
540          LS        0       80
541          UD      .25

542          KK    CM2+6  COMBINE HYDROGRAPHS
543          KM           SUBBASINS CM2 + CM6 @ E.D.H. BLVD.
544          HC       2

545          KK    TR2-1  CHANNEL ROUTING - GOLF COURSE TRIB
546          KM           ROUTE CM2 + CM6 TO CM3/CM5
547          RD     2000     .015     .055             TRAP       15       15

548          KK      CM1  SUBBASIN CM1
549          KM           SUBBASIN CM1 RUNOFF FOR 100 YEAR STORM
550          BA     .561
551          LS        0       86
552          UD       .5
1                                        HEC-1 INPUT                                                    PAGE 14

           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

553          KK      CM3  SUBBASIN CM3
554          KM           SUBBASIN CM3 RUNOFF FOR 100 YEAR STORM
555          BA     .117
556          LS        0       80
557          UD      .25

558          KK      CM5  SUBBASIN CM5
559          KM           SUBBASIN CM5 RUNOFF FOR 100 YEAR STORM
560          BA     .055
561          LS        0       80
562          UD      .39

563          KK       CM  COMBINE HYDROGRAPHS
564          KM           SUBBASINS CM1, CM2, CM3, CM5, CM6
565          HC       4

566          KK    TR2-2  CHANNEL ROUTING - G.C. TRIB
567          KM           ROUTE COMBINED HYDROGRAPH TO HWY. 50
568          RD     1100      .01     .055             TRAP       15       15

569          KK      CM4  SUBBASIN CM4
570          KM           SUBBASIN CM4 RUNOFF FOR 100 YEAR STORM
571          BA      .15
572          LS        0       83
573          UD     .269

574          KK    CM1-6  COMBINE HYDROGRAPHS
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575          KM          SUBBASINS CM1 - CM6 @ HWY. 50
576          HC       2
577          KK    CM7M  SUBBASIN CM7 MODIFIED AREA
578          KM          ANALYSES OF TOWN CENTER PER WOOD RODGERS DRAINAGE STUDY
579          BA    .0762
580          LS       0      90
581          UD   0.193
582          KK   CM1-7  COMBINE CM1 - CM7 BELOW HWY 50
583          HC       2
584          KK  REACH4  CHANNEL ROUTING - REACH HWY 50 - TOWN CENTER N. CROSSING
585          KM          COMBINED HYDROGRAPH ROUTED THROUGH WETLANDS IN TOWN CENTER EAST
586          RS       1    FLOW      -1
587          SV       0       1       2       3
588          SQ       0     200     600    1100
589          KK    CM83  INCREMENTAL PORTION OF SUBBASIN CM8 TRIB TO ROUTING REACH 3 (34 AC)
590          BA   0.053
591          LS       0      94
592          UD    0.19

1                                        HEC-1 INPUT                                        PAGE 15

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

593          KK    SUM3  COMBINED HYDROGRAPH; ADDED CM83
594          HC       2
595          KK  REACH3  CHANNEL ROUTING - REACH 3; N X-ING - TWN CTR BLVD
596          RS       1    FLOW      -1
597          SV       0       7       8      14
598          SQ       0     200     600    1100
599          KK    CM82  INCREMENTAL PORTION OF SUBBASIN CM8 TRIB TO ROUTING REACH 2 (25 AC)
600          BA    .039
601          LS       0      94
602          UD    .019
603          KK    SUM2  COMBINED HYDROGRAPH; ADDED CM82
604          HC       2
605          KK  REACH2  CHANNEL ROUTING - REACH 2; TWN CTR BLVD TO WEIR
606          RS       1    FLOW      -1
607          SV       0      12      13      18
608          SQ       0     200     600    1100
609          KK    CM81  INCREMENTAL PORTION OF SUBBASIN CM8 TRIB TO ROUTING REACH 1 (26 AC)
610          BA     .04
611          LS       0      94
612          UD    0.19
613          KK    SUM1  COMBINED HYDROGRAPH; ADDED CM81
614          HC       2
615          KK  WEIRDT
616          KM   WEIR CROSSING DETENTION BASIN (CM82)
617          RS       1    FLOW      -1
618          SV       0      .2     6.5     8.2
619          SE     588   588.1     592     593
620          SS     588     220       3     1.5
621          KK    CM8R  PORTION OF SUBBASIN CM8 BELOW TOWN CENTER EAST WETLANDS POND (14 AC)
622          BA    .022
623          LS       0      94
624          UD    0.19
625          KK  STHCRS  COMBINE HYDROGRAPHS - TRIB 2
626          KM          COMBINE CM1-CM8 @ SOUTH CROSSING
627          HC       2
628          KK  SSDET1
629          KM   S CROSSING DETENTION BASIN (CM8); LOW FLOW 1-103"X71"; HIGH FLOW; 1-8.03'X3.'
630          RS       1    FLOW      -1
631          SV       0     0.2     0.8    14.5    25.6    28.6
632          SE   577.2     580   582.5     588     592     593
633          SQ       0     100     200     300     400     500     600     700     800     900
634          SE   577.2   580.2   581.9   583.2   584.2   585.8   587.3     589   590.9     593
635          SQ    1100
636          SE     594

1                                        HEC-1 INPUT                                        PAGE 16

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

637          KK     CM8  SUBBASIN CM8 (REVISED SHED AREA FOR 28.5 AC)
638          KM          SUBBASIN CM8 RUNOFF FOR 100 YEAR STORM
639          BA   .0445
640          LS       0      89
641          UD    0.15
642          KK   CM1-8  COMBINE HYDROGRAPHS - TRIB 2
643          HC       2
644          KK   TR2-4  CHANNEL ROUTING - TRIB 2
645          KM          ROUTE TO POINT CU (CONFLUENCE W/ MAIN CHANNEL)
646          RD
647          RC     .04    .045     .04    2800    .005
648          RX       0     250     500     503     518     521     771    1021
649          RY     100      90      80      77      77      80      90     100
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650          KK      CU  SUBBASIN CU
651          BA   0.086
652          LS       0      88
653          UD    0.48

654          KK     CT2  SUBBASIN CT2
655          KM          SUBBASIN CT2 RUNOFF FOR 100 YEAR STORM
656          BA    .211
657          LS       0      85
658          UD    .287

659          KK    WWTP  COMBINE HYDROGRAPHS - MAIN CHANNEL
660          KM          FLOW IN CARSON CREEK @ CONFLUENCE W/ TRIB 2
661          HC       4

662          KK       A  WEST VALLEY SHED A (PORTION OF OLD CV1)
663          BA    .136
664          LS       0      84
665          UD    .370

666          KK     RTA  ROUTE SHED A TO CARSON CREEK
667          RD    2900    .015    .035            TRAP       5       2       2

668          KK      XW  WEST VALLEY SHED XW (PORTION OF OLD CV1)
669          BA    .109
670          LS       0      82
671          UD    .268

672          KK    'CV1'  SUM HYDROGRAPHS = OLD CV1
673          HC       2

674          KK   +'CV1'  FLOW IN CARSON CREEK ABOVE WWTP
675          HC       2
1                                        HEC-1 INPUT                                        PAGE 17

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

676          KK    ROUTE  ROUTE CARSON CREEK FLOW FROM CONFLUENCE TO LATROBE ROAD
677          RD     2000   .0033     .04            TRAP      20       3       3

678          KK      XY  WEST VALLEY SHED XY (PORTION OF OLD CV2)
679          BA    .125
680          LS       0      80
681          UD   0.246

682          KK   POINT1  CARSON CREEK FLOW @ LATROBE ROAD @ POINT 1
683          HC       2

684          KK    CC-13  CHANNEL ROUTING - MAIN CHANNEL
685          KM          STORAGE-OUTFLOW RATING FROM CCRDS
686          RS       1    FLOW       -1
687          SV       0       4       6       9      15      18      19      20      24      25
688          SV      30
689          SQ       0     300     500    1000    1500    2000    2500    3000    3500    4000
690          SQ    5000

691          KK     CV3  SUBASIN CV3
692          KM          SUBBASIN CV3 RUNOFF FOR 100 YEAR STORM
693          BA    .062
694          LS       0      87
695          UD    .308

696          KK       B  WEST VALLEY SHED B (PORTION OF OLD CV2)
697          BA    .059
698          LS       0      84
699          UD   0.325

700          KK    ROUTE  ROUTE SHED B TO LATROBE ROAD
701          RD     2000     .01     .04            TRAP       8       2       2

702          KK       C  WEST VALLEY SHED C (PORTION OF OLD CV2)
703          BA    .004
704          LS       0      98
705          UD    .123

706          KK      XV  WEST VALLEY SHED XV (PORTION OF OLD CV2)
707          BA    .047
708          LS       0      83
709          UD    .260

710          KK       D  WEST VALLEY SHED D
711          BA    .003
712          LS          85
713          UD    .104

714          KK   POINTA  FLOW @ LATROBE ROAD @ POINT A (CV2)
715          HC       4
1                                        HEC-1 INPUT                                        PAGE 18

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

716          KK   RT CV  ROUTE 'CV' FLOW FROM LATROBE ROAD TO CARSON CREEK CHANNEL
717          RD    1600     .005     .04            TRAP       8       3       3

718          KK    PT1a  COMBINE HYDROGRAPHS - CARSON CREEK FLOW @ POINT 1a (CV3)
719          KM          ADD CV3 AND 'CV' TO MAIN CHANNEL
720          HC       3
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721          KK     CR1  SUBBASIN CR1
722          KM          SUBBASIN CR1 RUNOFF FOR 100 YEAR STORM
723          BA    .303
724          LS       0      85
725          UD    .395

726          KK    CR-1  CHANNEL ROUTING - IMPROVED CHANNEL THROUGH VILLAGE U
727          KM          ROUTE CR1 TO CR2
728          RD
729          RC    .035    .035    .035    3000     .02
730          RX       0      50      54      58      73      77      81     131
731          RY     101     100      98      96      96      98     100     101

732          KK     CR2  SUBBASIN CR2
733          KM          SUBBASIN CR2 RUNOFF FOR 100 YEAR STORM
734          BA    .205
735          LS       0      94
736          UD    .312

737          KK   CR1+2  COMBINE HYDROGRAPHS
738          KM          SUBBASINS CR1 + CR2 @ WHITE ROCK ROAD
739          HC       2

740          KK    CR-2  HYDROGRAPH ROUTING
741          KM          ROUTE CR1 + CR2 TO CR3'
742          RD
743          RC     .05     .08     .05    3000     .02
744          RX       0      50      70      75     105     110     170     470
745          RY     105     100      98      93      93      98     100     105

746          KK    CR3'  SUBBASIN CR3' (REVISED AREA FOR DETENTION ANALYSIS)
747          KM          SUBBASIN CR3' RUNOFF FOR 100 YEAR STORM
748          BA    .223
749          LS       0      89
750          UD    .904

751          KK  CR1-3' COMBINE HYDROGRAPHS
752          KM         SUBBASINS CR1 - CR3'
753          HC       2

754          KK    +CR'  COMBINE HYDROGRAPHS
755          KM          ADD SUBBASIN CR' TO MAIN CHANNEL
756          HC       2
1                                    HEC-1 INPUT                                    PAGE 19

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

757          KK   CC-14  CHANNEL ROUTING - MAIN CHANNEL
758          KM          ROUTE TO CX3/CX4
759          KM          STORAGE-OUTFLOW RATING FROM CCRDS
760          RS       1    FLOW      -1
761          SV       0      10      11      15      19      26      33      40      48      55
762          SV      55
763          SQ       0     800    1000    1500    2000    3000    4000    5000    6000    7000
764          SQ    8000

765          KK      XB  WEST VALLEY SHED XB
766          BA    .052
767          LS             80
768          UD    .353

769          KK       K  WEST VALLEY SHED K
770          BA    .003
771          LS             85
772          UD    0.15

773          KK       L  WEST VALLEY SHED L
774          BA     .03
775          LS             85
776          UD    0.15

777          KK    SUM1  COMBINED FLOW
778          HC       3

779          KK     RTE  ROUTE TO CONFLUENCE BELOW W VALLEY TANK SITE
780          RD    2000    .006    .035            TRAP       8       2       2

781          KK       J  WEST VALLEY SHED J
782          BA    .009
783          LS             85
784          UD    0.17

785          KK       H  WEST VALLEY SHED H
786          BA    .001
787          LS             98
788          UD     .05

789          KK    SUM2  COMBINED FLOW IN MAIN CHNNEL
790          HC       3

791          KK     RTE  ROUTE TO CORNERSTONE DR X-ING
792          RD    1000    .009    .035            TRAP      10       2       2

793          KK      XA  WEST VALLEY SHED XA
794          BA    .186
795          LS             82
796          UD    .325
1                                    HEC-1 INPUT                                    PAGE 20

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
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797          KK       G  WEST VALLEY SHED G
798          BA    .001
799          LS              98
800          UD    .103

801          KK    SUM3  COMBINED FLOW @ CORNERSTONE DR
802          HC       3

803          KK     RTE  ROUTE TO WMP3
804          RD    1250    .004    .035            TRAP      10       3       3

805          KK       N  WEST VALLEY SHED N
806          BA    .025
807          LS              85
808          UD    .168

809          KK       E  WEST VALLEY SHED E
810          BA    .023
811          LS              83
812          UD     .13

813          KK       P  WEST VALLEY SHED P
814          BA    .003
815          LS              86
816          UD    .102

817          KK       R  WEST VALLEY SHED R
818          BA    .004
819          LS              86
820          UD    .119

821          KK      XJ  WEST VALLEY SHED XJ
822          BA    .047
823          LS              82
824          UD    .443

825          KK    SUM4  WMP3 INFLOW
826          HC       6

827          KK    WMP3  ROUTE THROUGH VALLEY VIEW WETLANDS MITIGATION POND 3
828          KM          POND OUTFLOW RATING AS PER NOV 2004 CTA SURVEY DATA
829          KM          30' WEIR CREST @ ELEV 543.2
830          KM          FLOW @ BLACKSTONE PKWY
831          RS       1    ELEV   543.2
832          SV       0    0.37       1    1.98    3.26     4.8
833          SE     542     543     544     545     546     547
834          SL
835          SS   543.2      30     2.6     1.5
1                                    HEC-1 INPUT                                                    PAGE 21

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

836          KK    RCX2  ROUTE TO LATROBE RD - PT 2/CX2
837          RD    1000    .004    .035            TRAP      12       3       3

838          KK       F  WEST VALLEY SHED F
839          BA    .033
840          LS              86
841          UD    .142

842          KK      XT  WEST VALLEY SHED XT
843          BA    .003
844          LS              92
845          UD     .15

846          KK      XU  WEST VALLEY SHED XU
847          BA    .014
848          LS              88
849          UD    .480

850          KK  POINT2  COMBINED FLOW @ LATROBE RD @ POINT 2 (PT CX2)
851          HC       4

852          KK   CC14B  CHANNEL ROUTING
853          KM          SUBBASINS CX1+CX2 ROUTED TO SUBBASIN CX3
854          RD
855          RC     .04     .05     .04    2300    .017
856          RX       0     250     350     356     370     380     480     730
857          RY     105     100      98      95      95      98     100     105

858          KK    CX3N  REVISED CCRDS SHED CX3N
859          BA    .114
860          LS              92
861          UD    .390

862          KK  POINTM  REVISED CCRDS SHED CX3S - POINT M @ GOLDEN FOOTHILL PKY
863          BA    .048
864          LS              92
865          UD     0.3

866          KK   SUMCX  COMBINED RUNOFF FROM CX1-CX3
867          HC       3

868          KK     CX4  CCRDS SHED CX4
869          BA    .241
870          LS              92
871          UD    .581
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 949          HC       3

 950          KK    CW1+2  COMBINE HYDROGRAPHS
 951          KM           COMBINE CW1+CW2
 952          HC       2

 953          KK     CW3  SUBBASIN CW3
 954          KM          SUBBASIN CW3 RUNOFF FOR 100 YEAR STORM
 955          BA    .414
 956          LS       0      82
 957          UD    .747
1                                        HEC-1 INPUT                                                    PAGE 24

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 958          KK    CW1-3  COMBINE HYDROGRAPHS
 959          KM           COMBINE CW1-CW3
 960          HC       2

 961          KK  TR3-1A  CHANNEL ROUTING
 962          KM          ROUTE CW1-CW3 TO CW4 (WHITE ROCK ROAD)
 963          RD    1500    .013    .055            TRAP      10      20

 964          KK     CW4  SUBBASIN CW4
 965          KM          SUBBASIN CW4 RUNOFF FOR 100 YEAR STORM
 966          BA    .072
 967          LS       0      86
 968          UD    .215

 969          KK     CW5  SUBBASIN CW5
 970          KM          SUBBASIN CW5 RUNOFF FOR 100 YEAR STORM
 971          BA    .116
 972          LS       0      83
 973          UD    .283

 974          KK    CW1-5  COMBINE HYDROGRAPHS @ WHITE ROCK ROAD
 975          KM           COMBINE CW1-CW5
 976          HC       3

 977          KK    TR3-2  CHANNEL ROUTING - TRIB 3
 978          KM           ROUTE CW1-CW5 TO CW6
 979          RD    5500    .007    .045            TRAP      20       3

 980          KK     CW6'
 981          KM          SUBBASIN CW6' RUNOFF FOR 100 YEAR STORM
 982          KM          NO DETENTION
 983          BA    .012
 984          LS       0    85.2
 985          UD    .742

 986          KK  CW1-6'  COMBINE HYDROGRAPHS
 987          KM          COMBINE CW1-CW6'
 988          HC       2

 989          KK     CW7  SUBBASIN CW7 (@ WHITE ROCK ROAD)
 990          KM          SUBBASIN CW7 RUNOFF FOR 100 YEAR STORM
 991          BA    .311
 992          LS       0      79
 993          UD    .636

 994          KK  TR3-2A  CHANNEL ROUTING
 995          KM          ROUTE CW7 TO CW8'
 996          RD    3000    .017    .045            TRAP      20       3
1                                        HEC-1 INPUT                                                    PAGE 25

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 997          KK    CW8'  SUBBASIN CW8' - PORTION NOT TRIBUTARY TO DETENTION @ CAR CRK RNCH
 998          KM          SUBBASIN CW8' RUNOFF FOR 100 YEAR STORM
 999          KM          NO DETENTION
1000          BA    .141
1001          LS       0    82.1
1002          UD    .466

1003          KK   CW7+8  COMBINE HYDROGRAHS
1004          KM          COMBINE CW7+CW8
1005          HC       2

1006          KK   CW1-8  COMBINE HYDROGRAPHS
1007          KM          COMBINE CW1-CW8
1008          HC       2

1009          KK   TR3-3  CHANNEL ROUTING
1010          KM          ROUTE CW1-CW8 TO CW9
1011          RD    2600    .006    .045            TRAP      20       3

1012          KK    CW9'  SUBBASIN CW9' - PORTION NOT TRIBUTARY TO DETENTION
1013          KM          SUBBASIN CW9' RUNOFF FOR 100 YEAR STORM
1014          KM          NO DETENTION
1015          BA    .079
1016          LS       0    82.6
1017          UD    .446

1018          KK     CWP  PORTIONS OF CW6, CW8, CW9
1019          BA     .38
1020          LS       0      84
1021          UD    1.28

1022          KK   TRIB3  COMBINE HYDROGRAPHS
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1023          KM          SUBBASIN CW1-CW9 (TRIBUTARY 3)
1024          HC       3

1025          KK  POINT4  CARSON CREEK BELOW TRIB 3 CONFLUENCE @ POINT 4
1026          KM          COMBINE CW1-CW9 (TRIBUTARY 3) WITH FLOW IN MAIN CHANNEL
1027          HC       2

1028          KK   CC-16  CHANNEL ROUTING - MAIN CHANNEL
1029          KM          ROUTE DOWNSTREAM IN MAIN CHANNEL TO CZ2
1030          KM          CHANNEL STORAGE FOR DEVELOPED CARSON CREEK BY TD30, USING 2004 TOPO
1031          KM          COMPUTED STORAGE VALUES REDUCED 25%
1032          RS       1    FLOW       -1
1033          SV       0      33       41       60       75      116      150      190      225      260
1034          SV     300
1035          SQ       0     800     1000     1500     2000     3000     4000     5000     6000     7000
1036          SQ    8000
1                                        HEC-1 INPUT                                                    PAGE 26
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1037          KK    CZ2'  REVISED CCRDS SHED CZ2'
1038          BA    .227
1039          LS       0       83
1040          UD    .836

1041          KK    +CZ2  COMBINE HYDROGRAPHS
1042          KM          COMBINE RUNOFF FROM CZ2 WITH FLOW IN MAIN CHANNEL
1043          HC       2

1044          KK      XF  WEST VALLEY SHED XF
1045          BA    .059
1046          LS            80
1047          UD    .321

1048          KK      AD  WEST VALLEY SHED AD
1049          BA    .005
1050          LS            87
1051          UD    .109

1052          KK    SUM1  COMBINED RUNOFF
1053          HC       2

1054          KK     RTE  ROUTED HYDROGRAPH
1055          RD    1600    .007    .035            TRAP       8       3       3

1056          KK      XE  WEST VALLEY SHED XE
1057          BA    .017
1058          LS            80
1059          UD    .333

1060          KK      XD  WEST VALLEY SHED XD
1061          BA    .055
1062          LS            80
1063          UD    .340

1064          KK      XC  WEST VALLEY SHED XC
1065          BA    .055
1066          LS            80
1067          UD    .348

1068          KK      AC  WEST VALLEY SHED AC
1069          BA    .003
1070          LS            87
1071          UD    .108

1072          KK       V  WEST VALLEY SHED V
1073          BA    .158
1074          LS          82.5
1075          UD    .234
1                                        HEC-1 INPUT                                                    PAGE 27
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1076          KK    SUM2  COMBINED RUNOFF
1077          HC       6

1078          KK     RTE  ROUTE
1079          RD    2000    .009    .035            TRAP      10       3       3

1080          KK      AE  WEST VALLWY SHED AE
1081          BA    .095
1082          LS            86
1083          UD    .175

1084          KK     RTE  ROUTE TO ROYAL OAKS DR
1085          RD    1000    .009    .035            TRAP      10       3       3

1086          KK      XG  WEST VALLEY SHED XG
1087          BA    .061
1088          LS            81
1089          UD    .597

1090          KK     ROD  COMBINED FLOW @ ROYAL OAKS DR
1091          HC       3

1092          KK       W  WEST VALLEY SHED W
1093          BA    .012
1094          LS            85
1095          UD     .13
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1096          KK      AB  WEST VALLEY SHED AB
1097          BA    .089
1098          LS              86
1099          UD    .222

1100          KK    SUM3  COMBINED FLOW BELOW ROYAL OAKS DR
1101          HC       3

1102          KK     RTE  ROUTE TO WMP 1/2
1103          RD    1500    .005    .035            TRAP      12       3       3

1104          KK       M  WEST VALLEY SHED M
1105          BA    .028
1106          LS              84
1107          UD    .269

1108          KK       U  WEST VALLEY SHED U
1109          BA    .003
1110          LS              86
1111          UD     .11

1112          KK    SUM4  COMBINED RUNOFF
1113          HC       2
1                                        HEC-1 INPUT                                                    PAGE 28

              LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1114          KK     RTE  ROUTE TO WMP 1/2
1115          RD    1300     .01    .035            TRAP       6       2       2

1116          KK      XH  WEST VALLEY SHED XH
1117          BA     .07
1118          LS              81
1119          UD    .314

1120          KK       X  WEST VALLEY SHED X
1121          BA    .015
1122          LS              88
1123          UD    .125

1124          KK       T  WEST VALLEY SHED T
1125          BA    .037
1126          LS              86
1127          UD    .139

1128          KK    SUM5  INFLOW TO WMP 1/2
1129          HC       5

1130          KK    WMP1  DETENTION ROUTING THROUGH ON-SITE WETLANDS MITIGATION POND 1
1131          KM          OUTFLOW RATING PER NOV 2004 CTA SURVEY DATA
1132          KM          150' WEIR @ CREST ELEV 540
1133          KM          ASSUME WATER SURFACE @ OVERFLOW CREST @ ONSET OF STORM
1134          KM          WMP1 OUTFLOW ENTERS WMP2
1135          RS       1    ELEV     540
1136          SV       0     0.7     1.5
1137          SQ       0     390    1100
1138          SE     540     541     542

1139          KK    WMP2  DETENTION ROUTING THROUGH ON-SITE WETLANDS MITIGATION POND 2
1140          KM          OUTFLOW RATING PER NOV 2004 SURVEY DATA & 2005 IMPROVEMNT PLANS
1141          KM          40' WEIR @ CREST ELEV 534.5
1142          KM          24" LOW LEVEL OUTLET @ CL ELEV 531.5
1143          KM          ASSUME WATER SURFACE @ ELEV 532 @ ONSET OF STORM
1144          KM          POND OUTFLOW @ 2ND ST (BLACKSTONE PKWY)
1145          RS       1    ELEV     532
1146          SV    0.21    0.43    0.92     1.6    2.45    3.62    5.17    6.92    8.77
1147          SE     532     533     534     535     536     538     540     541     542
1148          SL   531.5    3.14     0.6     0.5
1149          SS   534.5      40     2.6     1.5

1150          KK       Q  WEST VALLEY SHED Q
1151          BA    .011
1152          LS              86
1153          UD    .113

1154          KK       Y  WEST VALLEY SHED Y
1155          BA    .001
1156          LS              98
1157          UD     .10
1                                        HEC-1 INPUT                                                    PAGE 29

              LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1158          KK       Z  WEST VALLEY SHED Z
1159          BA    .046
1160          LS              86
1161          UD    .142

1162          KK      XR  WEST VALLEY SHED XR
1163          BA    .013
1164          LS              86
1165          UD    .210

1166          KK  POINT5  FLOW @ LATROBE RD - POINT 5 (CY2)
1167          KO                2
1168          HC       5

1169          KK     RTE  RTE TO ROBT J MATTHEWS PKWY
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1170          RD    1000     .02    .035            TRAP      10       3       3

1171          KK       S  WEST VALLEY SHED S
1172          BA    .004
1173          LS              98
1174          UD    .120

1175          KK      XS  WEST VALLEY SHED XS
1176          BA    .009
1177          LS              92
1178          UD    .150

1179          KK  POINTB  S+XS @ LATROBE RD - POINT B
1180          KO              2
1181          HC       2

1182          KK     RTE  HYDROGRAPH ROUTING TO ROBT J MATTHEWS PKWY
1183          RD    1500     .02    .035            TRAP       2       3       3

1184          KK  CY3-2C  BUSINESS PARK SHED CY3-2C
1185          BA    .036
1186          LS              92
1187          UD     .30

1188          KK  POINTG  'TRIBUTARY 4' @ ROBT J MATTHEWS PKWY - POINT G
1189          HC       3

1190          KK     RTE  ROUTE TO POINT CY3-2
1191          RD    1500    .004    .035            TRAP      12       2       2

1192          KK  CY3-2B  BUSINESS PARK SHED CY3-2B
1193          BA    .023
1194          LS              92
1195          UD     0.3
1                                        HEC-1 INPUT                                                    PAGE 30
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1196          KK     SUM
1197          HC       2

1198          KK      AA  WEST VALLEY SHED AA
1199          BA    .009
1200          LS              85
1201          UD    .194

1202          KK     RTE  RTE AA ACROSS XQ TO LATROBE RD
1203          RD     900     .08    .035            TRAP       1       2       2

1204          KK      XQ  WEST VALLEY SHED XQ
1205          BA    .025
1206          LS              81
1207          UD    .241

1208          KK  POINTC  FLOW @ LATROBE RD - POINT C
1209          HC       2

1210          KK     RTE  RTE AA+XQ TO ROBT J MATTHEWS PKY POINT H
1211          RD    1200     .03    .035            TRAP       3       2       2

1212          KK  CY3-2A  BUSINESS PARK SHED CY3-2A
1213          BA     .03
1214          LS              92
1215          UD     0.3

1216          KK  POINTH  FLOW @ ROBT J MATTHEWS PKY - POINT H
1217          KO              2
1218          HC       2

1219          KK   CY3-2  BUSINESS PARK SHED CY3-2
1220          BA    .108
1221          LS              92
1222          UD     0.3

1223          KK  POINTJ  'TRIBUTARY 4'@ POINT J (BUSINESS PARK OUTFALL)
1224          HC       3

1225          KK     RTE  RTE TO CY3-3
1226          RD    1500    .012    .035            TRAP      14       2       2

1227          KK  XP/PTD  WEST VALLEY SHED XP - FLOW @ LATROBE RD @ POINT D
1228          KO              2
1229          BA    .015
1230          LS              81
1231          UD    .167

1232          KK     RTE  RTE XP THROUGH CY3-1 TO PL
1233          RD    2300    .033    .035            TRAP       4       3       3
1                                        HEC-1 INPUT                                                    PAGE 31
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1234          KK   CY3-1  BUSINESS PARK SHED CY3-1
1235          BA    .072
1236          LS              92
1237          UD    .356

1238          KK  POINTK  S FORK 'TRIB 4' @ PL - POINT K
1239          HC       2
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1240          KK     RTE  RTE TO CY3-3
1241          RD    1000     .01     .035            TRAP       6       3       3

1242          KK    CY3-3  CARSON CREEK SHED CY3-3
1243          BA     .064
1244          LS             86
1245          UD     .303

1246          KK      SUM  COMBINED FLOW OF TRIB 4 N & S FORKS
1247          HC        3

1248          KK      RTE  RTE THROUGH CY3-4
1249          RD     2500     .008     .035            TRAP      15       3       3

1250          KK    CY3-4  CARSON CREEK SHED CY3-4
1251          BA     .055
1252          LS             90
1253          UD     .409

1254          KK   POINT6  FLOW IN 'TRIBUTARY 4' - POINT 6
1255          HC        2

1256          KK   XN/PTE  WEST VALLEY SHED XN - FLOW @ LATROBE RD POINT E
1257          BA     .029
1258          LS             81
1259          UD     .216

1260          KK      RTE  RTE THROUGH CY5E
1261          RD     3500     .028     .035            TRAP       6       3       3

1262          KK       AH  WEST VALLEY SHED AH
1263          BA     .018
1264          LS             86
1265          UD     .256

1266          KK      RTE  RTE THROUGH XM TO LATROBE RD
1267          RD     1000     0.13     .035            TRAP       2       2       2

1268          KK       XM  WEST VALLEY SHED XM
1269          BA     .041
1270          LS             80
1271          UD       .2
1                                      HEC-1 INPUT                                    PAGE 32

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.......10

1272          KK   POINTF  FLOW @ LATROBE RD @ POINT F
1273          HC        2

1274          KK       XL  WEST VALLEY SHED XL
1275          BA     .005
1276          LS             86
1277          UD      .20

1278          KK       AJ  WEST VALLEY SHED AJ
1279          BA     .003
1280          LS             98
1281          UD      .10

1282          KK       AG  WEST VALLEY SHED AG
1283          BA     .008
1284          LS             90
1285          UD     .125

1286          KK       XK  WEST VALLEY SHED XK
1287          BA     .102
1288          LS             80
1289          UD     .353

1290          KK   POINT7  FLOW @ LATROBE RD @ POINT 7 (XK+XL+AG+AJ)
1291          HC        4

1292          KK     SUM3  FLOW THROUGH CY5E (ADDED AH+XM)
1293          HC        2

1294          KK      RTE  RTE COMBINED HYDROGRAPH THROUGH CY5E TO PL
1295          RD     5000     .017     .035            TRAP       8       3       3

1296          KK    CY5E  BUSINESS PARK SHED CY5E
1297          BA     .438
1298          LS             84
1299          UD     .628

1300          KK   POINTL  'TRIBUTARY 5' @ POINT L (CARSON CREEK PROJECT PL)
1301          HC        3

1302          KK      RTE  RTE THROUGH CY5W
1303          KM           CHANNEL STORAGE ROUTING IN TRIB 5 ABOVE CARSON CREEK
1304          KM           REACH EXTENDS FROM X-SEC 500 TO E-SEC 500.7
1305          RS        1    FLOW       -1
1306          SV        0       7       12       16       20        2       26       29       31       33
1307          SQ        0     200      400      600      800     1000     1200     1400     1600     1800

1308          KK    CY5W  CARSON CREEK SHED CY5W
1309          BA     .281
1310          LS             84
1311          UD     .741
1                                      HEC-1 INPUT                                    PAGE 33
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          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          1312          KK  POINT8  FLOW IN 'TRIBUTARY 5' - POINT 8
          1313          HC       2
          1314          KK  POINT9  COMBINED FLOW IN 'TRIBUTARIES 4 & 5' - POINT 9
          1315          HC       2
          1316          KK     RTE  CHANNEL STORAGE ROUTING
          1317          KM          REACH EXTENDS FROM X-SEC 41 TO X-SEC 500
          1318          RS       1    FLOW      -1
          1319          SV       0       4       6       7       8       9      10      11      13      16
          1320          SQ       0     200     400     600     800    1000    1200    1400    1600    1800
          1321          KK    CY6'  REVISED CCRDS SHED CY6
          1322          BA    .028
          1323          LS              77
          1324          UD     .27
          1325          KK    PT10  FLOW IN CARSON CREEK @ LIMIT OF STUDY - POINT 10
          1326          KO              2
          1327          HC       3
          1328          ZZ
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 *                                       *                                       *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                       *    U.S. ARMY CORPS OF
ENGINEERS      *
 *              JUN   1998               *                                       *    HYDROLOGIC ENGINEERING
CENTER     *
 *            VERSION 4.1                *                                       *          609 SECOND
STREET          *
 *                                       *                                       *       DAVIS, CALIFORNIA
95616       *
 *  RUN DATE   18OCT05  TIME  10:16:12   *                                       *           (916) 756-1104
*
 *                                       *                                       *
*
 *****************************************
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                          AUGUST 2005 REVISION - RUN DATE 9/20/05
                          MODIFY SHEDS CX1, CX2, CY1, CY2, CY4, CY5, CV1,CV2 PER WEST VALLEY
                          INCLUDE PROPOSED WEST VALLEY VILLAGE WETLANDS MITIGATION PONDS
                          CARSON CREEK CHANNEL STORAGE S OF BUSINESS PARK REFLECTS 2005 CARSON CREEK
                          PROJECT INFO
                          TOWN CENTER EAST HYDROLOGY PER WOOD RODGERS SEPT 2002 DRAINAGE STUDY
                          NEW FILE NAME CCFU05.DAT/OUT
                          WATERSHED ANALYSES ARE BASED ON:
                          CARSON CREEK REGIONAL DRAINAGE STUDY
                          CARSON CREEK, FROM HEADWATER TO SACRAMENTO COUNTY LINE
                          RUNOFF FOR FUTURE CONDITIONS DUE TO 100 YEAR 24-HOUR SCS TYPE I STORM
                          SCENARIO I - DETENTION @ 19 SITES AS PER EXISTING TENT. MAPS
                          FOR NON-PARTICIPANTS ASSUME FUTURE RUNOFF IS UNMITIGATED
                          (CHANNEL ROUTING BY MUSKINGIM CUNGE METHOD)
                          ANALYSIS OF UPPER BASIN FROM G E THORNE & ASSOC. MASTER DRAINAGE STUDY 8-92
                          HEC 1 FILES FUTURE.DAT/OUT - S BOTTORFF   4-22-95

   18 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          1  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME         0000  STARTING TIME
                          NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2    0  ENDING DATE
                      NDTIME         0055  ENDING TIME
                       ICENT           19  CENTURY MARK

                    COMPUTATION INTERVAL      .08 HOURS
                        TOTAL TIME BASE   24.92 HOURS

           ENGLISH UNITS
                DRAINAGE AREA         SQUARE MILES
                PRECIPITATION DEPTH   INCHES
                LENGTH, ELEVATION     FEET
                FLOW                  CUBIC FEET PER SECOND
                STORAGE VOLUME        ACRE-FEET
                SURFACE AREA          ACRES
                TEMPERATURE           DEGREES FAHRENHEIT

 WARNING --- ROUTED OUTFLOW (     38.) IS GREATER THAN MAXIMUM OUTFLOW (     38.) IN STORAGE-OUTFLOW TABLE
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-1.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-2.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-3.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-4.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-5.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
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 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-6.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-7.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-8.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR1-9.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH  TR1-9A.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).
 ***** WARNING *****  POSSIBLE INSTABILITIES IN THE MUSKINGUM ROUTING FOR REACH   TR3-1.
       ADJUST NSTPS AND/OR COMPUTATION INTERVAL TO MEET CRITERIA IN USER MANUAL).


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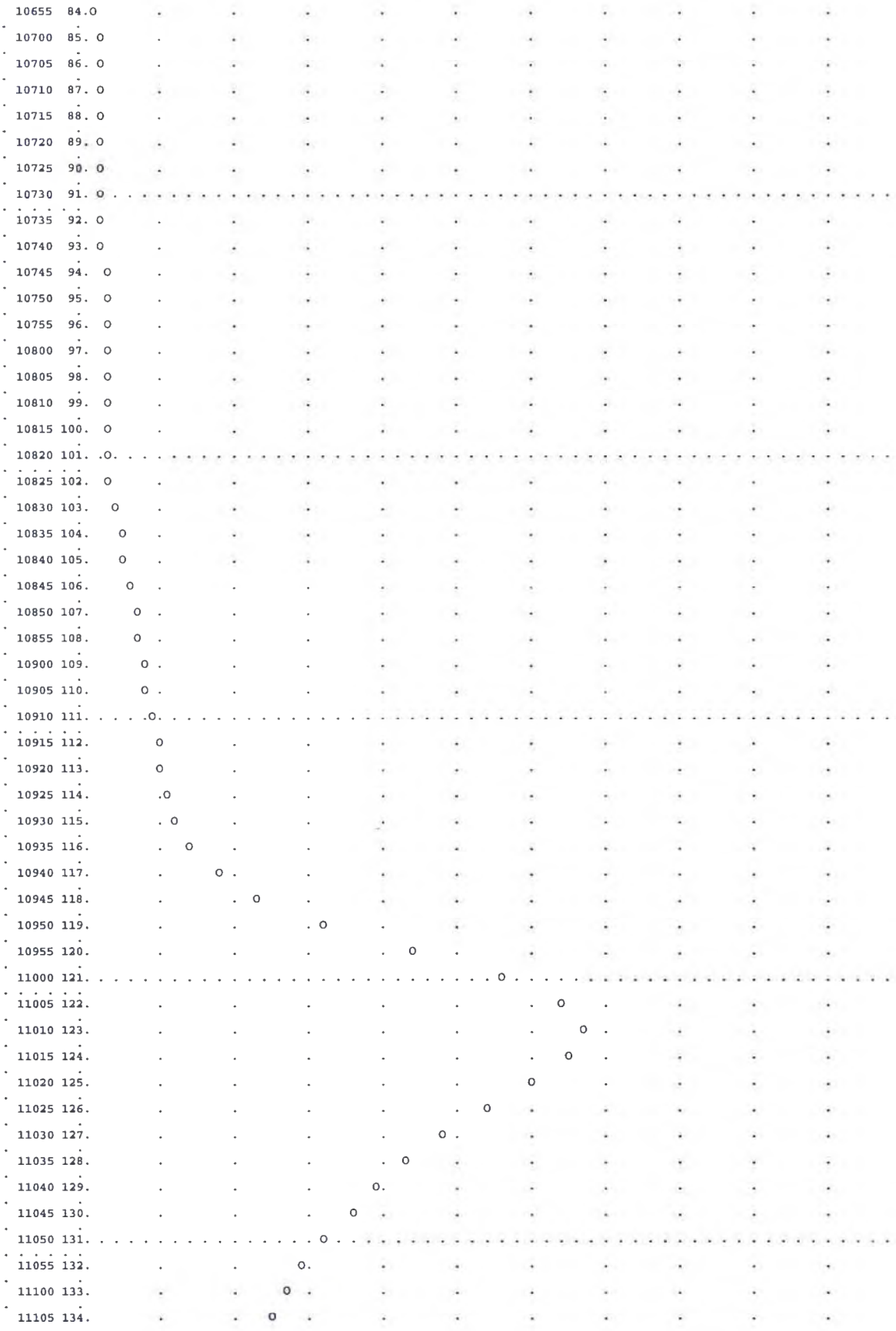
POINT 5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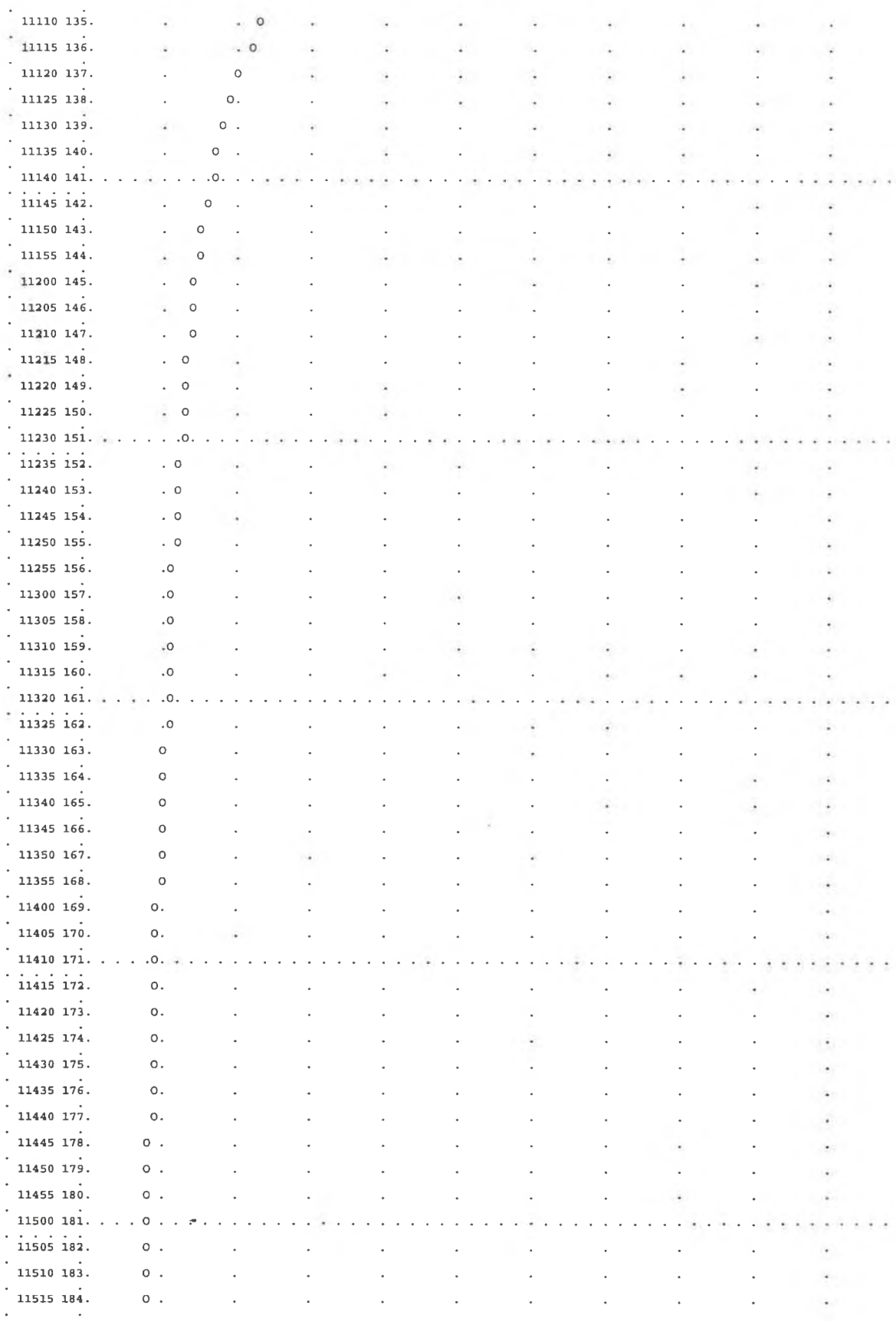
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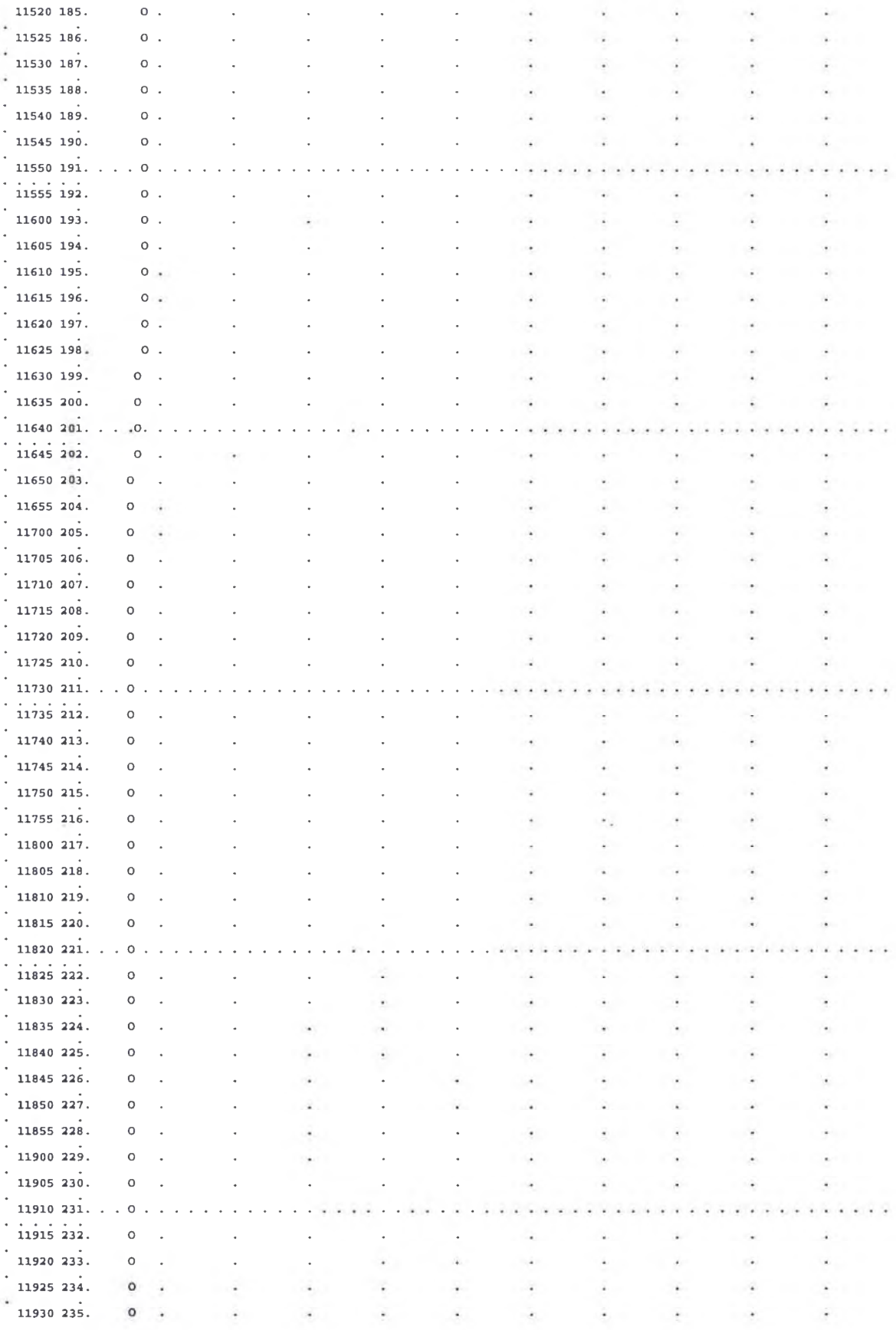
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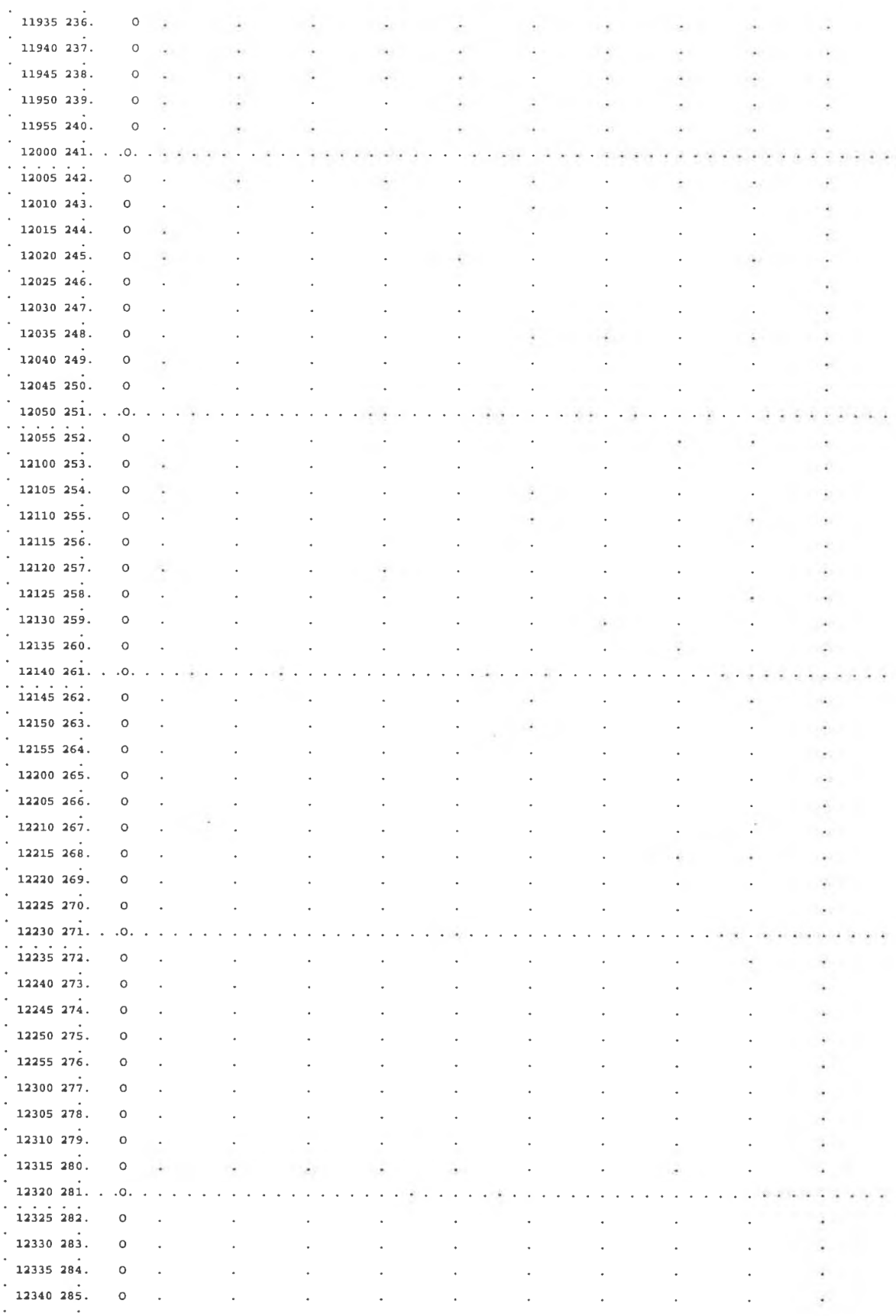
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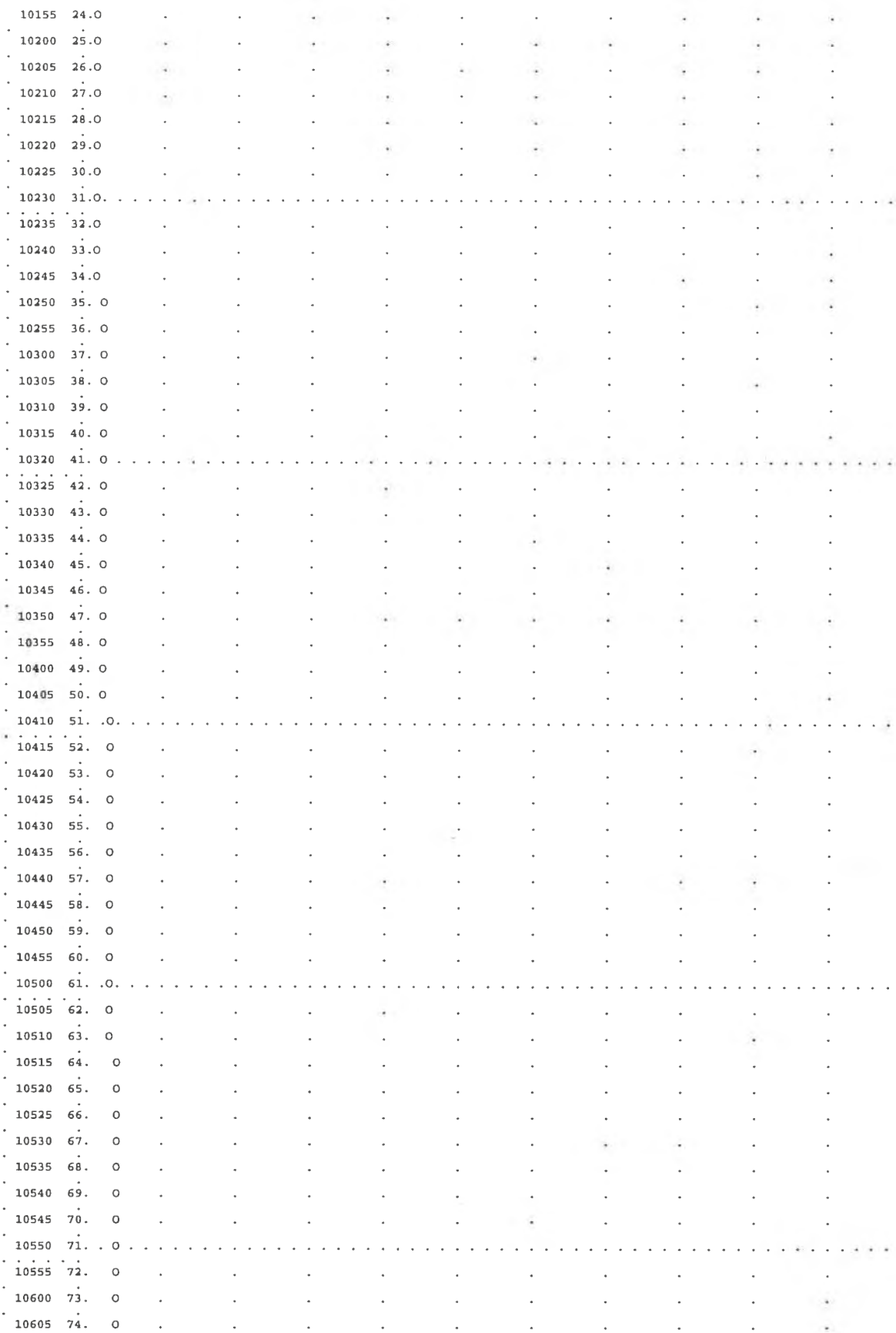
              **************
              *            *
 1179 KK      *    POINTB  *       S+XS @ LATROBE RD - POINT B
              *            *
              **************

 1180 KO           OUTPUT CONTROL VARIABLES
                        IPRNT          5  PRINT CONTROL
                        IPLOT          2  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
1                                                  STATION   POINTB

                          (O) OUTFLOW
          0.        2.        4.        6.        8.       10.       12.       14.       16.       18.       0.
0.        0.
 DAHRMN PER
  10000
1O---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------
-.
  10005   2O         .       .       .       .       .       .       .       .       .       .
.       .
  10010   3O         .       .       .       .       .       .       .       .       .       .
.       .
  10015   4O         .       .       .       .       .       .       .       .       .       .
.       .
  10020   5O         .       .       .       .       .       .       .       .       .       .
.       .
  10025   6O         .       .       .       .       .       .       .       .       .       .
.       .
  10030   7O         .       .       .       .       .       .       .       .       .       .
.       .
  10035   8O         .       .       .       .       .       .       .       .       .       .
.       .
  10040   9O         .       .       .       .       .       .       .       .       .       .
.       .
  10045  10O         .       .       .       .       .       .       .       .       .       .
.       .
  10050  11O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . .
  10055  12O         .       .       .       .       .       .       .       .       .       .
.       .
  10100  13O         .       .       .       .       .       .       .       .       .       .
.       .
  10105  14O         .       .       .       .       .       .       .       .       .       .
.       .
  10110  15O         .       .       .       .       .       .       .       .       .       .
.       .
  10115  16O         .       .       .       .       .       .       .       .       .       .
.       .
  10120  17.O        .       .       .       .       .       .       .       .       .       .
.       .
  10125  18.O        .       .       .       .       .       .       .       .       .       .
.       .
  10130  19.O        .       .       .       .       .       .       .       .       .       .
.       .
  10135  20.O        .       .       .       .       .       .       .       .       .       .
.       .
  10140  21.O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . .
  10145  22.O        .       .       .       .       .       .       .       .       .       .
.       .
  10150  23.O        .       .       .       .       .       .       .       .       .       .
.       .
```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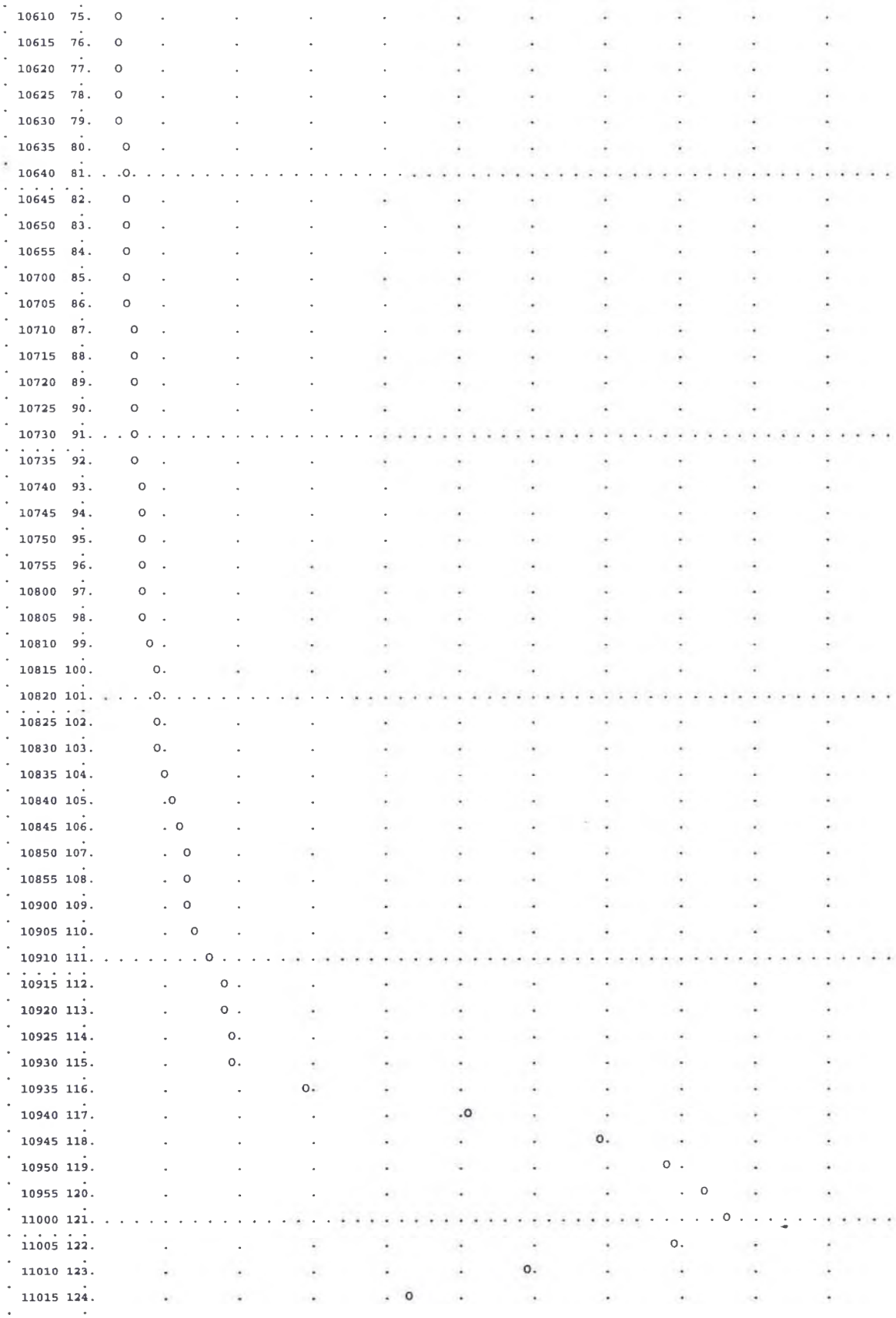
10200 25.O
10205 26.O
10210 27.O
10215 28.O
10220 29.O
10225 30.O
10230 31.O.
10235 32.O
10240 33.O
10245 34.O
10250 35. O
10255 36. O
10300 37. O
10305 38. O
10310 39. O
10315 40. O
10320 41. O
10325 42. O
10330 43. O
10335 44. O
10340 45. O
10345 46. O
10350 47. O
10355 48. O
10400 49. O
10405 50. O
10410 51. .O.
10415 52. O
10420 53. O
10425 54. O
10430 55. O
10435 56. O
10440 57. O
10445 58. O
10450 59. O
10455 60. O
10500 61. .O.
10505 62. O
10510 63. O
10515 64. O
10520 65. O
10525 66. O
10530 67. O
10535 68. O
10540 69. O
10545 70. O
10550 71. . O
10555 72. O
10600 73. O
10605 74. O

POINT 3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10615 76.
10620 77.
10625 78.
10630 79.
10635 80.
10640 81.
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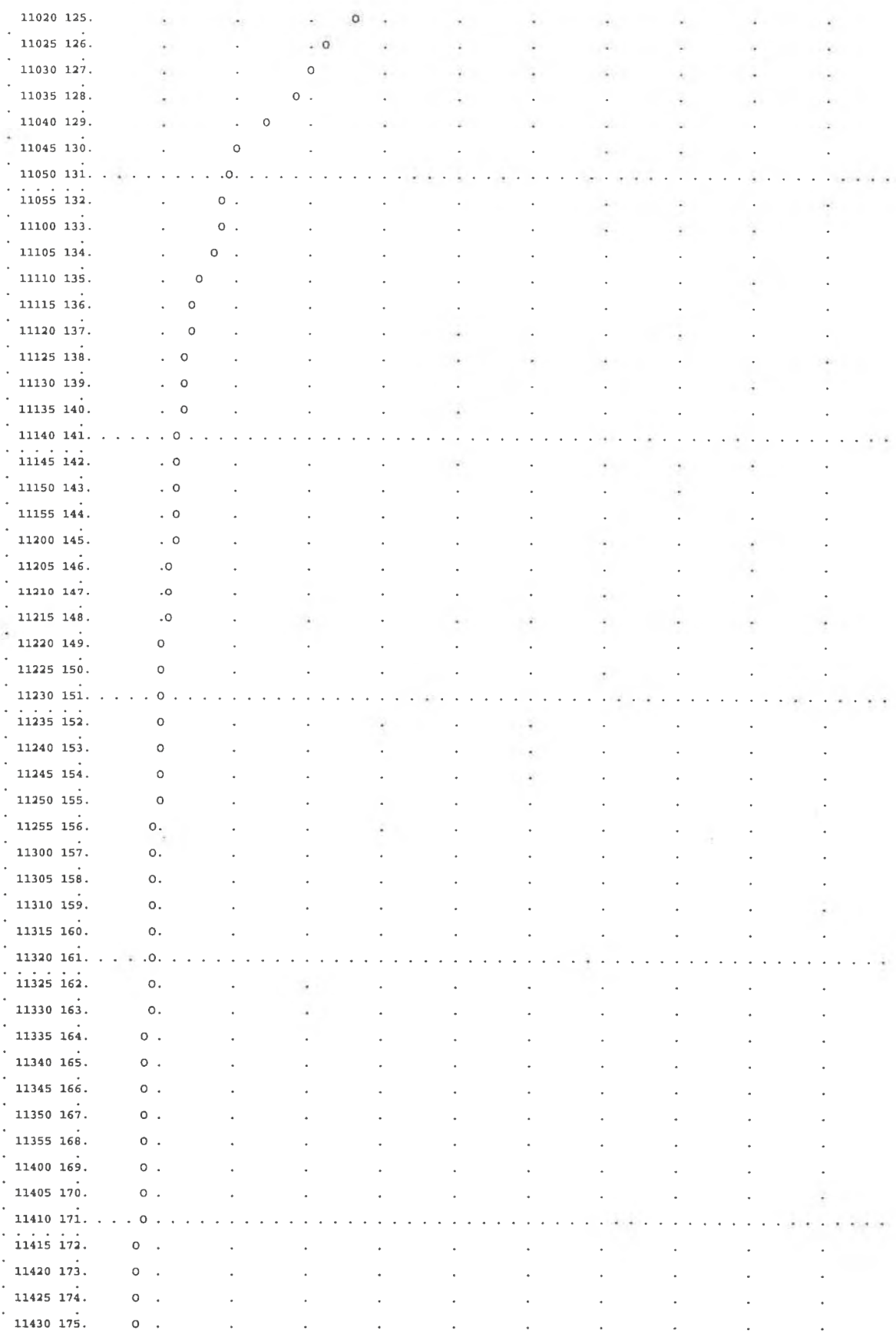
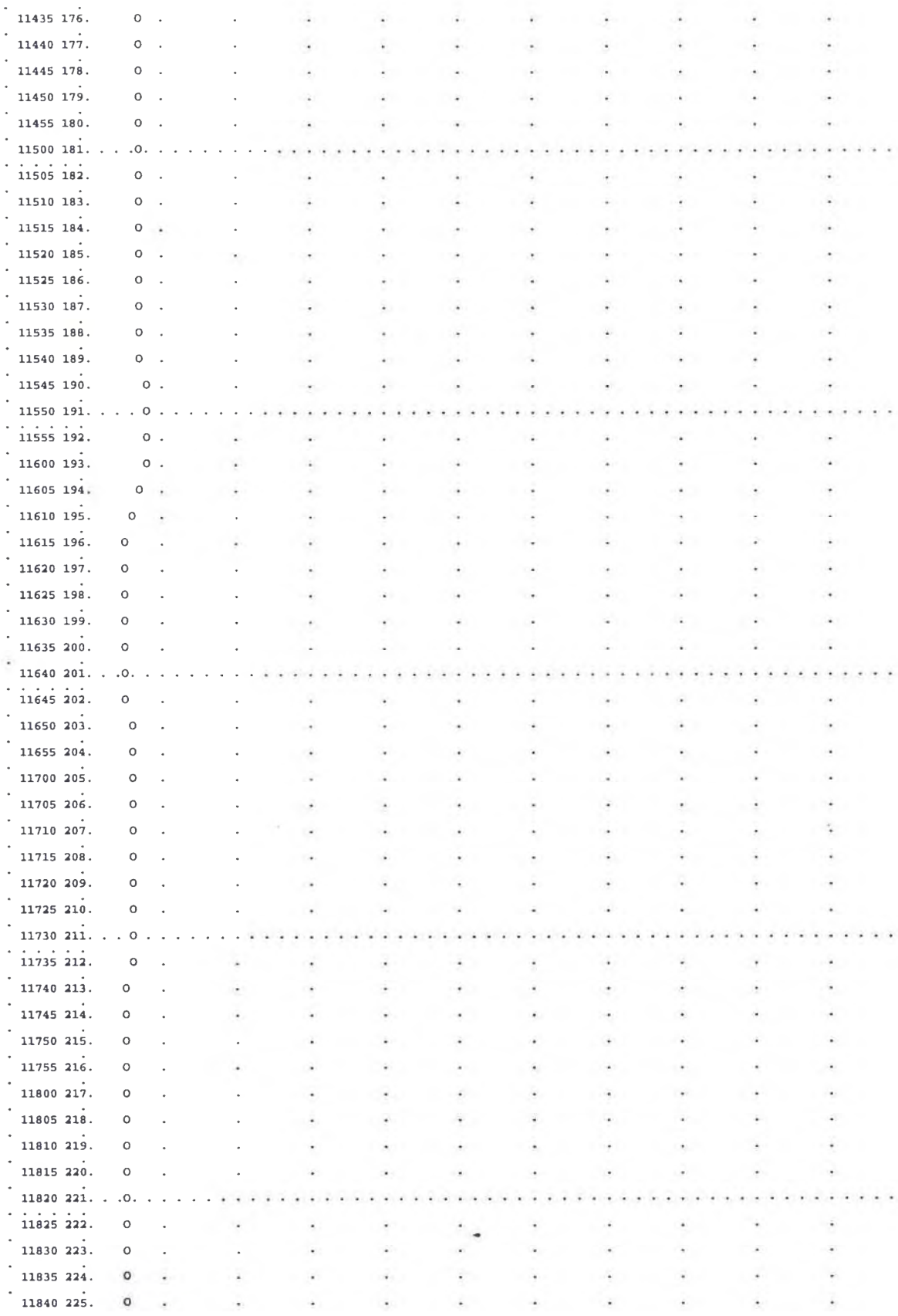
10650 83.
10655 84.
10700 85.
10705 86.
10710 87.
10715 88.
10720 89.
10725 90.
10730 91.
10735 92.
10740 93.
10745 94.
10750 95.
10755 96.
10800 97.
10805 98.
10810 99.
10815 100.
10820 101.
10825 102.
10830 103.
10835 104.
10840 105.
10845 106.
10850 107.
10855 108.
10900 109.
10905 110.
10910 111.
10915 112.
10920 113.
10925 114.
10930 115.
10935 116.
10940 117.
10945 118.
10950 119.
10955 120.
11000 121.
11005 122.
11010 123.
11015 124.

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11505 182.
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11515 184.
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11525 186.
11530 187.
11535 188.
11540 189.
11545 190.
11550 191.
11555 192.
11600 193.
11605 194.
11610 195.
11615 196.
11620 197.
11625 198.
11630 199.
11635 200.
11640 201.
11645 202.
11650 203.
11655 204.
11700 205.
11705 206.
11710 207.
11715 208.
11720 209.
11725 210.
11730 211.
11735 212.
11740 213.
11745 214.
11750 215.
11755 216.
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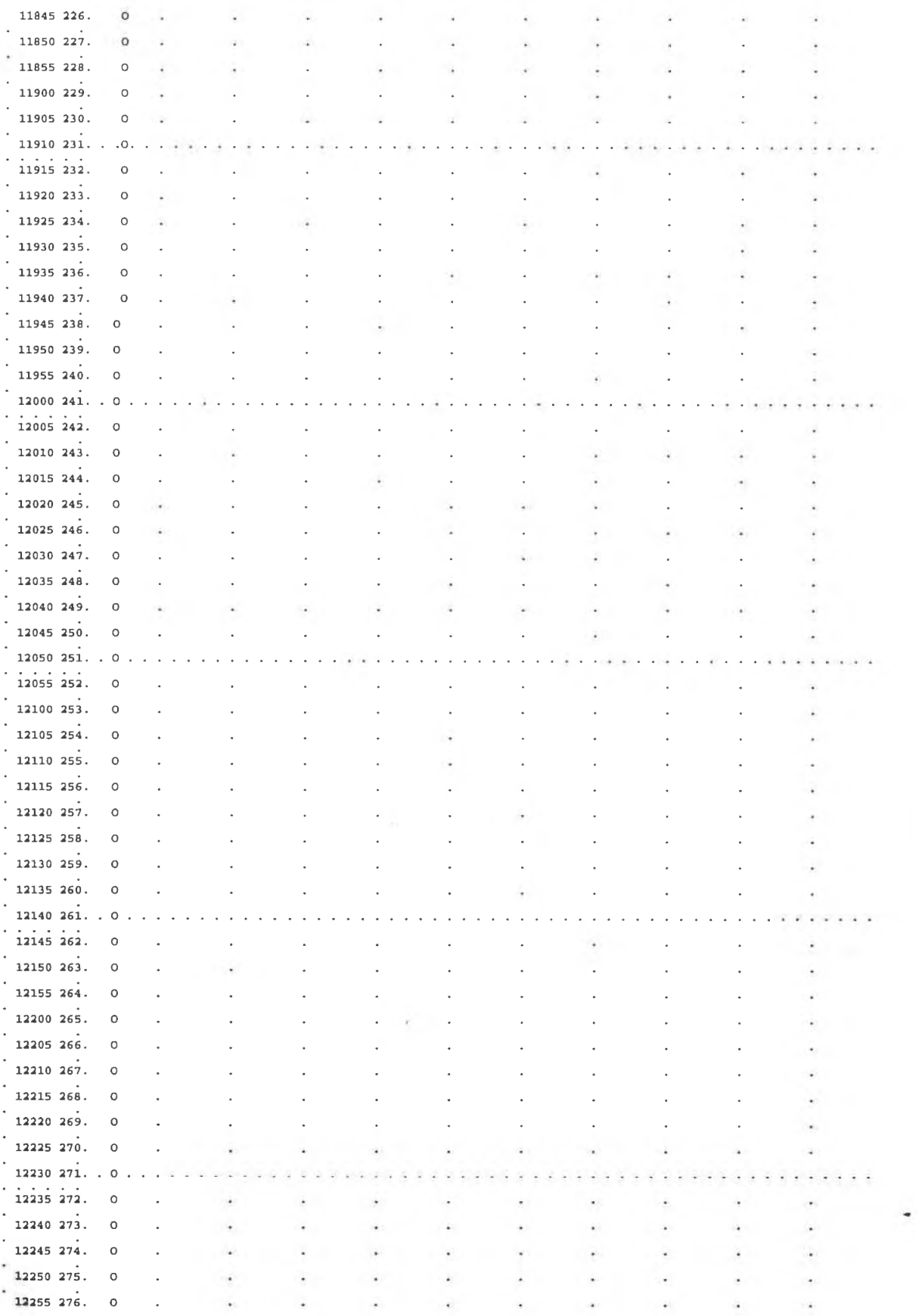
11835 224.
11840 225.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11850 227.
11855 228.
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11910 231.
11915 232.
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11925 234.
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11935 236.
11940 237.
11945 238.
11950 239.
11955 240.
12000 241.
12005 242.
12010 243.
12015 244.
12020 245.
12025 246.
12030 247.
12035 248.
12040 249.
12045 250.
12050 251.
12055 252.
12100 253.
12105 254.
12110 255.
12115 256.
12120 257.
12125 258.
12130 259.
12135 260.
12140 261.
12145 262.
12150 263.
12155 264.
12200 265.
12205 266.
12210 267.
12215 268.
12220 269.
12225 270.
12230 271.
12235 272.
12240 273.
12245 274.
12250 275.
12255 276.

```
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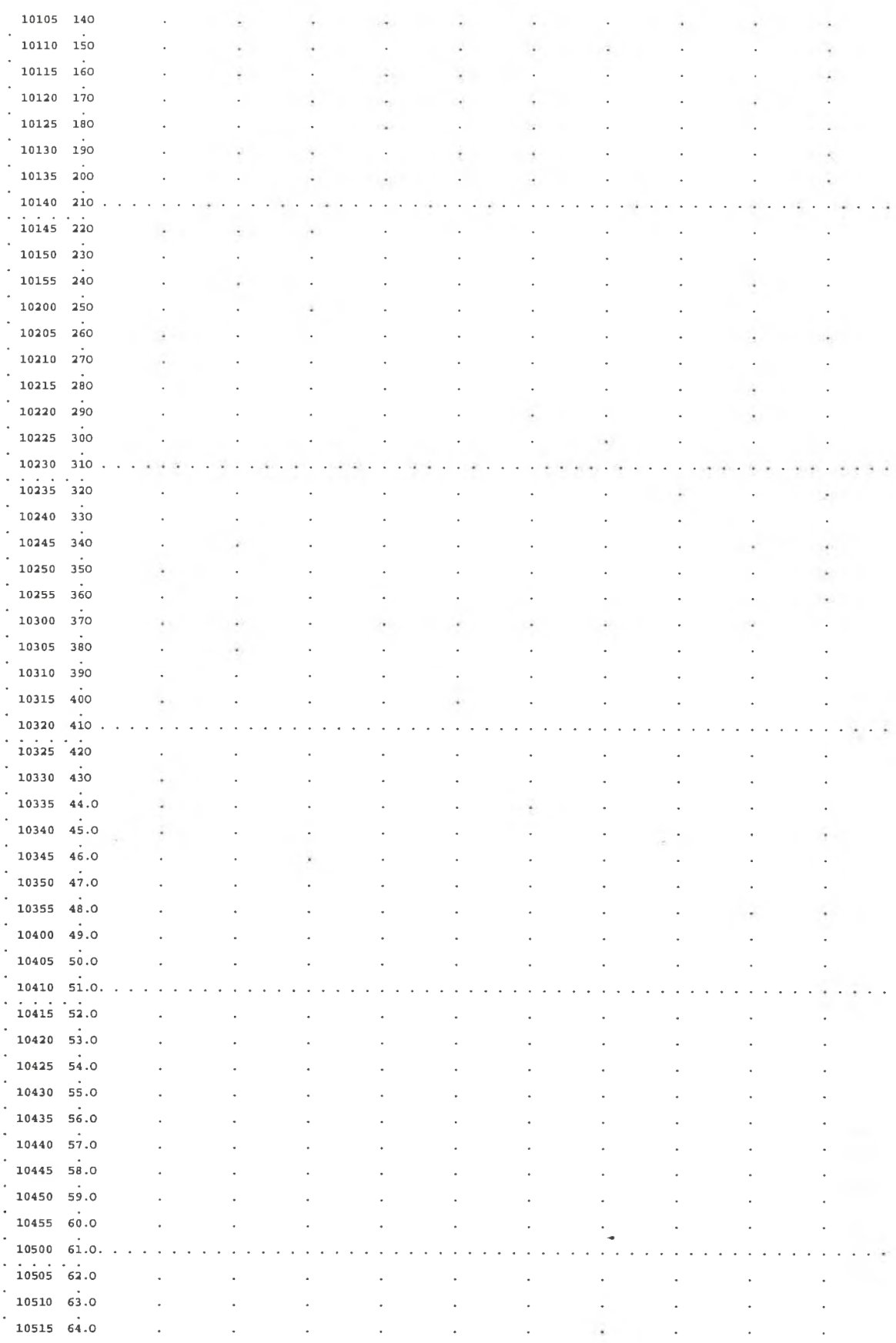
  12305 278.   O
  12310 279.   O
  12315 280.   O
  12320 281. . O . . .
```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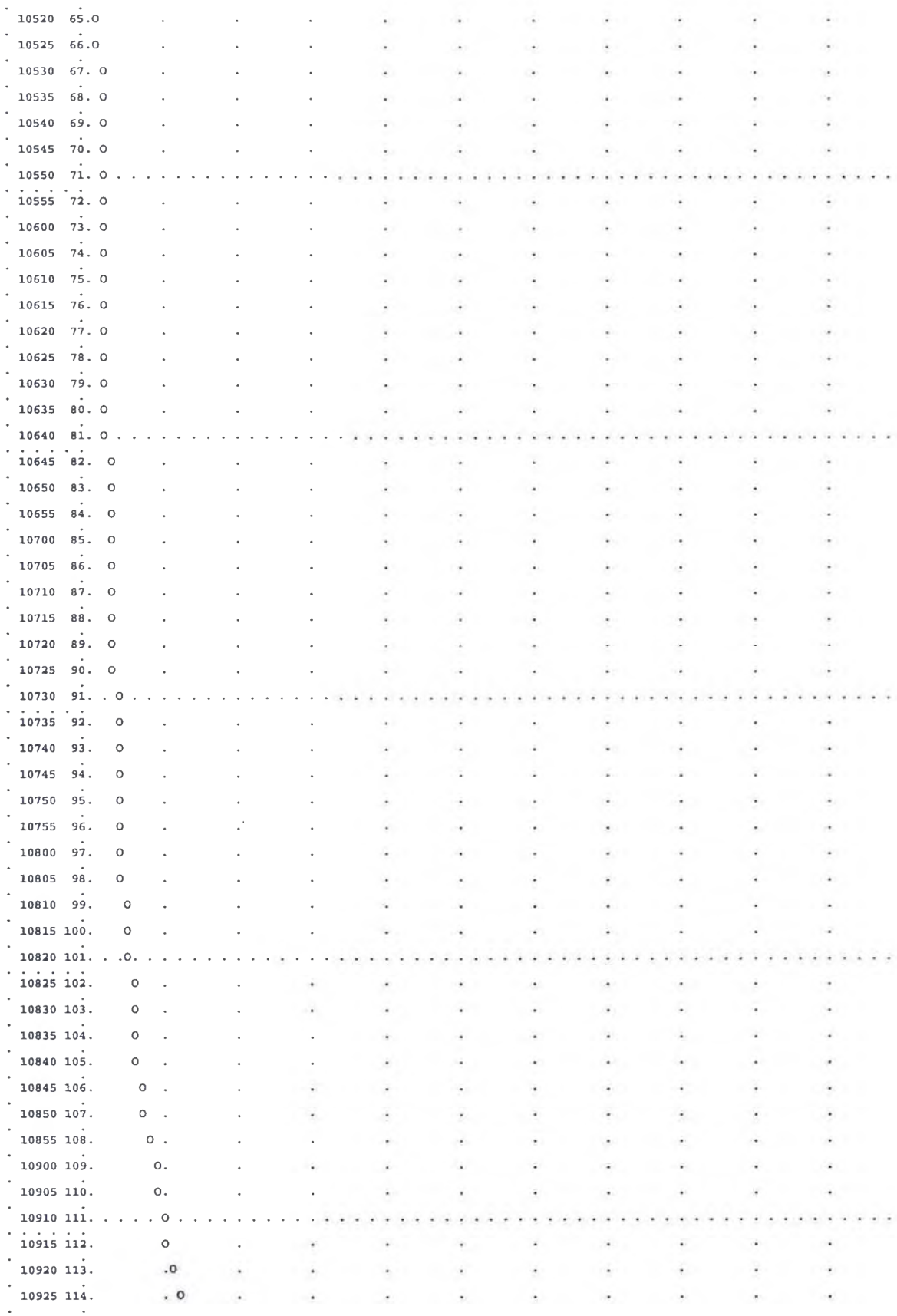
10150 230
10155 240
10200 250
10205 260
10210 270
10215 280
10220 290
10225 300
10230 310
10235 320
10240 330
10245 340
10250 350
10255 360
10300 370
10305 380
10310 390
10315 400
10320 410
10325 420
10330 430
10335 44.0
10340 45.0
10345 46.0
10350 47.0
10355 48.0
10400 49.0
10405 50.0
10410 51.0
10415 52.0
10420 53.0
10425 54.0
10430 55.0
10435 56.0
10440 57.0
10445 58.0
10450 59.0
10455 60.0
10500 61.0
10505 62.0
10510 63.0
10515 64.0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10525 66.O
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10535 68. O
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10545 70. O
10550 71. O
10555 72. O
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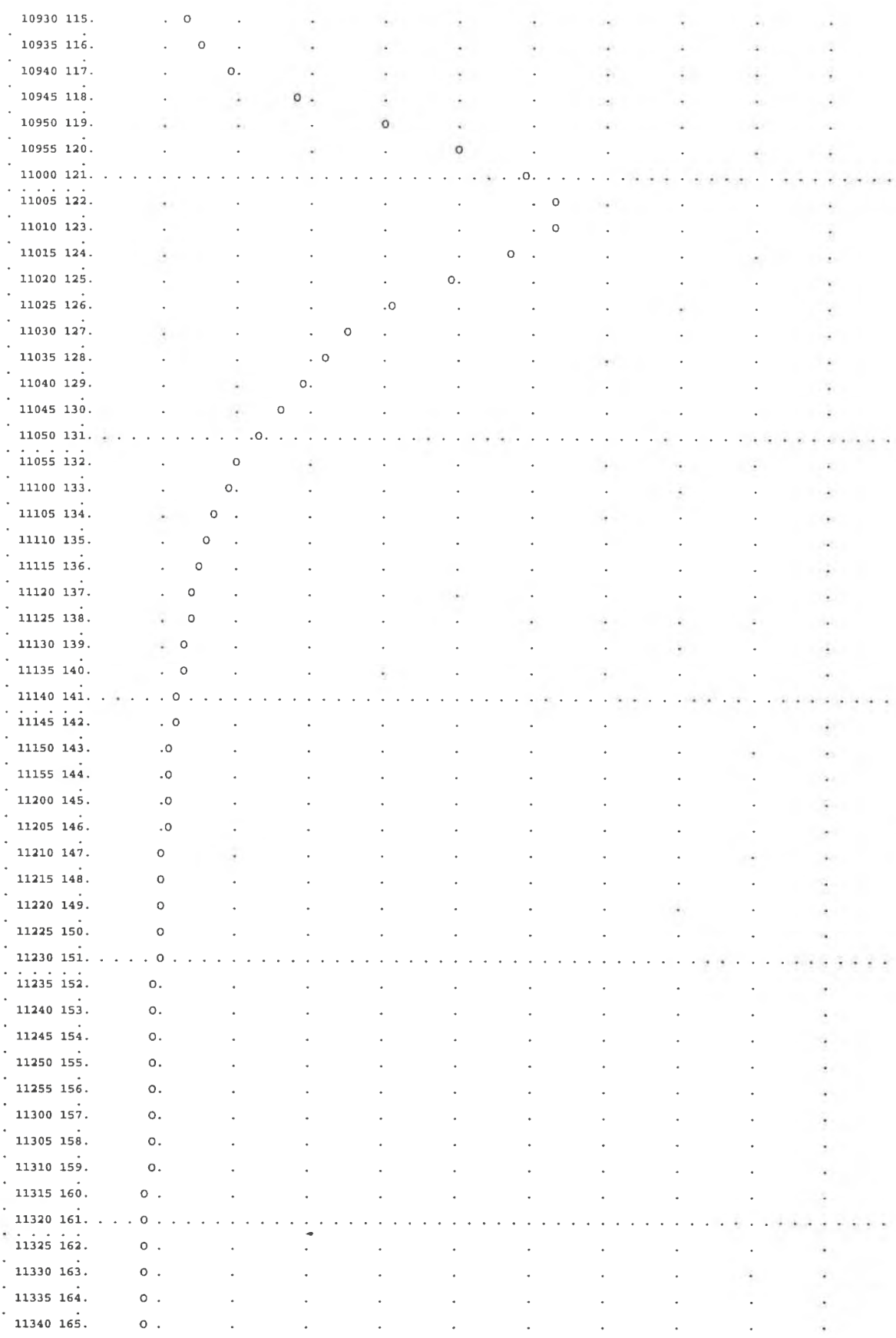
10605 74. O
10610 75. O
10615 76. O
10620 77. O
10625 78. O
10630 79. O
10635 80. O
10640 81. O
10645 82. O
10650 83. O
10655 84. O
10700 85. O
10705 86. O
10710 87. O
10715 88. O
10720 89. O
10725 90. O
10730 91. O
10735 92. O
10740 93. O
10745 94. O
10750 95. O
10755 96. O
10800 97. O
10805 98. O
10810 99. O
10815 100. O
10820 101. O
10825 102. O
10830 103. O
10835 104. O
10840 105. O
10845 106. O
10850 107. O
10855 108. O
10900 109. O
10905 110. O
10910 111. O
10915 112. O
10920 113. O
10925 114. O

POINT H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10935 116.
10940 117.
10945 118.
10950 119.
10955 120.
11000 121.
11005 122.
11010 123.
11015 124.
11020 125.
11025 126.
11030 127.
11035 128.
11040 129.
11045 130.
11050 131.
11055 132.
11100 133.
11105 134.
11110 135.
11115 136.
11120 137.
11125 138.
11130 139.
11135 140.
11140 141.
11145 142.
11150 143.
11155 144.
11200 145.
11205 146.
11210 147.
11215 148.
11220 149.
11225 150.
11230 151.
11235 152.
11240 153.
11245 154.
11250 155.
11255 156.
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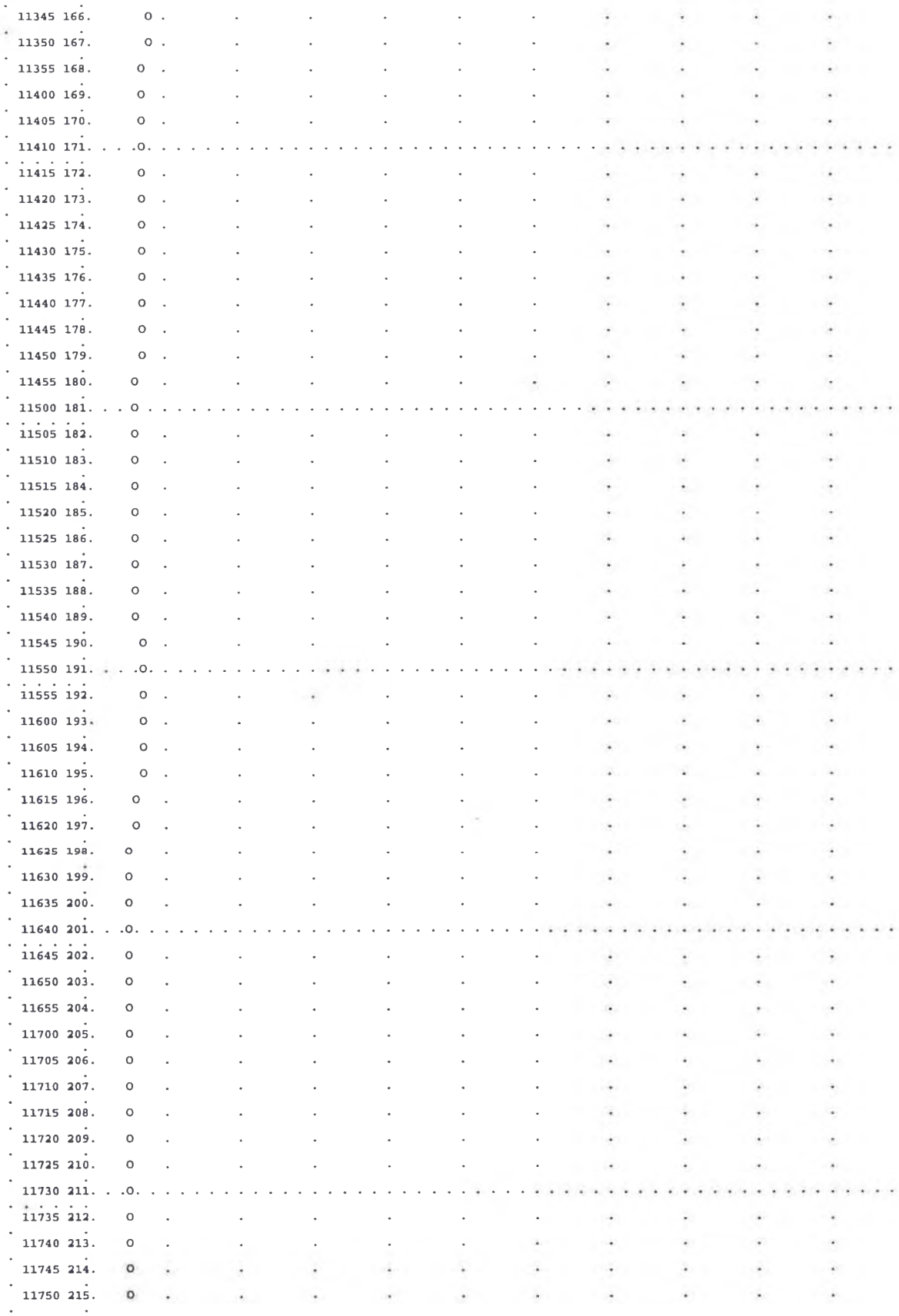
11305 158.
11310 159.
11315 160.
11320 161.
11325 162.
11330 163.
11335 164.
11340 165.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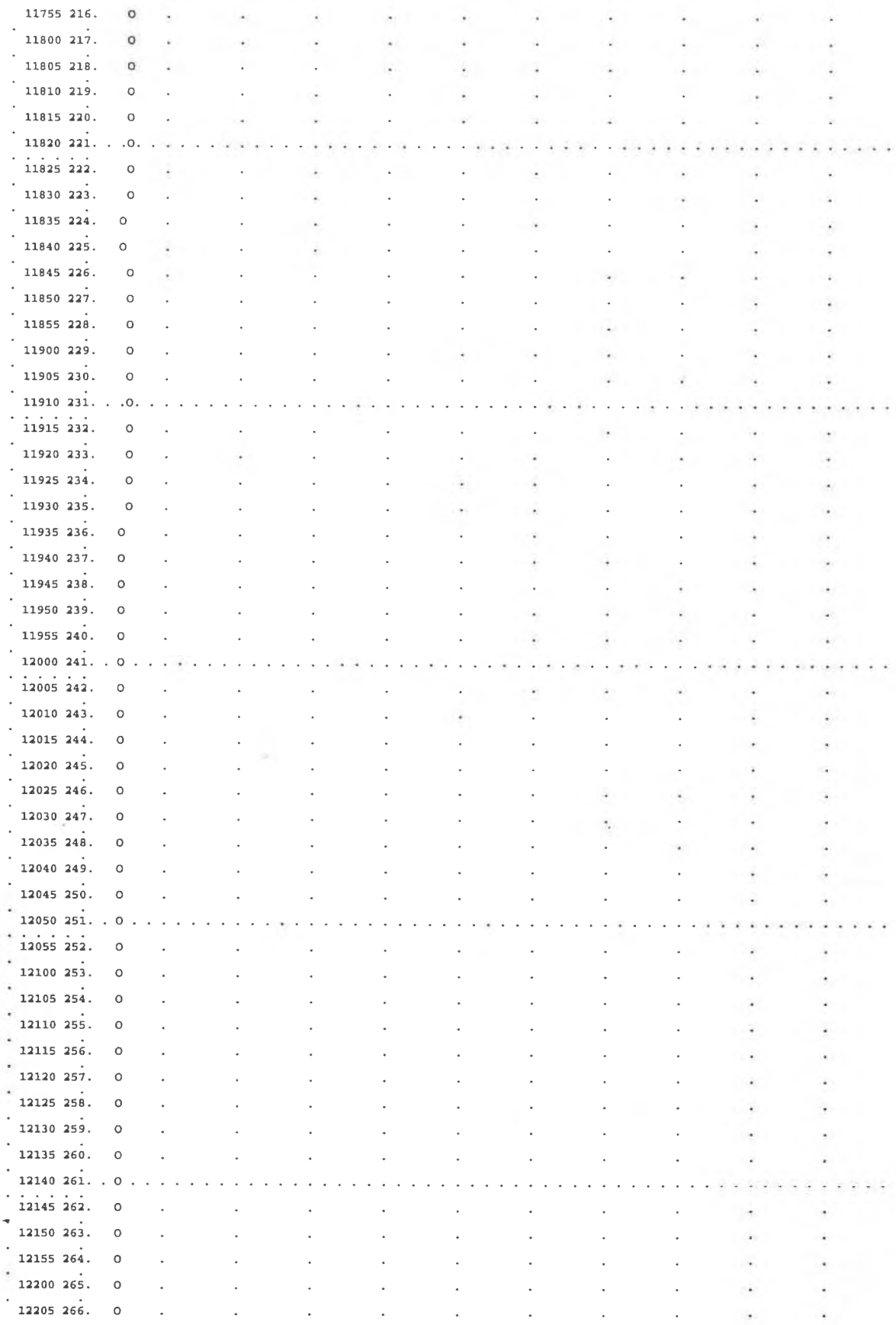
11350 167.
11355 168.
11400 169.
11405 170.
11410 171.
11415 172.
11420 173.
11425 174.
11430 175.
11435 176.
11440 177.
11445 178.
11450 179.
11455 180.
11500 181.
11505 182.
11510 183.
11515 184.
11520 185.
11525 186.
11530 187.
11535 188.
11540 189.
11545 190.
11550 191.
11555 192.
11600 193.
11605 194.
11610 195.
11615 196.
11620 197.
11625 198.
11630 199.
11635 200.
11640 201.
11645 202.
11650 203.
11655 204.
11700 205.
11705 206.
11710 207.
11715 208.
11720 209.
11725 210.
11730 211.
11735 212.
11740 213.
11745 214.
11750 215.


11755 216.
11800 217.
11805 218.
11810 219.
11815 220.
11820 221.
11825 222.
11830 223.
11835 224.
11840 225.
11845 226.
11850 227.
11855 228.
11900 229.
11905 230.
11910 231.
11915 232.
11920 233.
11925 234.
11930 235.
11935 236.
11940 237.
11945 238.
11950 239.
11955 240.
12000 241.
12005 242.
12010 243.
12015 244.
12020 245.
12025 246.
12030 247.
12035 248.
12040 249.
12045 250.
12050 251.
12055 252.
12100 253.
12105 254.
12110 255.
12115 256.
12120 257.
12125 258.
12130 259.
12135 260.
12140 261.
12145 262.
12150 263.
12155 264.
12200 265.
12205 266.

```
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 12215 268.   O
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 12225 270.   O
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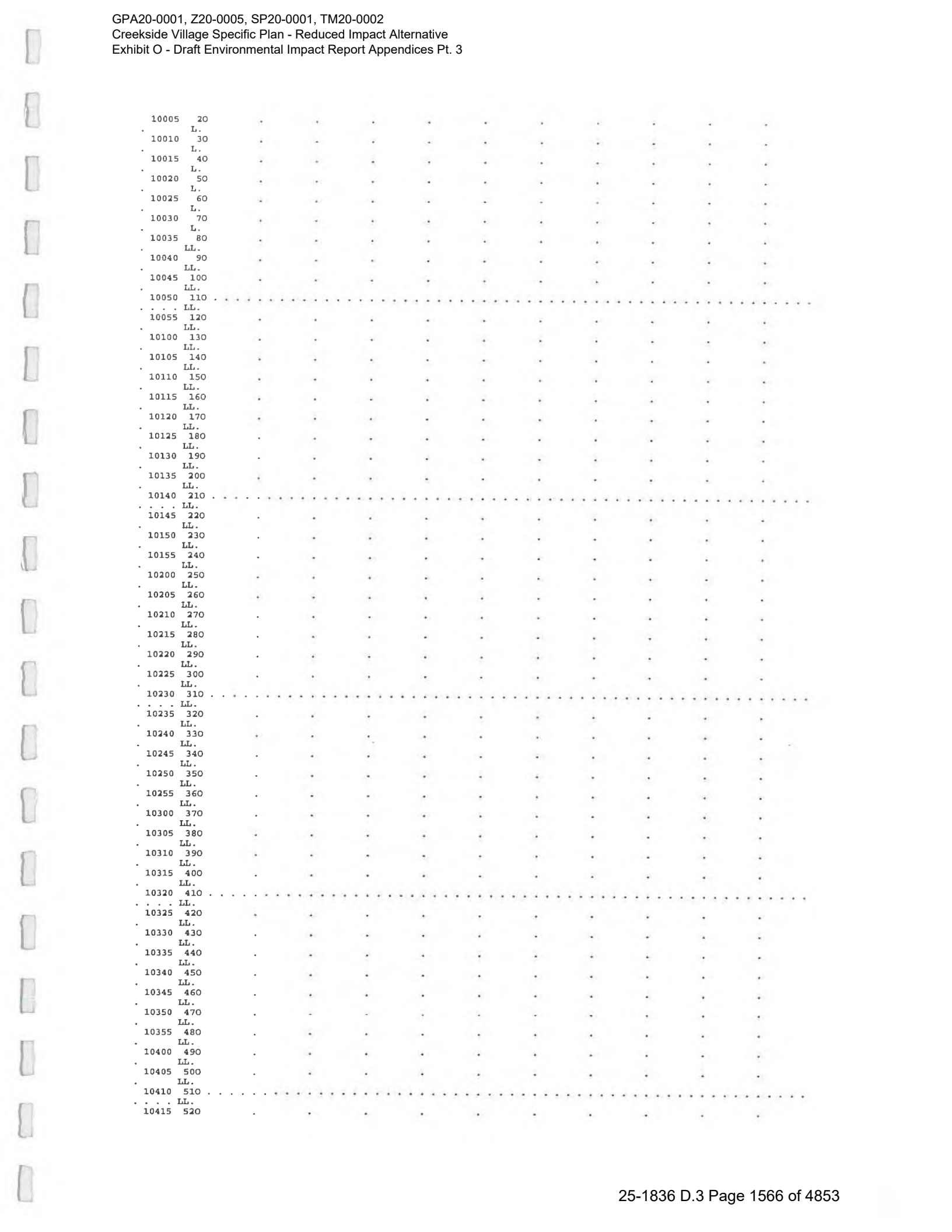
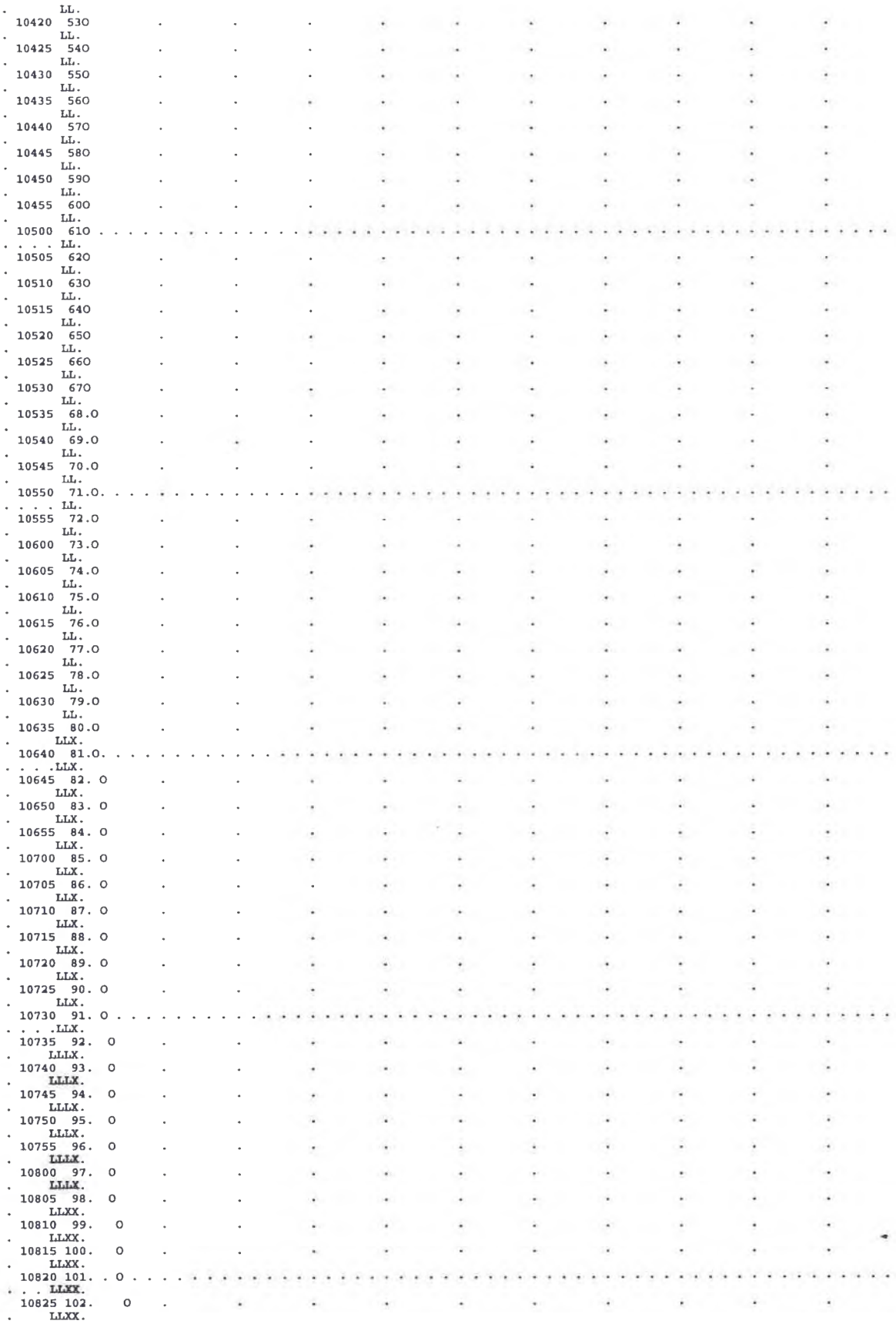
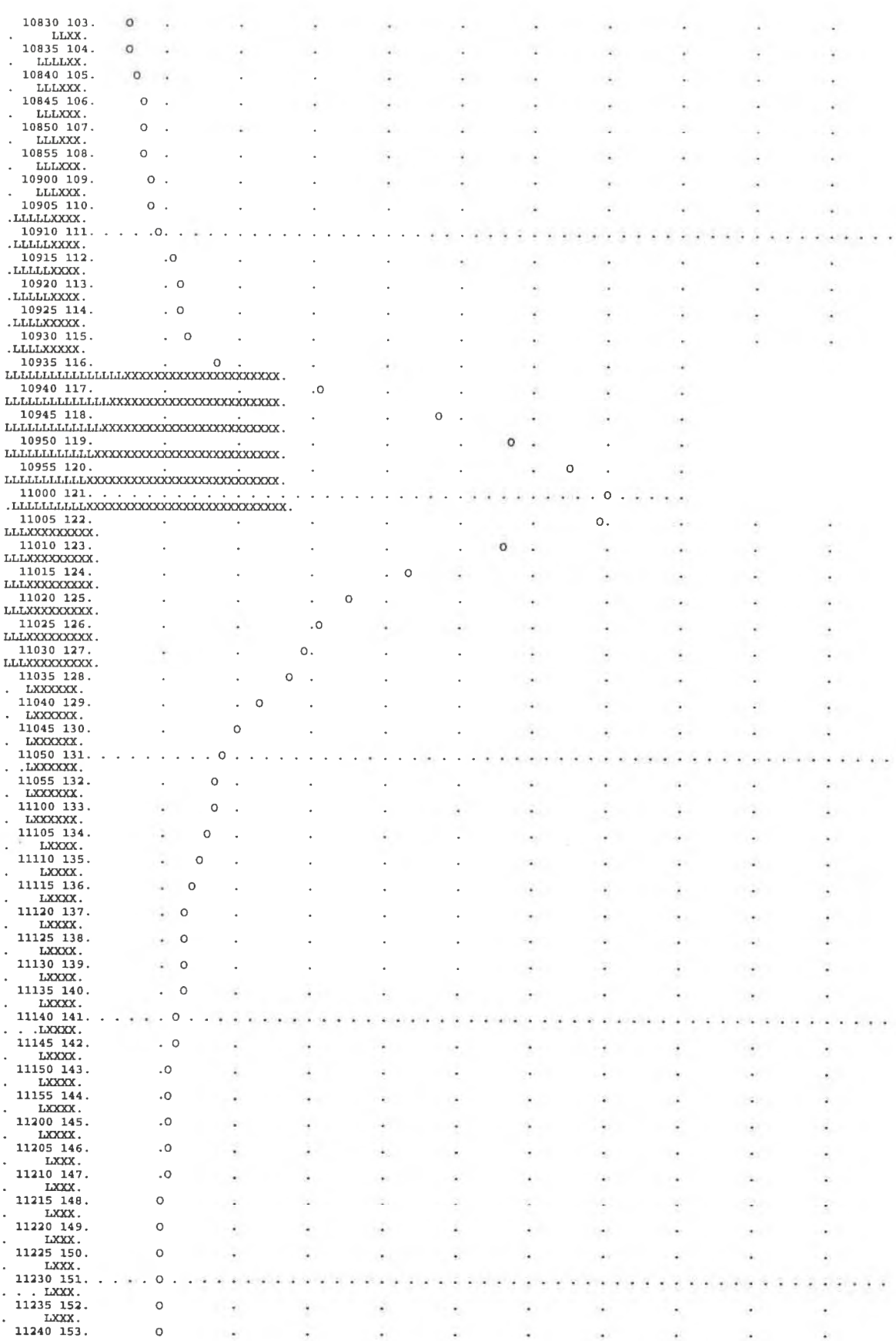
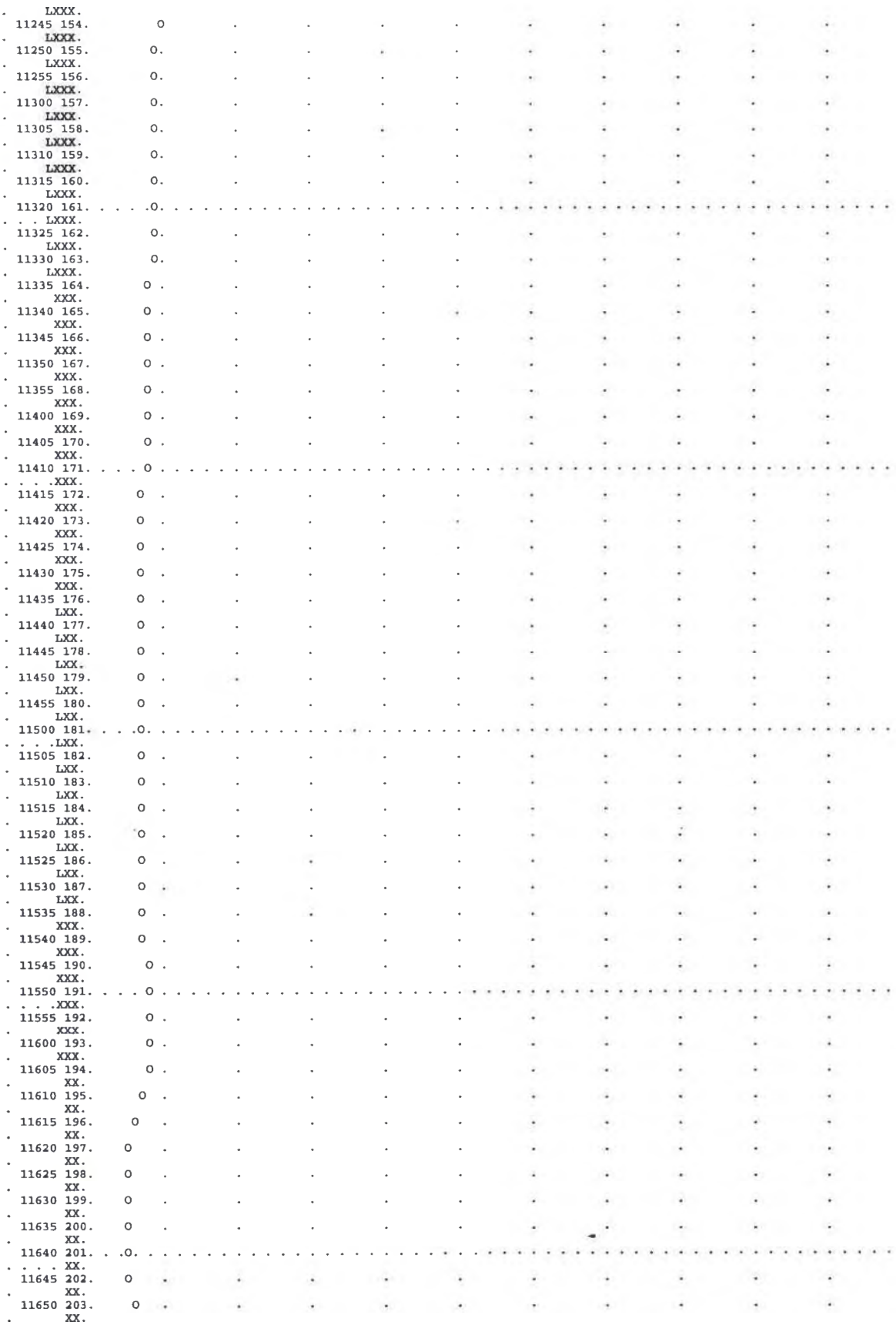
```





POINT D

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LXXX.
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LXXX.
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LXXX.
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11305 158.
LXXX.
11310 159.
LXXX.
11315 160.
LXXX.
11320 161.
LXXX.
11325 162.
LXXX.
11330 163.
LXXX.
11335 164.
XXX.
11340 165.
XXX.
11345 166.
XXX.
11350 167.
XXX.
11355 168.
XXX.
11400 169.
XXX.
11405 170.
XXX.
11410 171.
XXX.
11415 172.
XXX.
11420 173.
XXX.
11425 174.
XXX.
11430 175.
XXX.
11435 176.
LXX.
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LXX.
11445 178.
LXX.
11450 179.
LXX.
11455 180.
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LXX.
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LXX.
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LXX.
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11525 186.
LXX.
11530 187.
LXX.
11535 188.
XXX.
11540 189.
XXX.
11545 190.
XXX.
11550 191.
XXX.
11555 192.
XXX.
11600 193.
XXX.
11605 194.
XX.
11610 195.
XX.
11615 196.
XX.
11620 197.
XX.
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XX.
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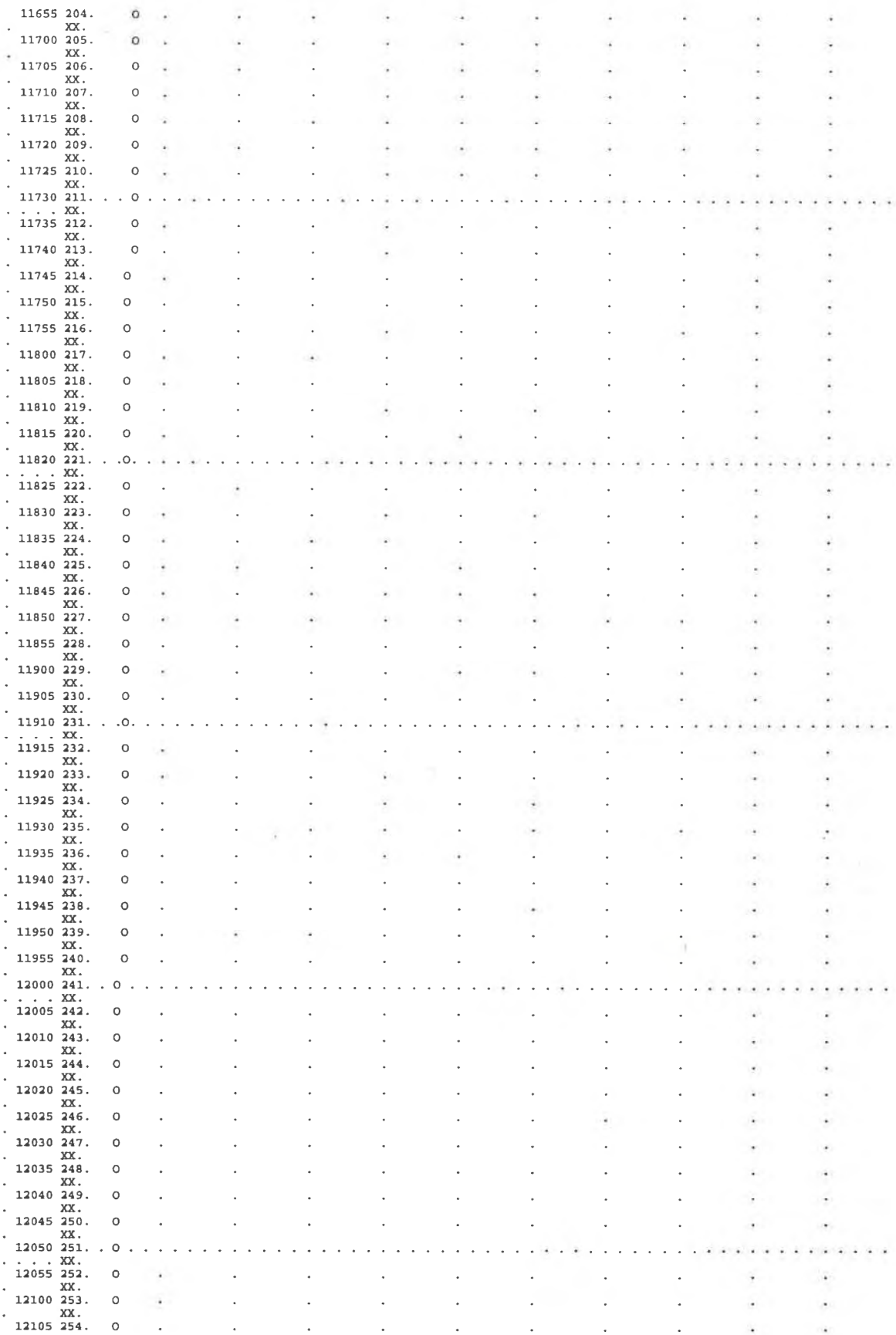
XX.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11725 210.
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11735 212.
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11745 214.
11750 215.
11755 216.
11800 217.
11805 218.
11810 219.
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11820 221.
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11830 223.
11835 224.
11840 225.
11845 226.
11850 227.
11855 228.
11900 229.
11905 230.
11910 231.
11915 232.
11920 233.
11925 234.
11930 235.
11935 236.
11940 237.
11945 238.
11950 239.
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12010 243.
12015 244.
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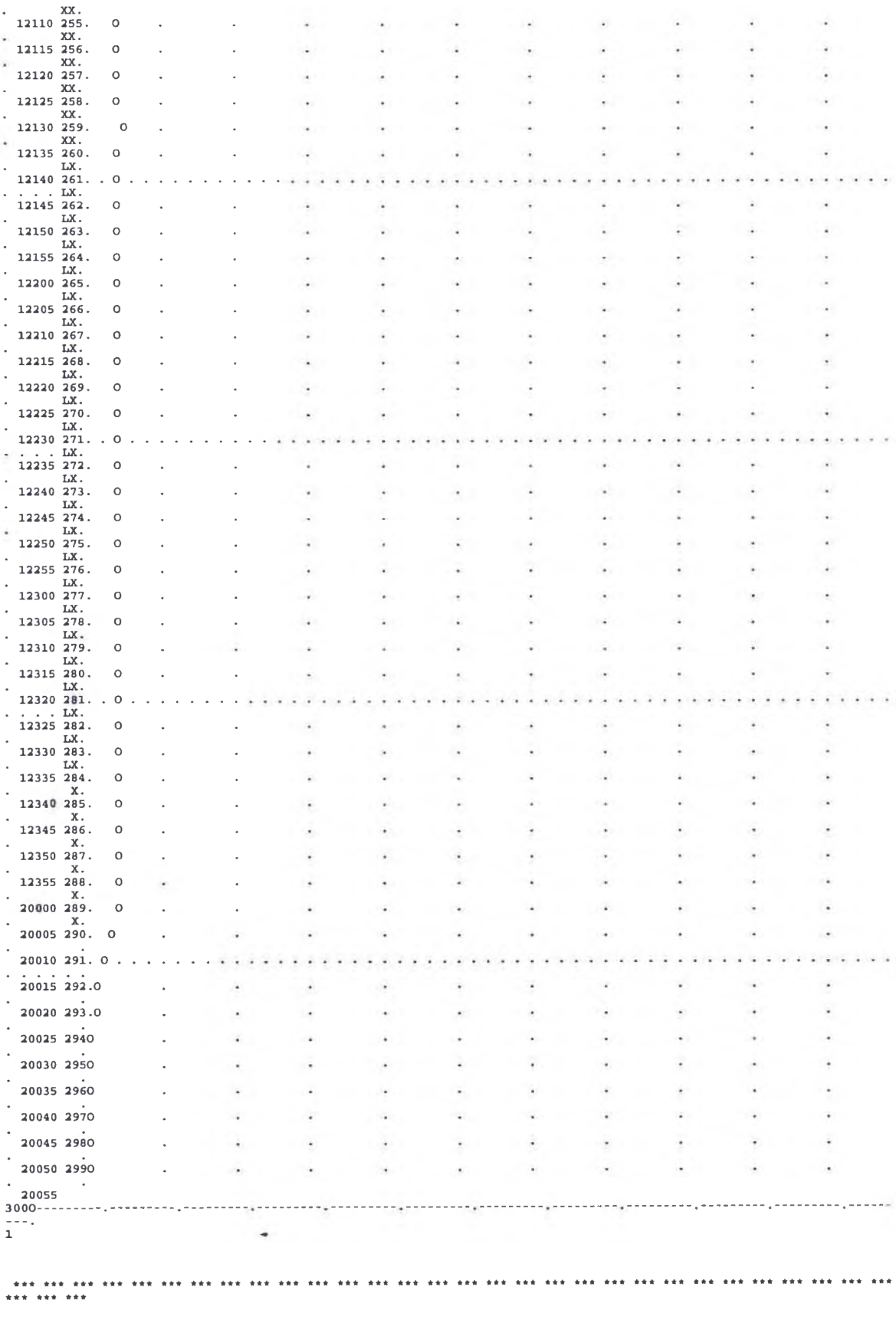

```
                **************
                *            *
 1325 KK        *      PT10  *       FLOW IN CARSON CREEK @ LIMIT OF STUDY - POINT 10
                *            *
                **************

 1326 KO           OUTPUT CONTROL VARIABLES
                        IPRNT          5  PRINT CONTROL
                        IPLOT          2  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
1                                                  STATION      PT10

                     (O) OUTFLOW
          0.     1000.     2000.     3000.     4000.     5000.     6000.     7000.     8000.        0.        0.
0.        0.
 DAHRMN PER
  10000
10---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
-.
  10005   20        .         .         .         .         .         .         .         .         .         .
.         .
  10010   30        .         .         .         .         .         .         .         .         .         .
.         .
  10015   40        .         .         .         .         .         .         .         .         .         .
.         .
  10020   50        .         .         .         .         .         .         .         .         .         .
.         .
  10025   60        .         .         .         .         .         .         .         .         .         .
.         .
  10030   70        .         .         .         .         .         .         .         .         .         .
.         .
  10035   8.O       .         .         .         .         .         .         .         .         .         .
.         .
  10040   9. O      .         .         .         .         .         .         .         .         .         .
.         .
  10045   10.  O    .         .         .         .         .         .         .         .         .         .
.         .
  10050   11. .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . .
  10055   12.   O   .         .         .         .         .         .         .         .         .         .
.         .
  10100   13.    O  .         .         .         .         .         .         .         .         .         .
.         .
  10105   14.     O .         .         .         .         .         .         .         .         .         .
.         .
  10110   15.      O.         .         .         .         .         .         .         .         .         .
.         .
  10115   16.       O.        .         .         .         .         .         .         .         .         .
.         .
  10120   17.       O.        .         .         .         .         .         .         .         .         .
.         .
  10125   18.        O.       .         .         .         .         .         .         .         .         .
.         .
  10130   19.        O.       .         .         .         .         .         .         .         .         .
.         .
  10135   20.        O.       .         .         .         .         .         .         .         .         .
.         .
  10140   21. . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . .
  10145   22.         O       .         .         .         .         .         .         .         .         .
.         .
  10150   23.         O       .         .         .         .         .         .         .         .         .
.         .
  10155   24.         O       .         .         .         .         .         .         .         .         .
.         .
  10200   25.         O       .         .         .         .         .         .         .         .         .
.         .
  10205   26.         O       .         .         .         .         .         .         .         .         .
.         .
  10210   27.         .O      .         .         .         .         .         .         .         .         .
.         .
  10215   28.         .O      .         .         .         .         .         .         .         .         .
.         .
  10220   29.         .O      .         .         .         .         .         .         .         .         .
.         .
  10225   30.         .O      .         .         .         .         .         .         .         .         .
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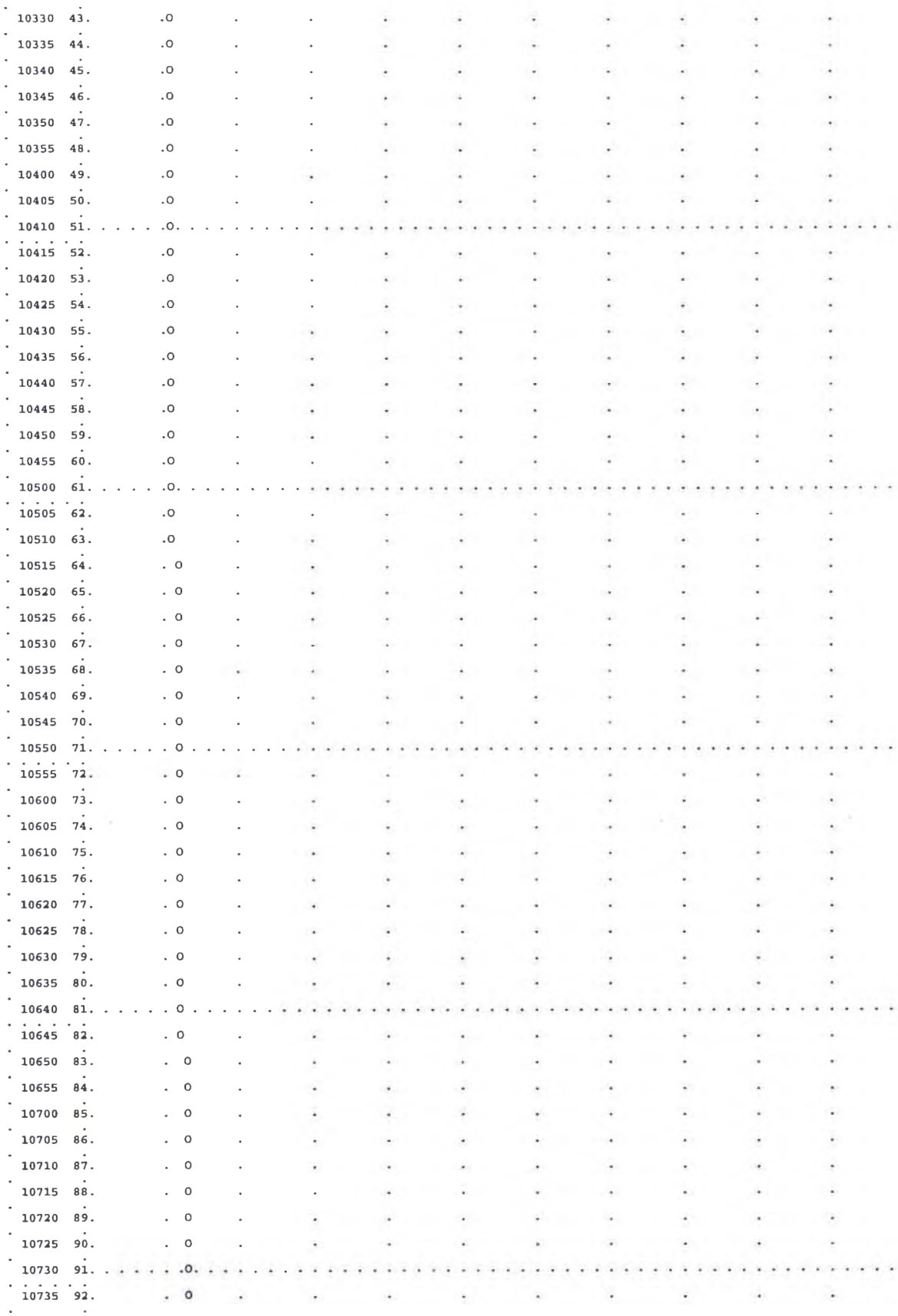
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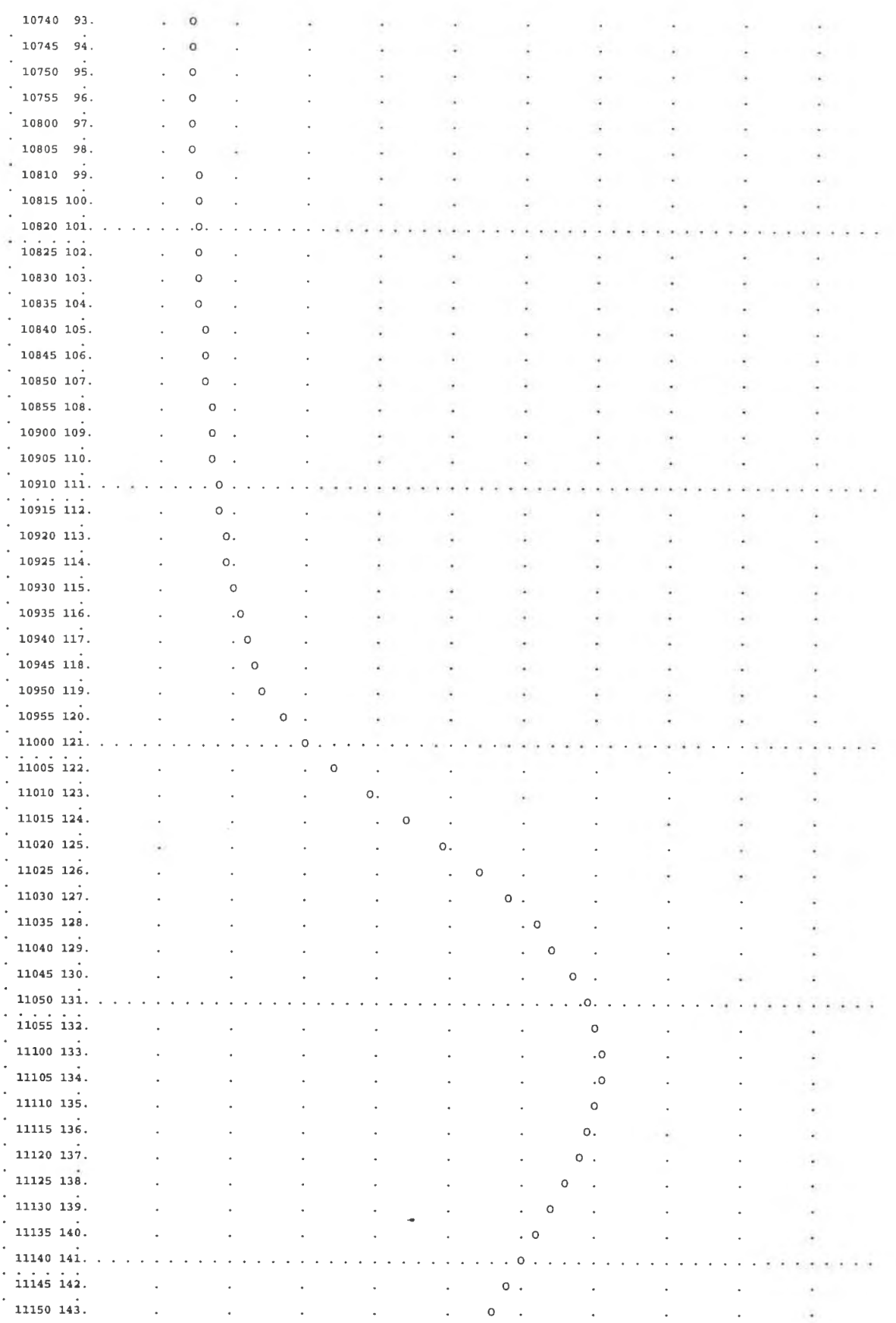

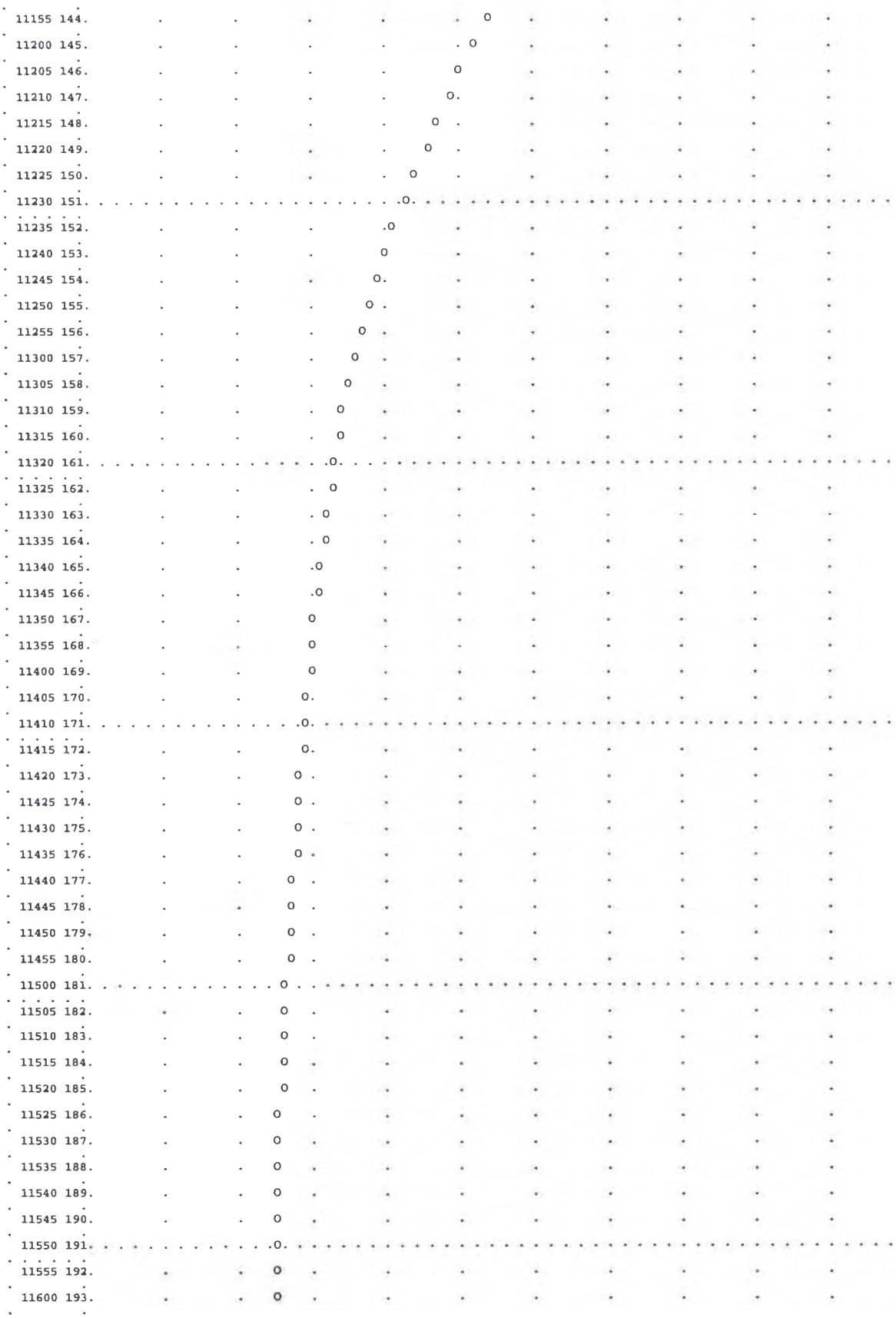
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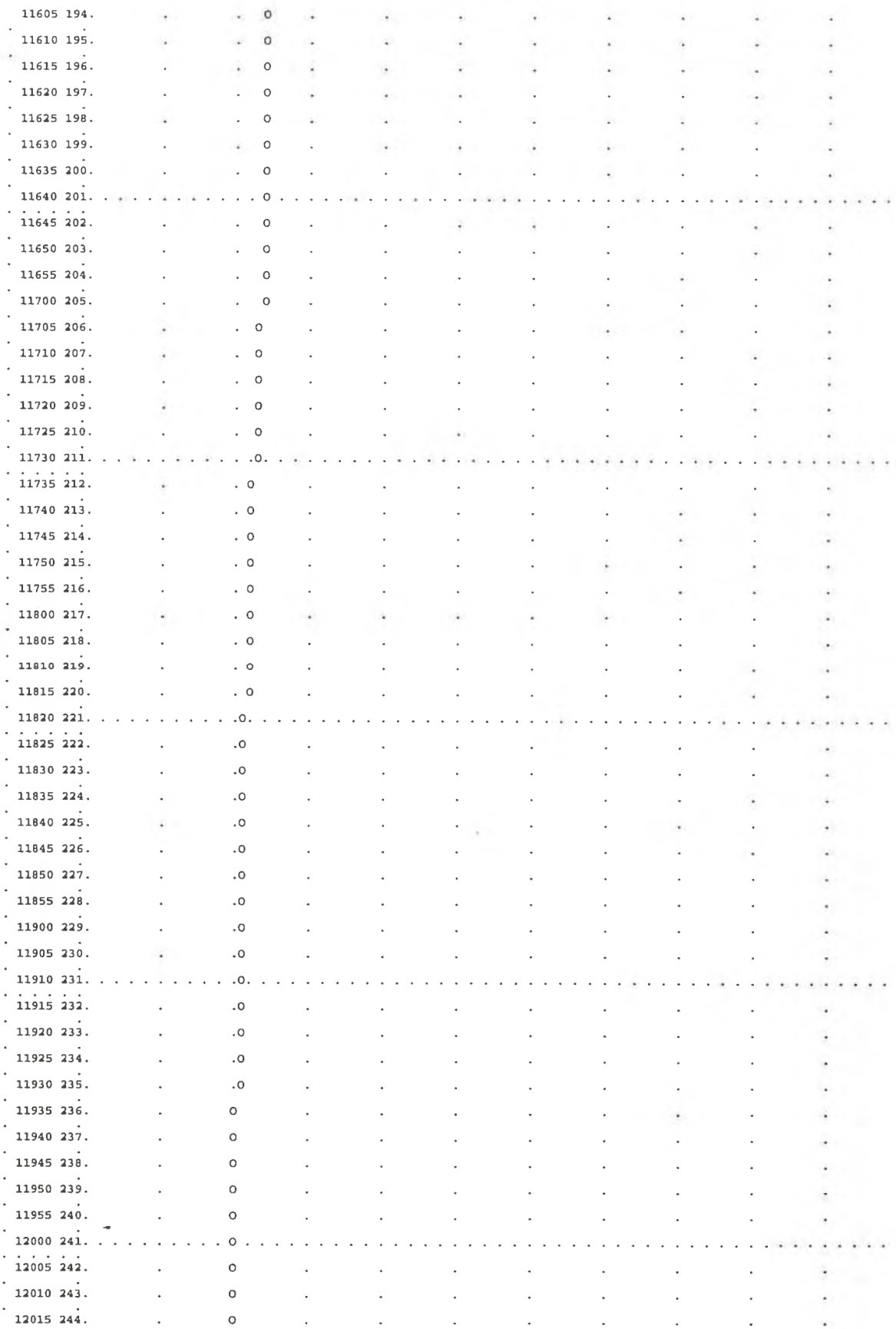
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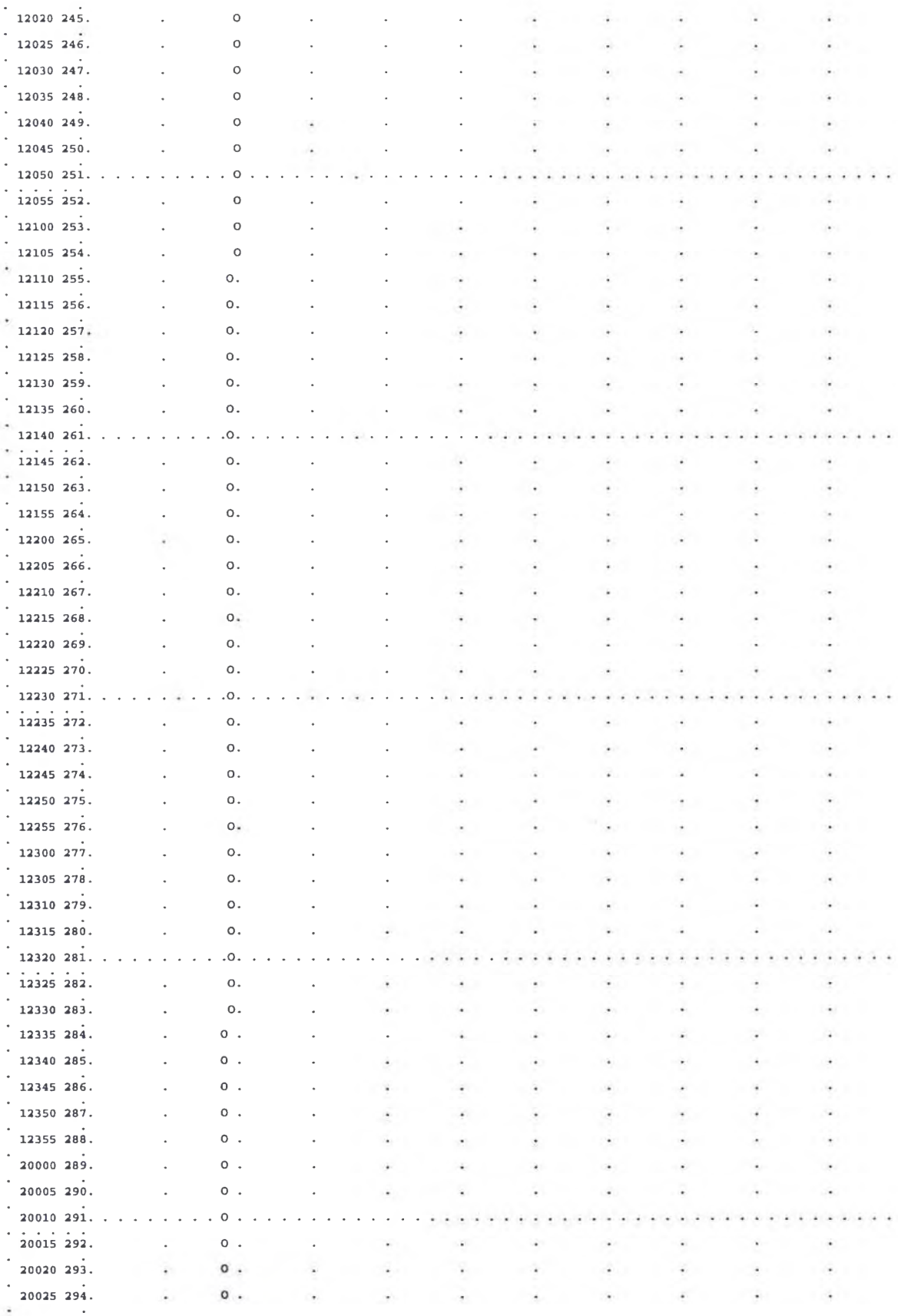
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RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

TIME OF STAGE	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	MAX
	HYDROGRAPH AT	CA1	170.	10.17	46.	18.	17.	.20		
	ROUTED TO	PCA1	92.	10.58	44.	17.	17.	.20		
10.58									103.33	
	ROUTED TO	CC-1	92.	10.67	44.	17.	17.	.20		
	HYDROGRAPH AT	CA2	108.	10.08	27.	11.	10.	.11		
	2 COMBINED AT	CA1+2	145.	10.17	70.	28.	27.	.31		
	ROUTED TO	PCA2	108.	11.08	67.	27.	26.	.31		
11.08									103.29	
	ROUTED TO	CC-2	108.	11.17	67.	27.	26.	.31		
	HYDROGRAPH AT	CA3	73.	10.08	20.	8.	7.	.08		
	HYDROGRAPH AT	CA4	242.	10.25	74.	29.	28.	.31		
	3 COMBINED AT	CA1-4	363.	10.25	158.	63.	61.	.70		
	ROUTED TO	CC-3	364.	10.33	158.	63.	60.	.70		
	HYDROGRAPH AT	CA5	88.	10.08	24.	9.	9.	.10		
	2 COMBINED AT	CA1-5	432.	10.33	181.	72.	69.	.80		
	HYDROGRAPH AT	CB1	100.	10.00	24.	9.	9.	.10		
	ROUTED TO	PCB1	86.	10.17	24.	9.	9.	.10		
10.17									69.27	
	ROUTED TO	CC-3A	86.	10.25	24.	9.	9.	.10		
	HYDROGRAPH AT	CB2	77.	10.17	21.	8.	8.	.09		
	2 COMBINED AT	CB1+2	159.	10.25	45.	18.	17.	.20		
	2 COMBINED AT	CA+CB	590.	10.25	226.	90.	86.	1.00		
	ROUTED TO	CC-4	587.	10.33	226.	89.	86.	1.00		
	HYDROGRAPH AT	CC	260.	10.42	95.	37.	36.	.44		
	HYDROGRAPH AT	CD1	67.	10.08	16.	6.	6.	.07		
	ROUTED TO	PCD1	38.	10.33	15.	6.	5.	.07		
10.33									102.01	

+	ROUTED TO	CC-4A	39.	10.50	15.	5.	5.	.07	
+	HYDROGRAPH AT	CD2	118.	10.08	30.	12.	11.	.13	
+	2 COMBINED AT	CD1+2	128.	10.17	43.	17.	17.	.20	
+	ROUTED TO	PCD2	124.	10.25	43.	17.	16.	.20	101.22
+									
10.25									
+	ROUTED TO	CC-4B	123.	10.33	43.	17.	16.	.20	
+	HYDROGRAPH AT	CD3	122.	10.00	29.	11.	11.	.13	
+	2 COMBINED AT	CD1-3	225.	10.08	72.	29.	27.	.32	
+	ROUTED TO	PCD3	218.	10.17	72.	28.	27.	.32	101.80
+									
10.17									
+	ROUTED TO	CC-4C	219.	10.25	72.	28.	27.	.32	
+	HYDROGRAPH AT	CD4	73.	10.08	18.	7.	7.	.08	
+	2 COMBINED AT	CD1-4	276.	10.17	90.	35.	34.	.40	
+	ROUTED TO	PCD4	251.	10.33	90.	35.	34.	.40	953.15
+									
10.33									
+	3 COMBINED AT	CA-CD	1089.	10.33	410.	162.	156.	1.83	
+	ROUTED TO	CC-5	1079.	10.42	410.	162.	156.	1.83	
+	HYDROGRAPH AT	CE	62.	10.08	15.	6.	6.	.06	
+	HYDROGRAPH AT	CW	53.	10.00	12.	5.	4.	.05	
+	3 COMBINED AT	+CE,CW	1130.	10.33	437.	172.	166.	1.95	
+	ROUTED TO	CC-6	1128.	10.42	436.	172.	166.	1.95	
+	HYDROGRAPH AT	CN1	520.	10.50	196.	77.	74.	.92	
+	HYDROGRAPH AT	CN2	80.	10.17	22.	9.	8.	.10	
+	2 COMBINED AT	CN1+2	569.	10.50	218.	85.	82.	1.02	
+	HYDROGRAPH AT	CX	22.	10.00	5.	2.	2.	.02	
+	3 COMBINED AT	+CN,CX	1704.	10.42	659.	259.	250.	2.99	
+	ROUTED TO	CC-7	1698.	10.42	659.	259.	249.	2.99	
+	HYDROGRAPH AT	CF	68.	10.08	17.	7.	6.	.07	
+	HYDROGRAPH AT	CO	153.	10.25	47.	18.	17.	.20	
+	ROUTED TO	PCO	103.	10.67	47.	18.	17.	.20	110.79
+									
10.67									
+	3 COMBINED AT	+CF,CO	1832.	10.42	722.	284.	273.	3.25	
+	ROUTED TO	CC-8	1834.	10.50	722.	283.	273.	3.25	
+	HYDROGRAPH AT	CG	34.	10.08	9.	3.	3.	.04	
+	2 COMBINED AT	+CG	1851.	10.50	730.	286.	276.	3.29	

+	ROUTED TO	CC-9	1851.	10.58	730.	285.	275.	3.29	
+	HYDROGRAPH AT	CH3	89.	10.00	22.	8.	8.	.09	
+	HYDROGRAPH AT	CH4	12.	10.00	3.	1.	1.	.01	
+	2 COMBINED AT	CH3+4	102.	10.00	24.	10.	9.	.10	
+	ROUTED TO	TR1-1	102.	10.08	24.	10.	9.	.10	
+	HYDROGRAPH AT	CH1	76.	10.08	19.	7.	7.	.09	
+	ROUTED TO	TR1-1A	74.	10.17	19.	7.	7.	.09	
+	HYDROGRAPH AT	CH2	86.	10.08	21.	8.	8.	.09	
+	3 COMBINED AT	CH1-4	260.	10.08	65.	25.	24.	.28	
+	ROUTED TO	TR1-2	256.	10.08	65.	25.	24.	.28	
+	HYDROGRAPH AT	CH7	179.	10.25	54.	21.	20.	.22	
+	2 COMBINED AT	+CH7	430.	10.17	119.	46.	45.	.50	
+	ROUTED TO	WMP1	403.	10.25	118.	46.	44.	.50	
+ 10.25									773.39
+	ROUTED TO	TR1-3	402.	10.25	118.	46.	44.	.50	
+	HYDROGRAPH AT	CH5	89.	10.00	21.	8.	8.	.09	
+	HYDROGRAPH AT	CH8	28.	10.00	6.	2.	2.	.03	
+	3 COMBINED AT	+CH8	469.	10.25	146.	56.	54.	.62	
+	ROUTED TO	WMP2	459.	10.33	145.	56.	54.	.62	
+ 10.33									764.52
+	ROUTED TO	TR1-4	461.	10.33	145.	56.	54.	.62	
+	HYDROGRAPH AT	CH6	77.	10.00	18.	7.	7.	.07	
+	2 COMBINED AT	CH1-8	497.	10.33	163.	63.	61.	.69	
+	ROUTED TO	TR1-5	498.	10.33	163.	63.	61.	.69	
+	HYDROGRAPH AT	CH9A	73.	10.08	18.	7.	7.	.08	
+	2 COMBINED AT	+CH9A	545.	10.33	181.	70.	67.	.77	
+	ROUTED TO	WMP4	546.	10.33	181.	70.	67.	.77	
+ 10.33									735.40
+	ROUTED TO	TR1-6	546.	10.33	181.	70.	67.	.77	
+	HYDROGRAPH AT	CH9B	13.	10.00	3.	1.	1.	.01	
+	2 COMBINED AT	+CH9B	551.	10.33	184.	71.	68.	.78	
+	ROUTED TO	WMP5	550.	10.33	184.	71.	68.	.78	
+ 10.33									728.40
+	ROUTED TO	TR1-7	548.	10.33	184.	71.	68.	.78	
+	HYDROGRAPH AT	CH10	17.	10.00	4.	1.	1.	.02	

+	2 COMBINED AT	CH1-10	554.	10.33	188.	72.	70.	.80	
+	ROUTED TO	WMP6	556.	10.42	188.	72.	70.	.80	722.41
+ 10.42									
+	ROUTED TO	TR1-8	556.	10.42	188.	72.	70.	.80	
+	HYDROGRAPH AT	CH11	8.	10.00	2.	1.	1.	.01	
+	2 COMBINED AT	CH1-11	559.	10.42	189.	73.	70.	.81	
+	ROUTED TO	WMP7	559.	10.42	189.	73.	70.	.81	716.42
+ 10.42									
+	ROUTED TO	TR1-9	559.	10.42	189.	73.	70.	.81	
+	HYDROGRAPH AT	CH12	5.	10.00	1.	0.	0.	.01	
+	2 COMBINED AT	CH1-12	560.	10.42	191.	73.	71.	.81	
+	HYDROGRAPH AT	CI1	96.	10.08	24.	9.	9.	.10	
+	ROUTED TO	TR1-9A	94.	10.08	24.	9.	9.	.10	
+	HYDROGRAPH AT	CI2	32.	10.00	7.	3.	3.	.03	
+	ROUTED TO	TR1-9B	31.	10.08	7.	3.	3.	.03	
+	HYDROGRAPH AT	CI3	55.	10.17	15.	6.	6.	.07	
+	3 COMBINED AT	CI1-3	180.	10.08	46.	18.	17.	.20	
+	2 COMBINED AT	CI+CH	665.	10.33	236.	91.	88.	1.01	
+	ROUTED TO	TR1-10	665.	10.42	236.	91.	88.	1.01	
+	HYDROGRAPH AT	CJ	58.	10.08	16.	6.	6.	.07	
+	HYDROGRAPH AT	CK	33.	10.00	8.	3.	3.	.03	
+	3 COMBINED AT	CH-CK	717.	10.42	259.	100.	96.	1.11	
+	ROUTED TO	TR1-11	716.	10.50	259.	100.	96.	1.11	
+	HYDROGRAPH AT	CP	63.	10.33	21.	8.	8.	.09	
+	2 COMBINED AT	TRIB1	778.	10.42	280.	108.	104.	1.21	
+	2 COMBINED AT	+TRIB1	2607.	10.58	1010.	394.	379.	4.50	
+	HYDROGRAPH AT	CS1	268.	10.75	119.	47.	45.	.58	
+	HYDROGRAPH AT	CS2	344.	10.33	115.	45.	43.	.54	
+	ROUTED TO	CC-9A	344.	10.50	115.	45.	43.	.54	
+	HYDROGRAPH AT	CS3	237.	10.42	87.	34.	33.	.43	
+	2 COMBINED AT	CS1+2	579.	10.50	201.	78.	76.	.97	
+	2 COMBINED AT	CS1-3	820.	10.50	320.	125.	120.	1.55	
+	2 COMBINED AT	+SOWL	3426.	10.58	1330.	518.	499.	6.05	
+	ROUTED TO	CC-10	3422.	10.58	1330.	518.	499.	6.05	
	HYDROGRAPH AT								

+		CQ	36.	10.00	9.	3.	3.	.03	
+	2 COMBINED AT	+CQ	3435.	10.58	1338.	522.	502.	6.08	
+	HYDROGRAPH AT	CT1	128.	10.17	35.	14.	13.	.15	
+	2 COMBINED AT	+CT1	3507.	10.58	1373.	535.	516.	6.23	
+	ROUTED TO	CC-11	3487.	10.58	1373.	534.	514.	6.23	
+	HYDROGRAPH AT	CM6	100.	10.92	47.	18.	18.	.22	
+	HYDROGRAPH AT	CM2	32.	10.08	8.	3.	3.	.04	
+	2 COMBINED AT	CM2+6	111.	10.83	55.	21.	21.	.26	
+	ROUTED TO	TR2-1	111.	11.00	55.	21.	21.	.26	
+	HYDROGRAPH AT	CM1	438.	10.33	143.	56.	54.	.56	
+	HYDROGRAPH AT	CM3	97.	10.08	25.	10.	9.	.12	
+	HYDROGRAPH AT	CM5	39.	10.25	12.	5.	4.	.05	
+	4 COMBINED AT	CM	625.	10.33	234.	92.	88.	.99	
+	ROUTED TO	TR2-2	625.	10.33	233.	92.	88.	.99	
+	HYDROGRAPH AT	CM4	134.	10.08	35.	14.	13.	.15	
+	2 COMBINED AT	CM1-6	725.	10.33	269.	105.	101.	1.14	
+	HYDROGRAPH AT	CM7M	89.	10.00	21.	8.	8.	.08	
+	2 COMBINED AT	CM1-7	780.	10.25	290.	114.	110.	1.22	
+	ROUTED TO	REACH4	776.	10.33	290.	114.	110.	1.22	
+	HYDROGRAPH AT	CM83	68.	10.00	16.	7.	6.	.05	
+	2 COMBINED AT	SUM3	820.	10.25	305.	120.	116.	1.27	
+	ROUTED TO	REACH3	786.	10.42	304.	119.	115.	1.27	
+	HYDROGRAPH AT	CM82	54.	10.00	12.	5.	5.	.04	
+	2 COMBINED AT	SUM2	804.	10.42	314.	124.	120.	1.31	
+	ROUTED TO	REACH2	786.	10.50	309.	122.	118.	1.31	
+	HYDROGRAPH AT	CM81	51.	10.00	12.	5.	5.	.04	
+	2 COMBINED AT	SUM1	806.	10.50	320.	127.	123.	1.35	
+	ROUTED TO	WEIRDT	805.	10.50	320.	127.	122.	1.35	
+									589.14
10.50									
+	HYDROGRAPH AT	CM8R	28.	10.00	7.	3.	3.	.02	
+	2 COMBINED AT	STHCRS	816.	10.50	326.	130.	125.	1.37	
+	ROUTED TO	SSDET1	1100.	.08	1100.	1100.	1098.	1.37	
+									577.20
.00									
+	HYDROGRAPH AT	CM8	53.	10.00	12.	5.	5.	.04	
+	2 COMBINED AT	CM1-8	1153.	10.00	1112.	1105.	1103.	1.42	

+	ROUTED TO	TR2-4	1152.	10.17	1112.	1105.	1095.	1.42
+	HYDROGRAPH AT	CU	72.	10.33	23.	9.	9.	.09
+	HYDROGRAPH AT	CT2	197.	10.08	52.	20.	20.	.21
+	4 COMBINED AT	WWTP	4769.	10.58	2557.	1668.	1638.	7.95
+	HYDROGRAPH AT	A	113.	10.17	33.	13.	12.	.14
+	ROUTED TO	RTA	113.	10.33	33.	13.	12.	.14
+	HYDROGRAPH AT	XW	95.	10.08	25.	10.	9.	.11
+	2 COMBINED AT	'CV1'	196.	10.17	58.	23.	22.	.25
+	2 COMBINED AT	+'CV1'	4901.	10.58	2614.	1691.	1660.	8.19
+	ROUTED TO	ROUTE	4873.	10.67	2614.	1690.	1655.	8.19
+	HYDROGRAPH AT	XY	104.	10.08	27.	10.	10.	.13
+	2 COMBINED AT	POINT1	4917.	10.67	2640.	1701.	1665.	8.32
+	ROUTED TO	CC-13	4896.	10.67	2640.	1699.	1659.	8.32
+	HYDROGRAPH AT	CV3	60.	10.17	16.	6.	6.	.06
+	HYDROGRAPH AT	B	52.	10.17	14.	6.	5.	.06
+	ROUTED TO	ROUTE	51.	10.25	14.	6.	5.	.06
+	HYDROGRAPH AT	C	6.	10.00	1.	1.	1.	.00
+	HYDROGRAPH AT	XV	43.	10.08	11.	4.	4.	.05
+	HYDROGRAPH AT	D	3.	10.00	1.	0.	0.	.00
+	4 COMBINED AT	POINTA	95.	10.17	27.	11.	10.	.11
+	ROUTED TO	RT CV	95.	10.25	27.	11.	10.	.11
+	3 COMBINED AT	PT1a	4987.	10.67	2682.	1716.	1675.	8.49
+	HYDROGRAPH AT	CR1	253.	10.25	75.	29.	28.	.30
+	ROUTED TO	CR-1	253.	10.33	75.	29.	28.	.30
+	HYDROGRAPH AT	CR2	232.	10.08	62.	25.	24.	.20
+	2 COMBINED AT	CR1+2	466.	10.25	137.	55.	53.	.51
+	ROUTED TO	CR-2	468.	10.33	137.	54.	52.	.51
+	HYDROGRAPH AT	CR3'	141.	10.75	61.	24.	23.	.22
+	2 COMBINED AT	CR1-3'	577.	10.33	198.	78.	75.	.73
+	2 COMBINED AT	+CR'	5467.	10.67	2878.	1794.	1751.	9.22
+	ROUTED TO	CC-14	5407.	10.75	2877.	1793.	1744.	9.22
+	HYDROGRAPH AT	XB	38.	10.17	11.	4.	4.	.05
+	HYDROGRAPH AT	K	3.	10.00	1.	0.	0.	.00
	HYDROGRAPH AT							

+		L	32.	10.00	7.	3.	3.	.03
+	3 COMBINED AT	SUM1	70.	10.08	19.	8.	7.	.09
+	ROUTED TO	RTE	69.	10.17	19.	8.	7.	.09
+	HYDROGRAPH AT	J	9.	10.00	2.	1.	1.	.01
+	HYDROGRAPH AT	H	1.	10.00	0.	0.	0.	.00
+	3 COMBINED AT	SUM2	77.	10.17	22.	9.	8.	.09
+	ROUTED TO	RTE	76.	10.25	22.	9.	8.	.09
+	HYDROGRAPH AT	XA	152.	10.17	42.	17.	16.	.19
+	HYDROGRAPH AT	G	1.	10.00	0.	0.	0.	.00
+	3 COMBINED AT	SUM3	228.	10.17	65.	25.	24.	.28
+	ROUTED TO	RTE	223.	10.25	65.	25.	24.	.28
+	HYDROGRAPH AT	N	26.	10.00	6.	2.	2.	.03
+	HYDROGRAPH AT	E	24.	10.00	5.	2.	2.	.02
+	HYDROGRAPH AT	P	3.	10.00	1.	0.	0.	.00
+	HYDROGRAPH AT	R	5.	10.00	1.	0.	0.	.00
+	HYDROGRAPH AT	XJ	34.	10.25	11.	4.	4.	.05
+	6 COMBINED AT	SUM4	293.	10.17	89.	35.	33.	.38
+	ROUTED TO	WMP3	283.	10.25	89.	35.	33.	.38
+								545.56
10.25								
+	ROUTED TO	RCX2	282.	10.33	89.	35.	33.	.38
+	HYDROGRAPH AT	F	37.	10.00	8.	3.	3.	.03
+	HYDROGRAPH AT	XT	4.	10.00	1.	0.	0.	.00
+	HYDROGRAPH AT	XU	12.	10.33	4.	1.	1.	.01
+	4 COMBINED AT	POINT2	311.	10.33	102.	40.	38.	.43
+	ROUTED TO	CC14B	311.	10.42	102.	40.	38.	.43
+	HYDROGRAPH AT	CX3N	115.	10.17	33.	13.	13.	.11
+	HYDROGRAPH AT	POINTM	53.	10.08	14.	6.	5.	.05
+	3 COMBINED AT	SUMCX	456.	10.33	148.	59.	56.	.60
+	HYDROGRAPH AT	CX4	205.	10.42	70.	28.	27.	.24
+	2 COMBINED AT	SUMCX	659.	10.33	219.	87.	83.	.84
+	2 COMBINED AT	POINT3	5894.	10.67	3091.	1880.	1827.	10.06
+	ROUTED TO	CHSTOR	5889.	10.75	3091.	1878.	1821.	10.06
+	HYDROGRAPH AT	CZ1'	33.	10.42	12.	5.	5.	.05
+	2 COMBINED AT	+CZ1'	5918.	10.75	3102.	1883.	1826.	10.11
	HYDROGRAPH AT							

+		CW1-P	169.	10.17	47.	18.	18.	.19	
	ROUTED TO								
+		RANDO	124.	10.42	47.	18.	18.	.19	644.54
+									
10.42									
	HYDROGRAPH AT								
+		CW1-W	21.	10.00	5.	2.	2.	.02	
	HYDROGRAPH AT								
+		CW1-E	16.	10.00	3.	1.	1.	.02	
	3 COMBINED AT								
+		CW1	138.	10.42	56.	22.	21.	.22	
	ROUTED TO								
+		TR3-1	136.	10.67	56.	22.	21.	.22	
	HYDROGRAPH AT								
+		CW2-1	76.	10.08	20.	8.	7.	.08	
	ROUTED TO								
+		POND1	76.	10.08	20.	8.	7.	.08	575.39
+									
10.08									
	HYDROGRAPH AT								
+		CW2-2	65.	10.00	15.	6.	6.	.06	
	ROUTED TO								
+		POND2	55.	10.17	15.	6.	6.	.06	567.60
+									
10.17									
	HYDROGRAPH AT								
+		CW2-3	42.	10.08	11.	4.	4.	.04	
	3 COMBINED AT								
+		CW2	171.	10.08	46.	18.	17.	.18	
	2 COMBINED AT								
+		CW1+2	268.	10.17	101.	40.	38.	.40	
	HYDROGRAPH AT								
+		CW3	233.	10.58	94.	37.	35.	.41	
	2 COMBINED AT								
+		CW1-3	460.	10.50	195.	76.	74.	.81	
	ROUTED TO								
+		TR3-1A	460.	10.58	195.	76.	73.	.81	
	HYDROGRAPH AT								
+		CW4	75.	10.08	18.	7.	7.	.07	
	HYDROGRAPH AT								
+		CW5	102.	10.08	27.	11.	10.	.12	
	3 COMBINED AT								
+		CW1-5	569.	10.25	240.	94.	91.	1.00	
	ROUTED TO								
+		TR3-2	570.	10.50	240.	93.	90.	1.00	
	HYDROGRAPH AT								
+		CW6'	8.	10.58	3.	1.	1.	.01	
	2 COMBINED AT								
+		CW1-6'	577.	10.50	243.	94.	91.	1.01	
	HYDROGRAPH AT								
+		CW7	171.	10.50	65.	25.	24.	.31	
	ROUTED TO								
+		TR3-2A	170.	10.58	65.	25.	24.	.31	
	HYDROGRAPH AT								
+		CW8'	100.	10.33	32.	13.	12.	.14	
	2 COMBINED AT								
+		CW7+8	254.	10.50	97.	38.	36.	.45	
	2 COMBINED AT								
+		CW1-8	831.	10.50	340.	132.	127.	1.47	
	ROUTED TO								
+		TR3-3	830.	10.58	340.	132.	127.	1.47	
	HYDROGRAPH AT								
+		CW9'	58.	10.25	18.	7.	7.	.08	
	HYDROGRAPH AT								
+		CWP	171.	11.25	90.	35.	34.	.38	
	3 COMBINED AT								
+		TRIB3	1003.	10.67	448.	174.	168.	1.93	
	2 COMBINED AT								
+		POINT4	6910.	10.75	3550.	2057.	1993.	12.04	

+	ROUTED TO	CC-16	6035.	11.17	3532.	2034.	1963.	12.04
+	HYDROGRAPH AT	CZ2'	125.	10.75	53.	21.	20.	.23
+	2 COMBINED AT	+CZ2	6137.	11.17	3584.	2054.	1982.	12.26
+	HYDROGRAPH AT	XF	45.	10.17	13.	5.	5.	.06
+	HYDROGRAPH AT	AD	6.	10.00	1.	1.	0.	.00
+	2 COMBINED AT	SUM1	49.	10.08	14.	5.	5.	.06
+	ROUTED TO	RTE	49.	10.25	14.	5.	5.	.06
+	HYDROGRAPH AT	XE	13.	10.17	4.	1.	1.	.02
+	HYDROGRAPH AT	XD	41.	10.17	12.	5.	4.	.05
+	HYDROGRAPH AT	XC	41.	10.17	12.	5.	4.	.05
+	HYDROGRAPH AT	AC	4.	10.00	1.	0.	0.	.00
+	HYDROGRAPH AT	V	145.	10.08	37.	14.	14.	.16
+	6 COMBINED AT	SUM2	282.	10.08	79.	31.	30.	.35
+	ROUTED TO	RTE	283.	10.17	79.	31.	30.	.35
+	HYDROGRAPH AT	AE	102.	10.00	24.	9.	9.	.09
+	ROUTED TO	RTE	101.	10.08	24.	9.	9.	.09
+	HYDROGRAPH AT	XG	37.	10.42	13.	5.	5.	.06
+	3 COMBINED AT	ROD	406.	10.17	116.	45.	44.	.51
+	HYDROGRAPH AT	W	13.	10.00	3.	1.	1.	.01
+	HYDROGRAPH AT	AB	92.	10.08	23.	9.	9.	.09
+	3 COMBINED AT	SUM3	499.	10.17	142.	55.	53.	.61
+	ROUTED TO	RTE	490.	10.17	142.	55.	53.	.61
+	HYDROGRAPH AT	M	26.	10.08	7.	3.	3.	.03
+	HYDROGRAPH AT	U	3.	10.00	1.	0.	0.	.00
+	2 COMBINED AT	SUM4	29.	10.08	8.	3.	3.	.03
+	ROUTED TO	RTE	29.	10.17	8.	3.	3.	.03
+	HYDROGRAPH AT	XH	56.	10.17	16.	6.	6.	.07
+	HYDROGRAPH AT	X	18.	10.00	4.	2.	2.	.01
+	HYDROGRAPH AT	T	41.	10.00	9.	4.	4.	.04
+	5 COMBINED AT	SUM5	615.	10.17	178.	70.	67.	.76
+	ROUTED TO	WMP1	616.	10.17	178.	70.	67.	.76
+								541.32
10.17								
+	ROUTED TO	WMP2	609.	10.17	178.	71.	69.	.76
+								537.60
10.17								
	HYDROGRAPH AT							

+		Q	13.	10.00	3.	1.	1.	.01
+	HYDROGRAPH AT	Y	1.	10.00	0.	0.	0.	.00
+	HYDROGRAPH AT	Z	51.	10.00	12.	5.	4.	.05
+	HYDROGRAPH AT	XR	14.	10.08	3.	1.	1.	.01
+	5 COMBINED AT	POINT5	666.	10.17	196.	78.	76.	.83
+	ROUTED TO	RTE	660.	10.17	196.	78.	76.	.83
+	HYDROGRAPH AT	S	6.	10.00	1.	1.	1.	.00
+	HYDROGRAPH AT	XS	12.	10.00	3.	1.	1.	.01
+	2 COMBINED AT	POINTB	17.	10.00	4.	2.	2.	.01
+	ROUTED TO	RTE	17.	10.08	4.	2.	2.	.01
+	HYDROGRAPH AT	CY3-2C	40.	10.08	11.	4.	4.	.04
+	3 COMBINED AT	POINTG	715.	10.17	210.	84.	81.	.88
+	ROUTED TO	RTE	706.	10.25	210.	84.	81.	.88
+	HYDROGRAPH AT	CY3-2B	25.	10.08	7.	3.	3.	.02
+	2 COMBINED AT	SUM	730.	10.25	217.	87.	84.	.91
+	HYDROGRAPH AT	AA	9.	10.08	2.	1.	1.	.01
+	ROUTED TO	RTE	9.	10.08	2.	1.	1.	.01
+	HYDROGRAPH AT	XQ	22.	10.08	6.	2.	2.	.03
+	2 COMBINED AT	POINTC	31.	10.08	8.	3.	3.	.03
+	ROUTED TO	RTE	30.	10.08	8.	3.	3.	.03
+	HYDROGRAPH AT	CY3-2A	33.	10.08	9.	4.	3.	.03
+	2 COMBINED AT	POINTH	63.	10.08	17.	7.	6.	.06
+	HYDROGRAPH AT	CY3-2	119.	10.08	32.	13.	12.	.11
+	3 COMBINED AT	POINTJ	896.	10.17	265.	106.	102.	1.08
+	ROUTED TO	RTE	898.	10.25	265.	106.	102.	1.08
+	HYDROGRAPH AT	XP/PTD	14.	10.00	3.	1.	1.	.01
+	ROUTED TO	RTE	14.	10.17	3.	1.	1.	.01
+	HYDROGRAPH AT	CY3-1	76.	10.17	21.	8.	8.	.07
+	2 COMBINED AT	POINTK	90.	10.17	24.	10.	9.	.09
+	ROUTED TO	RTE	88.	10.17	24.	10.	9.	.09
+	HYDROGRAPH AT	CY3-3	60.	10.17	16.	6.	6.	.06
+	3 COMBINED AT	SUM	1041.	10.25	305.	122.	118.	1.23
+	ROUTED TO	RTE	1031.	10.33	305.	122.	118.	1.23
+	HYDROGRAPH AT	CY3-4	52.	10.25	15.	6.	6.	.05

+	2 COMBINED AT POINT6	1081.	10.33	321.	128.	124.	1.28
+	HYDROGRAPH AT XN/PTE	26.	10.08	6.	3.	2.	.03
+	ROUTED TO RTE	26.	10.25	6.	3.	2.	.03
+	HYDROGRAPH AT AH	18.	10.08	5.	2.	2.	.02
+	ROUTED TO RTE	18.	10.08	5.	2.	2.	.02
+	HYDROGRAPH AT XM	36.	10.08	9.	3.	3.	.04
+	2 COMBINED AT POINTF	53.	10.08	13.	5.	5.	.06
+	HYDROGRAPH AT XL	5.	10.08	1.	0.	0.	.00
+	HYDROGRAPH AT AJ	4.	10.00	1.	0.	0.	.00
+	HYDROGRAPH AT AG	10.	10.00	2.	1.	1.	.01
+	HYDROGRAPH AT XK	75.	10.17	22.	9.	8.	.10
+	4 COMBINED AT POINT7	89.	10.08	26.	10.	10.	.12
+	2 COMBINED AT SUM3	142.	10.08	40.	16.	15.	.18
+	ROUTED TO RTE	142.	10.25	40.	16.	15.	.18
+	HYDROGRAPH AT CY5E	288.	10.50	105.	41.	40.	.44
+	3 COMBINED AT POINTL	438.	10.33	152.	59.	57.	.64
+	ROUTED TO RTE	366.	10.67	151.	59.	57.	.64
+	HYDROGRAPH AT CY5W	170.	10.58	68.	26.	25.	.28
+	2 COMBINED AT POINT8	535.	10.67	218.	85.	82.	.92
+	2 COMBINED AT POINT9	1514.	10.33	538.	213.	206.	2.21
+	ROUTED TO RTE	1471.	10.50	538.	212.	205.	2.21
+	HYDROGRAPH AT CY6'	20.	10.08	5.	2.	2.	.03
+	3 COMBINED AT PT10	7085.	11.08	4120.	2269.	2189.	14.50

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SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	INTERPOLATED TO COMPUTATION INTERVAL PEAK	INTERPOLATED TO COMPUTATION INTERVAL TIME TO PEAK	INTERPOLATED TO COMPUTATION INTERVAL VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
CC-1	MANE	5.00	91.96	640.00	3.25	5.00	91.96	640.00	3.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3433E+02 EXCESS= .0000E+00 OUTFLOW= .3417E+02 BASIN STORAGE= .1855E+00 PERCENT ERROR= -.1

CC-2	MANE	4.83	107.77	666.30	3.20	5.00	107.71	670.00	3.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5298E+02 EXCESS= .0000E+00 OUTFLOW= .5279E+02 BASIN STORAGE= .2056E+00 PERCENT ERROR= .0

CC-3	MANE	5.00	364.02	620.00	3.35	5.00	364.02	620.00	3.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1250E+03 EXCESS= .0000E+00 OUTFLOW= .1246E+03 BASIN STORAGE= .4816E+00 PERCENT ERROR= -.1

CC-3A	MANE	5.00	86.13	615.00	3.29	5.00	86.13	615.00	3.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1847E+02 EXCESS= .0000E+00 OUTFLOW= .1841E+02 BASIN STORAGE= .9353E-01 PERCENT ERROR= -.2

CC-4	MANE	3.28	588.42	619.02	3.34	5.00	586.70	620.00	3.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1778E+03 EXCESS= .0000E+00 OUTFLOW= .1775E+03 BASIN STORAGE= .3605E+00 PERCENT ERROR= -.1

CC-4A	MANE	5.00	38.60	630.00	2.96	5.00	38.60	630.00	2.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1097E+02 EXCESS= .0000E+00 OUTFLOW= .1090E+02 BASIN STORAGE= .9608E-01 PERCENT ERROR= -.2

CC-4B	MANE	3.83	123.06	616.04	3.23	5.00	122.70	620.00	3.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3388E+02 EXCESS= .0000E+00 OUTFLOW= .3383E+02 BASIN STORAGE= .7798E-01 PERCENT ERROR= -.1

CC-4C	MANE	5.00	219.06	615.00	3.29	5.00	219.06	615.00	3.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5645E+02 EXCESS= .0000E+00 OUTFLOW= .5634E+02 BASIN STORAGE= .1714E+00 PERCENT ERROR= -.1

CC-5	MANE	2.23	1086.72	623.81	3.28	5.00	1079.45	625.00	3.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3211E+03 EXCESS= .0000E+00 OUTFLOW= .3208E+03 BASIN STORAGE= .4523E+00 PERCENT ERROR= .0

CC-6	MANE	1.74	1131.02	622.59	3.28	5.00	1128.24	625.00	3.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3415E+03 EXCESS= .0000E+00 OUTFLOW= .3413E+03 BASIN STORAGE= .3602E+00 PERCENT ERROR= .0

CC-7	MANE	1.37	1701.39	626.71	3.22	5.00	1697.71	625.00	3.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5140E+03 EXCESS= .0000E+00 OUTFLOW= .5137E+03 BASIN STORAGE= .4054E+00 PERCENT ERROR= .0

CC-8	MANE	5.00	1834.21	630.00	3.23	5.00	1834.21	630.00	3.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5629E+03 EXCESS= .0000E+00 OUTFLOW= .5616E+03 BASIN STORAGE= .2056E+01 PERCENT ERROR= -.1

CC-9	MANE	5.00	1851.03	635.00	3.23	5.00	1851.03	635.00	3.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5682E+03 EXCESS= .0000E+00 OUTFLOW= .5666E+03 BASIN STORAGE= .2513E+01 PERCENT ERROR= -.2

TR1-10	MANE	3.32	665.15	625.02	3.35	5.00	665.13	625.00	3.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1806E+03 EXCESS= .0000E+00 OUTFLOW= .1803E+03 BASIN STORAGE= .3659E+00 PERCENT ERROR= -.1

TR1-11	MANE	5.00	715.93	630.00	3.33	5.00	715.93	630.00	3.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1984E+03 EXCESS= .0000E+00 OUTFLOW= .1979E+03 BASIN STORAGE= .6624E+00 PERCENT ERROR= -.1

CC-9A	MANE	5.00	344.10	630.00	3.06	5.00	344.10	630.00	3.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8877E+02 EXCESS= .0000E+00 OUTFLOW= .8843E+02 BASIN STORAGE= .6091E+00 PERCENT ERROR= -.3

CC-10	MANE	1.31	3422.48	635.97	3.18	5.00	3421.59	635.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1028E+04 EXCESS= .0000E+00 OUTFLOW= .1027E+04 BASIN STORAGE= .8390E+00 PERCENT ERROR= .0

CC-11	MANE	3.29	3494.26	635.78	3.18	5.00	3486.76	635.00	3.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1061E+04 EXCESS= .0000E+00 OUTFLOW= .1059E+04 BASIN STORAGE= .2578E+01 PERCENT ERROR= .0

TR2-1	MANE	5.00	110.75	660.00	3.07	5.00	110.75	660.00	3.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4258E+02 EXCESS= .0000E+00 OUTFLOW= .4234E+02 BASIN STORAGE= .2935E+00 PERCENT ERROR= -.1

TR2-2	MANE	4.36	625.55	619.76	3.43	5.00	625.41	620.00	3.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1818E+03 EXCESS= .0000E+00 OUTFLOW= .1816E+03 BASIN STORAGE= .3413E+00 PERCENT ERROR= -.1

TR2-4	MANE	5.00	1151.68	610.00	29.86	5.00	1151.68	610.00	29.86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2275E+04 EXCESS= .0000E+00 OUTFLOW= .2259E+04 BASIN STORAGE= .1585E+02 PERCENT ERROR= .0

RTA	MANE	5.00	112.58	620.00	3.51	5.00	112.58	620.00	3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2545E+02 EXCESS= .0000E+00 OUTFLOW= .2543E+02 BASIN STORAGE= .4618E-01 PERCENT ERROR= -.1

ROUTE	MANE	3.32	4884.18	637.61	7.80	5.00	4872.59	640.00	7.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3420E+04 EXCESS= .0000E+00 OUTFLOW= .3411E+04 BASIN STORAGE= .1107E+02 PERCENT ERROR= -.1

ROUTE	MANE	5.00	51.41	615.00	3.51	5.00	51.41	615.00	3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1104E+02 EXCESS= .0000E+00 OUTFLOW= .1104E+02 BASIN STORAGE= .2062E-01 PERCENT ERROR= -.1

RT CV	MANE	5.00	94.85	615.00	3.52	5.00	94.85	615.00	3.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2124E+02 EXCESS= .0000E+00 OUTFLOW= .2121E+02 BASIN STORAGE= .5188E-01 PERCENT ERROR= -.1

CR-1	MANE	5.00	252.66	620.00	3.61	5.00	252.66	620.00	3.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5831E+02 EXCESS= .0000E+00 OUTFLOW= .5828E+02 BASIN STORAGE= .8225E-01 PERCENT ERROR= -.1

CR-2	MANE	5.00	468.35	620.00	3.98	5.00	468.35	620.00	3.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1082E+03 EXCESS= .0000E+00 OUTFLOW= .1079E+03 BASIN STORAGE= .3701E+00 PERCENT ERROR= -.1

RTE	MANE	5.00	69.16	610.00	3.31	5.00	69.16	610.00	3.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1501E+02 EXCESS= .0000E+00 OUTFLOW= .1500E+02 BASIN STORAGE= .2425E-01 PERCENT ERROR= -.1

RTE	MANE	3.49	76.36	614.26	3.35	5.00	75.76	615.00	3.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1700E+02 EXCESS= .0000E+00 OUTFLOW= .1699E+02 BASIN STORAGE= .2067E-01 PERCENT ERROR= -.1

RTE	MANE	4.47	224.81	612.98	3.33	5.00	223.35	615.00	3.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5012E+02 EXCESS= .0000E+00 OUTFLOW= .5009E+02 BASIN STORAGE= .6798E-01 PERCENT ERROR= -.1

RCX2	MANE	3.39	281.72	621.13	3.35	5.00	281.59	620.00	3.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6864E+02 EXCESS= .0000E+00 OUTFLOW= .6857E+02 BASIN STORAGE= .1216E+00 PERCENT ERROR= -.1

CC14B	MANE	5.00	311.15	625.00	3.39	5.00	311.15	625.00	3.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7874E+02 EXCESS= .0000E+00 OUTFLOW= .7857E+02 BASIN STORAGE= .2407E+00 PERCENT ERROR= -.1

TR3-1A	MANE	5.00	459.95	635.00	3.48	5.00	459.95	635.00	3.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1514E+03 EXCESS= .0000E+00 OUTFLOW= .1512E+03 BASIN STORAGE= .3946E+00 PERCENT ERROR= -.1

TR3-2	MANE	5.00	569.92	630.00	3.46	5.00	569.92	630.00	3.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1865E+03 EXCESS= .0000E+00 OUTFLOW= .1852E+03 BASIN STORAGE= .2039E+01 PERCENT ERROR= -.3

TR3-2A	MANE	5.00	170.09	635.00	3.00	5.00	170.09	635.00	3.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5006E+02 EXCESS= .0000E+00 OUTFLOW= .4985E+02 BASIN STORAGE= .3233E+00 PERCENT ERROR= -.2

TR3-3	MANE	5.00	830.23	635.00	3.34	5.00	830.23	635.00	3.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2623E+03 EXCESS= .0000E+00 OUTFLOW= .2613E+03 BASIN STORAGE= .1544E+01 PERCENT ERROR= -.2

RTE	MANE	5.00	48.94	615.00	3.17	5.00	48.94	615.00	3.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1084E+02 EXCESS= .0000E+00 OUTFLOW= .1083E+02 BASIN STORAGE= .1564E-01 PERCENT ERROR= -.1

RTE	MANE	5.00	283.03	610.00	3.24	5.00	283.03	610.00	3.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6091E+02 EXCESS= .0000E+00 OUTFLOW= .6089E+02 BASIN STORAGE= .6379E-01 PERCENT ERROR= -.1

RTE	MANE	3.41	101.55	602.83	3.71	5.00	101.07	605.00	3.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1880E+02 EXCESS= .0000E+00 OUTFLOW= .1880E+02 BASIN STORAGE= .2241E-02 PERCENT ERROR= .0

RTE	MANE	3.97	494.43	611.60	3.39	5.00	489.83	610.00	3.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1100E+03 EXCESS= .0000E+00 OUTFLOW= .1100E+03 BASIN STORAGE= .1347E+00 PERCENT ERROR= -.1

RTE	MANE	5.00	28.80	610.00	3.53	5.00	28.80	610.00	3.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5835E+01 EXCESS= .0000E+00 OUTFLOW= .5834E+01 BASIN STORAGE= .3576E-02 PERCENT ERROR= .0

RTE	MANE	1.47	664.68	611.57	3.51	5.00	659.64	610.00	3.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1561E+03 EXCESS= .0000E+00 OUTFLOW= .1560E+03 BASIN STORAGE= .6644E-01 PERCENT ERROR= .0

RTE	MANE	5.00	16.99	605.00	4.55	5.00	16.99	605.00	4.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3157E+01 EXCESS= .0000E+00 OUTFLOW= .3157E+01 BASIN STORAGE= .8586E-03 PERCENT ERROR= .0

RTE	MANE	3.51	709.60	614.01	3.56	5.00	706.49	615.00	3.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1676E+03 EXCESS= .0000E+00 OUTFLOW= .1674E+03 BASIN STORAGE= .1836E+00 PERCENT ERROR= .0

RTE	MANE	2.13	9.22	602.97	3.61	5.00	9.21	605.00	3.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1733E+01 EXCESS= .0000E+00 OUTFLOW= .1733E+01 BASIN STORAGE= .2041E-03 PERCENT ERROR= .0

RTE	MANE	3.14	30.52	606.24	3.32	5.00	30.18	605.00	3.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6022E+01 EXCESS= .0000E+00 OUTFLOW= .6021E+01 BASIN STORAGE= .1311E-02 PERCENT ERROR= .0

RTE	MANE	2.27	898.55	614.78	3.67	5.00	897.55	615.00	3.67

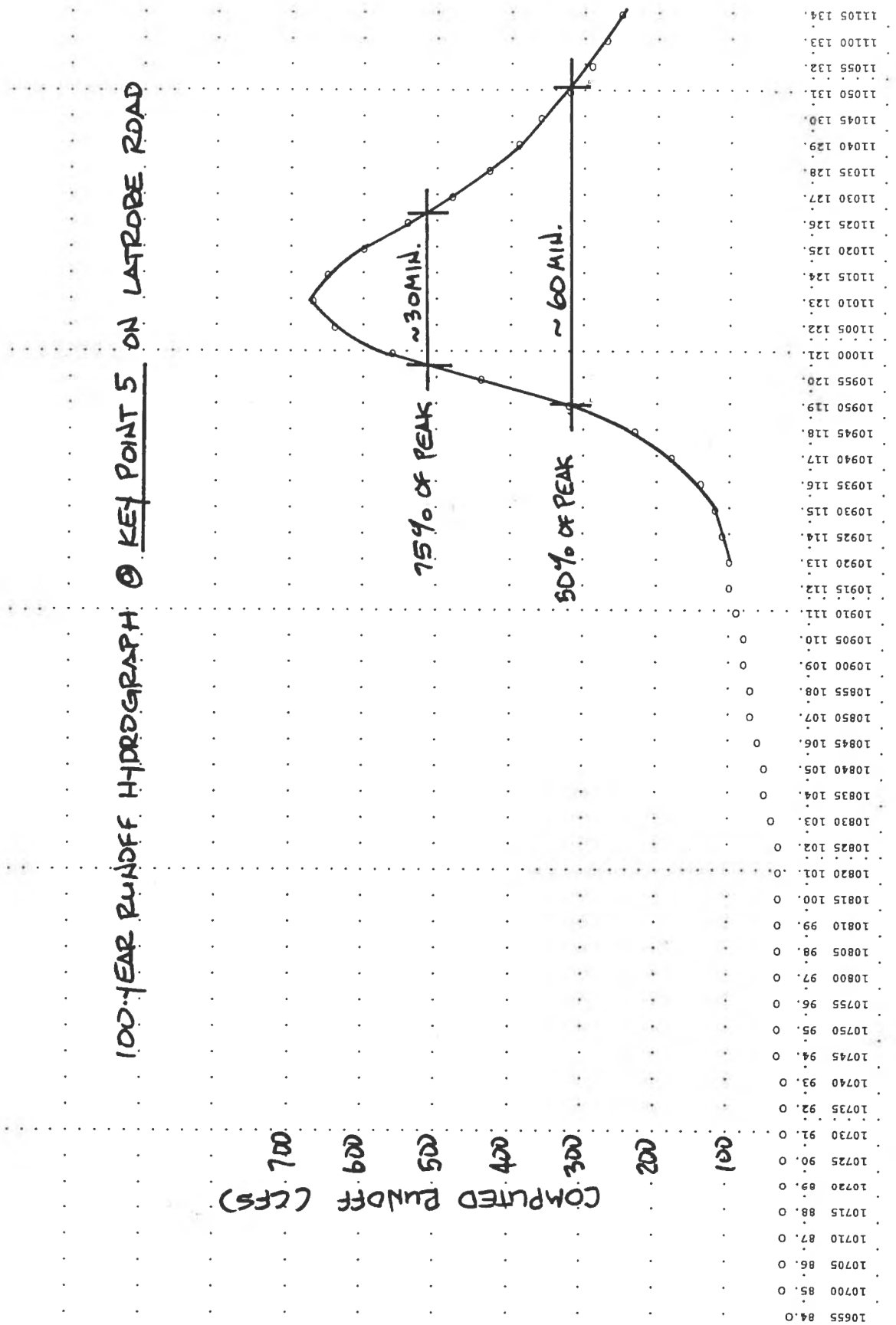
CONTINUITY SUMMARY (AC-FT) - INFLOW= .2107E+03 EXCESS= .0000E+00 OUTFLOW= .2106E+03 BASIN STORAGE= .1416E+00 PERCENT

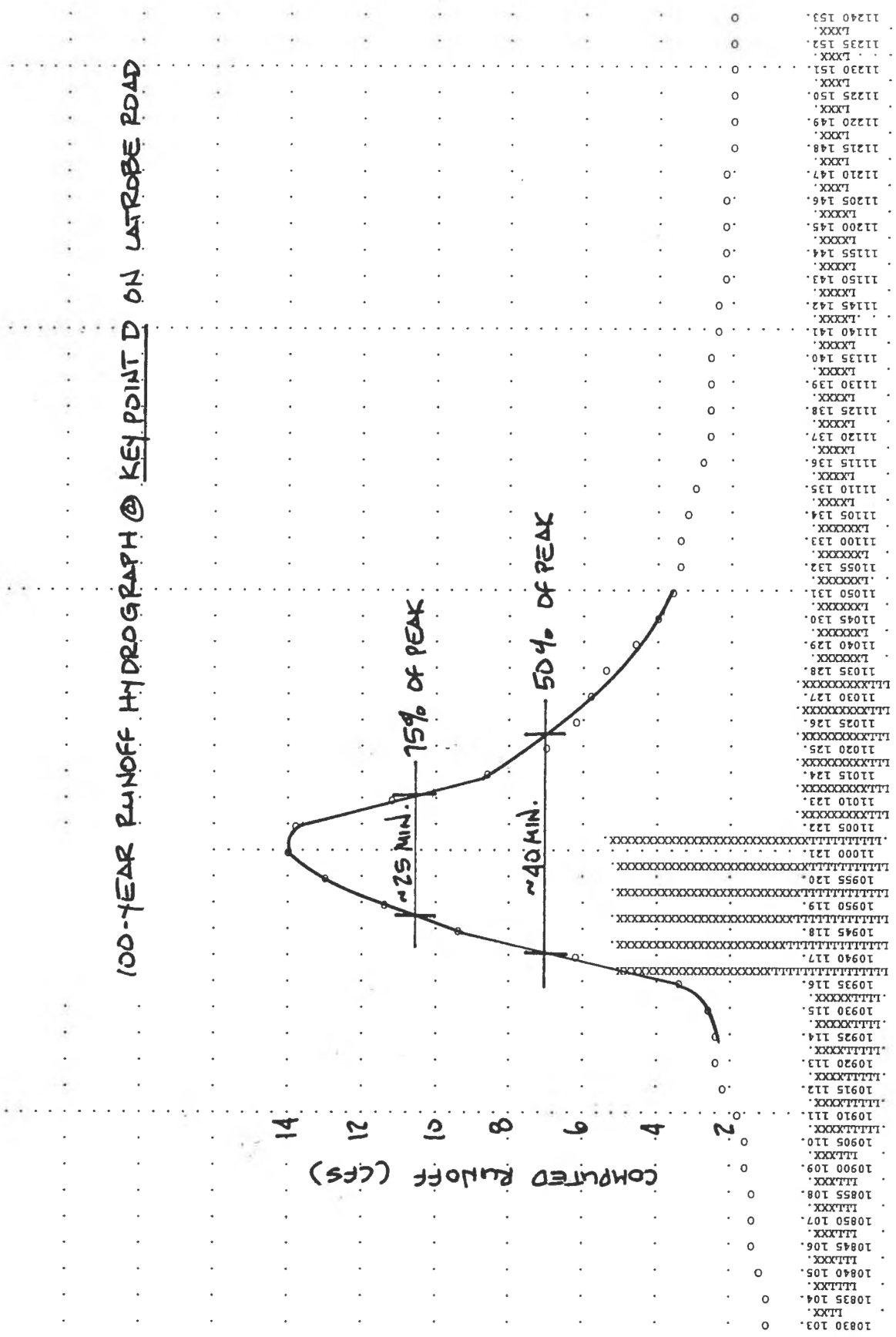
```
ERROR=     .0

                RTE  MANE          5.00     13.86    610.00      3.22      5.00     13.86    610.00        3.22

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2574E+01 EXCESS= .0000E+00 OUTFLOW= .2574E+01 BASIN STORAGE= .1811E-02 PERCENT
ERROR=    -.1

                RTE  MANE          3.27     88.49    610.96      4.15      5.00     87.78    610.00        4.15

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1925E+02 EXCESS= .0000E+00 OUTFLOW= .1925E+02 BASIN STORAGE= .1050E-01 PERCENT
ERROR=     .0

                RTE  MANE          4.52   1032.54    619.86      3.70      5.00   1031.05    620.00        3.70

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2425E+03 EXCESS= .0000E+00 OUTFLOW= .2423E+03 BASIN STORAGE= .3757E+00 PERCENT
ERROR=     .0

                RTE  MANE          5.00     25.55    615.00      3.22      5.00     25.55    615.00        3.22

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4976E+01 EXCESS= .0000E+00 OUTFLOW= .4975E+01 BASIN STORAGE= .6402E-02 PERCENT
ERROR=    -.1

                RTE  MANE          1.71     17.92    606.36      3.71      5.00     17.72    605.00        3.71

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3563E+01 EXCESS= .0000E+00 OUTFLOW= .3563E+01 BASIN STORAGE= .3512E-03 PERCENT
ERROR=     .0

                RTE  MANE          5.00    141.87    615.00      3.27      5.00    141.87    615.00        3.27

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3092E+02 EXCESS= .0000E+00 OUTFLOW= .3088E+02 BASIN STORAGE= .9857E-01 PERCENT
ERROR=    -.2


 *** NORMAL END OF HEC-1 ***
```

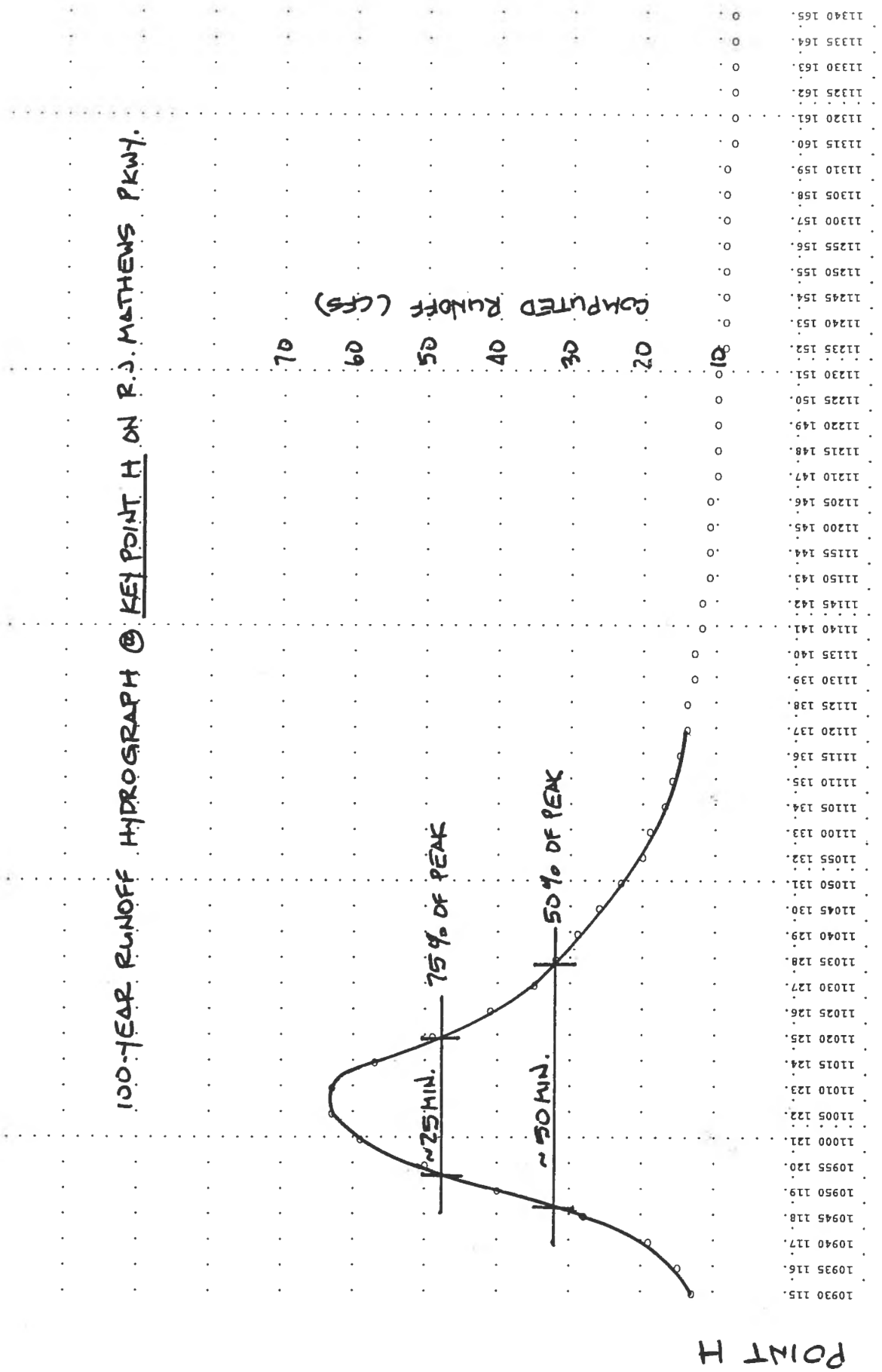
APPENDIX D

BUSINESS PARK RUNOFF HYDROGRAPHS

100-YEAR RUNOFF HYDROGRAPH @ KEY POINT B ON LATROBE ROAD
75% OF PEAK
50% OF PEAK
~25 MIN.
~39 MIN.
COMPUTED RUNOFF (CFS)
18
16
14
12
10
8
6
4
2


100-YEAR RUNOFF HYDROGRAPH @ KEY POINT 5 ON LATROBE ROAD
COMPUTED RUNOFF (CFS)
100
200
300
400
500
600
700
~30 MIN.
75% OF PEAK
~60 MIN.
50% OF PEAK
POINT 5


100-YEAR RUNOFF HYDROGRAPH @ KEY POINT D ON LATROBE ROAD
COMPUTED RUNOFF (CFS)
14
12
10
8
6
4
2
75% OF PEAK
50% OF PEAK
~25 MIN.
~40 MIN.


100-YEAR RUNOFF HYDROGRAPH @ KEY POINT H ON R.S. MATHEWS PKWY.
COMPUTED RUNOFF (CFS)
10
20
30
40
50
60
70
75% OF PEAK
50% OF PEAK
~25 MIN.
~50 MIN.
POINT H

APPENDIX E

HEC-RAS OUTPUT SUMMARY

HEC-RAS Plan: Plan 28 Profile: PF 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
CARSON CREEK	UPPER CARSON CRE	116	PF 1	5900.00	479.00	486.46		487.20	0.003276	7.07	889.79	179.75	0.50
CARSON CREEK	UPPER CARSON CRE	115	PF 1	5900.00	479.00	485.54	484.55	486.64	0.005963	8.56	727.75	174.26	0.66
CARSON CREEK	UPPER CARSON CRE	114	PF 1	5900.00	477.50	483.11		484.03	0.006307	8.66	793.65	206.42	0.68
CARSON CREEK	UPPER CARSON CRE	113	PF 1	5900.00	474.00	481.38		482.10	0.004445	7.48	888.64	193.39	0.53
CARSON CREEK	UPPER CARSON CRE	112	PF 1	5900.00	472.00	479.47		480.16	0.004080	7.69	904.30	192.83	0.51
CARSON CREEK	UPPER CARSON CRE	111.8	PF 1	5900.00	470.70	478.74		479.34	0.003285	7.07	966.09	192.96	0.46
CARSON CREEK	UPPER CARSON CRE	111.6	PF 1	5900.00	470.90	478.53	475.99	479.10	0.002691	6.45	982.13	162.16	0.42
CARSON CREEK	UPPER CARSON CRE	111.55		Bridge									
CARSON CREEK	UPPER CARSON CRE	111.5	PF 1	5900.00	470.50	475.44	475.44	477.17	0.015783	11.78	566.68	159.62	0.94
CARSON CREEK	UPPER CARSON CRE	111.45	PF 1	6900.00	466.50	473.10		473.13	0.000412	1.48	4653.75	1411.77	0.14
CARSON CREEK	UPPER CARSON CRE	111	PF 1	6900.00	464.90	472.99		473.01	0.000150	1.16	5930.92	1210.77	0.09
CARSON CREEK	UPPER CARSON CRE	110.8	PF 1	6900.00	463.30	472.90		472.93	0.000192	2.03	7039.79	938.44	0.12
CARSON CREEK	UPPER CARSON CRE	110.6	PF 1	6900.00	463.00	472.88		472.90	0.000059	1.12	6415.23	871.01	0.06
CARSON CREEK	LOWER CARSON CRE	110.4	PF 1	6900.00	462.00	472.67		472.82	0.000510	3.50	2312.12	837.11	0.19
CARSON CREEK	LOWER CARSON CRE	110.2	PF 1	6900.00	460.00	470.39	468.72	472.04	0.005919	11.25	712.24	624.50	0.64
CARSON CREEK	LOWER CARSON CRE	110	PF 1	6900.00	457.00	466.62		468.70	0.011011	12.91	732.76	496.97	0.83
CARSON CREEK	LOWER CARSON CRE	109	PF 1	6900.00	456.00	465.91		466.88	0.003686	8.62	912.98	357.15	0.51
CARSON CREEK	LOWER CARSON CRE	108	PF 1	6900.00	455.00	465.63		466.27	0.002257	7.13	1113.55	330.49	0.40
CARSON CREEK	LOWER CARSON CRE	107	PF 1	6900.00	451.00	463.14	461.80	464.45	0.004581	10.66	821.71	671.47	0.57
CARSON CREEK	LOWER CARSON CRE	106	PF 1	6900.00	450.00	459.97	459.97	462.70	0.011497	14.05	551.66	645.73	0.87
CARSON CREEK	LOWER CARSON CRE	105	PF 1	6900.00	448.00	456.41	456.41	457.91	0.009048	11.67	791.21	880.46	0.76
CARSON CREEK	LOWER CARSON CRE	104	PF 1	6900.00	448.00	455.98		456.34	0.002117	5.72	1473.27	838.79	0.37
CARSON CREEK	LOWER CARSON CRE	103	PF 1	6900.00	445.00	455.34	451.54	455.67	0.001271	5.27	1501.07	959.02	0.30
CARSON CREEK	LOWER CARSON CRE	102	PF 1	6900.00	443.00	451.91	451.91	454.55	0.011540	14.26	556.83	460.81	0.88
CARSON CREEK	LOWER CARSON CRE	101	PF 1	6900.00	439.20	452.82	443.11	452.89	0.000123	2.09	3329.61	1189.14	0.10
CARSON CREEK	LOWER CARSON CRE	100.9		Bridge									
CARSON CREEK	LOWER CARSON CRE	100.8	PF 1	6900.00	439.20	452.80		452.86	0.000123	2.09	3322.66	1188.97	0.10
CARSON CREEK	LOWER CARSON CRE	100.5	PF 1	6900.00	436.00	452.15		452.63	0.001146	5.52	1248.67	366.00	0.27
CARSON CREEK	LOWER CARSON CRE	100.3	PF 1	6900.00	434.20	451.07	443.83	452.16	0.001891	8.40	821.18	275.00	0.38
CARSON CREEK	LOWER CARSON CRE	100.2		Bridge									
CARSON CREEK	LOWER CARSON CRE	100.1	PF 1	6900.00	434.20	443.83	443.83	447.82	0.016268	16.03	430.55	267.66	1.00
CARSON CREEK	LOWER CARSON CRE	100	PF 1	6900.00	434.00	444.12	443.53	445.13	0.006002	10.38	935.97	259.59	0.62
TRIBUTARY 3	UPPER TRIB 3	3500	PF 1	1000.00	478.00	481.38	481.15	481.54	0.012585	3.15	316.84	405.93	0.63
TRIBUTARY 3	UPPER TRIB 3	3400	PF 1	1000.00	477.00	479.47	478.93	479.64	0.007759	3.26	306.92	258.16	0.53
TRIBUTARY 3	UPPER TRIB 3	3300	PF 1	1000.00	475.00	478.24		478.34	0.003987	2.52	397.44	298.88	0.38
TRIBUTARY 3	LOWER TRIB 3	3250	PF 1	1000.00	474.00	477.68	477.28	477.93	0.004823	5.15	274.81	175.48	0.49
TRIBUTARY 3	LOWER TRIB 3	3020	PF 1	1000.00	469.80	474.67		475.09	0.007760	6.02	206.12	123.98	0.60
TRIBUTARY 3	LOWER TRIB 3	3010	PF 1	1000.00	469.10	474.51		474.55	0.000340	1.83	686.30	228.01	0.14
TRIBUTARY 3	LOWER TRIB 3	3007	PF 1	1000.00	467.40	474.14	470.90	474.41	0.001553	4.36	249.60	43.03	0.31
TRIBUTARY 3	LOWER TRIB 3	3006		Bridge									
TRIBUTARY 3	LOWER TRIB 3	3005	PF 1	1000.00	467.20	472.92		473.22	0.001926	4.54	232.00	44.87	0.34
TRIBUTARY 3	LOWER TRIB 3	111.45	PF 1	6900.00	466.50	472.94		472.97	0.000484	1.56	4427.52	1405.44	0.15
TRIBUTARY 3	LOWER TRIB 3	111	PF 1	6900.00	464.90	472.90		472.92	0.000160	1.19	5808.21	1207.74	0.10
TRIBUTARY 3	LOWER TRIB 3	110.8	PF 1	6900.00	463.00	472.87		472.89	0.000046	0.96	7059.67	940.22	0.06
TRIBUTARY 3	LOWER TRIB 3	110.6	PF 1	6900.00	461.00	472.86		472.88	0.000061	1.24	6352.07	870.57	0.07
WEST CHANNEL	W CHANNEL	3500	PF 1	1000.00	478.00	481.86	481.17	481.92	0.002653	1.95	512.07	415.21	0.31

HEC-RAS Plan: Plan 28 Profile: PF 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
TRIBUTARY 5	SOUTH	504	PF 1	440.00	468.00	471.49		471.68	0.005570	4.43	144.96	144.19	0.50
TRIBUTARY 5	SOUTH	503	PF 1	440.00	464.00	467.18	466.92	467.68	0.011118	6.54	81.47	203.00	0.70
TRIBUTARY 5	NORTH	504	PF 1	60.00	469.50	470.19	470.19	470.41	0.037246	3.71	16.49	41.23	0.98
TRIBUTARY 5	NORTH	503	PF 1	60.00	464.80	466.13	465.82	466.17	0.002244	1.80	42.24	151.42	0.29
TRIBUTARY 5	TRIB 5	502.5	PF 1	500.00	461.00	464.54		464.78	0.006313	4.40	130.70	234.78	0.52
TRIBUTARY 5	TRIB 5	502	PF 1	500.00	458.00	463.63		463.72	0.001771	3.30	219.82	131.66	0.29
TRIBUTARY 5	TRIB 5	501	PF 1	500.00	457.00	461.92	460.75	462.35	0.004901	5.53	100.60	127.48	0.50
TRIBUTARY 5	TRIB 5	500.6	PF 1	450.00	453.00	455.76	455.76	456.17	0.012606	5.68	104.32	282.51	0.72
TRIBUTARY 5	TRIB 5	500.5	PF 1	450.00	450.00	453.77		453.80	0.000688	1.71	329.83	373.96	0.18
TRIBUTARY 5	TRIB 5	500	PF 1	450.00	448.00	453.75		453.76	0.000026	0.52	1080.34	338.31	0.04
TRIBUTARY 4	S FORK	406.4	PF 1	90.00	480.50	481.06	480.96	481.16	0.017927	2.53	35.58	135.54	0.68
TRIBUTARY 4	S FORK	406.2	PF 1	90.00	476.00	476.70	476.52	476.79	0.013723	2.43	37.06	74.47	0.61
TRIBUTARY 4	S FORK	406	PF 1	90.00	469.00	469.71	469.71	470.03	0.034813	4.57	19.70	30.66	1.00
TRIBUTARY 4	N FORK	409	PF 1	770.00	478.00	481.70	481.70	482.52	0.012700	8.38	122.36	108.46	0.80
TRIBUTARY 4	N FORK	408	PF 1	770.00	475.00	477.88		478.50	0.013075	6.98	129.61	152.46	0.77
TRIBUTARY 4	N FORK	407	PF 1	770.00	472.00	474.99	474.65	475.34	0.008245	5.80	174.22	122.50	0.62
TRIBUTARY 4	N FORK	406	PF 1	770.00	467.00	471.17	471.17	471.78	0.011846	7.69	142.87	170.15	0.75
TRIBUTARY 4	LOWER	405	PF 1	1040.00	463.50	466.67	466.11	466.83	0.004043	3.92	347.94	269.33	0.43
TRIBUTARY 4	LOWER	404	PF 1	1040.00	459.00	463.18		463.99	0.012316	7.99	147.98	212.74	0.78
TRIBUTARY 4	LOWER	403	PF 1	1040.00	456.00	460.02		460.36	0.005323	4.83	226.52	143.36	0.50
TRIBUTARY 4	LOWER	402	PF 1	1040.00	452.00	455.77	455.52	456.34	0.010512	6.80	178.11	193.50	0.71
TRIBUTARY 4	LOWER	401.5	PF 1	1040.00	451.00	454.65		454.88	0.003758	4.45	267.74	298.58	0.43
TRIBUTARY 4	LOWER	401	PF 1	1040.00	449.00	453.84		454.12	0.003033	4.45	245.39	327.13	0.40
TRIBUTARY 4	MAIN	142	PF 1	1400.00	446.00	453.61		453.68	0.000360	2.11	678.28	508.32	0.15
TRIBUTARY 4	MAIN	141	PF 1	1400.00	442.40	453.62		453.62	0.000026	0.77	2164.27	330.00	0.04
TRIBUTARY 4	MAIN	101	PF 1	6900.00	442.40	453.37	449.66	453.55	0.000703	3.97	2083.56	330.00	0.22
TRIBUTARY 4	MAIN	100.95		Bridge									
TRIBUTARY 4	MAIN	100.9	PF 1	6900.00	438.20	453.35		453.36	0.000020	0.91	9970.53	1197.00	0.04
TRIBUTARY 4	MAIN	100.5	PF 1	6900.00	436.00	452.87		453.29	0.000895	4.81	1335.29	366.00	0.22
TRIBUTARY 4	MAIN	100.3	PF 1	6900.00	434.20	453.05	443.69	453.11	0.000119	2.29	3398.82	275.00	0.10
TRIBUTARY 4	MAIN	100.2		Bridge									
TRIBUTARY 4	MAIN	100.1	PF 1	6900.00	434.20	453.01		453.07	0.000121	2.30	3387.44	275.00	0.10
TRIBUTARY 4	MAIN	100	PF 1	6900.00	434.00	453.00	443.77	453.07	0.000125	2.40	3341.25	275.00	0.10

Appendix G
Noise Reports

Environmental Noise and Vibration Assessment (February 2024)

Environmental Noise & Vibration Assessment

Creekside Village Residential Development

El Dorado County, California

BAC Job # 2020-143

Prepared For:

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February 21, 2024

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Introduction

The proposed Creekside Village Residential Development (project) is a 208-acre residential development located south of El Dorado Hills Business Park, and west of Latrobe Road in El Dorado County, California. The project site is bordered to the north by the El Dorado Hills Business Park, the Blackstone master planned community (Valley View Specific Plan) to the east, undeveloped R & D land within the Carson Creek Specific Plan to the west, and undeveloped rural residential and industrial lands to the south. The proposed project consists of approximately 918 dwelling units, one village and two neighborhood parks, a 1.8-acre neighborhood commercial site, and approximately 46-acres of open space. The project area and site plan are shown in Figures 1 and 2, respectively.

The purposes of this assessment are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project. Specifically, impacts are identified if project-related activities would cause a substantial increase in ambient noise or vibration levels at existing sensitive land uses in the project vicinity, or if future traffic, commercial / business, or project-generated noise or vibration levels would exceed applicable federal, state, or local standards at the residences proposed within this development.

Noise and Vibration Fundamentals

Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 3.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of

environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day-night average noise descriptor, DNL (or L_{dn}), and shows very good correlation with community response to noise. DNL is based on the average noise level over a 24-hour day, with a +10-decibel weighting applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because DNL represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, April 2020), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Legend

- Project Area Boundary (Approximate)
- Noise & Vibration Survey Locations

N

Scale (Feet)

0 400 800

Creekside Village Residential Development
El Dorado County, California

Project Area

Figure 1

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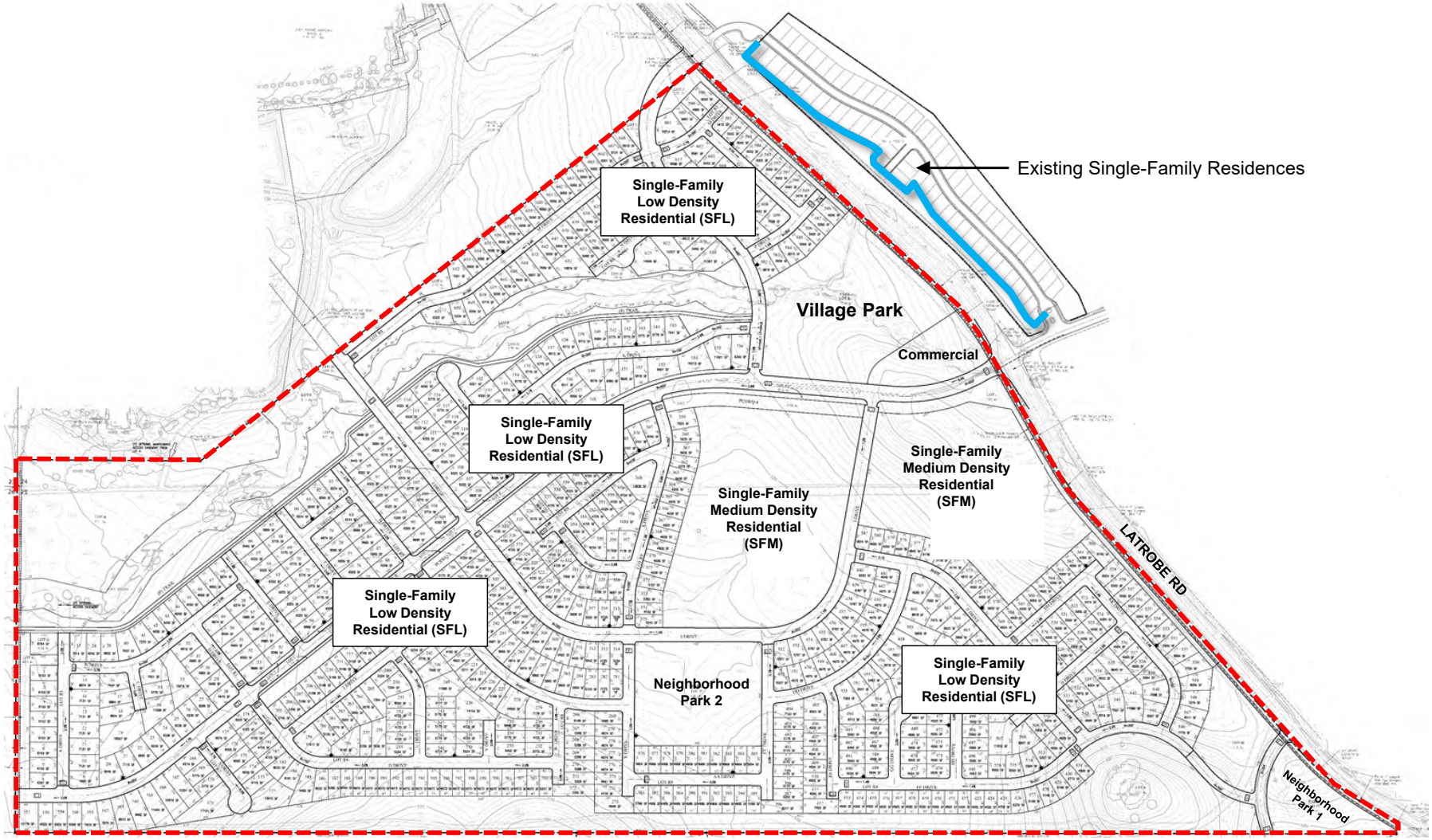


Legend

- Project Area Boundary
- Existing Solid Traffic Noise Barrier

N

Scale (Feet)

0 250 500

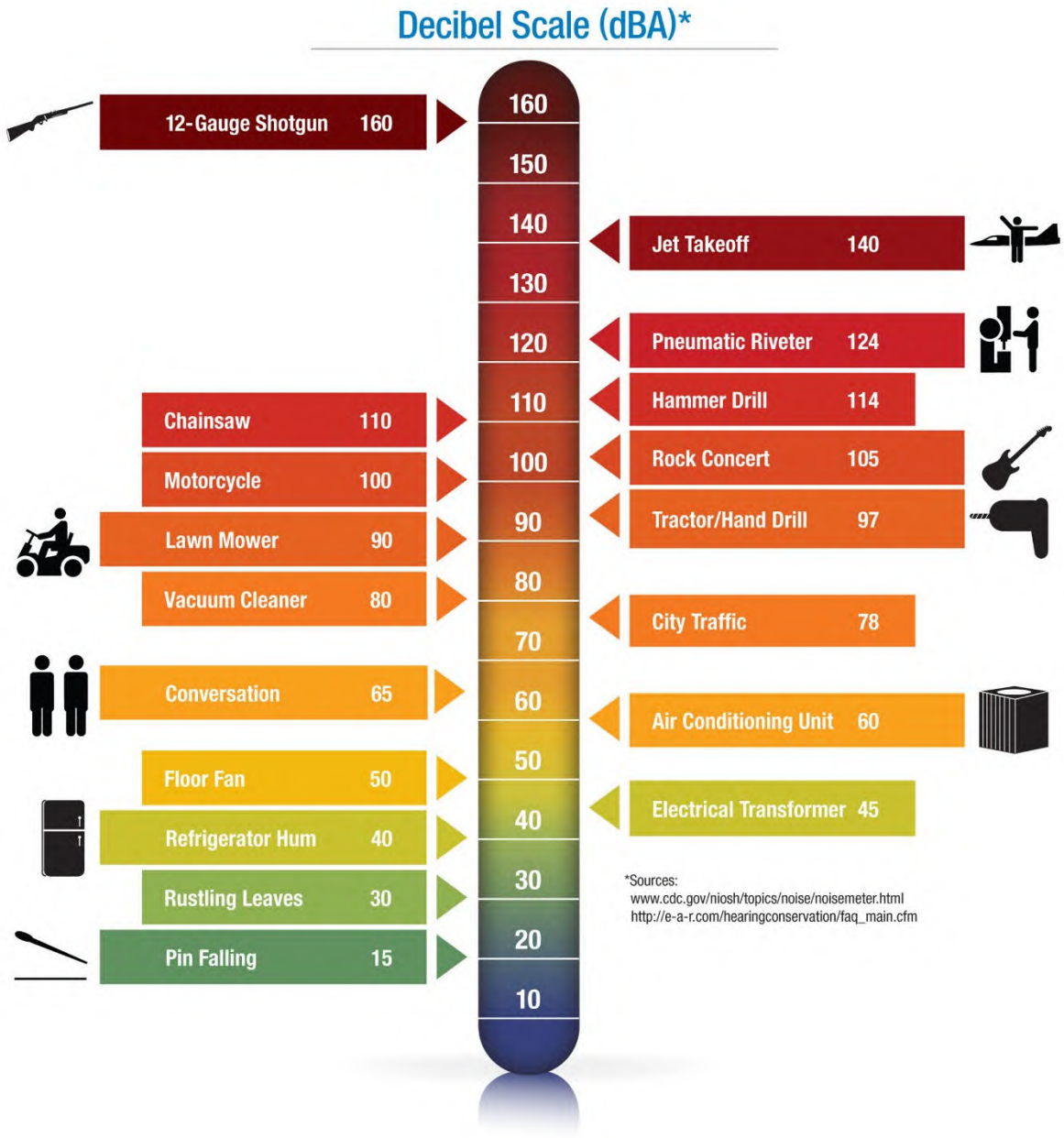
Creekside Village Residential Development
El Dorado County, California

Project Site Plan

Figure 2

BOLLARD Acoustical Consultants

Figure 3
Noise Levels Associated with Common Noise Sources



Environmental Setting – Existing Ambient Noise and Vibration Environment

Land Uses in the Project Vicinity

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities. Existing noise-sensitive land uses within the project vicinity consist of residential uses to the east of the project across Latrobe Road, and a school use located northwest of the project area (John Adams Academy). Existing commercial / office uses are located to the north of the project site (El Dorado Hills Business Park), which are typically not considered to be noise-sensitive. The project area and surrounding land uses are shown in Figure 1.

Existing Traffic Noise Levels along Project Area Roadway Network

To predict traffic noise levels along existing roadway networks with multiple segments, modelling is commonly used rather than monitoring. The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The Model was also used to quantify the distances to the 60, 65 and 70 dB DNL traffic noise contours for these roadways. The FHWA Model predicts hourly average (L_{eq}) values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Existing (2023) traffic data in the form of AM and PM peak hour intersection turning movements were obtained from the traffic impact analysis prepared by the project transportation consultant (T. Kear Transportation Planning & Management). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were obtained from BAC observations and noise measurement data. The existing traffic noise levels at the distances representing the nearest noise-sensitive land uses to the project area roadways and distances from the centerlines of selected roadways to the 60 dB, 65 dB and 70 dB DNL contours are summarized in Table 1. Appendix B-1 contains the FHWA Model inputs for existing conditions.

Table 1
Existing (2023) Traffic Noise Levels at Nearest Receptors and Distances to DNL Contours

#	Roadway	Segment Description	DNL at Nearest Sensitive Receptor	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
1	El Dorado Hills Blvd	North of Serrano Pkwy	68	82	176	380
2	El Dorado Hills Blvd	Serrano Pkwy to White Rock Rd	62	88	189	408
3	Latrobe Rd	White Rock Rd to Golden Foothill Pkwy	68	98	212	457
4	Latrobe Rd	Golden Foothill Pkwy to Investment Blvd	53	8	16	35
5	Latrobe Rd	Investment Blvd to Avanti Dr/Q Dr	51	13	29	62
6	Latrobe Rd	Avanti Dr/Q Dr to Project Commercial Entry	56	13	27	59
7	Latrobe Rd	Project Commercial Entry to Royal Oaks Dr	56	13	27	59
8	Latrobe Rd	Royal Oaks Dr to Wetsel Oviatt Rd	50	11	25	53
9	Latrobe Rd	Wetsel Oviatt Rd to S Shingle Rd	62	38	81	175
10	Latrobe Rd	South of S Shingle Rd	60	31	67	144
11	Lassen Ln	West of El Dorado Hills Blvd	54	9	18	40
12	Serrano Pkwy	East of El Dorado Hills Blvd	58	29	62	133
13	White Rock Rd	West of Latrobe Rd	58	17	37	81
14	White Rock Rd	East of Latrobe Rd	64	30	66	141
15	Golden Foothill Pkwy	West of Latrobe Rd	57	11	24	52
16	Clubview Dr	East of Latrobe Rd	52	5	10	22
17	Investment Blvd	Latrobe Rd to Robert J Mathews Pkwy	36	2	5	11
18	Investment Blvd	West of Robert J Mathews Pkwy	47	5	10	21
19	Project Q Dr	West of Latrobe Rd (within project area)	--	--	--	--
20	Avanti Dr	East of Latrobe Rd	37	1	1	3
21	Project Commercial Entry	West of Latrobe Rd (within project area)	--	--	--	--
22	Royal Oaks Dr	West of Latrobe Rd (within project area)	--	--	--	--
23	Royal Oaks Dr	East of Latrobe Rd	42	2	5	11
24	Wetsel Oviatt Rd	West of Latrobe Rd	19	1	2	4
25	S Shingle Rd	West of Latrobe Rd	46	4	9	19
26	S Shingle Rd	East of Latrobe Rd	54	15	32	69
27	Robert J Mathews Pkwy	Investment Blvd to Golden Foothill Pkwy	51	16	35	76
28	Robert J Mathews Pkwy	South of Investment Blvd	50	20	43	92
29	Palmdale Dr	South of Carson Crossing Dr	45	2	4	8
30	Carson Crossing Dr	Palmdale Dr to Four Seasons Dr	51	4	8	17
31	Carson Crossing Dr	Palmdale Dr to Golden Foothill Pkwy	51	4	8	18

Source: FHWA-RD-77-108, T. Kear Transportation Planning & Management, and BAC 2023.

Existing Overall Ambient Noise Environment within the Project Vicinity

The existing ambient noise environment at the project site is defined primarily by noise from traffic on Latrobe Road, and to a lesser extent by activities within the El Dorado Business Park to the north. To generally quantify existing ambient noise environment within the project area, BAC conducted long-term (72-hour) ambient noise level measurements at four (4) locations from

October 3-5, 2020. The long-term noise survey locations are shown in Figure 1. Photographs of the noise survey locations are provided in Appendix C.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used to complete the noise level measurements. The meters were calibrated immediately before and after use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4).

The results of the long-term ambient noise survey are shown numerically and graphically in Appendices D and E (respectively) and are summarized in Table 2.

Table 2
Long-Term Noise Level Measurement Results – October 3-5, 2020[1]

			Average Measured Hourly Noise Levels, dBA			
			Daytime[3]		Nighttime[4]	
Site Description[2]	Date	DNL	L_{eq}	L_{max}	L_{eq}	L_{max}
Site 1: Western project area boundary, approximately 800' from existing commercial / offices uses to north	10/3/20	52	45	59	46	54
	10/4/20	57	41	56	51	56
	10/5/20	50	44	60	43	50
Site 2: Northwest project area boundary, approximately 800' from existing commercial / office uses to north	10/3/20	53	50	68	46	63
	10/4/20	57	55	69	48	62
	10/5/20	54	54	69	45	61
Site 3: Northern project area boundary, approximately 50' from centerline of Latrobe Road	10/3/20	63	63	83	55	74
	10/4/20	61	60	80	52	74
	10/5/20	65	62	82	57	77
Site 4: Southeast project area boundary, approximately 200' from centerline of Latrobe Road	10/3/20	56	53	70	49	64
	10/4/20	54	51	68	47	65
	10/5/20	58	53	70	51	67

[1] Detailed summaries of the noise monitoring results are provided in Appendices D and E.
[2] Long-term ambient noise monitoring locations are identified in Figure 1.
[3] Daytime hours: 7:00 AM to 10:00 PM
[4] Nighttime hours: 10:00 PM to 7:00 AM

Source: BAC 2020.

As shown in Table 2, average measured hourly noise levels were generally consistent at each individual site throughout the monitoring period. The Table 2 data also indicate that measured day-night average noise levels were highest at site 3, which was likely due to the proximity of the measurement location to Latrobe Road. The slightly elevated measured nighttime noise levels at Sites 1 and 2 are believed to have been caused by natural sounds (crickets, frogs, etc.).

Existing Ambient Vibration Environment

During a site visit on October 2, 2020, vibration levels were below the threshold of perception at the project site. Nonetheless, to quantify existing vibration levels at the project site, BAC

conducted short-term (15-minute) vibration measurements at the four (4) locations identified in Figure 1. Photographs of the vibration survey locations are provided in Appendix C.

A Larson-Davis Laboratories Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the measurements. The results are summarized below in Table 3.

Table 3
Summary of Ambient Vibration Monitoring Results – October 2, 2020

Site Description	Time	Average Measured Vibration Level, PPV (in. sec)[1]
Site 1: Western project area boundary	12:06 p.m.	<0.001
Site 2: Northwest project area boundary	12:59 p.m.	<0.001
Site 3: Northern project area boundary	1:59 p.m.	<0.001
Site 4: Southeast project area boundary	2:29 p.m.	<0.001
[1] PPV = Peak Particle Velocity (inches/second)		

Source: BAC 2020.

The Table 3 data indicate that measured average vibration levels at the project area boundaries were less than 0.001 in/sec PPV.

Regulatory Setting: Criteria for Acceptable Noise and Vibration Exposure

Federal

There are no federal noise or vibration criteria which would be directly applicable to this project.

State of California

California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies.

B. Generation of excessive groundborne vibration or groundborne noise levels.

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered significant according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

California Department of Transportation (Caltrans)

El Dorado County does not currently have adopted standards for groundborne vibration. As a result, the vibration impact criteria developed by the California Department of Transportation (Caltrans) was applied to the project. The Caltrans criteria applicable to damage and annoyance from transient and continuous vibration typically associated with construction activities are presented in Tables 4 and 5. Equipment or activities typical of continuous vibration include: excavation equipment, static compaction equipment, tracked vehicles, traffic on a highway, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment. Equipment or activities typical of single-impact (transient) or low-rate repeated impact vibration include impact pile drivers, blasting, drop balls, “pogo stick” compactors, and crack-and-seat equipment (California Department of Transportation 2013).

Table 4
Guideline Vibration Damage Potential Threshold Criteria

	Maximum PPV (in/sec)	
Structure and Condition	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = Peak Particle Velocity

Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Table 13.

Table 5
Guideline Vibration Annoyance Potential Criteria

	Maximum PPV (in/sec)	
Human Response	**Transient Sources**	**Continuous/Frequent Intermittent Sources**
Barely perceptible	0.40	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.1
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = Peak Particle Velocity

Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Table 20.

Local

El Dorado County General Plan

The Public Health, Safety, and Noise Element of the El Dorado County General Plan contains the County's noise-related policies. The specific policies which are generally applicable to this project are reproduced below:

Policy 6.5.1.1 Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 6 (General Plan Table 6-1) or the performance standards of Table 7 (General Plan Table 6-2), an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy 6.5.1.2 Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 7 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design

Policy 6.5.1.3 Where noise mitigation measures are required to achieve the standards of Tables 6 and Table 7, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.

Policy 6.5.1.7 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 7 for noise-sensitive uses.

Policy 6.5.1.8 New development of noise sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table 6 unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in Table 6.

Policy 6.5.1.9 Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 6 at existing noise-sensitive land uses.

Policy 6.5.1.11 The standards outlined in Tables 8, 9 and 10 (General Plan Tables 6-3, 6-4, 6-5) shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on weekends, and on federally-recognized holidays. Further, the standards outlined in Tables 8 through 10 shall not apply to public projects to alleviate traffic congestion and safety hazards.

Policy 6.5.1.12 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:

a) Where existing or projected future traffic noise levels are less than 60 dB DNL at the outdoor activity areas of residential uses, an increase of more than 5 dBA DNL caused by a new transportation noise source will be considered significant.

b) Where existing or projected future traffic noise levels range between 60 and 65 dBA DNL at the outdoor activity areas of residential uses, an increase of more than 3 dBA DNL caused by a new transportation noise source will be considered significant; and

c) Where existing or projected future traffic noise levels are greater than 65 dBA DNL at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA DNL caused by a new transportation noise source will be considered significant.

Policy 6.5.1.13 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:

a) In areas in which ambient noise levels are in accordance with the standards in Table 7, increases in ambient noise levels caused by new non-transportation noise sources that exceed 5 dBA shall be considered significant; and

b) In areas in which ambient noise levels are not in accordance with the standards in Table 7, increases in ambient noise levels caused by new non-transportation noise sources that exceed 3 dBA shall be considered significant.

Table 6
Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] DNL/CNEL, dB	Interior Spaces DNL/CNEL, dB	Interior Spaces L_{eq}, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Schools	60[3]	--	40
Office Buildings	--	--	45
Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

[1] In Community Regions and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB DNL shall be applied at the building facade, in addition to a 60 dB DNL criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB DNL shall be applied at a 100-foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB DNL may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

[2] As determined for a typical worst-case hour during periods of use.

[3] Where it is not possible to reduce noise in outdoor activity areas to 60 dB DNL/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB DNL/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-1

Table 7
Noise Level Performance Protection Standards for Noise-Sensitive Land Uses Affected by Non-Transportation Sources

	Daytime 7 am – 7 pm		Evening 7 pm – 10 pm		Nighttime 10 pm – 7 am	
Noise Level Descriptor	**Community**	**Rural**	**Community**	**Rural**	**Community**	**Rural**
Hourly, L_{eq}	55	50	50	45	45	40
Maximum, L_{max}	70	60	60	55	55	50

-Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
-The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.
-In Community Regions the exterior noise level standard shall be applied to the property line of the receiving property. In Rural Areas the exterior noise level standard shall be applied at a point 100' away from the residence. The above standards shall be measured only on property containing a noise-sensitive land use as defined in Objective 6.5.1.

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-2.

Table 8
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Community Regions and Adopted Plan Areas – Construction Noise

		Noise Level (dB)	
Land Use Designation[1]	**Time Period**	**L_{eq}**	**L_{max}**
Higher-Density Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am – 7 pm	70	90
	10 pm – 7 am	65	75
Industrial (I)	Any Time	80	90

[1] Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-3.

Table 9
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Rural Centers – Construction Noise

Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	40	55
Commercial and Public Facilities (C, TR, PF)	7 am – 7 pm	65	75
	10 pm – 7 am	60	70
Industrial (I)	Any Time	70	80
Open Space (OS)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-4

Table 10
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Rural Regions and Adopted Plan Areas – Construction Noise

Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (LDR)	7 am – 7 pm	50	60
	7 pm – 10 pm	45	55
	10 pm – 7 am	40	50
Commercial and Public Facilities (C, TR, PF)	7 am – 7 pm	65	75
	10 pm – 7 am	60	70
Industrial (I)	Any Time	70	80
Rural Land, Natural Resources, Open Space, Agricultural Lands (RR, NR, OS, AL)	7 am – 7 pm	65	75
	7 pm – 10 pm	60	70

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-5.

According to Figure LU-1 of the El Dorado County General Plan (Land Use Diagram), the project property and adjacent properties are located within a community region of the county. As a result, the noise level limits and associated criteria applicable to community regions identified in Tables 6-8 would be applicable to the project.

<u>El Dorado County Municipal Code</u>

The provisions of the El Dorado County Municipal Code which would be most applicable to this project are reproduced below.

130.37.020 Exemptions

The following noise sources shall be exempt from the standards of this Chapter:

A. Activities conducted in public parks, public playgrounds, and public or private school grounds, including but not limited to school athletic and school entertainment events, providing an amplified sound system is not required or used.

B. The use of any mechanical device, apparatus, or equipment related to or connected with emergency activities or emergency work to protect life or property.

C. Safety signals, warning devices, and emergency pressure relief valves properly operated and in good working order.

D. Noise sources associated with property maintenance, such as lawn mowers, trimmers, snow blowers, power tools in good working order, and cutting of firewood for non-commercial personal use, provided that the activities take place between the hours of eight a.m. and nine p.m. on weekdays and nine a.m. to nine p.m. on weekends and federal holidays.

E. Noise sources associated with agricultural uses listed in Section 130.21.020 (Agricultural Zones: Matrix of Allowed Uses) in Article 2 (Zones, Allowed Uses, and Zoning Standards) of this Title that are performed consistent with the standards and practices of the agricultural industry.

F. Noise sources associated with work performed by public or private utilities in the maintenance or modification of its facilities.

G. Noise sources associated with public holidays, or other commonly celebrated occasions.

H. Traffic on public roadways, railroad line operations, aircraft in flight, and any other activity where regulation thereof has been preempted by state or federal law.

I. Construction (e.g., construction, alteration or repair activities) during daylight hours provided that all construction equipment shall be fitted with factory installed muffling devices and maintained in good working order.

130.37.060 Noise Standards.

The following standards shall apply to all development projects for which an acoustic analysis is required:

A. Noise sensitive land uses affected by non-transportation noise sources shall not exceed standards set forth in Table 11 (MC Table 130.37.060.1) provided below:

Table 11
Noise Level Performance Standards for Noise-Sensitive Land Uses Affected by Non-Transportation Sources

	Daytime (7am – 7pm)		Evening (7pm – 10pm)		Nighttime (10pm – 7am)	
Noise Level Descriptor	**Community**	**Rural**	**Community**	**Rural**	**Community**	**Rural**
Hourly Leq, dB	55	50	50	45	45	40
Maximum level (L_{max}), dB	70	60	60	55	55	50

Source: El Dorado County Municipal Code, Section 130.37.060.

1. Each of the noise levels specified above shall be lowered by five dBA for simple tone noises, noises consisting primarily of unamplified speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses, such as caretaker dwellings.
2. The Director can impose noise level standards which are up to five dBA less than those specified above, based upon a -determination of existing low ambient noise levels in the vicinity of the project site.
3. The exterior noise level standard shall be applied as follows:
   a. In Community Regions, at the property line of the receiving property;
   b. In Rural Centers and Regions, at a point 100 feet away from a sensitive receptor or, if the sensitive receptor is within the Platted Lands Overlay (-PL) where the underlying land use designation is consistent with Community Region densities, at the property line of the receiving property or 100 feet away from the sensitive receptor, whichever is less; or
   c. In all areas, at the boundary of a recorded noise easement between affected properties

B. Transportation noise shall not exceed thresholds set forth in Table 12 (MC Table 130.37.060.2) provided below:

Table 12
Noise Level Standards for Noise-Sensitive Land Uses Affected by Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] DNL/CNEL, dB	Interior Spaces	
		DNL/CNEL, dB	L_{eq}, dB
Residential	60	45	--
Transient Lodging	60	45	--
Hospitals, Nursing Homes	60	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Schools	60	--	40
Office Buildings	--	--	45
Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Source: El Dorado County Municipal Code, Section 130.37.060.2.

1. In Community Regions and Rural Centers:
   a. Where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied at the property line of the sensitive receptor.
   b. For residential uses with front yards facing the identified noise source, an exterior noise level threshold of 65 dBA DNL shall be applied at the dwelling facade in addition to the required threshold at the outdoor activity area.

2. In Rural Regions: An exterior noise level threshold of 60 dBA DNL shall be applied at a 100-foot radius from the dwelling on lots five acres and larger. Those lots less than five acres shall have the noise level standards applied at the property line.
3. Where it is not possible to reduce noise levels in those outdoor activity areas limited to 60 dBA DNL/CNEL thresholds using a practical application of the best-available noise reduction measures, an exterior noise threshold of up to 65 dBA DNL/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

C. Construction-related noise shall allow for exceptions to the evening and nighttime standards or other temporary exceedances of noise standards as may be approved by the Director, where necessary to alleviate traffic congestion and safety hazards, or where authorized by an approved permit.

Impacts and Mitigation Measures

Thresholds of Significance

For the purposes of this assessment, a noise and vibration impact is considered significant if the project would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies; or
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

The project site is not within the vicinity of a private airstrip, an airport land use plan, or within two miles of a public airport. Therefore, the last threshold listed above is not discussed further.

The following criteria based on standards established by the California Department of Transportation (Caltrans) and El Dorado County General Plan were used to evaluate the significance of environmental noise and vibration resulting from the project:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the El Dorado County General Plan or El Dorado County Municipal Code.
- A significant impact would be identified if off-site traffic noise exposure or on-site activities generated by the project would substantially increase noise levels at existing sensitive receptors in the vicinity. A substantial increase would be identified relative to the noise level increase significance criteria established in Policies 6.5.1.12 (transportation noise

sources) and 6.5.1.13 (non-transportation noise sources) of the El Dorado County General Plan.

- A significant impact would be identified if project construction activities or proposed on-site operations would expose noise-sensitive receptors to excessive groundborne vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to these sources would exceed the Caltrans vibration impact criteria.

Noise Impacts Associated with Project-Generated Increases in Off-Site Traffic

With development of the project, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing uses located along those roadways. Impacts 1 & 2 evaluate increases in off-site traffic noise levels which would result from the project.

Impact 1: Increases in Existing Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Traffic data in the form of peak hour intersection turning movements were obtained from the traffic impact analysis prepared by the project transportation consultant (T. Kear Transportation Planning & Management, Inc.). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were obtained from BAC observations and noise measurement data. Appendices B-1 and B-2 contain the FHWA Model inputs for existing and existing plus project conditions, respectively. The existing and existing plus project traffic noise levels at the distances representing the nearest noise-sensitive land uses to the project area roadways are summarized in Table 13. Table 13 also shows the thresholds for determination of a significant traffic noise increase, whether the roadway segment contains sensitive uses, and whether or not significant noise impacts are identified for each segment.

It should be noted that the FHWA Model predictions presented in Table 13 are based on inputs that include weekday peak hour traffic volumes, day/night, and truck type percentages (e.g., medium and heavy trucks), vehicle speed, and distance from roadway centerlines. The FHWA Model does not account for non-traffic ambient noise sources such as nearby wildlife (e.g., birds chipping) or other anthropogenic noise sources within an area (e.g., distant traffic from other roadways, recreational activities, commercial or industrial operations, etc.).

Table 13
Predicted Traffic Noise Level Increases at Existing Noise-Sensitive Receptors – Existing (2023) vs. Existing (2023) Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E	E+P	Increase				
1	El Dorado Hills Blvd	North of Serrano Pkwy	67.8	67.9	0.1	1.5	No	Yes-Residence	No
2	El Dorado Hills Blvd	Serrano Pkwy to White Rock Rd	62.0	62.4	0.4	3.0	No	Yes-Residence	No
3	Latrobe Rd	White Rock Rd to Golden Foothill Pkwy	68.4	69.0	0.6	1.5	No	Yes-Residence	No
4	Latrobe Rd	Golden Foothill Pkwy to Investment Blvd	52.6	54.7	2.1	5.0	No	Yes-Residence	No
5	Latrobe Rd	Investment Blvd to Avanti Dr/Q Dr	50.9	53.6	2.7	5.0	No	Yes-Residence	No
6	Latrobe Rd	Avanti Dr/Q Dr to Project Commercial Entry	55.7	58.5	2.8	5.0	No	Yes-Residence	No
7	Latrobe Rd	Project Commercial Entry to Royal Oaks Dr	56.3	58.9	2.6	5.0	No	Yes-Residence	No
8	Latrobe Rd	Royal Oaks Dr to Wetsel Oviatt Rd	49.7	50.6	1.0	5.0	No	Yes-Residence	No
9	Latrobe Rd	Wetsel Oviatt Rd to S Shingle Rd	61.9	62.5	0.5	3.0	No	Yes-Residence	No
10	Latrobe Rd	South of S Shingle Rd	59.7	59.9	0.2	5.0	No	Yes-Residence	No
11	Lassen Ln	West of El Dorado Hills Blvd	53.7	53.7	0.0	5.0	No	Yes-Residence	No
12	Serrano Pkwy	East of El Dorado Hills Blvd	58.4	58.4	0.0	5.0	No	Yes-Residence	No
13	White Rock Rd	West of Latrobe Rd	58.3	58.2	0.0	5.0	No	Yes-Residence	No
14	White Rock Rd	East of Latrobe Rd	64.1	64.4	0.3	3.0	No	Yes-Residence	No
15	Golden Foothill Pkwy	West of Latrobe Rd	56.8	57.3	0.5	5.0	No	Yes-Residence	No
16	Clubview Dr	East of Latrobe Rd	52.0	52.4	0.4	5.0	No	Yes-Residence	No
17	Investment Blvd	Latrobe Rd to Robert J Mathews Pkwy	36.1	36.2	0.1	5.0	No	Yes-Residence	No
18	Investment Blvd	West of Robert J Mathews Pkwy	47.3	47.3	0.0	5.0	No	Yes-Church	No
19	Project Q Dr	West of Latrobe Rd (within project area)	56.0[4]	31.3	-24.7	5.0	No	Yes-Residence	No
20	Avanti Dr	East of Latrobe Rd	36.7	36.7	0.0	5.0	No	Yes-Residence	No
21	Project Commercial Entry	West of Latrobe Rd (within project area)	56.0[4]	29.0	-27.0	5.0	No	Yes-Residence	No
22	Royal Oaks Dr	West of Latrobe Rd (within project area)	56.0[4]	45.5	-10.5	5.0	No	Yes-Residence	No
23	Royal Oaks Dr	East of Latrobe Rd	42.1	42.2	0.1	5.0	No	Yes-Residence	No
24	Wetsel Oviatt Rd	West of Latrobe Rd	19.4	22.1	2.7	5.0	No	Yes-Residence	No
25	S Shingle Rd	West of Latrobe Rd	45.5	46.4	0.9	5.0	No	Yes-Residence	No
26	S Shingle Rd	East of Latrobe Rd	53.9	54.4	0.5	5.0	No	Yes-Residence	No
27	Robert J Mathews Pkwy	Investment Blvd to Golden Foothill Pkwy	51.4	51.5	0.1	5.0	No	Yes-Church	No
28	Robert J Mathews Pkwy	South of Investment Blvd	50.2	50.2	0.0	5.0	No	Yes-School	No
29	Palmdale Dr	South of Carson Crossing Dr	45.4	45.4	0.0	5.0	No	Yes-Residence	No
30	Carson Crossing Dr	Palmdale Dr to Four Seasons Dr	50.6	52.7	2.1	5.0	No	Yes-Residence	No
31	Carson Crossing Dr	Palmdale Dr to Golden Foothill Pkwy	51.1	53.0	1.9	5.0	No	Yes-Residence	No

[1] Significance thresholds established in General Plan Policy 6.5.1.12.
[2] Sensitive receptors identified as existing residential, school or church uses.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed threshold AND where sensitive receptors are present along the roadway segment.
[4] Project traffic study did not contain data for segments 19, 21 and 22, which are access points to the project property (located within the project area). For the purposes of this analysis, the measured ambient DNL at BAC site 4 was utilized, which is believed to be representative of the existing ambient noise level environment along those roadway segments.

Source: FHWA-RD-77-108 with inputs from T. Kear Transportation Planning & Management. Appendices B-1 & B-2 contain FHWA Model inputs.

Based on the analyses presented in Table 13, project-generated traffic noise level increases would not result in significant noise impacts at existing noise-sensitive receptors located along the project area roadway network relative to the increase significance criteria contained in Policy 6.5.1.12 of the El Dorado County General Plan. As a result, this impact is identified as being ***less than significant***.

Impact 2: Increases in Cumulative Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used within inputs obtained from the traffic impact analysis prepared by the project transportation consultant (T. Kear Transportation Planning & Management, Inc.) to quantify increases in future (cumulative) traffic noise levels at the nearest existing noise-sensitive land uses to the project area roadway network. This analysis first assesses whether a cumulative roadway noise impact would occur by comparing the cumulative with project conditions to existing conditions, which is presented in Table 14. If a cumulative roadway noise impact is identified, it is further evaluated to assess whether the proposed project would make a cumulatively considerable contribution to the cumulative impact. This process is completed through a comparison of the roadway noise associated with the cumulative with project scenario against the cumulative no-project scenario, which is shown in Table 15. Appendices B-3 and B-4 contain the FHWA Model inputs for cumulative and cumulative plus project conditions, respectively.

Table 14
Predicted Traffic Noise Level Increases at Existing Noise-Sensitive Receptors – Existing (2023) vs. Cumulative (2040) Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E	C+P	Increase				
1	El Dorado Hills Blvd	North of Serrano Pkwy	67.8	68.2	0.4	1.5	No	Yes-Residence	No
2	El Dorado Hills Blvd	Serrano Pkwy to White Rock Rd	62.0	62.8	0.8	3.0	No	Yes-Residence	No
3	Latrobe Rd	White Rock Rd to Golden Foothill Pkwy	68.4	69.9	1.4	1.5	No	Yes-Residence	No
4	Latrobe Rd	Golden Foothill Pkwy to Investment Blvd	52.6	55.2	2.5	5.0	No	Yes-Residence	No
5	Latrobe Rd	Investment Blvd to Avanti Dr/Q Dr	50.9	53.9	3.0	5.0	No	Yes-Residence	No
6	Latrobe Rd	Avanti Dr/Q Dr to Project Commercial Entry	55.7	58.7	3.1	5.0	No	Yes-Residence	No
7	Latrobe Rd	Project Commercial Entry to Royal Oaks Dr	56.3	59.2	2.9	5.0	No	Yes-Residence	No
8	Latrobe Rd	Royal Oaks Dr to Wetsel Oviatt Rd	49.7	50.8	1.1	5.0	No	Yes-Residence	No
9	Latrobe Rd	Wetsel Oviatt Rd to S Shingle Rd	61.9	62.7	0.8	3.0	No	Yes-Residence	No
10	Latrobe Rd	South of S Shingle Rd	59.7	59.7	0.0	5.0	No	Yes-Residence	No
11	Lassen Ln	West of El Dorado Hills Blvd	53.7	55.2	1.5	5.0	No	Yes-Residence	No
12	Serrano Pkwy	East of El Dorado Hills Blvd	58.4	58.7	0.3	5.0	No	Yes-Residence	No
13	White Rock Rd	West of Latrobe Rd	58.3	59.7	1.4	5.0	No	Yes-Residence	No
14	White Rock Rd	East of Latrobe Rd	64.1	66.1	2.0	3.0	No	Yes-Residence	No
15	Golden Foothill Pkwy	West of Latrobe Rd	56.8	58.4	1.6	5.0	No	Yes-Residence	No
16	Clubview Dr	East of Latrobe Rd	52.0	54.5	2.5	5.0	No	Yes-Residence	No
17	Investment Blvd	Latrobe Rd to Robert J Mathews Pkwy	36.1	37.7	1.7	5.0	No	Yes-Residence	No
18	Investment Blvd	West of Robert J Mathews Pkwy	47.3	49.5	2.2	5.0	No	Yes-Church	No
19	Project Q Dr	West of Latrobe Rd (within project area)	56.0[4]	30.2	-25.8	5.0	No	Yes-Residence	No
20	Avanti Dr	East of Latrobe Rd	36.7	36.7	0.0	5.0	No	Yes-Residence	No
21	Project Commercial Entry	West of Latrobe Rd (within project area)	56.0[4]	28.5	-27.5	5.0	No	Yes-Residence	No
22	Royal Oaks Dr	West of Latrobe Rd (within project area)	56.0[4]	45.2	-10.8	5.0	No	Yes-Residence	No
23	Royal Oaks Dr	East of Latrobe Rd	42.1	43.8	1.8	5.0	No	Yes-Residence	No
24	Wetsel Oviatt Rd	West of Latrobe Rd	19.4	22.1	2.7	5.0	No	Yes-Residence	No
25	S Shingle Rd	West of Latrobe Rd	45.5	47.1	1.6	5.0	No	Yes-Residence	No
26	S Shingle Rd	East of Latrobe Rd	53.9	54.8	0.9	5.0	No	Yes-Residence	No
27	Robert J Mathews Pkwy	Investment Blvd to Golden Foothill Pkwy	51.4	53.5	2.1	5.0	No	Yes-Church	No
28	Robert J Mathews Pkwy	South of Investment Blvd	50.2	50.8	0.6	5.0	No	Yes-School	No
29	Palmdale Dr	South of Carson Crossing Dr	45.4	52.0	6.7	5.0	Yes	Yes-Residence	Yes
30	Carson Crossing Dr	Palmdale Dr to Four Seasons Dr	50.6	54.6	4.0	5.0	No	Yes-Residence	No
31	Carson Crossing Dr	Palmdale Dr to Golden Foothill Pkwy	51.1	55.2	4.1	5.0	No	Yes-Residence	No

[1] Significance thresholds established in General Plan Policy 6.5.1.12.
[2] Sensitive receptors identified as existing residential, school or church uses.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed threshold AND where sensitive receptors are present along the roadway segment.
[4] Project traffic study did not contain data for segments 19, 21 and 22, which are access points to the project property (located within the project area). For the purposes of this analysis, the measured ambient DNL at BAC site 4 was utilized, which is believed to be representative of the existing ambient noise level environment along those roadway segments.

Source: FHWA-RD-77-108 with inputs from T. Kear Transportation Planning & Management. Appendices B-1 & B-4 contain FHWA Model inputs.

Table 15
Predicted Traffic Noise Level Increases at Existing Noise-Sensitive Receptors – Cumulative (2040) vs. Cumulative (2040) Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB)			Significance Threshold[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			C	C+P	Increase				
29	Palmdale Dr	South of Carson Crossing Dr	52.0	52.0	0.0	5.0	No	Yes-Residence	No

[1] Significance thresholds established in General Plan Policy 6.5.1.12.
[2] Sensitive receptors identified as existing residential, school or church uses.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108 with inputs from T. Kear Transportation Planning & Management. Appendices B-3 & B-4 contain FHWA Model inputs.

As indicated in Table 14, project-generated traffic is calculated to exceed the applicable General Plan Policy 6.5.1.12 impact significance criterion along one roadway segment containing a noise-sensitive receptor (segment 29). However, the project-generated increase along that roadway segment is not calculated to have a cumulatively considerable contribution to the cumulative impact relative to the General Plan Policy 6.5.1.12 criterion (Table 15).

Based on the analyses presented in Tables 14 and 15, project-generated traffic noise level increases would not result in significant noise impacts at existing noise-sensitive receptors located along the project area roadway network relative to the increase significance criteria contained in Policy 6.5.1.12 of the El Dorado County General Plan. As a result, this impact is identified as being ***less than significant***.

Impact 3: Increases in Project-Generated Traffic Noise Levels at Existing Schools

As mentioned previously, traffic volumes on the local roadway network will increase with development of the project. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing uses located along those roadways – which would include schools.

Existing and cumulative increases in off-site traffic noise levels which would result from the project were evaluated in **Impacts 1 and 2**. As indicated in Table 13, existing plus project increases in traffic noise levels at the outdoor area/playground of the nearest existing school along the project roadway network (John Hancock Academy, roadway segment 28) were calculated to be less than 0.1 dB DNL. In addition, Table 14 data indicates that cumulative plus project increases in traffic noise levels at the outdoor area/playground of the closest existing school within project roadway network (John Hancock Academy, roadway segment 28) were calculated to be 0.6 dB DNL. The threshold of perception of the human ear is approximately 3 to 5 dB – a 5 dB change is considered to be clearly noticeable. Further, when considering a doubling of traffic volumes, which is unlikely to occur within the local roadway network, would result in a logarithmic increase of 3 dB. The calculated range of project-generated increases in ambient noise levels at the closest schools within the project roadway network (0.1 dB DNL to 0.6 dB DNL) would be well below the threshold of human perception.

Based on the analysis provided in this report and the information above, project-generated increases in traffic noise levels are not expected to result in significant increases in ambient noise levels at existing outdoor areas of schools within the local roadway network (Latrobe School District). As a result, this impact is identified as being ***less than significant***.

Off-Site Noise Impacts Associated with Proposed On-Site Activities

The proposed project consists of approximately 918 dwelling units, one village and two neighborhood parks, approximately 46-acres of open space, and a 1.8-acre commercial component. The primary noise sources associated with proposed uses of the development have been identified as park and commercial activities. An assessment of project-related park and commercial activity noise levels at the nearest existing noise-sensitive uses follows.

Section 130.37.020 of the El Dorado County Municipal Code provides an exemption for noise from activities conducted in parks, such as those proposed by the project. As a result, an impact discussion for project park noise at existing noise-sensitive uses relative to Municipal Code noise level criteria is not included in this assessment. Rather, this assessment provides an analysis of project park noise at existing off-site uses relative to the applicable El Dorado County General Plan noise level limits.

Impact 4: Park Activity Noise at Nearest Existing Noise-Sensitive Uses

According to the project site plans, the project proposes three (3) parks. Specifically, the project proposes one large Village Park and two smaller Neighborhood Parks. The locations of the proposed parks are shown in Figure 2.

Noise generated by parks vary depending on whether the parks are intended for passive or active use. Passive use includes picnic and sitting areas whereas active use incudes playing fields and play structures. Based on information contained in the Public Facilities and Services Chapter of the Creekside Village Specific Plan, the proposed Village and Neighborhood Parks will have both passive and active uses. According to BAC file data, parks consisting of active uses (playing fields / playgrounds) have noise levels of approximately 60 dB L_{eq} and 70 dB L_{max} at a distance of 50 feet.

The nearest existing noise-sensitive uses to a proposed park have been identified as residences constructed along Latrobe Road east of the development (adjacent to the Village Park, identified in Figure 2). Based on the reference noise levels presented above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), park activity noise exposure at the nearest existing noise-sensitive uses was calculated. The results of those calculations are provided in Table 16.

Because park activities would likely consist of human speech (i.e., shouting and cheering during activities), noise associated with park activities would be subject to the El Dorado County General Plan's more restrictive daytime, evening, and nighttime noise level standards for community regions shown in Table 7 (the criteria contain a 5 dB penalty for noise consisting primarily of speech). However, it is reasonable to assume that park hours would be likely be restricted to daytime and evening hours only (7:00 a.m. to 10:00 p.m.). Satisfaction with the General Plan's more restrictive evening noise level standards would ensure for compliance with the General Plan's less restrictive daytime noise level limits. Therefore, project park noise exposure at the nearest existing noise-sensitive uses was assessed relative to the applicable General Plan evening noise level standards for community regions shown in Table 7.

Table 16
Predicted Park Activity Noise Levels at Nearest Existing Noise-Sensitive Uses

			Predicted Noise Levels (dB)[4]		County Evening Noise Standards (dB)	
Receiver[1]	**Nearest Park[2]**	**Distance (ft)[3]**	**L_{eq}**	**L_{max}**	**L_{eq}**	**L_{max}**
Residential – East	Village	450	33	43	45	55

[1] Locations of existing residences are shown in Figure 2.
[2] Locations of proposed park areas are shown in Figure 2.
[3] Distances measured from effective noise center of nearest park to nearest residential property line.
[4] Predicted park activity noise levels at the nearest existing residences include consideration of the shielding that would be provided by existing 8' traffic noise barriers along the property lines of those residences, and have been adjusted by -8 dB. Figure 2 shows the location of the existing traffic noise barriers.

Source: BAC 2020.

As indicated in Table 16, project park noise level exposure is predicted to satisfy the applicable El Dorado County General Plan evening noise level standards at the nearest existing noise-sensitive uses (single-family residential uses to the east of the project).

In addition, the predicted park activity noise levels shown in Table 16 are well below ambient daytime (7:00 a.m. to 10:00 p.m.) noise levels measured within close proximity to the nearest residential uses to the east of the park (BAC ambient measurement site 3). Based on this information, increases in ambient daytime and evening noise levels at the nearest existing sensitive uses due to project park activities would not be significant relative to the criteria contained in General Plan Policy 6.5.1.13.

Because project park activity noise exposure is predicted to satisfy the applicable El Dorado County General Plan noise level standards at the nearest existing sensitive uses (residential), and because increases in ambient noise levels due to project park activity noise levels at those locations would not be significant relative to the General Plan Policy 6.5.1.13 criteria, this impact is considered to be ***less than significant***.

Impact 5: Commercial Operations Noise at Nearest Existing Noise-Sensitive Uses

The project site plan indicates that a 1.8-acre commercial component (Neighborhood Commercial – NC) will be included in the site design. The location of the proposed commercial component is shown in Figure 2. A complete list of allowed commercial uses within the component is provided below:

-Building supply store
-Banks and financial services
-Bars and drinking establishments
-Brewpub
-Child day care center
-Community care facility
-Drive-through facility
-Offices: professional
-Pet grooming
-Research and laboratory services
-Restaurant
-Retail sales and services
-Specialized education and training
-Veterinary clinic

-Food and beverage retail
-Medical services: clinic
-Mixed-use dwelling
-Offices: medical
-Automotive: fuel sales (CUP required)
-Microbrewery (CUP required)
-Nursery retail (CUP required)
-Winery: full-service facilities (CUP required)

As indicated above, the automotive (w/fuel sales), microbrewery, nursery/retail, and winery (full-service facilities) uses would trigger the need for a county conditional use permit (CUP). It is reasonably assumed that specific noise studies would be required for each of those uses as part of the county's CUP approval process at a later point in time. Based on this assumption, further consideration of noise sources associated with the automotive (w/fuel sales), microbrewery, nursery/retail, and winery uses within the proposed commercial component of the development were not included in this discussion. The primary noise sources associated with the remaining allowable commercial uses in the list above have been identified as parking movements, truck delivery activities, drive-through operations, childcare outdoor play area activities, building mechanical equipment (i.e., HVAC), and forklift operations.

Although the tentative map plan contains the general location of the planned commercial component within the development, detailed plans illustrating locations of specific uses within those components have not yet been developed. It is expected that detailed development plans for the commercial component will be reviewed at a future date as part of the county's project approval process. As a result, the following section provides a generalized analysis of commercial operations noise exposure at nearby existing noise-sensitive uses.

Parking Lot Movements

As a means of determining potential noise exposure due to commercial component parking lot activities, BAC utilized specific parking lot noise level measurements conducted by BAC. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles. The results of those measurements revealed that individual parking lot movements generated mean noise levels of 65 dB SEL and 65 dB L_{max} at a reference distance of 50 feet.

For a conservative assessment of parking area noise generation, it was assumed that a parking area within the commercial component could accommodate up to 200 vehicles. This estimate of vehicle capacity was based on review of the tentative map plan shown in Figure 2 and the use types envisioned within the commercial component. It was also assumed that a parking area could fill or empty during any given peak hour of business operations. Using BAC parking lot noise measurement data and based on the operations assumptions above, noise exposure from an individual parking area having 200 vehicle stalls computes to approximately 52 dB L_{eq} and 65 dB L_{max} at a distance of 50 feet from the effective noise center of the area.

Truck Delivery Activities

It is the experience of BAC that deliveries of product to commercial uses such as the ones allowed within the commercial component occur are typically done with medium-duty vendor trucks/vans. The primary noise sources associated with delivery activities are trucks stopping (air brakes), trucks backing into position (back-up alarms), and pulling away from the loading/unloading area

(revving engines). BAC file data indicate that noise levels associated with medium-duty truck deliveries (including side-step vans) are approximately 76 dB SEL and 66 dB L_{max} at a distance of 100 feet.

For a conservative assessment of commercial component delivery truck noise generation, it was assumed that 5 medium duty trucks/vans would deliver products to the store on a typical busy day. To compute delivery truck activity noise exposure relative to the county's hourly average (L_{eq}) noise descriptor, it was assumed that 3 truck deliveries could occur with the same given hour. Using the BAC noise measurement data and operations assumptions above, noise exposure from 3 truck deliveries computes to approximately 45 dB L_{eq} at a distance of 100 feet (maximum noise level of 66 dB L_{max}).

Drive-Through Operations

It is the experience of BAC that the primary noise sources associated with drive-through operations are the amplified menu speaker board/post and vehicle passages. To quantify the noise emissions of drive-through operations, BAC utilized noise measurement data collected for similar drive-through operations in the greater Sacramento area in recent years. The BAC file data indicate that drive-through speakers were measured to have average and maximum noise levels of approximately 60 dB L_{eq} and 67 dB L_{max} (respectively) at a distance of 10 feet. BAC file data further indicate that vehicles within drive-throughs were measured to have average and maximum noise levels of 57 dB L_{eq} and 70 dB L_{max} (respectively) at a distance of 5 feet.

Playground Activities

It is reasonably assumed that child care uses within the commercial component (should they be development) would have an outdoor play area. For the assessment of play area noise impacts, noise level data collected by BAC staff at various outdoor playgrounds in recent years was utilized. The primary noise source associated with play area use is shouting children. BAC file data indicate that average and maximum noise levels are approximately 55 dB L_{eq} and 75 dB L_{max} at a distance of 50 feet from the focal point of the playground area.

HVAC Equipment

The HVAC systems within future buildings of the commercial component will likely consist of packaged rooftop air conditioning systems. Such HVAC units, which typically stand about 4-5 feet tall, would be shielded from view of nearby sensitive uses by the building parapets. It is the experience of BAC that such rooftop HVAC units frequently generate a noise level of approximately 45 dB L_{eq} at a reference distance of 100 feet from the building facade, including shielding by the building parapet (estimated to provide approximately 10 dB of noise level reduction).

Forklift Activities

According the list of allowed commercial uses within the commercial development, it is expected that the building supply store and winery uses would have forklift operations for moving deliveries of product. To quantify the noise emissions of forklift activities, BAC utilized noise measurement data collected from commercial forklift operations. Those data indicate that average and

maximum noise levels for forklift loading/ unloading operations can be expected to be approximately 67 dBA L_{eq} and 82 dBA L_{max} (respectively) at a distance of 10 feet from the operating forklift.

Predicted Commercial Operations Noise Levels at Existing Noise-Sensitive Uses

Based on the reference noise level data and operations assumptions presented above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), commercial operations noise exposure at the nearest existing noise-sensitive uses was calculated. The results of those calculations are presented in Tables 17 and 18. The nearest existing noise-sensitive uses to the commercial component have been identified as residences constructed along Latrobe Road east of the development.

Table 17
Predicted Commercial Noise Levels at Nearest Existing Noise-Sensitive Uses – Hourly L_{eq}

	Predicted Noise Level, L_{eq} (dB)[2,3]						
Receiver[1]	Parking (250')	Truck Delivery (250')	Drive-Thru (200')	Playground (200')	HVAC (200')	Forklift (200')	Cumulative[4]
Residential – East	30	29	29	25	39	33	41

[1] Locations of existing residences are shown in Figure 2.
[2] Predicted noise level when projected from commercial component to nearest residential property line.
[3] Predicted commercial noise levels at the nearest existing residences include consideration of the shielding that would be provided by existing 8' traffic noise barriers along the property lines of those residences, and have been adjusted by -8 dB. Figure 2 shows the location of the existing traffic noise barriers.
[4] Cumulative noise level exposure, or logarithmic sum of concurrent operations/activities.

Source: BAC 2023.

Table 18
Predicted Commercial Noise Levels at Nearest Existing Noise-Sensitive Uses – Maximum L_{max}

	Predicted Noise Level, L_{max} (dB)[2,3]						
Receiver[1]	Parking (250')	Truck Delivery (250')	Drive-Thru (200')	Playground (200')	HVAC (200')	Forklift (200')	Highest Predicted[4]
Residential – East	43	50	33	46	39	48	50

[1] Locations of existing residences are shown in Figure 2.
[2] Predicted noise level when projected from commercial component to nearest residential property line.
[3] Predicted commercial noise levels at the nearest existing residences include consideration of the shielding that would be provided by existing 8' traffic noise barriers along the property lines of those residences, and have been adjusted by -8 dB. Figure 2 shows the location of the existing traffic noise barriers.
[4] Highest predicted maximum noise level from analyzed commercial operations/activities.

Source: BAC 2023.

According to the data presented in Tables 17 and 18, commercial operations noise level exposure is predicted to satisfy the applicable El Dorado County General Plan daytime, evening, and

nighttime hourly average (L_{eq}) and maximum (L_{max}) community noise level criteria at the nearest existing noise-sensitive uses (single-family residential uses to the east of the project).

Additionally, the predicted commercial operations noise levels shown in Tables 17 and 18 are well below ambient daytime, evening, and nighttime noise levels measured within close proximity to the nearest residential uses to the east of the park (BAC ambient measurement site 3). Based on this information, increases in ambient daytime, evening, and nighttime noise levels at the nearest existing sensitive uses due to project commercial activities would not be significant relative to the criteria contained in General Plan Policy 6.5.1.13.

Based on the analysis and results provided above, noise level exposure from the analyzed commercial operations is predicted to satisfy the applicable El Dorado County General Plan noise level standards at the nearest existing sensitive uses (residential). Further, increases in ambient noise levels from those operations at the nearest existing sensitive uses would not be significant relative to applicable General Plan Policy 6.5.1.13 criteria. As a result, this impact is considered to be ***less than significant***.

Noise Impacts Associated with Proposed Off-Site Infrastructure Improvements

The project proposes off-site improvements associated with transportation and utility infrastructure. The overall area of potential effect (APE) for the improvements is presented in Appendix F. The off-site infrastructure improvements include:

- Improvement I: Intersection improvements at Latrobe Road/Town Center Boulevard (turn lane extension, roadway re-paving and re-striping)
- Improvement II: Roadway improvements at Royal Oaks Drive/Latrobe Road and Avanti Drive/Latrobe Road intersections (intersection signalization and roadway re-striping)
- Improvement III: Transportation improvements (roadway and bicycle access connection, and waterline connection)
- Improvement IV: Infrastructure improvements (wastewater force main extension)

During the infrastructure improvements, noise from heavy equipment operations would add to the noise environment in the immediate project vicinity.

Impact 6: Off-Site Infrastructure Improvement Noise at Existing Noise-Sensitive Uses

Heavy equipment associated with project off-site infrastructure improvement activities would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point.

The nearest existing noise-sensitive receptors to the off-site infrastructure improvement work areas have been identified as residences along Latrobe Road – located as close as 150 feet away from the acoustic noise center of the Improvement II work areas. However, it should be noted

that those nearest residences have existing property line noise barriers that would provide screening of work area noise levels.

Table 19 includes the range of maximum noise levels for equipment commonly used in roadway improvement projects at full-power operation at a distance of 50 feet. The Table 19 data also include predicted maximum equipment noise levels at the nearest identified sensitive receptor to an off-site infrastructure improvement work area located approximately 150 feet away, which assume a standard spherical spreading loss of 6 dB per doubling of distance.

It should be noted that average noise levels associated with construction activities are dependent upon equipment type, duration of activity, and location within a given work area, and therefore tend to be highly variable. As a result, this analysis focuses on maximum noise levels associated with construction equipment only.

Table 19
Typical Construction Equipment Noise – Roadway Improvement Projects

Equipment Description	Typical Maximum Noise Level at 50 Feet (dBA)	Predicted Maximum Noise Level at 150 Feet (dBA)
Concrete mixer truck	85	75
Concrete saw	90	80
Dump truck	84	74
Flatbed truck	84	74
Front end loader	80	70
Generator (more than 25 kVA)	82	72
Paver	85	75
Pickup truck	55	45

Source: 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1.

Based on the equipment noise levels in Table 19, maximum noise levels from construction equipment are predicted to range from 45 to 80 dB at a distance of 150 feet – the distance from the acoustical noise center of the nearest work area to the nearest residence. Although it is expected that existing noise barriers along the property lines of the nearest residences to the work areas would reduce equipment noise levels at those locations, it is possible that a portion of the heavy equipment associated with project infrastructure improvements could result in temporary short-term increases over ambient maximum noise levels at those residences. Further, it is possible that those noise levels could exceed the applicable El Dorado County noise level limits.

Policy 6.5.1.11 of the El Dorado County General Plan exempts noise sources associated with construction provided such activities take place between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 8:00 p.m. on weekends, and on federally recognized holidays. Section 130.37.20 of the El Dorado County Municipal Code also provides an exemption for construction noise provided that such activities occur during daylight hours and that all equipment is fitted with factory installed muffling devices and maintained in good working order. Provided that project roadway improvement construction activities occur pursuant to the criteria identified in General Plan Policy 6.5.1.11 and Municipal Code Section 130.37.20, noise from those project-generated activities would be exempt, and this impact would be considered less than

significant. However, if construction activities are proposed during the hours/days not exempted by the General Plan or Municipal Code, noise levels generated by project roadway improvement construction activities could exceed the maximum noise level standards identified in Table 8 at the nearest existing residential uses. As a result, noise impacts associated with project on-site construction activities are identified as being **potentially significant**.

Mitigation for Impact 6: Construction Noise Control Measures

MM-6: To the maximum extent practical, the following construction-related measures should be incorporated into the project off-site infrastructure improvement operations:

- Noise-generating infrastructure improvement construction activities should occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on weekends and on federal holidays.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.

Significance of Impact 6 after Mitigation: ***Less than Significant***

Noise Impacts Associated with Project On-Site Construction Activities

Impact 6: On-Site Construction Noise Levels at Existing Sensitive Uses

During project construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point. The property boundary of the nearest existing residential use (east of Latrobe Road) is located approximately 200 feet away from where construction activities would occur within the project area.

Table 20 includes the range of maximum noise levels for equipment commonly used in general construction projects at full-power operation at a distance of 50 feet. Not all of these construction activities would be required of this project. The Table 20 data also include predicted maximum

equipment noise levels at the boundary of the nearest sensitive use located approximately 200 feet away, which assume a standard spherical spreading loss of 6 dB per doubling of distance.

Table 20
Construction Equipment Reference Noise Levels and Predicted Noise Levels at 200 Feet

Equipment Description	Maximum Noise Level at 50 Feet (dBA)	Predicted Maximum Noise Level at 200 feet (dBA)
Air compressor	80	68
Backhoe	80	68
Ballast equalizer	82	70
Ballast tamper	83	71
Compactor	82	70
Concrete mixer	85	73
Concrete pump	82	70
Concrete vibrator	76	64
Crane, mobile	83	71
Dozer	85	73
Generator	82	73
Grader	85	70
Impact wrench	85	73
Loader	80	73
Paver	85	68
Pneumatic tool	85	73
Pump	77	73
Saw	76	65
Scarifier	83	64
Scraper	85	71
Shovel	82	73
Spike driver	77	70
Tie cutter	84	65
Tie handler	80	72
Tie inserter	85	68
Truck	84	73

Source: 2018 Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1.

Based on the equipment noise levels in Table 20, worst-case on-site project construction equipment maximum noise levels at the nearest existing residential use located 200 feet away are expected to range from approximately 64 to 73 dB. However, the predicted project construction equipment maximum noise levels of 64 to 73 dB are below ambient daytime maximum noise levels measured within close proximity to those residences (BAC ambient measurement site 3). Further, it is expected that existing traffic noise barriers along the property boundaries of those nearest residential uses would further reduce project construction noise levels at those locations (the existing barriers are illustrated in Figure 2). However, it is possible that worst-case one-site project construction noise levels could exceed the applicable El Dorado County General Plan noise level limits applicable to construction noise in community regions identified in Table 8, including consideration of the existing noise barriers.

Policy 6.5.1.11 of the El Dorado County General Plan exempts noise sources associated with construction provided such activities take place between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 8:00 p.m. on weekends, and on federally recognized holidays. Section 130.37.20 of the El Dorado County Municipal Code also provides an exemption

for construction noise provided that such activities occur during daylight hours and that all equipment is fitted with factory installed muffling devices and maintained in good working order. Provided project construction activities occur during these hours/days, construction activities would be exempt, and this impact would be considered less than significant. However, if construction activities are proposed during the hours not exempted by the General Plan or Municipal Code, noise levels generated by construction activities could exceed the maximum noise level standards identified in Table 8 at the nearest existing residential uses. As a result, noise impacts associated with project on-site construction activities are identified as being **potentially significant**.

Mitigation for Impact 7: On-Site Construction Noise Control Measures

MM-7: To the maximum extent practical, the following measures should be incorporated into the project on-site construction operations:

- Noise-generating infrastructure improvement construction activities should occur between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on weekends and on federal holidays.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Project area and site access road speed limits shall be established and enforced during the construction period.
- Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.

Significance of Impact 7 after Mitigation: ***Less than Significant***

Vibration Impacts Associated with Project Activities

Impact 8: Vibration Generated by Project Construction and On-Site Operations

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest identified existing structures (residences east of Latrobe Road) are located approximately 215 feet from where from construction activities which would occur within the project area.

Table 21 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. The Table 21 data also include predicted equipment vibration levels at the nearest existing residences to the project area located approximately 215 feet away.

Table 21
Vibration Source Levels for Construction Equipment and Predicted Levels at 215 Feet

Equipment	Maximum Vibration Level at 25 Feet (PPV)[1]	Predicted Maximum Vibration Level at 215 Feet (PPV)
Large bulldozer	0.089	0.004
Hoe ram	0.089	0.004
Caisson drilling	0.089	0.004
Loaded trucks	0.076	0.003
Backhoe	0.051	0.002
Excavator	0.051	0.002
Grader	0.051	0.002
Loader	0.051	0.002
Jackhammer	0.035	0.001
Small bulldozer	0.003	<0.001

[1] PPV = Peak Particle Velocity

Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual and BAC calculations

As shown in Table 21, vibration levels generated from on-site construction activities at the nearest existing structures located approximately 215 feet away (residences east of Latrobe Road) are predicted to be well below the Caltrans thresholds for damage to new residential structures of 0.5 in/sec PPV shown in Table 4. In addition, the predicted vibration levels in Table 21 are well below the threshold for a barely perceptible human response as defined by Caltrans in Table 5 (vibration damage potential threshold criteria). Therefore, on-site construction within the project area is not expected to result in excessive groundborne vibration levels at nearby existing residential uses.

Results from the ambient vibration level monitoring at the project site (Table 3) indicate that measured average vibration levels were well below the strictest Caltrans thresholds for damage to structures and thresholds for annoyance. Therefore, it is expected that the project would not result in the exposure of persons to excessive groundborne vibration levels at proposed uses of the project.

The project proposes residential and park uses within the development. It is the experience of BAC these uses do not typically have equipment that generates appreciable vibration. Further, it is our understanding that the project does not propose equipment that will produce appreciable vibration.

Because vibration levels due to and upon the proposed project are expected to satisfy the applicable Caltrans groundborne impact vibration criteria, this impact is considered to be ***less than significant***.

Impact 9: Vibration Generated by Off-Site Infrastructure Improvements

During project off-site infrastructure improvements, heavy equipment would be used, which would generate localized vibration in the immediate vicinity of the construction. The worst-case vibration exposure from off-site heavy equipment activities would occur at the sensitive receptors (residences) located along Latrobe Road – located as close as 110 feet away from Improvement II work areas.

According to the reference vibration levels for construction equipment presented in Table 21, vibration levels associated with typical construction equipment range from 0.003 to 0.089 PPV at a distance of 25 feet. When projected to the nearest existing residence located near an off-site infrastructure improvement work area approximately 110 feet away, construction equipment vibration levels are calculated to range from less than 0.001 to 0.010 PPV. The calculated vibration levels of less than 0.001 to 0.010 PPV are well below the Caltrans thresholds for damage to new residential structures of 0.5 in/sec PPV shown in Table 4. In addition, the calculated vibration levels are below the threshold for a barely perceptible human response as defined by Caltrans in Table 5 (vibration damage potential threshold criteria).

Because vibration level exposure due to project off-site infrastructure improvements would satisfy the Caltrans groundborne impact vibration criteria, this impact is considered to be ***less than significant***

Noise Impacts Upon the Development

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users or residents. Nevertheless, El Dorado County has policies that address existing/future conditions affecting the proposed project, which are discussed in the following section.

On-Site Traffic Noise Impacts

Impact 10: Future Exterior Traffic Noise Levels at Proposed Residential and Park Uses

The FHWA Model was used with future traffic data to predict future traffic noise levels at the residential and park uses of the development. The future (Cumulative 2040 Plus Project) average daily traffic (ADT) volume for Latrobe Road was calculated using data provided in the project

transportation impact analysis completed by T. Kear Transportation Planning & Management, Inc. Specifically, the future Latrobe Road average daily traffic (ADT) volume was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions. The predicted future Latrobe Road traffic noise levels at the residential and park uses proposed nearest to Latrobe Road are summarized in Table 22. Detailed FHWA Model inputs and results are provided in Appendix G.

Table 22
Predicted Future Exterior Latrobe Road Traffic Noise Levels at Proposed Residential Uses[1]

Location[2]	Description	Distance from Roadway Centerline (ft)[3]	Future Exterior DNL (dB)[4]
Park	Village Park	300	61
Park	Neighborhood Park 1	150	62
SFL Lots 588-598	Backyards	95	68
	First-Floor Facades	110	67
	Upper-Floor Facades	110	69
SFL Lots 550-560	Backyards	95	65
	First-Floor Facades	110	64
	Upper-Floor Facades	110	66
SFM Large Lot 2	Backyards	230	60
	First-Floor Facades	60	68
	Upper-Floor Facades	60	70

[1] A complete listing of FHWA Model inputs and results are provided in Appendix G.
[2] Locations of parks and lots are shown in Figure 2.
[3] Distances scaled from effective noise center of proposed parks and residential lots to roadway centerline using provided site plans.
[4] A +2 dB offset was applied to upper-floor facades for reduced ground absorption of sound at elevated locations.

Source: BAC 2023.

As indicated in Table 22, predicted future Latrobe Road traffic noise level exposure at the nearest proposed park uses of the development (Village Park and Neighborhood Park 1) would satisfy the applicable El Dorado County General Plan exterior noise level standard of 70 dB DNL for playgrounds and neighborhood park uses. However, at the nearest single-family low density residential (SFL) backyards, future Latrobe Road traffic noise level exposure is predicted to exceed the General Plan exterior noise level standard of 60 dB DNL for residential uses.

Although the project site plans contain the general location of the proposed single-family medium density residential (SFM) large lot, the locations of the individual residences and outdoor activity areas are currently unknown. However, the Table 22 data indicate that future Latrobe Road exterior traffic noise levels are predicted to be 60 dB DNL at a distance of 230 feet from the centerline of the roadway. Thus, future Latrobe Road traffic noise exposure would exceed the applicable El Dorado County General Plan 60 dB DNL exterior noise level standard should the outdoor activity areas of the residences within the proposed SFM large lot be located within 230 feet from the centerline of Latrobe Road. Based on the analysis provided above, this impact is identified as being **potentially significant**.

Mitigation Impact 10:

To satisfy the El Dorado County General Plan 60 dB DNL exterior noise level standard at the single-family low and medium density residential outdoor activity areas proposed nearest to Latrobe Road, the following noise mitigation measures should be implemented:

MM-10A: To satisfy the General Plan 60 dB DNL exterior noise level standard at the backyards of the single-family residential lots proposed nearest to Latrobe Road, the construction of solid traffic noise barriers ranging from 6 to 9' in height at the locations illustrated in Figure 4 would be required. Appendix H contains the inputs and results from the barrier analysis.

It is recommended that the traffic noise barriers take the form of a masonry wall, earthen berm, or combination of the two. Other materials may be acceptable (i.e., wood or wood composite fence with overlapping slat construction) but should be reviewed by an acoustical consultant prior to construction.

MM-10B: To satisfy the General Plan 60 dB DNL exterior noise level standard at the backyards of the single-family medium density (SFM) lots, one of the following two noise measures could be implemented by the project developer:

1. Ensure that the outdoor activity areas of the residential lots proposed within the SFM area maintain a minimum setback distance of 230 feet from the centerline of Latrobe Road; or
2. Should the outdoor activity areas of the proposed residential lots within the SFM area be proposed within 230 feet from the centerline of Latrobe Road, the construction of solid traffic noise barriers would be required along the property lines of the lots located within that setback distance. Once site plans that include building pad elevations are available, a site-specific noise study would need to be completed by a qualified noise consultant in order to determine the overall final heights of barriers required at those locations.

   It is recommended that the traffic noise barriers take the form of a masonry wall, earthen berm, or combination of the two. Other materials may be acceptable (i.e., wood or wood composite fence with overlapping slat construction) but should be reviewed by an acoustical consultant prior to construction.

Significance of Impact 10 after Mitigation: ***Less than Significant***

Impact 11: Future Interior Traffic Noise Levels at Proposed Residential Uses

Standard residential construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), *typically* results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Therefore, provided future traffic noise levels do not exceed 70 dB DNL at exterior building facades, standard construction practices should be adequate to ensure compliance with the El Dorado County General Plan 45 dB DNL interior noise level standard at the project site.

After implementation of Mitigation Measure 8A (construction of property line traffic noise barriers), future exterior traffic noise levels from Latrobe Road are predicted to be approximately 60 dB DNL or less at the first-floor facades of the single-family low density (SFL) residences constructed nearest to the roadway. Due to reduced ground absorption at elevated positions and lack of shielding by the noise barriers identified in Mitigation Measure 9A, future Latrobe Road traffic noise levels at the upper-floor facades of those residences are predicted to be as high as 69 dB DNL (Table 22). According to the Table 22 data, future exterior Latrobe Road traffic noise levels at the SFM residences are predicted to be approximately 68 dB DNL at a distance of 60 feet from the roadway centerline. Due to reduced ground absorption at elevated positions, upper-level traffic noise levels from Latrobe Road would approach 70 dB DNL at that same distance.

Based on the information above, standard construction should be adequate to reduce future Latrobe Road traffic noise levels within all floors of SFL residences constructed adjacent to the roadway. However, future traffic noise level exposure is calculated to be only 1 dB below the General Plan 45 dB DNL interior noise level standard.

Predicted future Latrobe Road interior traffic noise levels within the SFM residences constructed at least 60 feet from the roadway centerline would satisfy the 45 dB DNL interior noise level standard (i.e., standard building construction practices with windows closed and mechanical ventilation provided). However, should residences within the SFM large lot be constructed within 60 feet from the centerline of Latrobe Road, future interior traffic noise levels from the roadway could exceed the General Plan 45 dB DNL interior noise level standard at the upper-floors of those residences. As a result, this impact is identified as being **potentially significant**.

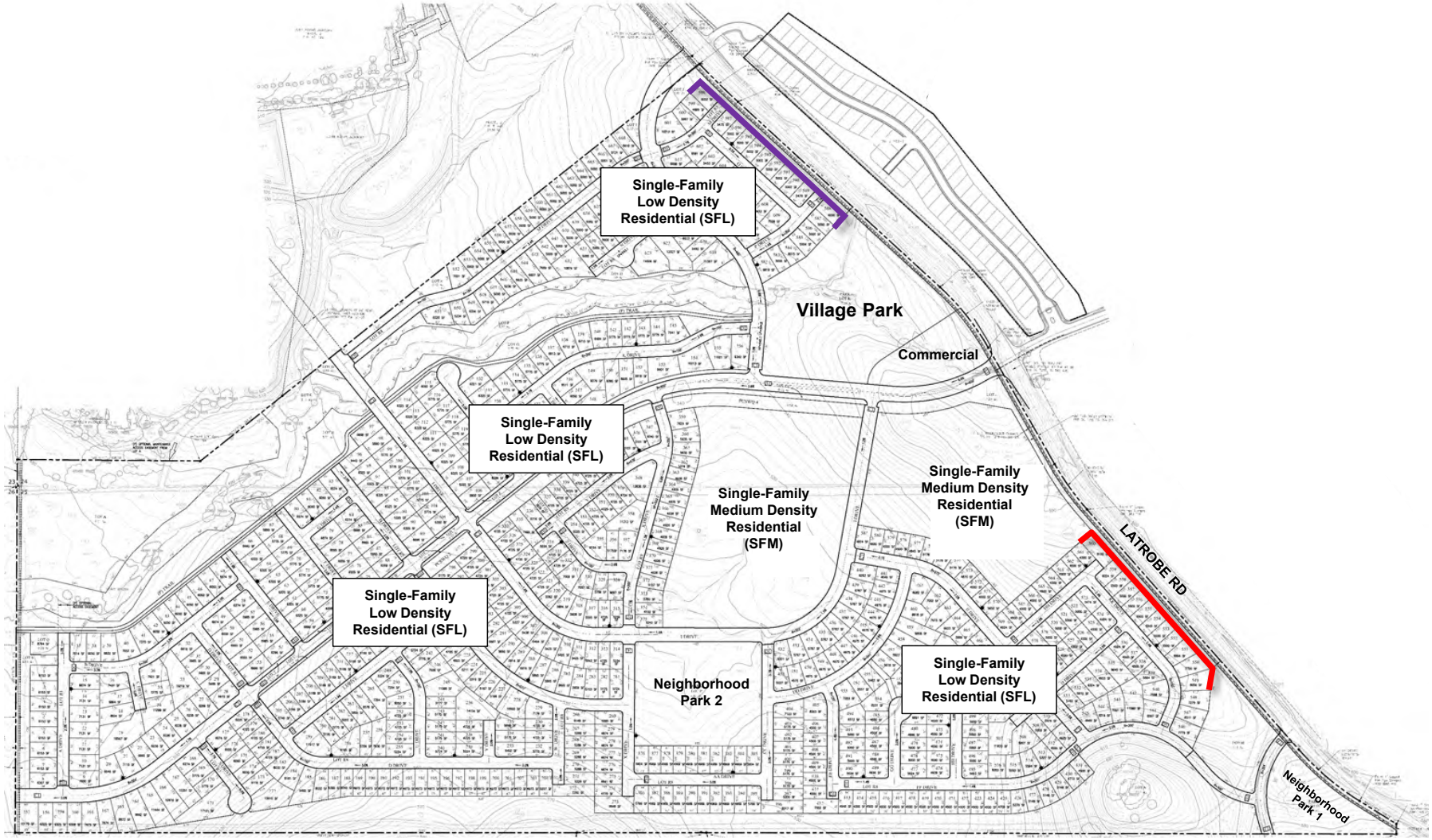
Mitigation Impact 11:

To satisfy the El Dorado County General Plan 45 dB DNL interior noise level standard within the single-family low and medium density residences proposed nearest to Latrobe Road (*including* a factor of safety), the following noise mitigation measures should be implemented:

MM-11A: To achieve a greater margin of safety, the window construction upgrades identified in Figure 5 should be integrated into the project design. Specifically, the upper-floor bedrooms windows of the lots identified in Figure 5 from which Latrobe Road would be visible should be upgraded to have a minimum Sound Transmission Rating (STC) of 32. In addition, mechanical ventilation (air conditioning) should be provided for all residences within this development to allow the occupants to close doors and windows to achieve compliance with General Plan 45 dB DNL interior noise level standard.

MM-11B: Should the building facades of residences located within the SFM large lot be proposed within 60 feet from the centerline of Latrobe Road, all upper-floor bedroom windows of the residences located within that setback distance that would have a view of the roadway should be upgraded to a minimum STC of 32.

Significance of Impact 11 after Mitigation: ***Less than Significant***



Legend

- 9' Solid Noise Barriers (Mitigation Measure MM-10A – Traffic Noise)
- 6' Solid Noise Barriers (Mitigation Measure MM-10A – Traffic Noise)

N

Scale (Feet)

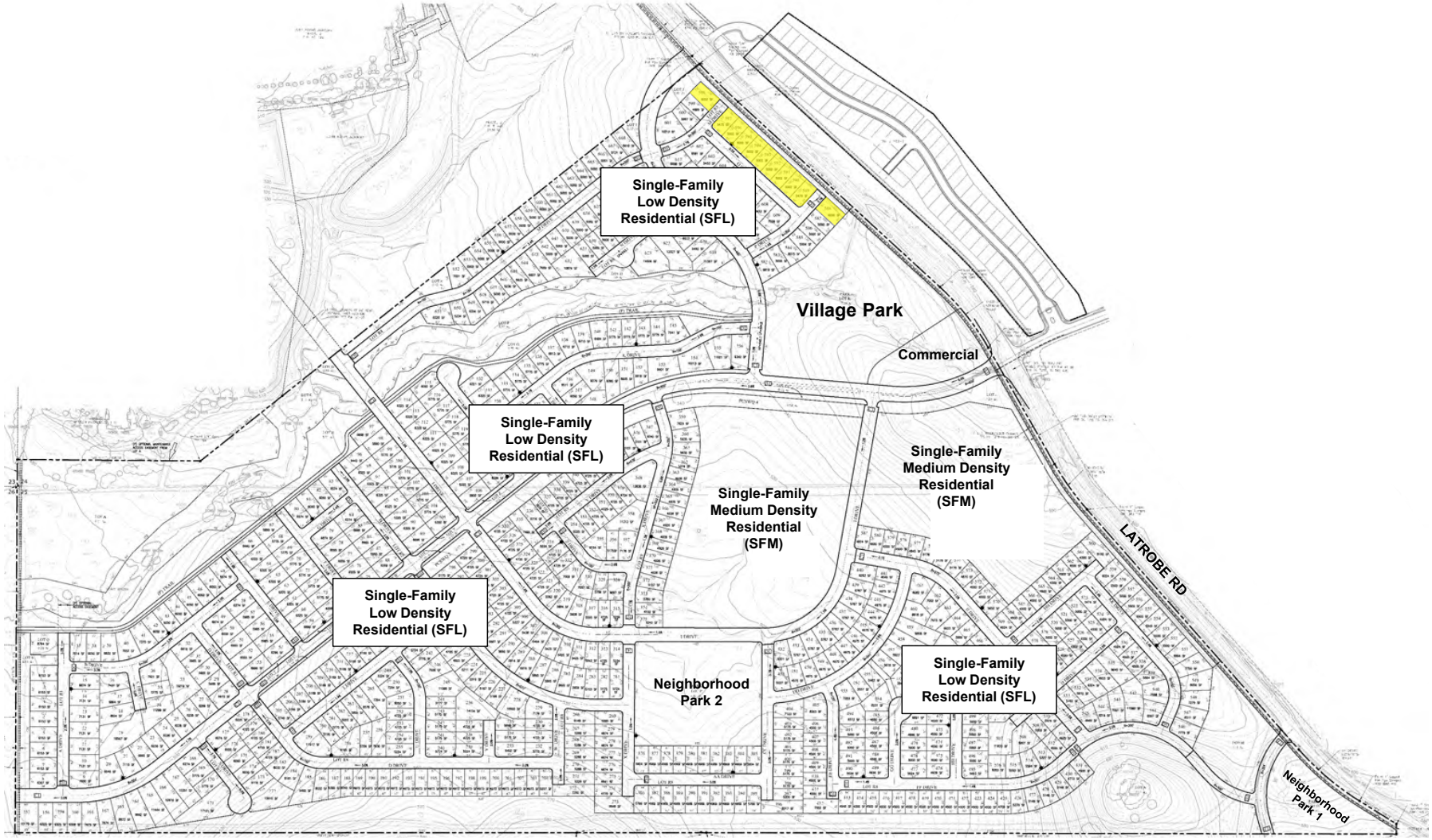
0 250 500

Creekside Village Residential Development
El Dorado County, California

Mitigation Measure 10A – Traffic Noise

Figure 4

BOLLARD Acoustical Consultants



Legend

Window Upgrade STC 32: Upper-Floors Only (Mitigation Measure MM-11A)

N

Scale (Feet)

0 250 500

Creekside Village Residential Development
El Dorado County, California

Mitigation Measure 11A – Traffic Noise

Figure 5

BOLLARD Acoustical Consultants

Impact 12: Park Activity Noise Levels at Proposed Residential Uses

According to the project site plan shown in Figure 2, parks are proposed to be located adjacent to residential uses within the development. Park activities have been identified as a primary noise source that could impact nearby residential uses proposed within the development.

An analysis of park activity noise exposure at existing noise-sensitive (residential) uses was presented in **Impact 4**. BAC file data referenced in that analysis indicate that parks consisting of active uses have noise levels of up to 60 dB L_{eq} and 70 dB L_{max} at a distance of 50 feet.

Section 130.37.020 of the El Dorado County Municipal Code provides an exemption for noise from activities conducted in parks, such as those proposed by the project. However, project park noise levels would be subject to compliance with applicable El Dorado County General Plan noise level limits. Park activities would likely consist of human speech (i.e., shouting and cheering during activities), which would be subject to the General Plan's more restrictive daytime, evening, and nighttime noise level standards for community regions shown in Table 7. However, it is reasonable to assume that park hours would be likely be restricted to daytime and evening hours only (7:00 a.m. to 10:00 p.m.). Satisfaction with the General Plan's more restrictive evening noise level standards would ensure for compliance with the General Plan's less restrictive daytime noise level limits. Therefore, project park noise exposure at the nearest proposed residential uses was assessed relative to the applicable General Plan evening noise level standards for community regions shown in Table 7.

The nearest proposed residential uses to a park within the development maintain a separation of approximately 150 feet from the center of the park (Neighborhood Park 2). Based on the reference noise levels presented above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), park activity noise levels at the nearest proposed residential uses located 150 feet away is calculated to be 50 dB L_{eq} and 60 dB L_{max}. The predicted park activity noise levels of 50 dB L_{eq} and 60 dB L_{max} at the nearest residential uses would exceed the applicable El Dorado General Plan evening noise level standards of 45 dB L_{eq} and 55 dB L_{max}. As a result, this impact is identified as being **potentially significant**.

Mitigation Impact 12:

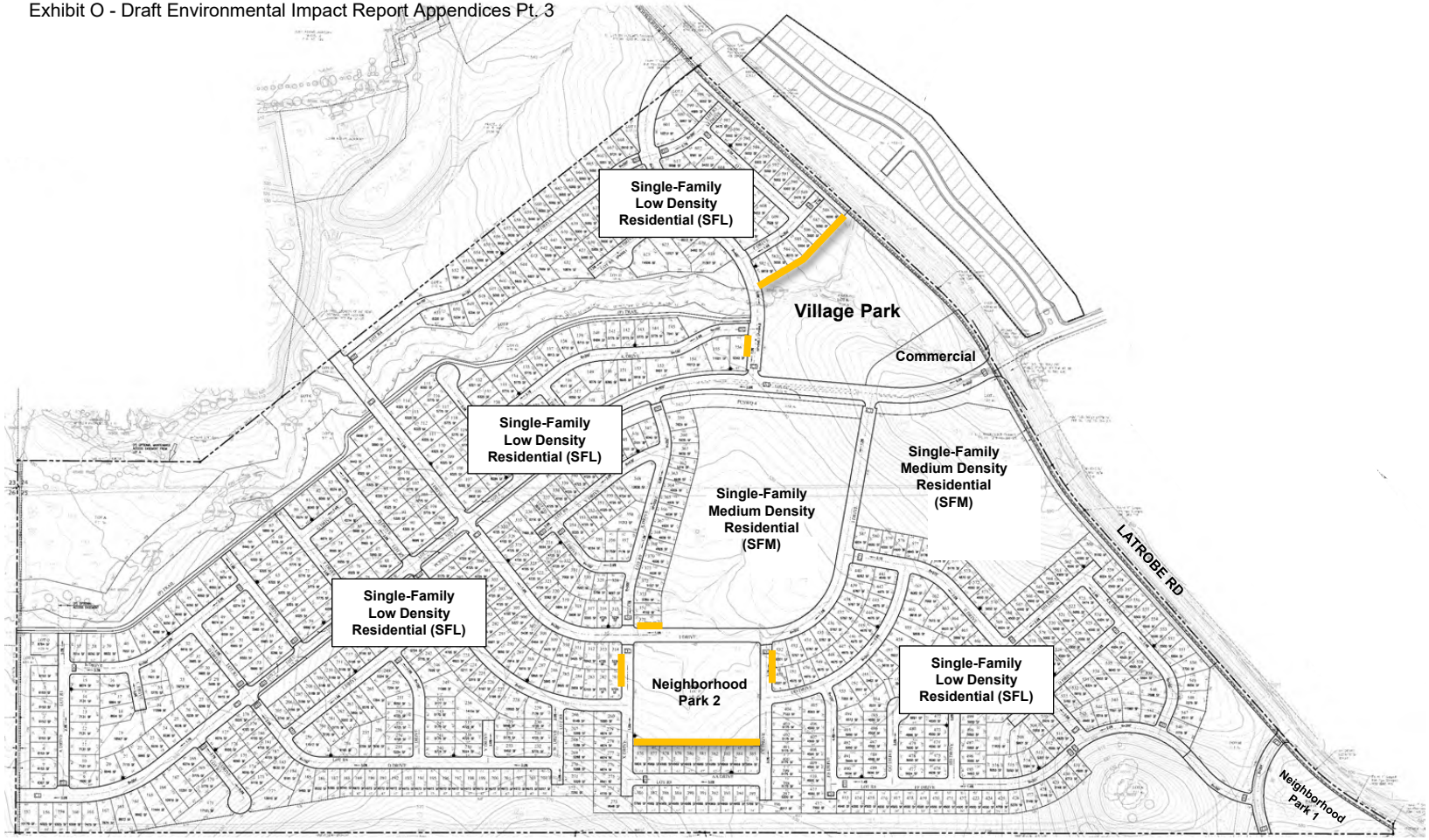
To reduce the potential for an exceedance of the applicable El Dorado County General Plan evening noise level standards at proposed residential uses, the following park noise mitigation measure should be implemented:

MM-12: Solid noise barriers measuring a minimum of 6-feet in height (relative to backyard elevation) should be constructed at the locations illustrated in Figure 6. The recommended noise barrier extension could take the form of a solid masonry wall or wood fence. Should the construction of a wood fence be selected as a barrier, the fence slats should overlap by a minimum of two inches and be screwed to the framing rather than nailed. The purpose of the overlapping slats and using screws rather than nails is to ensure that prolonged exposure to the elements does not result in visible gaps through the slats which would result in reduced noise barrier

effectiveness. The final barrier design should be reviewed by an acoustical consultant prior to installation.

The construction of 6-foot-tall noise barriers at the locations illustrated in Figure 6 would break line of sight of the park activities at the outdoor activity areas of the nearest proposed residences. This shielding is estimated to provide approximately 5 dB of noise attenuation, which would reduce predicted park noise level levels to 45 dB L_{eq} and 55 dB L_{max} or less at those locations and would satisfy the applicable El Dorado County General Plan 45 dB L_{eq} and 55 dB L_{max} evening noise level noise level standards.

Significance of Impact 12 after Mitigation: ***Less than Significant***



Legend

6' Solid Noise Barriers (Mitigation Measure MM-11 – Park Noise)

N

Scale (Feet)

0 250 500

Creekside Village Residential Development
El Dorado County, California

Mitigation Measure 11 – Park Noise

Figure 6

BOLLARD Acoustical Consultants

Impact 13: Existing El Dorado Business Park Operations Noise Levels at Proposed Residential Uses

As indicated in Figure 1, existing commercial / office uses (El Dorado Business Park) are located north of the proposed development. Primary noise sources associated with the adjacent commercial uses have been identified as mechanical equipment (HVAC), parking lot movements, and truck loading dock activities. According to BAC ambient noise level data collected at the project site (Appendices D & E), not including natural sounds (i.e., frogs, crickets, etc.), noise from the existing commercial operations to the north did not exceed the County's noise standards applicable to stationary noise sources. As a result, this impact is considered to be ***less than significant*.**

This concludes BAC's noise and vibration assessment of the Creekside Village Residential Development project in El Dorado County, California. Please contact BAC at (530) 537-2328 or dariog@bacnoise.com if you have any comments or questions regarding this report.

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

Appendix B-1
FHWA Highway Traffic Noise Prediction Model Inputs
Creekside Village
File Name: 01 2023 Existing No Project
Run Date: 10/4/2023

#	Roadway	Segment Description	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance to Receptor	Offset (dB)
1	El Dorado Hills Blvd	North of Serrano Prkwy	28,265	83	17	2	1	50	115	0
2	El Dorado Hills Blvd	Serrano Pkwy to White Rock Rd	40,915	83	17	2	1	45	300	0
3	Latrobe Rd	White Rock Rd to Golden Foothill Pkwy	37,240	83	17	2	1	50	125	0
4	Latrobe Rd	Golden Foothill Pkwy to Investment Blvd	12,635	83	17	2	1	55	110	-13
5	Latrobe Rd	Investment Blvd to Avanti Dr/Project Q Dr	9,245	83	17	2	1	55	250	-8
6	Latrobe Rd	Avanti Dr/Project Q Dr to Project Commercial Entry	8,620	83	17	2	1	55	115	-8
7	Latrobe Rd	Project Commercial Entry to Royal Oaks Dr	8,620	83	17	2	1	55	105	-8
8	Latrobe Rd	Royal Oaks Dr to Wetsel Oviatt Rd	7,355	83	17	2	1	55	260	-8
9	Latrobe Rd	Wetsel Oviatt Rd to S Shingle Rd	6,910	83	17	2	1	55	130	0
10	Latrobe Rd	South of S Shingle Rd	5,170	83	17	2	1	55	150	0
11	Lassen Ln	West of El Dorado Hills Blvd	4,165	83	17	2	1	25	105	0
12	Serrano Pkwy	East of El Dorado Hills Blvd	7,950	83	17	1	1	45	170	0
13	White Rock Rd	West of Latrobe Rd	14,280	83	17	2	1	45	105	-6
14	White Rock Rd	East of Latrobe Rd	15,185	83	17	2	1	35	75	0
15	Golden Foothill Pkwy	West of Latrobe Rd	13,465	83	17	2	1	35	85	-6
16	Clubview Dr	East of Latrobe Rd	7,240	83	17	1	1	25	75	-6
17	Investment Blvd	Latrobe Rd to Robert J Mathews Pkwy	6,140	83	17	2	1	35	415	-13
18	Investment Blvd	West of Robert J Mathews Pkwy	890	83	17	2	1	35	150	0
19	Project Q Dr	West of Latrobe Rd (within project area)								
20	Avanti Dr	East of Latrobe Rd	645	83	17	1	1	25	115	-8
21	Project Commercial Entry	West of Latrobe Rd (within project area)								
22	Royal Oaks Dr	West of Latrobe Rd (within project area)								
23	Royal Oaks Dr	East of Latrobe Rd	2,245	83	17	1	1	35	175	-8
24	Wetsel Oviatt Rd	West of Latrobe Rd	445	83	17	2	1	35	2000	-8
25	S Shingle Rd	West of Latrobe Rd	1,455	83	17	1	1	25	175	0
26	S Shingle Rd	East of Latrobe Rd	2,945	83	17	1	1	45	175	0
27	Robert J Mathews Pkwy	Investment Blvd to Golden Foothill Pkwy	5,975	83	17	2	1	35	285	0
28	Robert J Mathews Pkwy	South of Investment Blvd	8,025	83	17	2	1	35	415	0
29	Palmdale Dr	South of Carson Crossing Dr	1,570	83	17	1	1	25	75	-6
30	Carson Crossing Dr	Palmdale Dr to Four Seasons Dr	2,580	83	17	1	1	35	70	-6
31	Carson Crossing Dr	Palmdale Dr to Golden Foothill Pkwy	2,890	83	17	1	1	35	70	-6

Notes: Offsets applied where existing traffic noise barriers (sound walls) are present (heights range from 6' to 13').

Appendix B-2
FHWA Highway Traffic Noise Prediction Model Inputs
Creekside Village
File Name: 02 2023 Existing+Project
Run Date: 10/4/2023

#	Roadway	Segment Description	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance to Receptor	Offset (dB)
1	El Dorado Hills Blvd	North of Serrano Prkwy	29,180	83	17	2	1	50	115	0
2	El Dorado Hills Blvd	Serrano Pkwy to White Rock Rd	45,150	83	17	2	1	45	300	0
3	Latrobe Rd	White Rock Rd to Golden Foothill Pkwy	42,620	83	17	2	1	50	125	0
4	Latrobe Rd	Golden Foothill Pkwy to Investment Blvd	20,435	83	17	2	1	55	110	-13
5	Latrobe Rd	Investment Blvd to Avanti Dr/Project Q Dr	17,230	83	17	2	1	55	250	-8
6	Latrobe Rd	Avanti Dr/Project Q Dr to Project Commercial Entry	16,330	83	17	2	1	55	115	-8
7	Latrobe Rd	Project Commercial Entry to Royal Oaks Dr	15,865	83	17	2	1	55	105	-8
8	Latrobe Rd	Royal Oaks Dr to Wetsel Oviatt Rd	9,160	83	17	2	1	55	260	-8
9	Latrobe Rd	Wetsel Oviatt Rd to S Shingle Rd	7,810	83	17	2	1	55	130	0
10	Latrobe Rd	South of S Shingle Rd	5,360	83	17	2	1	55	150	0
11	Lassen Ln	West of El Dorado Hills Blvd	4,165	83	17	2	1	25	105	0
12	Serrano Pkwy	East of El Dorado Hills Blvd	7,950	83	17	1	1	45	170	0
13	White Rock Rd	West of Latrobe Rd	14,180	83	17	2	1	45	105	-6
14	White Rock Rd	East of Latrobe Rd	16,230	83	17	2	1	35	75	0
15	Golden Foothill Pkwy	West of Latrobe Rd	15,025	83	17	2	1	35	85	-6
16	Clubview Dr	East of Latrobe Rd	7,910	83	17	1	1	25	75	-6
17	Investment Blvd	Latrobe Rd to Robert J Mathews Pkwy	6,330	83	17	2	1	35	415	-13
18	Investment Blvd	West of Robert J Mathews Pkwy	890	83	17	2	1	35	150	0
19	Project Q Dr	West of Latrobe Rd (within project area)	785	83	17	1	1	25	300	-8
20	Avanti Dr	East of Latrobe Rd	645	83	17	1	1	25	115	-8
21	Project Commercial Entry	West of Latrobe Rd (within project area)	845	83	17	1	1	15	250	-8
22	Royal Oaks Dr	West of Latrobe Rd (within project area)	8,405	83	17	1	1	35	250	-8
23	Royal Oaks Dr	East of Latrobe Rd	2,310	83	17	1	1	35	175	-8
24	Wetsel Oviatt Rd	West of Latrobe Rd	835	83	17	2	1	35	2000	-8
25	S Shingle Rd	West of Latrobe Rd	1,810	83	17	1	1	25	175	0
26	S Shingle Rd	East of Latrobe Rd	3,300	83	17	1	1	45	175	0
27	Robert J Mathews Pkwy	Investment Blvd to Golden Foothill Pkwy	6,165	83	17	2	1	35	285	0
28	Robert J Mathews Pkwy	South of Investment Blvd	8,025	83	17	2	1	35	415	0
29	Palmdale Dr	South of Carson Crossing Dr	1,570	83	17	1	1	25	75	-6
30	Carson Crossing Dr	Palmdale Dr to Four Seasons Dr	4,140	83	17	1	1	35	70	-6
31	Carson Crossing Dr	Palmdale Dr to Golden Foothill Pkwy	4,450	83	17	1	1	35	70	-6

Notes: Offsets applied where existing traffic noise barriers (sound walls) are present (heights range from 6' to 13').

Appendix B-3
FHWA Highway Traffic Noise Prediction Model Inputs
Creekside Village
File Name: 03 2040 Cumulative No Project
Run Date: 10/4/2023

#	Roadway	Segment Description	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance to Receptor	Offset (dB)
1	El Dorado Hills Blvd	North of Serrano Prkwy	30,660	83	17	2	1	50	115	0
2	El Dorado Hills Blvd	Serrano Pkwy to White Rock Rd	48,835	83	17	2	1	45	300	0
3	Latrobe Rd	White Rock Rd to Golden Foothill Pkwy	51,165	83	17	2	1	50	125	0
4	Latrobe Rd	Golden Foothill Pkwy to Investment Blvd	17,575	83	17	2	1	55	110	-13
5	Latrobe Rd	Investment Blvd to Avanti Dr/Project Q Dr	10,845	83	17	2	1	55	250	-8
6	Latrobe Rd	Avanti Dr/Project Q Dr to Project Commercial Entry	10,220	83	17	2	1	55	115	-8
7	Latrobe Rd	Project Commercial Entry to Royal Oaks Dr	10,220	83	17	2	1	55	105	-8
8	Latrobe Rd	Royal Oaks Dr to Wetsel Oviatt Rd	8,265	83	17	2	1	55	260	-8
9	Latrobe Rd	Wetsel Oviatt Rd to S Shingle Rd	7,820	83	17	2	1	55	130	0
10	Latrobe Rd	South of S Shingle Rd	5,340	83	17	2	1	55	150	0
11	Lassen Ln	West of El Dorado Hills Blvd	5,840	83	17	2	1	25	105	0
12	Serrano Pkwy	East of El Dorado Hills Blvd	8,460	83	17	1	1	45	170	0
13	White Rock Rd	West of Latrobe Rd	19,725	83	17	2	1	45	105	-6
14	White Rock Rd	East of Latrobe Rd	24,015	83	17	2	1	35	75	0
15	Golden Foothill Pkwy	West of Latrobe Rd	21,685	83	17	2	1	35	85	-6
16	Clubview Dr	East of Latrobe Rd	13,095	83	17	1	1	25	75	-6
17	Investment Blvd	Latrobe Rd to Robert J Mathews Pkwy	12,115	83	17	2	1	35	415	-13
18	Investment Blvd	West of Robert J Mathews Pkwy	1,485	83	17	2	1	35	150	0
19	Project Q Dr	West of Latrobe Rd (within project area)								
20	Avanti Dr	East of Latrobe Rd	645	83	17	1	1	25	115	-8
21	Project Commercial Entry	West of Latrobe Rd (within project area)								
22	Royal Oaks Dr	West of Latrobe Rd (within project area)								
23	Royal Oaks Dr	East of Latrobe Rd	3,325	83	17	1	1	35	175	-8
24	Wetsel Oviatt Rd	West of Latrobe Rd	445	83	17	2	1	35	2000	-8
25	S Shingle Rd	West of Latrobe Rd	1,730	83	17	1	1	25	175	0
26	S Shingle Rd	East of Latrobe Rd	3,260	83	17	1	1	45	175	0
27	Robert J Mathews Pkwy	Investment Blvd to Golden Foothill Pkwy	14,020	83	17	2	1	35	285	0
28	Robert J Mathews Pkwy	South of Investment Blvd	16,360	83	17	2	1	35	415	0
29	Palmdale Dr	South of Carson Crossing Dr	7,280	83	17	1	1	25	75	-6
30	Carson Crossing Dr	Palmdale Dr to Four Seasons Dr	6,380	83	17	1	1	35	70	-6
31	Carson Crossing Dr	Palmdale Dr to Golden Foothill Pkwy	7,340	83	17	1	1	35	70	-6

Notes: Offsets applied where existing traffic noise barriers (sound walls) are present (heights range from 6' to 13').

Appendix B-4
FHWA Highway Traffic Noise Prediction Model Inputs
Creekside Village
File Name: 04 2040 Cumulative+Project
Run Date: 10/4/2023

#	Roadway	Segment Description	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance to Receptor	Offset (dB)
1	El Dorado Hills Blvd	North of Serrano Prkwy	30,790	83	17	2	1	50	115	0
2	El Dorado Hills Blvd	Serrano Pkwy to White Rock Rd	49,395	83	17	2	1	45	300	0
3	Latrobe Rd	White Rock Rd to Golden Foothill Pkwy	51,865	83	17	2	1	50	125	0
4	Latrobe Rd	Golden Foothill Pkwy to Investment Blvd	22,660	83	17	2	1	55	110	-13
5	Latrobe Rd	Investment Blvd to Avanti Dr/Project Q Dr	18,290	83	17	2	1	55	250	-8
6	Latrobe Rd	Avanti Dr/Project Q Dr to Project Commercial Entry	17,480	83	17	2	1	55	115	-8
7	Latrobe Rd	Project Commercial Entry to Royal Oaks Dr	16,915	83	17	2	1	55	105	-8
8	Latrobe Rd	Royal Oaks Dr to Wetsel Oviatt Rd	9,530	83	17	2	1	55	260	-8
9	Latrobe Rd	Wetsel Oviatt Rd to S Shingle Rd	8,330	83	17	2	1	55	130	0
10	Latrobe Rd	South of S Shingle Rd	5,140	83	17	2	1	55	150	0
11	Lassen Ln	West of El Dorado Hills Blvd	5,840	83	17	2	1	25	105	0
12	Serrano Pkwy	East of El Dorado Hills Blvd	8,460	83	17	1	1	45	170	0
13	White Rock Rd	West of Latrobe Rd	19,725	83	17	2	1	45	105	-6
14	White Rock Rd	East of Latrobe Rd	24,155	83	17	2	1	35	75	0
15	Golden Foothill Pkwy	West of Latrobe Rd	19,365	83	17	2	1	35	85	-6
16	Clubview Dr	East of Latrobe Rd	12,960	83	17	1	1	25	75	-6
17	Investment Blvd	Latrobe Rd to Robert J Mathews Pkwy	9,060	83	17	2	1	35	415	-13
18	Investment Blvd	West of Robert J Mathews Pkwy	1,485	83	17	2	1	35	150	0
19	Project Q Dr	West of Latrobe Rd (within project area)	605	83	17	1	1	25	300	-8
20	Avanti Dr	East of Latrobe Rd	645	83	17	1	1	25	115	-8
21	Project Commercial Entry	West of Latrobe Rd (within project area)	755	83	17	1	1	15	250	-8
22	Royal Oaks Dr	West of Latrobe Rd (within project area)	7,985	83	17	1	1	35	250	-8
23	Royal Oaks Dr	East of Latrobe Rd	3,390	83	17	1	1	35	175	-8
24	Wetsel Oviatt Rd	West of Latrobe Rd	820	83	17	2	1	35	2000	-8
25	S Shingle Rd	West of Latrobe Rd	2,100	83	17	1	1	25	175	0
26	S Shingle Rd	East of Latrobe Rd	3,630	83	17	1	1	45	175	0
27	Robert J Mathews Pkwy	Investment Blvd to Golden Foothill Pkwy	9,785	83	17	2	1	35	285	0
28	Robert J Mathews Pkwy	South of Investment Blvd	9,150	83	17	2	1	35	415	0
29	Palmdale Dr	South of Carson Crossing Dr	7,280	83	17	1	1	25	75	-6
30	Carson Crossing Dr	Palmdale Dr to Four Seasons Dr	6,460	83	17	1	1	35	70	-6
31	Carson Crossing Dr	Palmdale Dr to Golden Foothill Pkwy	7,420	83	17	1	1	35	70	-6

Notes: Offsets applied where existing traffic noise barriers (sound walls) are present (heights range from 6' to 13').

Legend

A: Site 1: Facing north towards existing commercial / offices uses
B: Site 2: Facing east towards Latrobe Road
C: Site 3: Facing north along Latrobe Road
D: Site 4: Facing north towards Latrobe Road

Creekside Village Residential Development
El Dorado County, California

Photographs of Noise & Vibration Survey Locations

Appendix C

BOLLARD Acoustical Consultants

Appendix D-1
Ambient Noise Monitoring Results - Site 1
Creekside Village Residential Development - El Dorado County, California
Saturday, October 03, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	47	52	47	43
1:00 AM	49	52	49	45
2:00 AM	48	51	48	45
3:00 AM	44	50	44	39
4:00 AM	43	49	39	35
5:00 AM	45	51	44	40
6:00 AM	42	69	38	36
7:00 AM	48	74	43	39
8:00 AM	46	65	42	39
9:00 AM	39	56	38	36
10:00 AM	40	60	37	35
11:00 AM	42	62	36	34
12:00 PM	41	59	36	34
1:00 PM	37	48	36	34
2:00 PM	37	55	36	34
3:00 PM	40	61	37	35
4:00 PM	40	58	36	35
5:00 PM	45	72	37	35
6:00 PM	38	50	36	34
7:00 PM	47	51	47	40
8:00 PM	49	53	49	47
9:00 PM	49	54	49	44
10:00 PM	48	57	48	46
11:00 PM	45	51	44	41

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	49	37	45	49	42	46
Lmax (Maximum)	74	48	59	69	49	54
L50 (Median)	49	36	40	49	38	45
L90 (Background)	47	34	37	46	35	41

Computed DNL, dB	52
% Daytime Energy	53%
% Nighttime Energy	47%

GPS Coordinates	38°36'40.89"N
	121° 3'30.97"W

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Appendix D-2
Ambient Noise Monitoring Results - Site 1
Creekside Village Residential Development - El Dorado County, California
Sunday, October 04, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	45	56	45	38
1:00 AM	51	55	51	49
2:00 AM	51	55	51	49
3:00 AM	51	57	49	44
4:00 AM	54	57	54	51
5:00 AM	53	57	53	49
6:00 AM	41	55	39	36
7:00 AM	42	59	39	36
8:00 AM	46	69	39	36
9:00 AM	40	58	35	32
10:00 AM	38	55	35	32
11:00 AM	34	45	33	31
12:00 PM	37	55	32	30
1:00 PM	42	62	33	30
2:00 PM	33	54	31	29
3:00 PM	37	60	32	30
4:00 PM	36	57	31	29
5:00 PM	36	55	31	28
6:00 PM	38	58	31	28
7:00 PM	45	53	44	36
8:00 PM	46	54	46	42
9:00 PM	43	48	43	39
10:00 PM	51	55	49	42
11:00 PM	51	56	51	42

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	46	33	41	54	41	51
Lmax (Maximum)	69	45	56	57	55	56
L50 (Median)	46	31	36	54	39	49
L90 (Background)	42	28	33	51	36	44

Computed DNL, dB	57
% Daytime Energy	16%
% Nighttime Energy	84%

GPS Coordinates	38°36'40.89"N
	121° 3'30.97"W

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Appendix D-3
Ambient Noise Monitoring Results - Site 1
Creekside Village Residential Development - El Dorado County, California
Monday, October 05, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	37	44	37	35
1:00 AM	40	50	38	34
2:00 AM	36	46	35	32
3:00 AM	37	45	37	35
4:00 AM	37	42	37	35
5:00 AM	40	47	39	37
6:00 AM	43	64	42	39
7:00 AM	49	71	44	41
8:00 AM	48	72	43	39
9:00 AM	47	66	39	35
10:00 AM	39	58	37	34
11:00 AM	40	62	36	34
12:00 PM	36	58	33	31
1:00 PM	37	56	36	33
2:00 PM	38	61	36	34
3:00 PM	40	61	36	34
4:00 PM	40	60	38	35
5:00 PM	42	56	41	38
6:00 PM	42	56	41	37
7:00 PM	45	51	44	41
8:00 PM	46	51	46	41
9:00 PM	49	54	48	46
10:00 PM	47	60	46	40
11:00 PM	48	52	48	46

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	49	36	44	48	36	43
Lmax (Maximum)	72	51	60	64	42	50
L50 (Median)	48	33	40	48	35	40
L90 (Background)	46	31	37	46	32	37

Computed DNL, dB	50
% Daytime Energy	71%
% Nighttime Energy	29%

GPS Coordinates	38°36'40.89"N
	121° 3'30.97"W

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Appendix D-4
Ambient Noise Monitoring Results - Site 2
Creekside Village Residential Development - El Dorado County, California
Saturday, October 03, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	45	71	42	39
1:00 AM	51	82	39	36
2:00 AM	40	58	37	35
3:00 AM	40	53	36	32
4:00 AM	41	53	39	36
5:00 AM	46	73	40	35
6:00 AM	46	61	42	34
7:00 AM	52	77	48	40
8:00 AM	52	70	48	39
9:00 AM	41	62	37	33
10:00 AM	51	84	36	33
11:00 AM	44	65	37	34
12:00 PM	51	71	42	35
1:00 PM	54	73	45	35
2:00 PM	53	78	40	34
3:00 PM	45	66	37	34
4:00 PM	39	56	35	32
5:00 PM	43	75	38	35
6:00 PM	43	51	42	36
7:00 PM	47	58	45	41
8:00 PM	50	61	48	43
9:00 PM	49	65	47	42
10:00 PM	48	59	46	41
11:00 PM	45	56	42	39

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	54	39	50	51	40	46
Lmax (Maximum)	84	51	68	82	53	63
L50 (Median)	48	35	42	46	36	40
L90 (Background)	43	32	37	41	32	36

Computed DNL, dB	53
% Daytime Energy	79%
% Nighttime Energy	21%

GPS Coordinates	38°36'55.23"N
	121° 3'11.79"W

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Appendix D-5
Ambient Noise Monitoring Results - Site 2
Creekside Village Residential Development - El Dorado County, California
Sunday, October 04, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	44	60	41	38
1:00 AM	43	61	40	38
2:00 AM	42	57	40	38
3:00 AM	44	65	41	38
4:00 AM	45	61	43	41
5:00 AM	56	88	40	35
6:00 AM	43	58	38	30
7:00 AM	47	60	44	34
8:00 AM	51	68	48	38
9:00 AM	39	58	35	32
10:00 AM	44	67	36	33
11:00 AM	60	83	48	36
12:00 PM	61	83	49	35
1:00 PM	58	74	48	35
2:00 PM	58	79	44	33
3:00 PM	59	83	49	34
4:00 PM	56	77	43	32
5:00 PM	45	68	37	31
6:00 PM	38	56	37	34
7:00 PM	45	57	43	38
8:00 PM	48	60	46	42
9:00 PM	46	59	44	39
10:00 PM	44	56	42	38
11:00 PM	40	54	37	34

Statistical Summary						
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	61	38	55	56	40	48
Lmax (Maximum)	83	56	69	88	54	62
L50 (Median)	49	35	43	43	37	40
L90 (Background)	42	31	35	41	30	37

Computed DNL, dB	57
% Daytime Energy	90%
% Nighttime Energy	10%

GPS Coordinates	38°36'55.23"N
	121° 3'11.79"W

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Appendix D-6
Ambient Noise Monitoring Results - Site 2
Creekside Village Residential Development - El Dorado County, California
Monday, October 05, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	40	55	38	34
1:00 AM	49	83	37	32
2:00 AM	39	60	33	28
3:00 AM	39	52	37	32
4:00 AM	39	56	33	29
5:00 AM	46	59	44	36
6:00 AM	48	63	45	40
7:00 AM	51	63	49	43
8:00 AM	48	69	44	36
9:00 AM	40	57	37	33
10:00 AM	42	64	37	33
11:00 AM	51	74	40	33
12:00 PM	54	75	42	33
1:00 PM	60	79	49	37
2:00 PM	61	82	52	39
3:00 PM	54	74	44	36
4:00 PM	56	79	45	37
5:00 PM	51	77	45	41
6:00 PM	46	55	46	43
7:00 PM	48	56	48	45
8:00 PM	49	67	47	44
9:00 PM	46	60	44	39
10:00 PM	47	70	39	33
11:00 PM	41	54	35	32

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	61	40	54	49	39	45
Lmax (Maximum)	82	55	69	83	52	61
L50 (Median)	52	37	45	45	33	38
L90 (Background)	45	33	38	40	28	33

Computed DNL, dB	54
% Daytime Energy	93%
% Nighttime Energy	7%

GPS Coordinates	38°36'55.23"N
	121° 3'11.79"W

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Appendix D-7
Ambient Noise Monitoring Results - Site 3
Creekside Village Residential Development - El Dorado County, California
Saturday, October 03, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	53	74	44	42
1:00 AM	50	70	42	39
2:00 AM	48	71	42	40
3:00 AM	48	67	42	39
4:00 AM	52	74	43	40
5:00 AM	56	79	45	40
6:00 AM	58	76	48	38
7:00 AM	63	90	53	44
8:00 AM	63	83	54	46
9:00 AM	63	89	54	43
10:00 AM	65	88	55	42
11:00 AM	66	96	56	42
12:00 PM	61	76	54	42
1:00 PM	62	81	55	41
2:00 PM	63	85	56	42
3:00 PM	63	78	56	42
4:00 PM	63	77	57	42
5:00 PM	62	79	57	43
6:00 PM	62	80	56	46
7:00 PM	60	77	54	45
8:00 PM	60	80	53	42
9:00 PM	59	79	51	41
10:00 PM	57	76	48	36
11:00 PM	55	78	41	35

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	66	59	63	58	48	55
Lmax (Maximum)	96	76	83	79	67	74
L50 (Median)	57	51	55	48	41	44
L90 (Background)	46	41	43	42	35	39

Computed DNL, dB	63
% Daytime Energy	92%
% Nighttime Energy	8%

GPS Coordinates	38°37'1.04"N
	121° 2'58.11"W

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Appendix D-8
Ambient Noise Monitoring Results - Site 3
Creekside Village Residential Development - El Dorado County, California
Sunday, October 04, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	51	74	37	34
1:00 AM	50	75	36	34
2:00 AM	51	78	35	33
3:00 AM	45	67	35	32
4:00 AM	48	71	35	32
5:00 AM	54	77	37	33
6:00 AM	55	74	40	35
7:00 AM	58	79	47	38
8:00 AM	60	84	52	40
9:00 AM	60	78	49	38
10:00 AM	61	81	53	40
11:00 AM	60	83	50	39
12:00 PM	60	80	52	39
1:00 PM	61	83	53	38
2:00 PM	61	76	53	40
3:00 PM	60	80	50	40
4:00 PM	61	80	52	39
5:00 PM	60	77	53	42
6:00 PM	61	83	54	43
7:00 PM	60	80	52	41
8:00 PM	59	79	51	43
9:00 PM	57	80	46	38
10:00 PM	55	78	40	32
11:00 PM	51	72	35	33

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	61	57	60	55	45	52
Lmax (Maximum)	84	76	80	78	67	74
L50 (Median)	54	46	51	40	35	37
L90 (Background)	43	38	40	35	32	33

Computed DNL, dB	61
% Daytime Energy	91%
% Nighttime Energy	9%

GPS Coordinates	38°37'1.04"N
	121° 2'58.11"W

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Appendix D-9
Ambient Noise Monitoring Results - Site 3
Creekside Village Residential Development - El Dorado County, California
Monday, October 05, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	46	69	34	32
1:00 AM	47	71	33	31
2:00 AM	50	76	36	34
3:00 AM	51	76	34	32
4:00 AM	53	75	40	37
5:00 AM	60	76	53	45
6:00 AM	62	83	55	45
7:00 AM	63	79	57	49
8:00 AM	62	80	55	47
9:00 AM	62	81	53	42
10:00 AM	61	81	52	41
11:00 AM	62	80	54	41
12:00 PM	62	86	51	41
1:00 PM	62	80	52	41
2:00 PM	62	78	55	43
3:00 PM	63	81	57	43
4:00 PM	64	83	56	43
5:00 PM	64	86	57	43
6:00 PM	62	80	56	44
7:00 PM	62	89	53	42
8:00 PM	60	83	51	41
9:00 PM	57	80	46	38
10:00 PM	61	90	42	37
11:00 PM	51	72	41	38

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	64	57	62	62	46	57
Lmax (Maximum)	89	78	82	90	69	77
L50 (Median)	57	46	54	55	33	41
L90 (Background)	49	38	43	45	31	37

Computed DNL, dB	65
% Daytime Energy	84%
% Nighttime Energy	16%

GPS Coordinates	38°37'1.04"N
	121° 2'58.11"W

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Appendix D-10
Ambient Noise Monitoring Results - Site 4
Creekside Village Residential Development - El Dorado County, California
Saturday, October 03, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	47	66	40	38
1:00 AM	44	59	39	35
2:00 AM	44	60	42	40
3:00 AM	42	57	40	34
4:00 AM	45	64	39	33
5:00 AM	51	66	44	40
6:00 AM	53	68	44	38
7:00 AM	57	81	50	39
8:00 AM	55	74	49	39
9:00 AM	53	76	49	37
10:00 AM	53	74	48	34
11:00 AM	52	72	48	34
12:00 PM	51	67	47	33
1:00 PM	52	65	49	38
2:00 PM	52	75	48	34
3:00 PM	52	66	48	34
4:00 PM	52	64	49	35
5:00 PM	51	64	49	38
6:00 PM	52	70	49	38
7:00 PM	53	67	50	42
8:00 PM	54	68	50	44
9:00 PM	53	71	48	42
10:00 PM	52	66	47	45
11:00 PM	51	68	47	46

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	57	51	53	53	42	49
Lmax (Maximum)	81	64	70	68	57	64
L50 (Median)	50	47	49	47	39	42
L90 (Background)	44	33	37	46	33	39

Computed DNL, dB	56
% Daytime Energy	80%
% Nighttime Energy	20%

GPS Coordinates	38°36'38.11"N
	121° 2'35.01"W

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Appendix D-11
Ambient Noise Monitoring Results - Site 4
Creekside Village Residential Development - El Dorado County, California
Sunday, October 04, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	46	63	41	33
1:00 AM	47	65	44	42
2:00 AM	47	69	44	43
3:00 AM	46	62	44	42
4:00 AM	46	64	45	41
5:00 AM	47	61	43	40
6:00 AM	47	66	39	32
7:00 AM	50	67	42	33
8:00 AM	53	79	46	35
9:00 AM	51	66	43	29
10:00 AM	51	69	46	33
11:00 AM	50	69	44	30
12:00 PM	50	69	45	31
1:00 PM	50	68	46	32
2:00 PM	50	64	44	31
3:00 PM	50	67	44	28
4:00 PM	50	69	45	29
5:00 PM	49	64	44	27
6:00 PM	50	69	46	32
7:00 PM	53	72	48	39
8:00 PM	53	66	49	43
9:00 PM	50	69	45	40
10:00 PM	50	69	46	44
11:00 PM	47	67	45	42

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	53	49	51	50	46	47
Lmax (Maximum)	79	64	68	69	61	65
L50 (Median)	49	42	45	46	39	43
L90 (Background)	43	27	33	44	32	40

Computed DNL, dB	54
% Daytime Energy	79%
% Nighttime Energy	21%

GPS Coordinates	38°36'38.11"N
	121° 2'35.01"W

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Appendix D-12
Ambient Noise Monitoring Results - Site 4
Creekside Village Residential Development - El Dorado County, California
Monday, October 05, 2020

Hour	Leq	Lmax	L50	L90
12:00 AM	42	60	39	27
1:00 AM	46	59	45	44
2:00 AM	45	68	37	33
3:00 AM	44	67	32	26
4:00 AM	45	64	32	29
5:00 AM	53	67	49	37
6:00 AM	54	71	51	39
7:00 AM	55	68	52	43
8:00 AM	53	69	50	41
9:00 AM	53	71	48	34
10:00 AM	52	71	46	31
11:00 AM	52	67	47	34
12:00 PM	51	72	44	31
1:00 PM	51	67	45	34
2:00 PM	50	66	46	36
3:00 PM	53	74	48	36
4:00 PM	53	71	49	37
5:00 PM	53	70	51	37
6:00 PM	53	68	50	36
7:00 PM	54	76	51	45
8:00 PM	52	69	46	38
9:00 PM	52	71	46	40
10:00 PM	57	82	45	36
11:00 PM	46	62	33	27

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	55	50	53	57	42	51
Lmax (Maximum)	76	66	70	82	59	67
L50 (Median)	52	44	48	51	32	40
L90 (Background)	45	31	37	44	26	33

Computed DNL, dB	58
% Daytime Energy	70%
% Nighttime Energy	30%

GPS Coordinates	38°36'38.11"N
	121° 2'35.01"W

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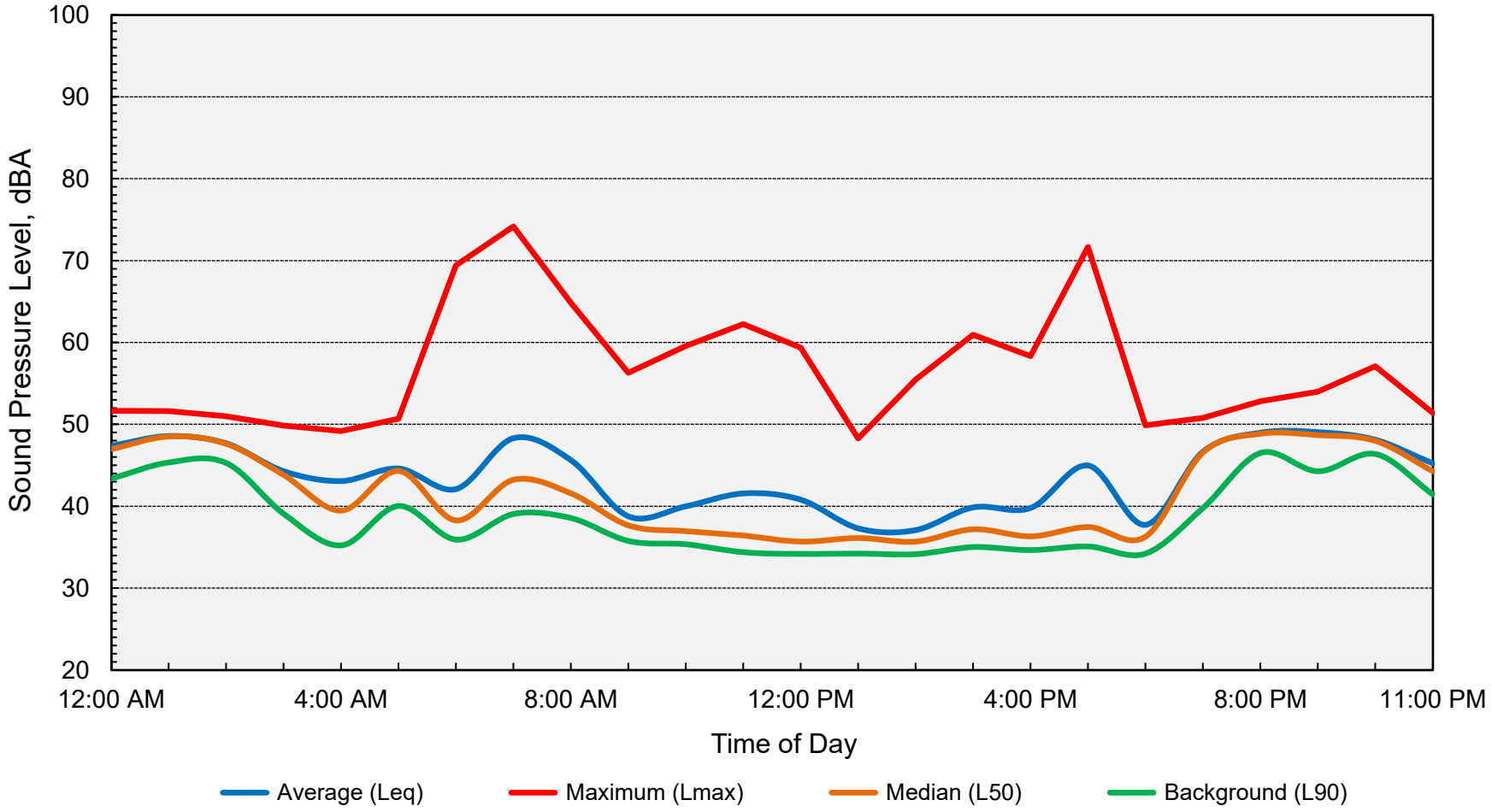
Appendix E-1
Ambient Noise Monitoring Results - Site 1
Creekside Village Residential Development - El Dorado County, California
Saturday, October 03, 2020



Computed DNL = 52 dB

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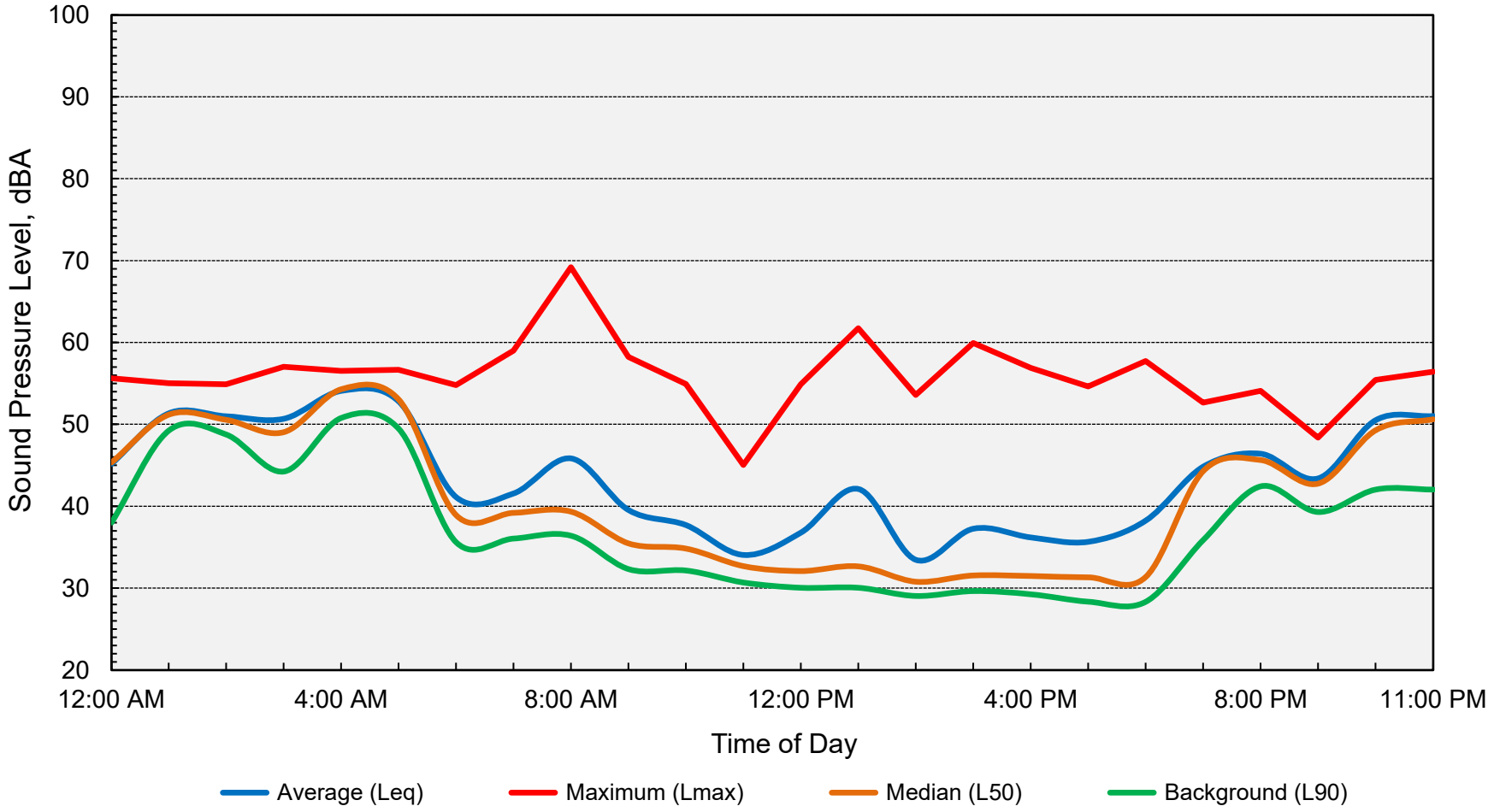
Appendix E-2
Ambient Noise Monitoring Results - Site 1
Creekside Village Residential Development - El Dorado County, California
Sunday, October 04, 2020



Computed DNL = 57 dB

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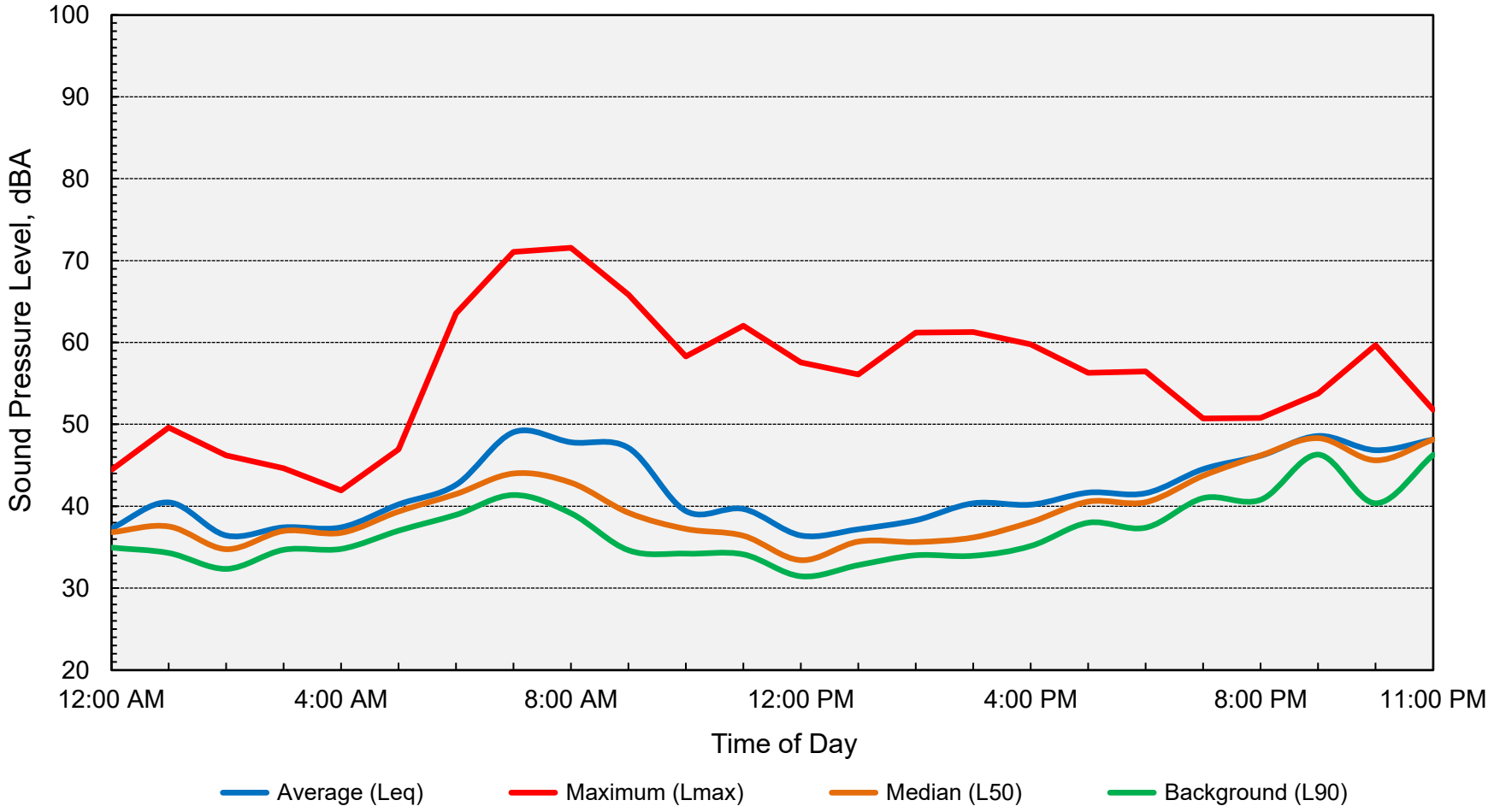
Appendix E-3
Ambient Noise Monitoring Results - Site 1
Creekside Village Residential Development - El Dorado County, California
Monday, October 05, 2020



Computed DNL = 50 dB

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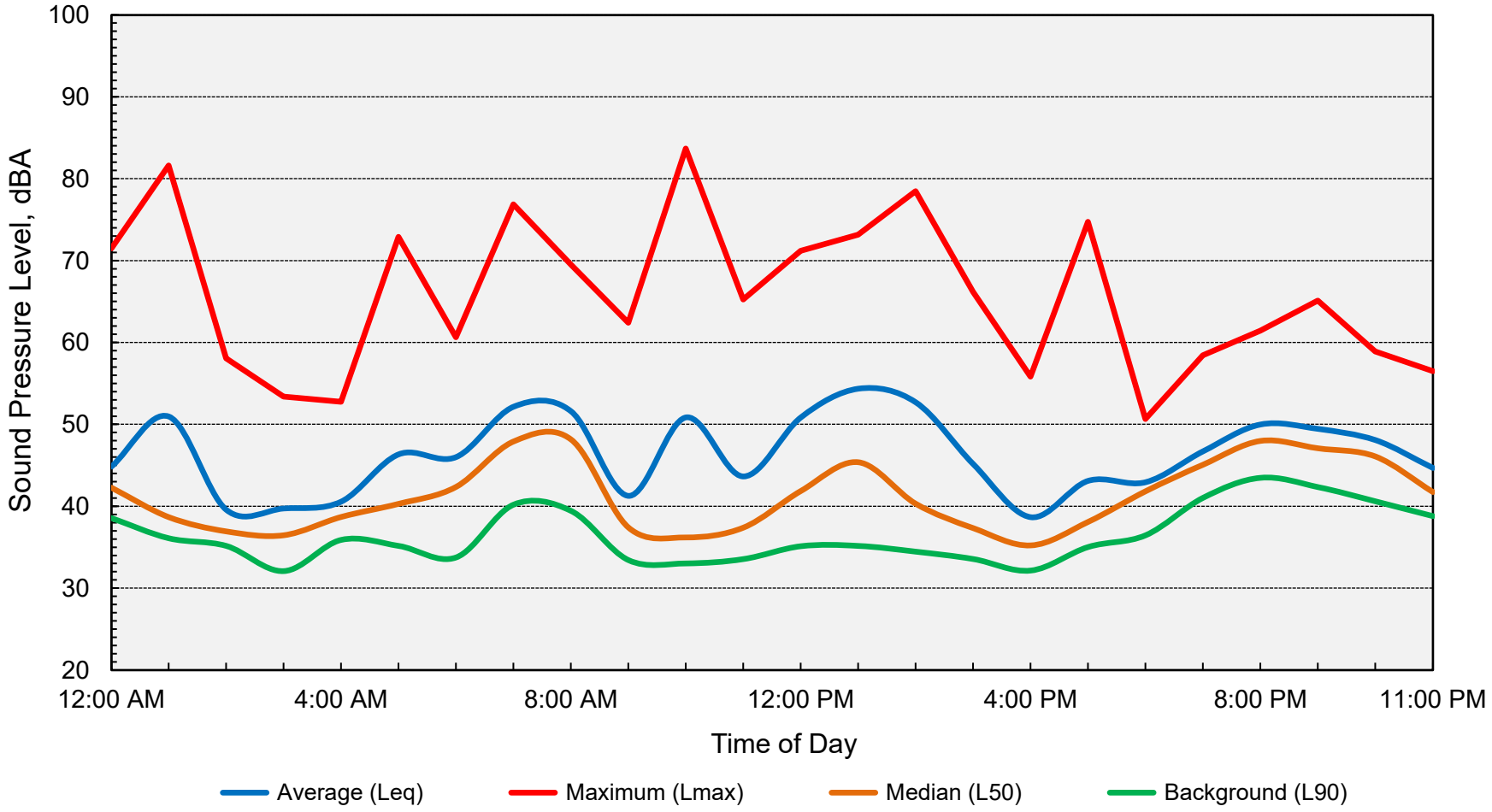
Appendix E-4
Ambient Noise Monitoring Results - Site 2
Creekside Village Residential Development - El Dorado County, California
Saturday, October 03, 2020



Computed DNL = 53 dB

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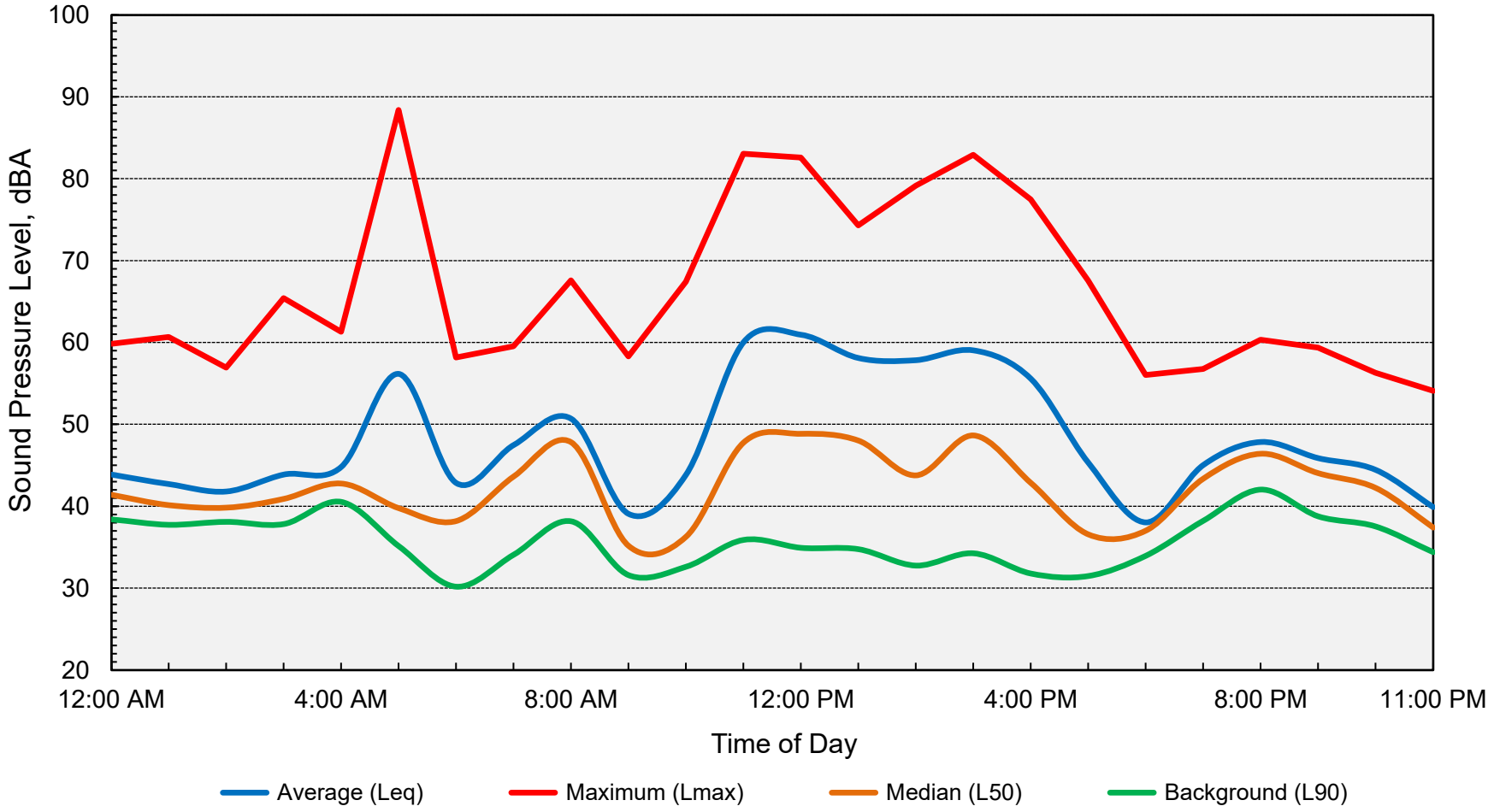
Appendix E-5
Ambient Noise Monitoring Results - Site 2
Creekside Village Residential Development - El Dorado County, California
Sunday, October 04, 2020



Computed DNL = 57 dB

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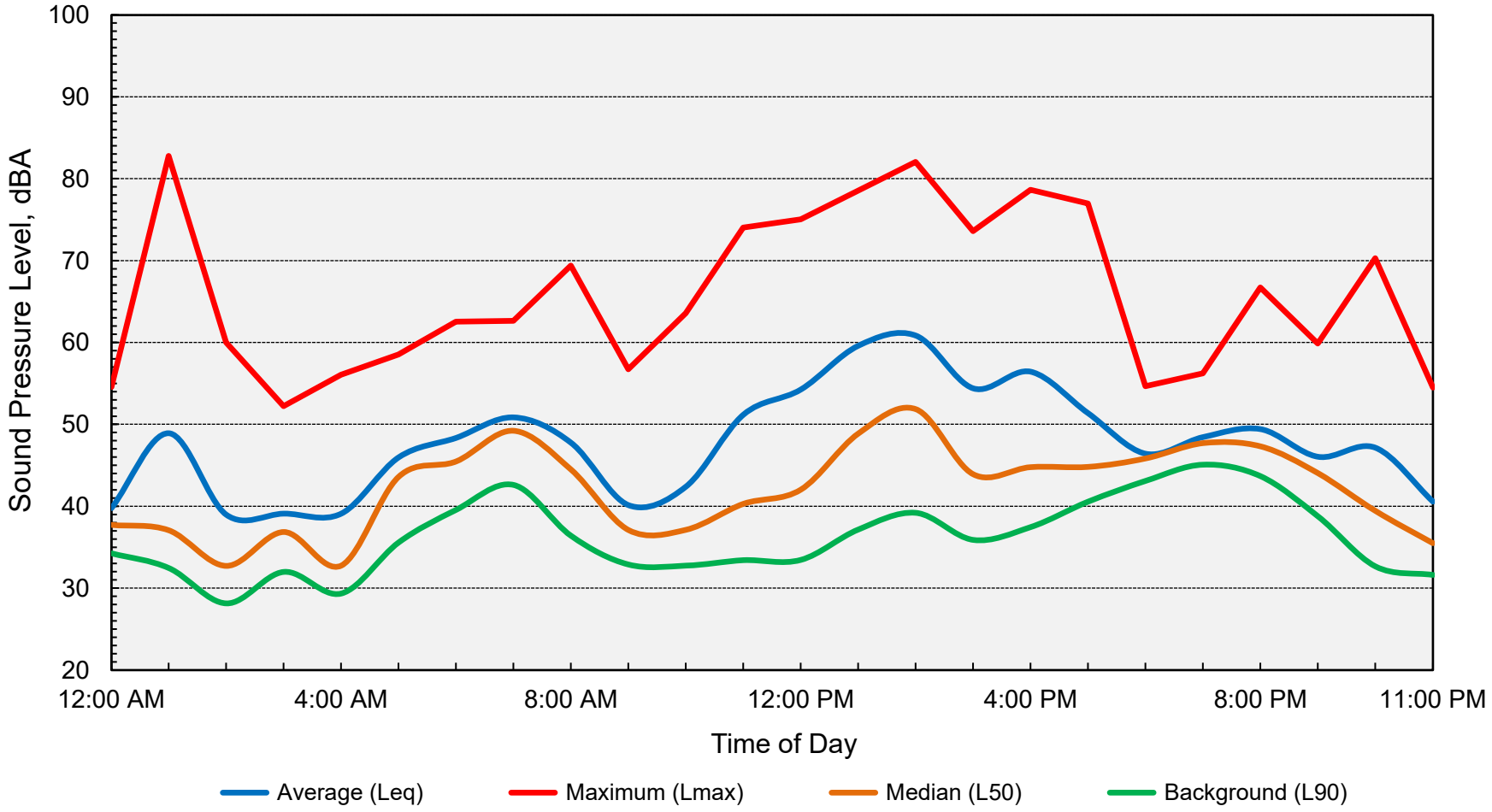
Appendix E-6
Ambient Noise Monitoring Results - Site 2
Creekside Village Residential Development - El Dorado County, California
Monday, October 05, 2020



Computed DNL = 54 dB

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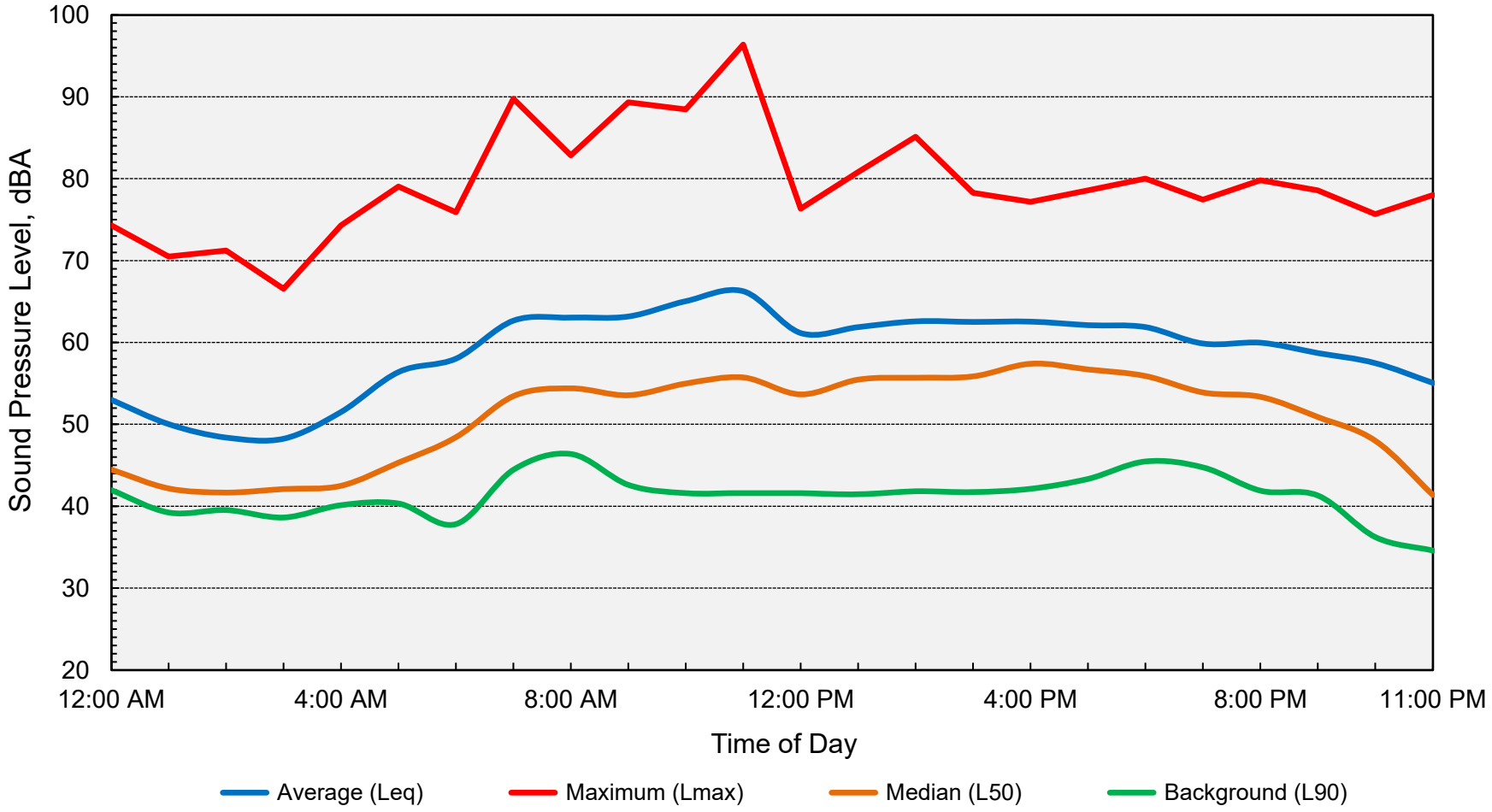
Appendix E-7
Ambient Noise Monitoring Results - Site 3
Creekside Village Residential Development - El Dorado County, California
Saturday, October 03, 2020



Computed DNL = 63 dB

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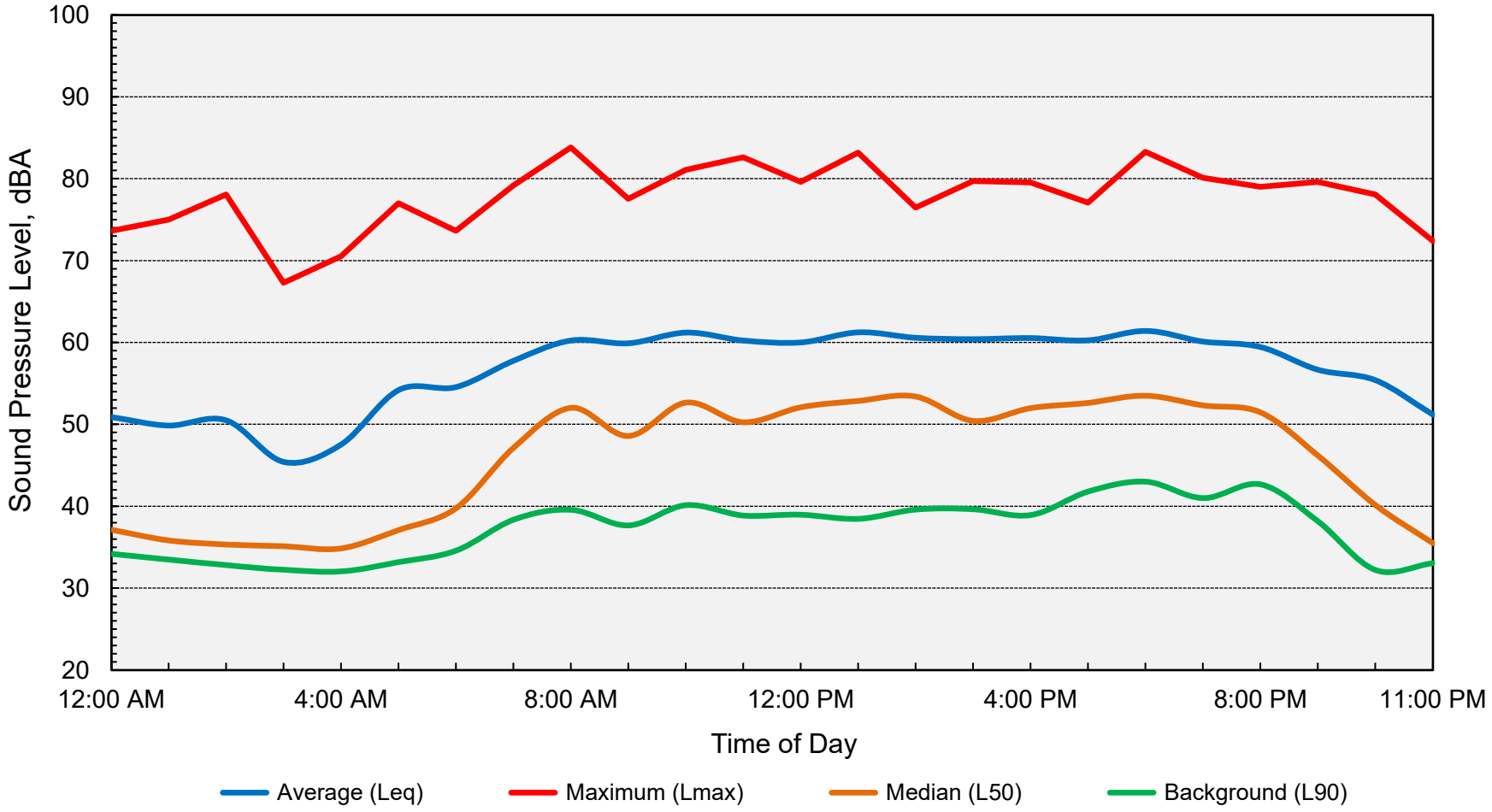
Appendix E-8
Ambient Noise Monitoring Results - Site 3
Creekside Village Residential Development - El Dorado County, California
Sunday, October 04, 2020



Computed DNL = 61 dB

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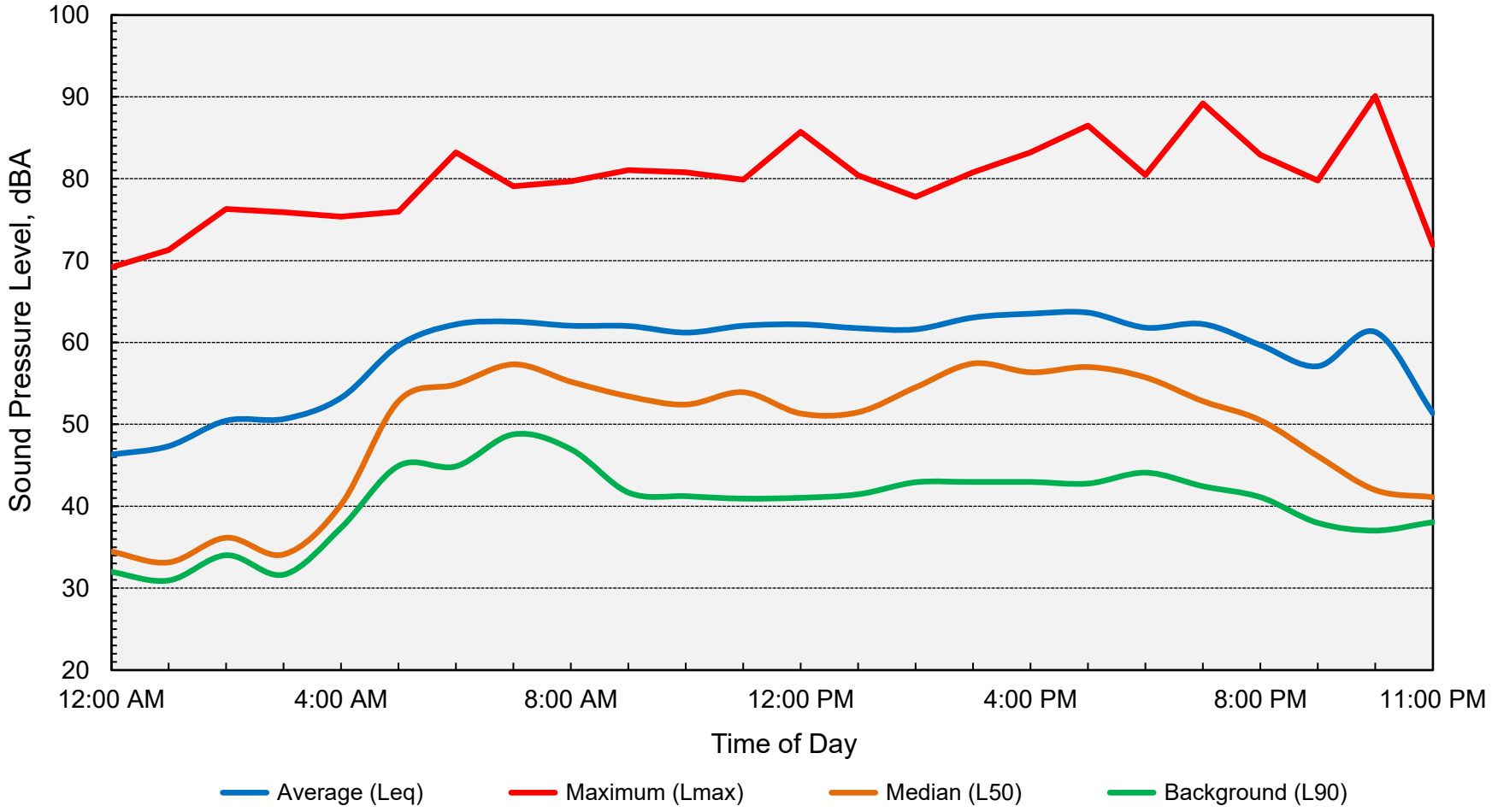
Appendix E-9
Ambient Noise Monitoring Results - Site 3
Creekside Village Residential Development - El Dorado County, California
Monday, October 05, 2020



Computed DNL = 65 dB

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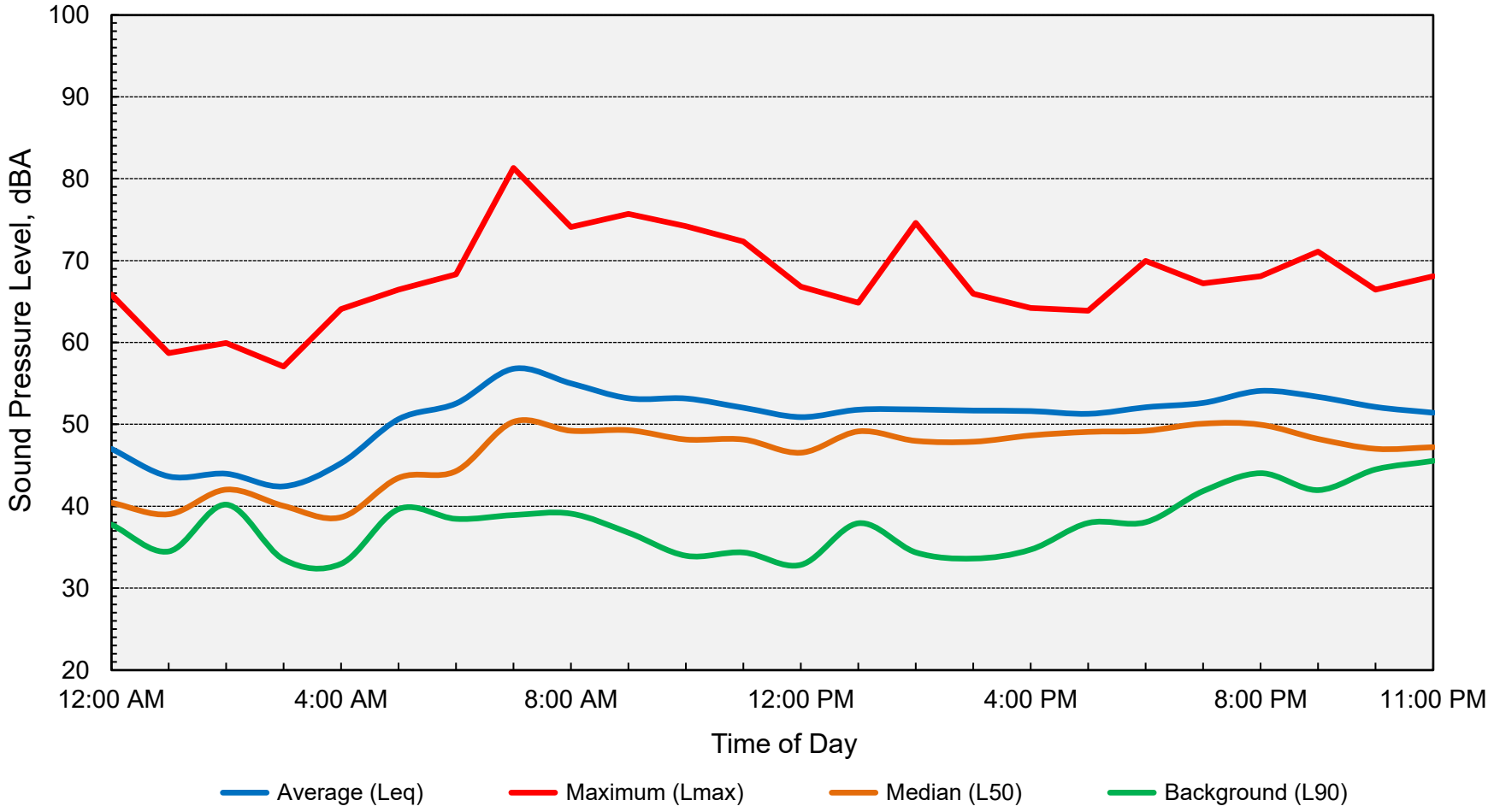
Appendix E-10
Ambient Noise Monitoring Results - Site 4
Creekside Village Residential Development - El Dorado County, California
Saturday, October 03, 2020



Computed DNL = 56 dB

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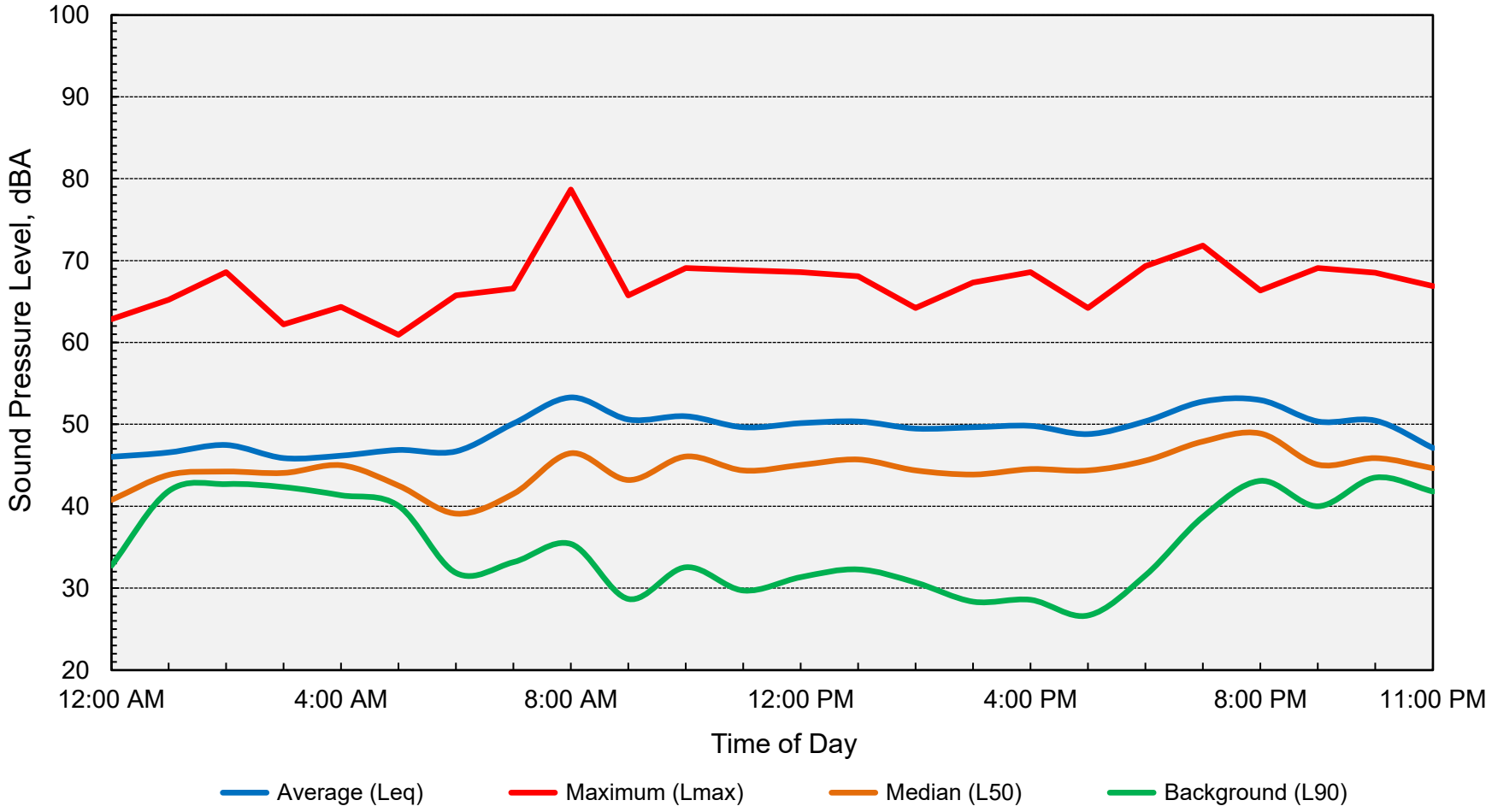
Appendix E-11
Ambient Noise Monitoring Results - Site 4
Creekside Village Residential Development - El Dorado County, California
Sunday, October 04, 2020



Computed DNL = 54 dB

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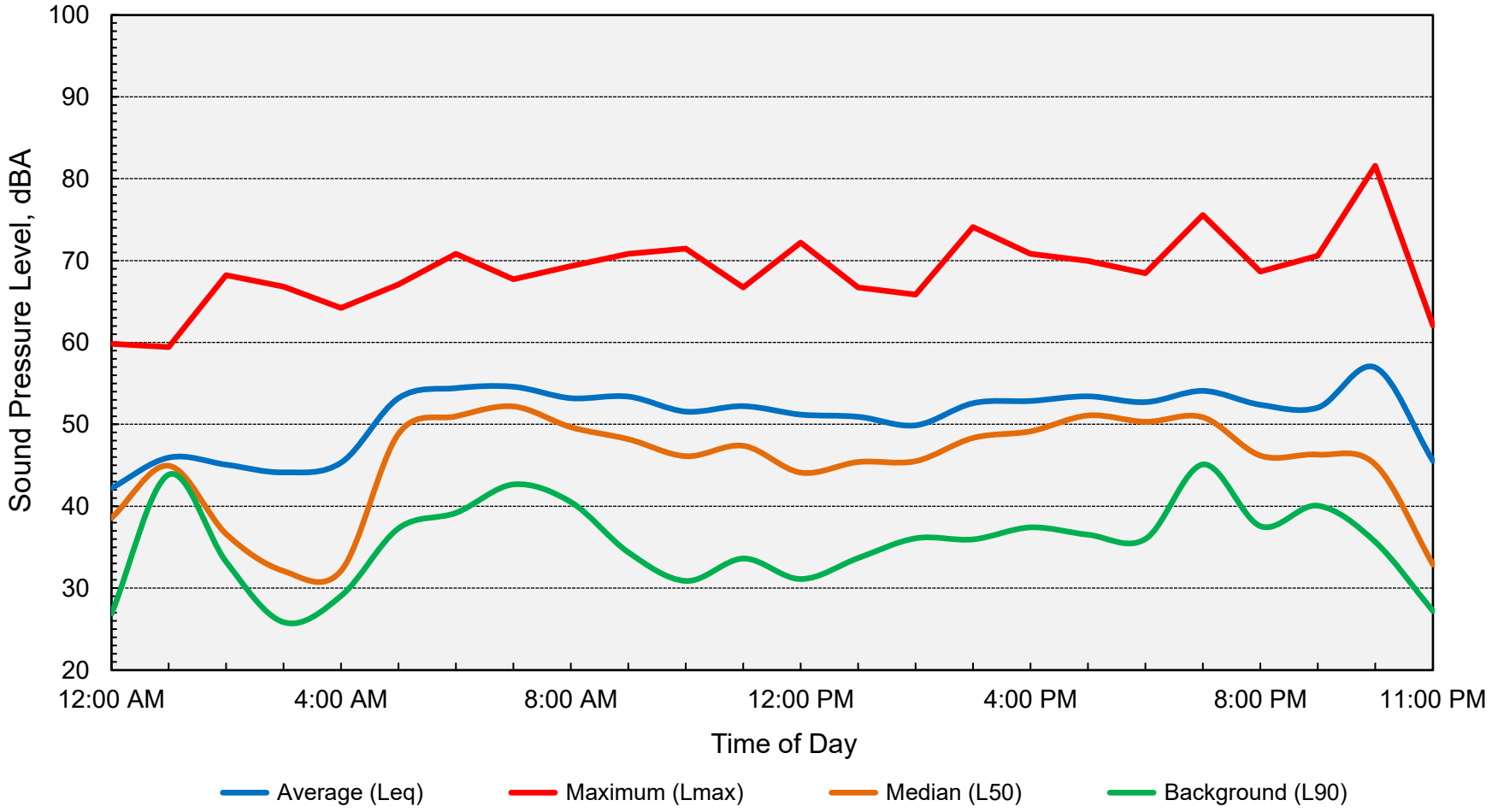
Appendix E-12
Ambient Noise Monitoring Results - Site 4
Creekside Village Residential Development - El Dorado County, California
Monday, October 05, 2020



Computed DNL = 58 dB

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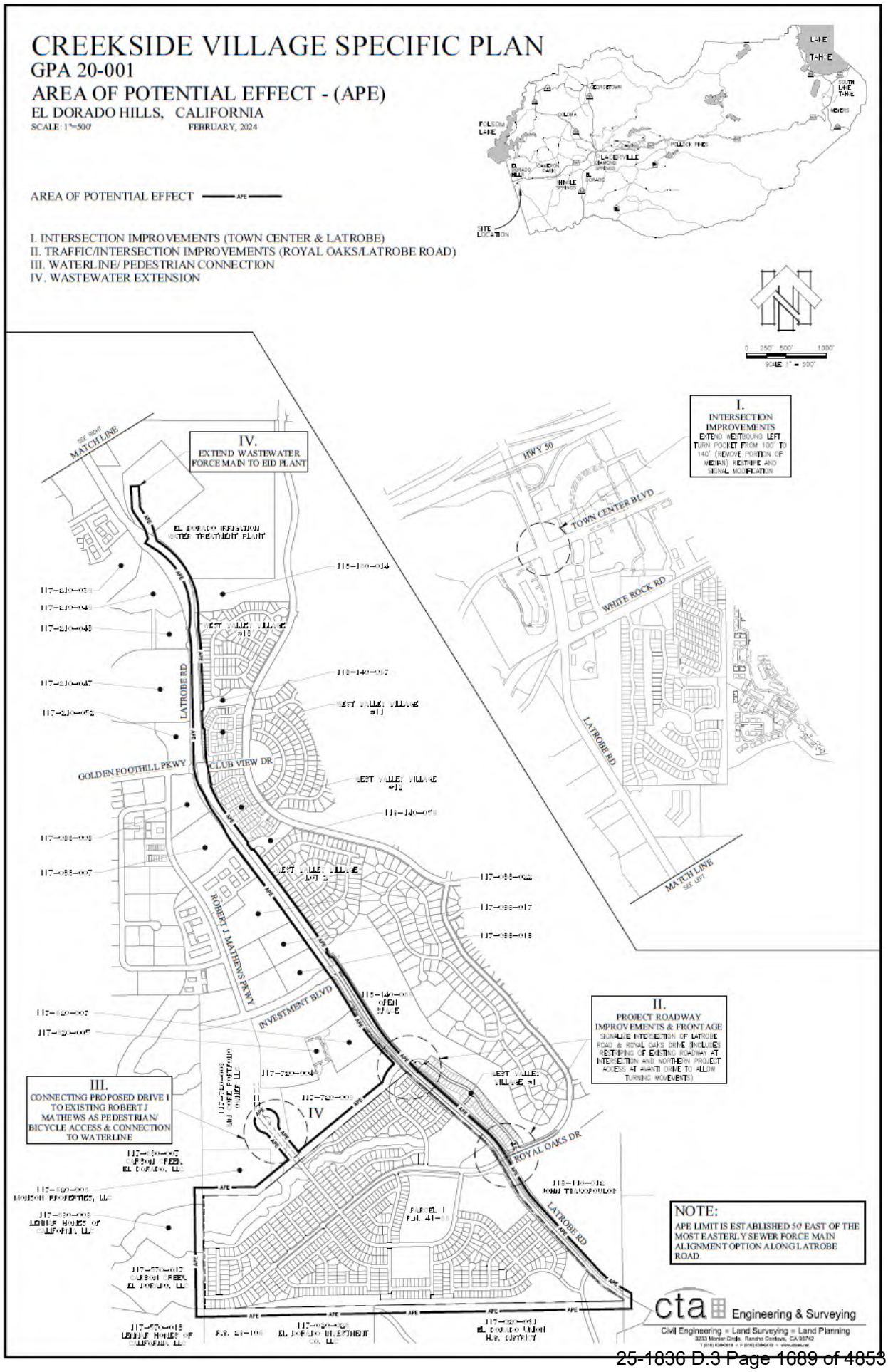
CREEKSIDE VILLAGE SPECIFIC PLAN
GPA 20-001
AREA OF POTENTIAL EFFECT - (APE)
EL DORADO HILLS, CALIFORNIA
SCALE: 1"=500'
FEBRUARY, 2024
AREA OF POTENTIAL EFFECT
I. INTERSECTION IMPROVEMENTS (TOWN CENTER & LATROBE)
II. TRAFFIC/INTERSECTION IMPROVEMENTS (ROYAL OAKS/LATROBE ROAD)
III. WATERLINE/ PEDESTRIAN CONNECTION
IV. WASTEWATER EXTENSION
SITE LOCATION
FOLSOM LAKE
LAKE TAHOE
SOUTH LAKE TAHOE
PLACERVILLE
EL DORADO HILLS
SHINGLE SPRINGS
0 250' 500' 1000'
SCALE: 1" = 500'
IV.
EXTEND WASTEWATER FORCE MAIN TO EID PLANT
I.
INTERSECTION IMPROVEMENTS
EXTEND WESTBOUND LEFT TURN POCKET FROM 100' TO 140' (REMOVE PORTION OF MEDIAN) RESTRIPE AND SIGNAL MODIFICATION
II.
PROJECT ROADWAY IMPROVEMENTS & FRONTAGE
SIGNALIZE INTERSECTION OF LATROBE ROAD & ROYAL OAKS DRIVE (INCLUDES RESTRIPING OF EXISTING ROADWAY AT INTERSECTION AND NORTHERN PROJECT ACCESS AT AVANTI DRIVE TO ALLOW TURNING MOVEMENTS)
III.
CONNECTING PROPOSED DRIVE I TO EXISTING ROBERT J MATHEWS AS PEDESTRIAN/ BICYCLE ACCESS & CONNECTION TO WATERLINE
NOTE:
APE LIMIT IS ESTABLISHED 50' EAST OF THE MOST EASTERLY SEWER FORCE MAIN ALIGNMENT OPTION ALONG LATROBE ROAD
MATCH LINE
SEE SHT
HWY 50
TOWN CENTER BLVD
WHITE ROCK RD
LATROBE RD
GOLDEN FOOTHILL PKWY
CLUB VIEW DR
ROBERT J. MATHEWS PKWY
INVESTMENT BLVD
ROYAL OAKS DR
EL DORADO IRRIGATION WATER TREATMENT PLANT
WEST VALLEY VILLAGE
APE
cta Engineering & Surveying
Civil Engineering = Land Surveying = Land Planning

Appendix G-1
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road

Traffic Data:

Year: Future (2040)
Average Daily Traffic Volume: 17,480
Percent Daytime Traffic: 83
Percent Nighttime Traffic: 17
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 1
Assumed Vehicle Speed (mph): 55
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				---------- DNL, dB ----------			
Location	**Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
Park	Village Park	300		60	50	51	61
SFL Lots 588-598	Nearest Backyards	95		67	57	58	68
	Nearest First-Floor Facades	110		66	56	57	67
	Nearest Upper-Floor Facades	110	2	68	58	59	69

Traffic Noise Contours (No Calibration Offset):

DNL Contour (dB)	Distance from Centerline (ft)
75	32
70	70
65	150
60	324

Notes: 1. Future (Cumulative 2040 Plus Project conditions) average daily traffic volume for Latrobe Road was calculated using data provided in the traffic impact study conducted for the project by T. Kear Transporation Planning & Management, Inc.
2. Offset of +2 dB offset was applied at upper-level building facades to account for reduced ground absorption of sound at elevated positions.

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Appendix G-2
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road

Traffic Data:

Year: Future (2040)
Average Daily Traffic Volume: 9,530
Percent Daytime Traffic: 83
Percent Nighttime Traffic: 17
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 1
Assumed Vehicle Speed (mph): 55
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL, dB			
Location	Description	Distance	Offset (dB)	Autos	Medium Trucks	Heavy Trucks	Total
Park	Neighborhood Park 1	150		61	52	53	62
SFL Lots 550-560	Nearest Backyards	95		64	55	56	65
	Nearest First-Floor Facades	110		63	54	55	64
	Nearest Upper-Floor Facades	110	2	65	56	57	66
SFM Large Lot 2	Nearest Backyards	230		59	49	50	60
	Nearest First-Floor Facades	60		67	58	59	68
	Nearest Upper-Floor Facades	60	2	69	60	61	70

Traffic Noise Contours (No Calibration Offset):

DNL Contour (dB)	Distance from Centerline (ft)
75	22
70	47
65	100
60	216

Notes:
1. Future (Cumulative 2040 Plus Project conditions) average daily traffic volume for Latrobe Road was calculated using data provided in the traffic impact study conducted for the project by T. Kear Transporation Planning & Management, Inc.
2. Offset of +2 dB offset was applied at upper-level building facades to account for reduced ground absorption of sound at elevated positions.

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Appendix H-1
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 588

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 67
Medium Truck DNL (dB): 57
Heavy Truck DNL (dB): 58

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 569
Medium Truck Elevation: 571
Heavy Truck Elevation: 577
Pad/Ground Elevation at Receiver: 556
Receiver Elevation: 561
Base of Barrier Elevation: 556
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
562	6	62	52	54	**63**	Yes	No	No
563	7	61	52	53	**62**	Yes	Yes	Yes
564	8	60	51	52	**61**	Yes	Yes	Yes
565	9	59	49	51	**60**	Yes	Yes	Yes
566	10	57	48	50	**58**	Yes	Yes	Yes
567	11	56	47	48	**57**	Yes	Yes	Yes
568	12	55	46	47	**56**	Yes	Yes	Yes
569	13	54	45	46	**55**	Yes	Yes	Yes
570	14	53	44	45	**55**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Appendix H-2
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 589

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 67
Medium Truck DNL (dB): 57
Heavy Truck DNL (dB): 58

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 569
Medium Truck Elevation: 571
Heavy Truck Elevation: 577
Pad/Ground Elevation at Receiver: 552
Receiver Elevation: 557
Base of Barrier Elevation: 552
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
558	6	62	53	54	**63**	No	No	No
559	7	62	52	53	**63**	Yes	Yes	No
560	8	61	51	53	**62**	Yes	Yes	Yes
561	9	59	50	52	**60**	Yes	Yes	Yes
562	10	58	48	50	**59**	Yes	Yes	Yes
563	11	57	47	49	**58**	Yes	Yes	Yes
564	12	56	46	48	**57**	Yes	Yes	Yes
565	13	55	45	47	**56**	Yes	Yes	Yes
566	14	54	44	46	**55**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Appendix H-3
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 593

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 67
Medium Truck DNL (dB): 57
Heavy Truck DNL (dB): 58

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 569
Medium Truck Elevation: 571
Heavy Truck Elevation: 577
Pad/Ground Elevation at Receiver: 552
Receiver Elevation: 557
Base of Barrier Elevation: 552
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
558	6	62	53	54	**63**	No	No	No
559	7	62	52	53	**63**	Yes	Yes	No
560	8	61	51	53	**62**	Yes	Yes	Yes
561	9	59	50	52	**60**	Yes	Yes	Yes
562	10	58	48	50	**59**	Yes	Yes	Yes
563	11	57	47	49	**58**	Yes	Yes	Yes
564	12	56	46	48	**57**	Yes	Yes	Yes
565	13	55	45	47	**56**	Yes	Yes	Yes
566	14	54	44	46	**55**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Appendix H-4
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 597

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 67
Medium Truck DNL (dB): 57
Heavy Truck DNL (dB): 58

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 568
Medium Truck Elevation: 570
Heavy Truck Elevation: 576
Pad/Ground Elevation at Receiver: 554
Receiver Elevation: 559
Base of Barrier Elevation: 554
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
560	6	62	52	54	**63**	Yes	No	No
561	7	62	52	53	**63**	Yes	Yes	Yes
562	8	60	51	53	**61**	Yes	Yes	Yes
563	9	59	49	51	**60**	Yes	Yes	Yes
564	10	57	48	50	**58**	Yes	Yes	Yes
565	11	56	47	48	**57**	Yes	Yes	Yes
566	12	55	46	48	**56**	Yes	Yes	Yes
567	13	54	45	47	**55**	Yes	Yes	Yes
568	14	54	44	46	**55**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Appendix H-5
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 598

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 67
Medium Truck DNL (dB): 57
Heavy Truck DNL (dB): 58

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 567
Medium Truck Elevation: 569
Heavy Truck Elevation: 575
Pad/Ground Elevation at Receiver: 557
Receiver Elevation: 562
Base of Barrier Elevation: 557
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
563	6	62	52	53	**63**	Yes	Yes	No
564	7	61	52	53	**62**	Yes	Yes	Yes
565	8	59	50	52	**61**	Yes	Yes	Yes
566	9	58	49	51	**59**	Yes	Yes	Yes
567	10	57	47	49	**58**	Yes	Yes	Yes
568	11	56	46	48	**57**	Yes	Yes	Yes
569	12	55	45	47	**56**	Yes	Yes	Yes
570	13	54	44	46	**55**	Yes	Yes	Yes
571	14	53	44	45	**54**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Appendix H-6
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 550

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 64
Medium Truck DNL (dB): 55
Heavy Truck DNL (dB): 56

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 593
Medium Truck Elevation: 595
Heavy Truck Elevation: 601
Pad/Ground Elevation at Receiver: 583
Receiver Elevation: 588
Base of Barrier Elevation: 583
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
589	6	59	50	51	**60**	Yes	Yes	No
590	7	58	49	50	**59**	Yes	Yes	Yes
591	8	57	47	49	**58**	Yes	Yes	Yes
592	9	55	46	48	**56**	Yes	Yes	Yes
593	10	54	45	47	**55**	Yes	Yes	Yes
594	11	53	44	45	**54**	Yes	Yes	Yes
595	12	52	43	45	**53**	Yes	Yes	Yes
596	13	51	42	43	**52**	Yes	Yes	Yes
597	14	51	41	42	**52**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Appendix H-7
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 552

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 64
Medium Truck DNL (dB): 55
Heavy Truck DNL (dB): 56

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 594
Medium Truck Elevation: 596
Heavy Truck Elevation: 602
Pad/Ground Elevation at Receiver: 581
Receiver Elevation: 586
Base of Barrier Elevation: 581
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
587	6	59	50	51	**60**	Yes	No	No
588	7	59	49	51	**60**	Yes	Yes	Yes
589	8	57	48	50	**58**	Yes	Yes	Yes
590	9	56	46	48	**57**	Yes	Yes	Yes
591	10	55	45	47	**56**	Yes	Yes	Yes
592	11	54	44	46	**55**	Yes	Yes	Yes
593	12	53	43	45	**54**	Yes	Yes	Yes
594	13	52	42	44	**53**	Yes	Yes	Yes
595	14	51	41	43	**52**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Appendix H-8
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 556

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 64
Medium Truck DNL (dB): 55
Heavy Truck DNL (dB): 56

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 593
Medium Truck Elevation: 595
Heavy Truck Elevation: 601
Pad/Ground Elevation at Receiver: 577
Receiver Elevation: 582
Base of Barrier Elevation: 577
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
583	6	59	50	51	**60**	Yes	No	No
584	7	59	49	51	**60**	Yes	Yes	Yes
585	8	58	48	50	**59**	Yes	Yes	Yes
586	9	56	47	49	**57**	Yes	Yes	Yes
587	10	55	45	47	**56**	Yes	Yes	Yes
588	11	54	44	46	**55**	Yes	Yes	Yes
589	12	53	43	45	**54**	Yes	Yes	Yes
590	13	52	42	44	**53**	Yes	Yes	Yes
591	14	51	41	43	**52**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Appendix H-9
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Barrier Effectiveness Prediction Worksheet

Project Information:

Job Number: 2020-143
Project Name: Creekside Village Residential Development
Roadway Name: Latrobe Road
Location(s): SFL Lot 560

Noise Level Data:

Year: Future (2040)
Auto DNL (dB): 64
Medium Truck DNL (dB): 55
Heavy Truck DNL (dB): 56

Site Geometry:

Receiver Description: Backyard
Centerline to Barrier Distance (C_1): 85
Barrier to Receiver Distance (C_2): 10
Automobile Elevation: 593
Medium Truck Elevation: 595
Heavy Truck Elevation: 601
Pad/Ground Elevation at Receiver: 575
Receiver Elevation: 580
Base of Barrier Elevation: 575
Starting Barrier Height 6

Barrier Effectiveness:

Top of Barrier Elevation (ft)	Barrier Height (ft)	DNL (dB) Autos	Medium Trucks	Heavy Trucks	Total	Barrier Breaks Line of Sight to… Autos?	Medium Trucks?	Heavy Trucks?
581	6	59	50	51	**60**	No	No	No
582	7	59	49	51	**60**	Yes	Yes	Yes
583	8	58	48	50	**59**	Yes	Yes	Yes
584	9	56	47	49	**57**	Yes	Yes	Yes
585	10	55	45	47	**56**	Yes	Yes	Yes
586	11	54	44	46	**55**	Yes	Yes	Yes
587	12	53	43	45	**54**	Yes	Yes	Yes
588	13	52	42	44	**53**	Yes	Yes	Yes
589	14	51	41	43	**52**	Yes	Yes	Yes

Notes: 1. Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s).

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Reduced Impact Alternative Memorandum (December 2024)

Memorandum

To: Tony Gon
Winn Communities
555 University Avenue, Suite 180
Sacramento, CA 95825

Date: December 10, 2024

From: Dario Gotchet, Principal
Bollard Acoustical Consultants, Inc.
P.O. Box 7968
Auburn, CA 95604

Subject: Creekside Village Development – Revised Tentative Map Plan & Trip Generation Information for the Reduced Impact Alternative

Dear Tony,

Bollard Acoustical Consultants, Inc. (BAC) previously completed an environmental noise assessment for the Creekside Village Development (latest revision dated February 21, 2024). It was brought to the attention of BAC in October 2024 that revisions were made to the project tentative map plan and traffic impact analysis. Further, BAC was informed that a Reduced Impact Alternative is now being proposed. In response to those changes, BAC has prepared this memorandum. Specifically, this memorandum includes the revised tentative map plan with associated mitigation as identified in the noise assessment previously prepared by BAC in 2024. This memorandum also contains a discussion on the potential impacts associated with the revised project trip generation information.

It should be noted that the function of this memorandum is to supplement the noise assessment previously prepared by BAC in February 2024. For the purposes of this memorandum, that assessment will be referenced as the 2024 BAC Noise Study.

Revised Project Tentative Map Plan – Reduced Impact Alternative

The analysis, results and impact determinations contained in the 2024 BAC Noise Study are based on the project site plan identified in Figures 2, 4, 5 and 6. Figures 4 through 6 of the 2024 BAC Noise Study contain illustrations of required mitigation measures as outlined in the report. As mentioned above, it has been brought the attention of BAC that a tentative map plan has been revised, included as a Reduced Impact Alternative to the EIR. Figures 2, 4, 5 and 6 of 2024 BAC Noise Study have been revised to include the new tentative map plan (Reduced Impact Alternative) and are presented in this memorandum as Attachments A, B, C and D. Attachments B through D of this memorandum include integration of the mitigation measures as outlined in the 2024 BAC Noise Study. It should be noted that, although the revised site design under the Reduced Impact Alternative did not warrant revisions to mitigation language as presented in the 2024 BAC Noise Study, the revised site design did

trigger minor changes to the illustrated mitigation measures in those graphics (i.e., extending lengths of sound walls).

Revised Trip Generation – Reduced Impact Alternative

The analysis, results and impact determinations contained in the 2024 BAC Noise Study are based on trip generation estimates prepared by T. Kear Transportation Planning & Management (dated August 24, 2023). That 2022 trip generation information indicates a total of 10,040 new project trips, which accounted for residential and commercial land uses of the development. As mentioned above, it has been brought the attention of BAC that trip generation estimates have revised, included as a Reduced Impact Alternative to the EIR. According to revised (2024) trip generation information (prepared by T. Kear), a total of 4,147 new trips are calculated under the Reduced Impact Alternative – which is calculated to be approximately 59% less total trips than previously reported by T. Kear. As indicated in the 2024 BAC Noise Study, noise impacts associated with project-generated increases in off-site traffic are determined to be less than significant (Impacts 2 and 3). Based on the revised trip generation estimate (4,147) and considering that that revised estimate is significantly lower than that previously reported (10,040), the impact determinations associated with the revised trip generation information for the Reduced Impact Alternative would not change from presented in the 2024 BAC Noise Study. Further, traffic noise levels associated with the revised trip generation estimate are expected to be lower than those levels report in the 2024 BAC Noise Study.

Conclusions

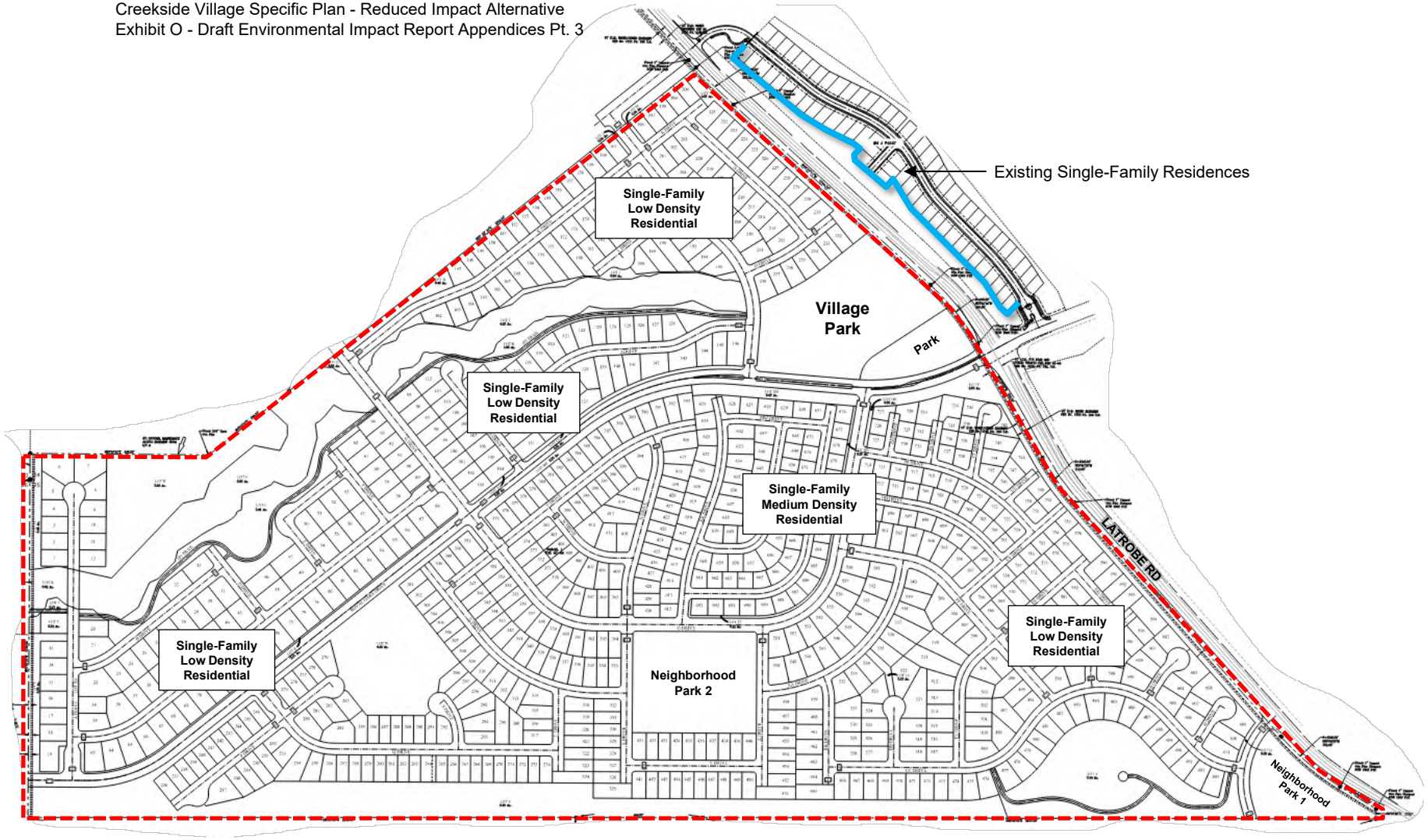
This concludes our review of the revised tentative map and trip generation information for the Creekside Village development. Please contact me at (530) 537-2328 or dariog@bacnoise.com if you have any questions or require additional information.

Sincerely,

Bollard Acoustical Consultants, Inc.

Dario Gotchet
Principal Consultant
Elected Member, Institute of Noise Control Engineering (INCE)

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3



Legend

- Development Area Boundary
- Existing Solid Traffic Noise Barrier

N

Scale (Feet)

0 250 500

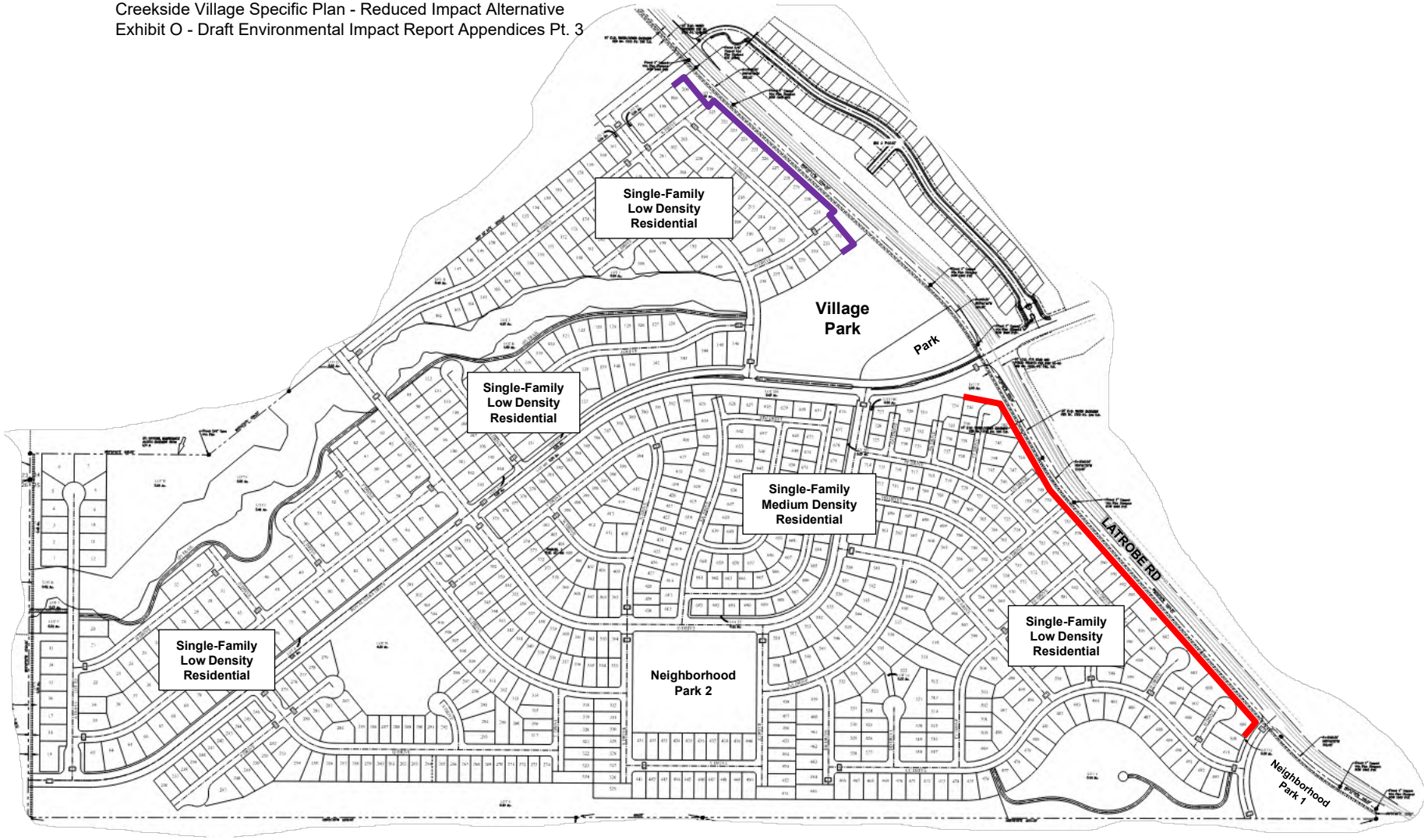
Creekside Village Development
El Dorado County, California

Tentative Map – Reduced Impact Alternative

Attachment A

BOLLARD Acoustical Consultants

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3



Legend

- 9' Solid Noise Barriers (Mitigation Measure MM-10A – Traffic Noise)*
- 6' Solid Noise Barriers (Mitigation Measure MM-10A – Traffic Noise)*

Based on mitigation as outlined in MM-10A of the 2024 BAC 2024 Noise Study

N

Scale (Feet)

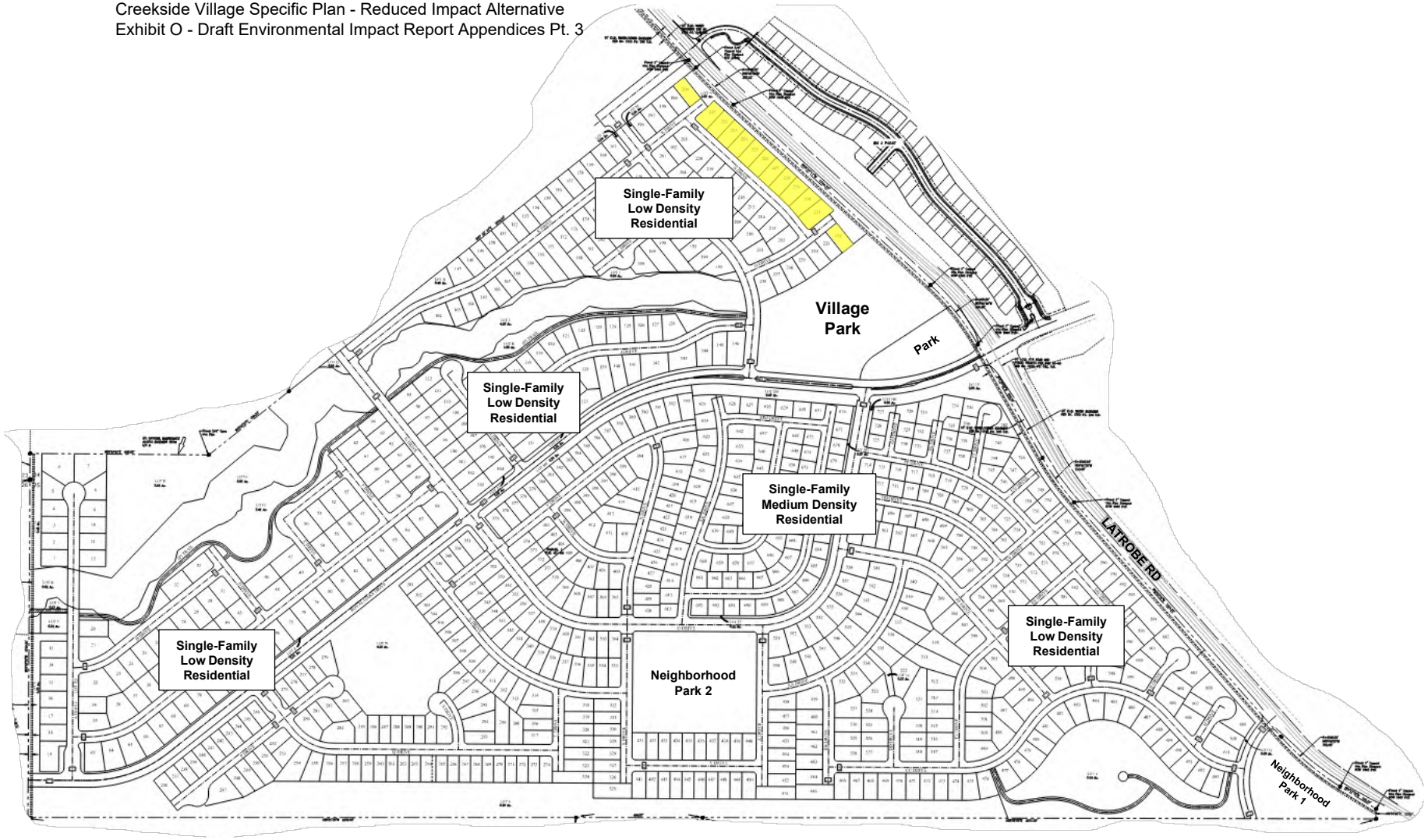
0 250 500

Creekside Village Development
El Dorado County, California

Mitigation Measure 10A – Traffic Noise*

Attachment B

BOLLARD Acoustical Consultants



Legend

Window Assembly Upgrade STC 32: Upper-Floors Only (Mitigation Measure MM-11A)*

Based on mitigation as outlined in MM-11A of the 2024 BAC 2024 Noise Study

N

Scale (Feet)

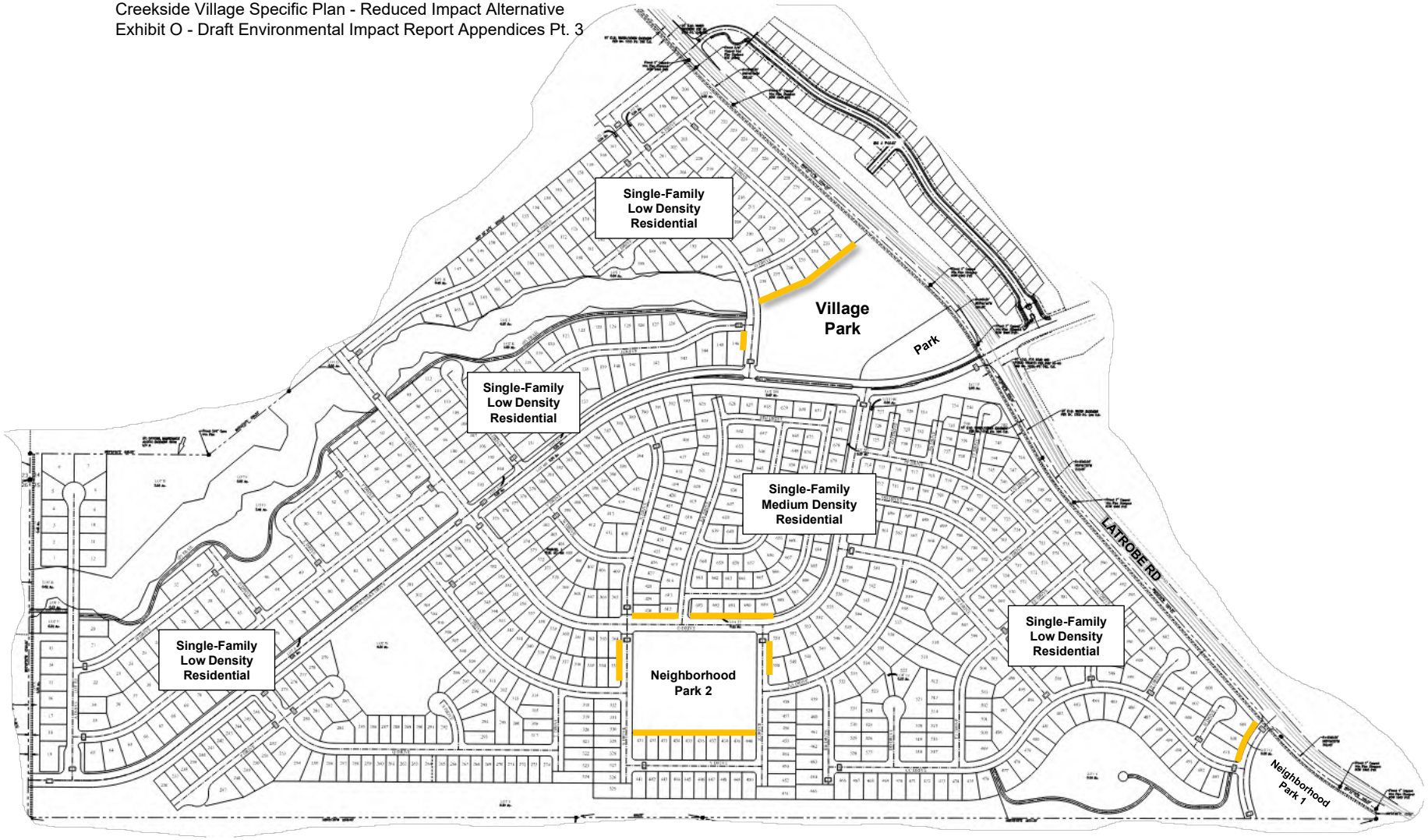
0 250 500

Creekside Village Development
El Dorado County, California

Mitigation Measure 11A – Traffic Noise*

BOLLARD Acoustical Consultants

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3



Legend

6' Solid Noise Barriers (Mitigation Measure MM-12 – Park Noise)*

Based on mitigation as outlined in MM-12 of the 2024 BAC 2024 Noise Study

N

Scale (Feet)

0 250 500

Creekside Village Development
El Dorado County, California

Mitigation Measure 12 – Park Noise*

Attachment D

BOLLARD Acoustical Consultants

Appendix H
Transportation Reports

Transportation Impact Study (April 2024)

P23160

Transportation Impact Study

Creekside Village
El Dorado Hills, California

Prepared for:
Winn Ridge Investments, LLC
and
County of El Dorado, California

Prepared By

T.KEAR
TRANSPORTATION PLANNING
& MANAGEMENT, INC.

2838 Zamora Lane
Davis, CA 95616
www.tkearinc.com

Contact: Tom Kear, tkear@tkearinc.com, (916) 340-4811

April 25, 2024

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REVISION HISTORY

Description	Date	Notes
Internal Draft	February 19, 2024	Draft TIS.
Admin Draft	February 22, 2024	Revisions for clarity.
Public Report	April 25, 2024	Added EBL queue data at intersection 3, clarified abatement 18A.

EXECUTIVE SUMMARY

This transportation impact study (TIS) analyzes the proposed Creekside Village Specific Plan (the Project) for consistency with the El Dorado County General Plan level-of-service policies and for vehicle miles of travel (VMT) impacts under the California Environmental Quality Act (CEQA). Where appropriate, abatement measures are provided to address any deficiencies relative to adopted General Plan policies and mitigation measures are provided to address any potentially significant impacts under CEQA.

Creekside Village (the Project) is a planned community with housing, parks, open space, and neighborhood commercial located in the El Dorado Hills community region of El Dorado County. Requested entitlements include a tentative subdivision map allowing for up to 918 single family homes and an option to include up to 5,400 sqft of neighborhood commercial, a General Plan amendment, and a new Specific Plan. The Project proposes 668 residential lots, and two large lots for the remaining 250 single family homes on a vacant 207.9 acre parcel located on the southern end of the El Dorado Hills Business Park, south of Investment Boulevard and west of Latrobe Road. The Project parcels are APNs 117-010-032 and a portion of 117-010-031. A vicinity map Is shown in **Figure ES-1**. The Project parcel is split by a creek, with most of the housing located on the south side of the creek. The north side of the creek would contain 87 of the residential lots, neighborhood commercial, parks and open space, and the south side of the creek would include 581 of the residential lots plus two large lots for the remaining 250 dwelling units, parks, and open space.

The Project parcel has been de-annexed from the business park, and the applicant is requesting to change its General Plan land use designation and zoning from Research and Development (R&D) to Adopted Plan (AP) with Single Family Low Density (CV-SFL), Single Family Medium Density (CV-SFM) residential, and Neighborhood Commercial (CV-NC), Open Space (CV-OS) and Parks (CV-P) land use designations within the plan area.

Project Description

Figure ES-2 provides a preliminary site plan for the Project. The Project would:

- Amend the General Plan, change the zoning designation, and adopt a specific plan to allow the development of 207.9 acres for residential, neighborhood commercial and related uses on land that is undeveloped and currently designated as industrial and R&D.

Figure ES-1. Project location map

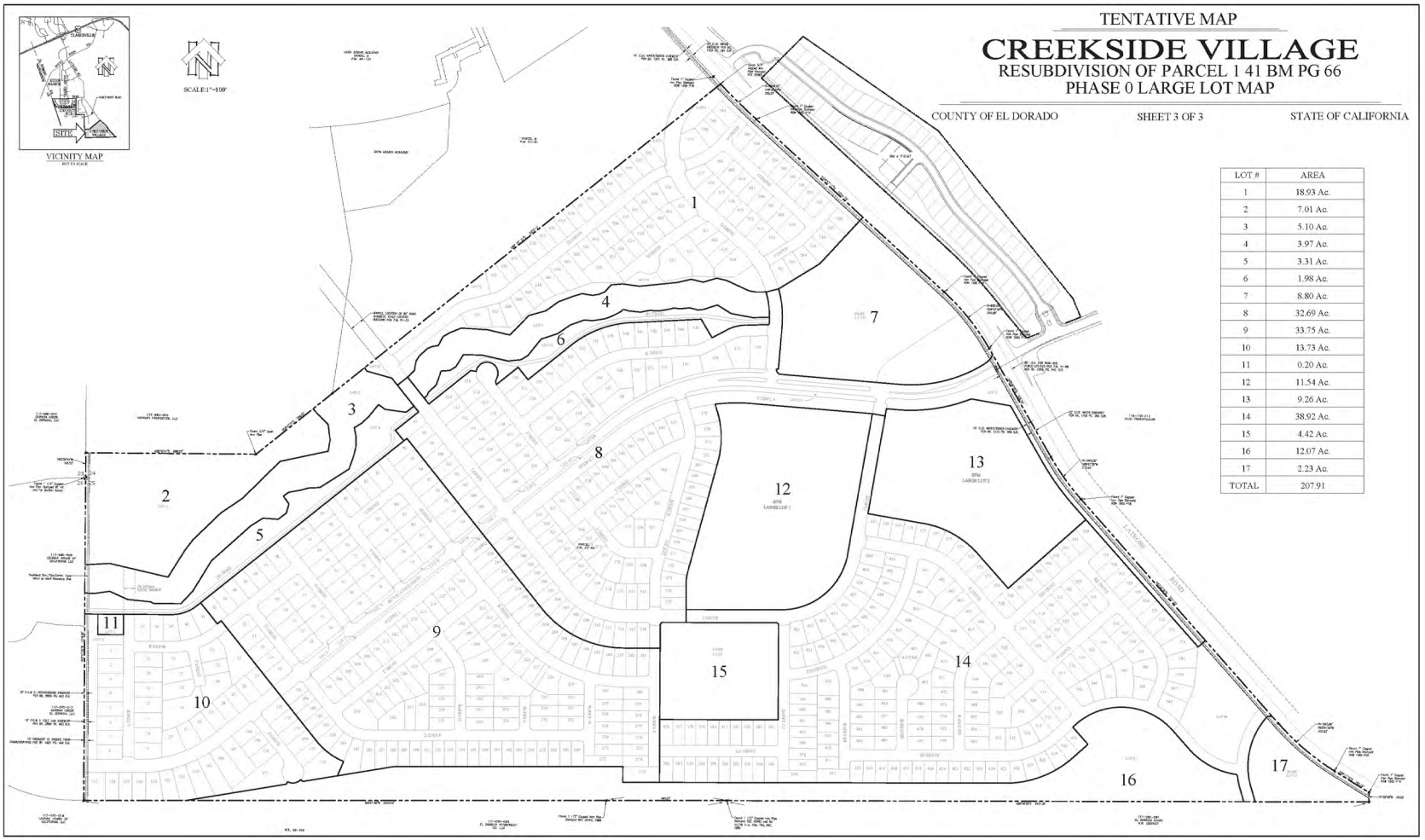

Figure ES-2. Preliminary Project site plan

- Create a Tentative Map for 668 homesites, 2 large-lot parcels that are analyzed as a combined total of 250 additional homes and 5,400 sqft of neighborhood commercial (918 homes and 5,400 sqft of commercial in total). The Tentative Map would include additional lots associated with parks and open space and various landscape lots.

Access to the Project will be provided by three roadways, a commercial driveway and a multiuse trail:

- The primary access will be from Latrobe Road via an extension of Royal Oaks Drive. The intersection of Latrobe Rd/Royal Oaks Dr is proposed to remain as full access, This intersection is analyzed with its existing two-way-stop-control, with signal-controlled recommended as an abatement to maintain acceptable level-of-service.
- The first secondary access road is an extension of Avanti Dr. The intersection is proposed as full access with side-street-stop-control.
- The second secondary access is via a connection to Wetsel-Oviatt Road.
- A right-in/right-out (RIRO) commercial driveway is proposed providing the neighborhood commercial site with direct access to southbound Latrobe Rd. The commercial driveway would be located just north of the existing Latrobe Rd/Royal Oaks Dr intersection.
- A pedestrian and bicycle access route connecting to Robert J. Mathews Parkway will provide enhanced non-motorized access to the medical, education, fitness, service, food, and retail options within the El Dorado Hills Business Park.

Traffic is distributed across the driveways based on the rough proximity of each land use to the access points.

Study Area

The TIS area (**Figure ES-3**), which includes portions of White Rock Road, Latrobe Road, El Dorado Hills Boulevard, Silva Valley Parkway and US 50 in El Dorado County, California, was selected with consideration of the requirements of CEQA and General Plan policies TC-Xd and TC-Xe. Specifically, the study was selected to include El Dorado County locations where Project traffic would constitute:

A. A two percent increase in traffic during the AM peak hour, PM peak hour, or daily; or,
B. The addition of 100 or more daily trips; or,
C. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

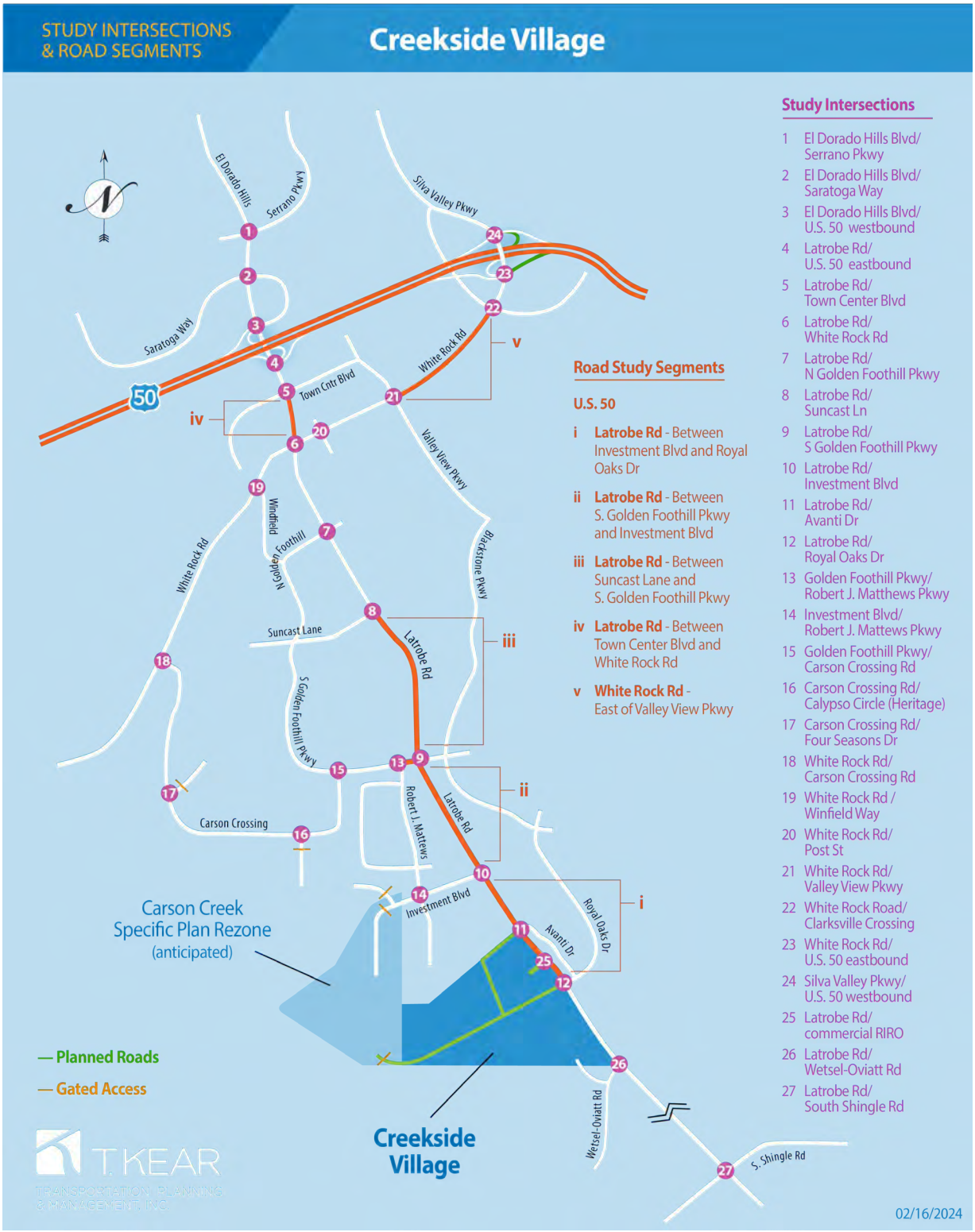

Figure ES-3 Study area

Project Trip Generation and Distribution

Anticipated Traffic generation by the Project reflects both trips generated by the Project itself, and, avoided trips in 2033 and 2040 from the commercial land uses that the El Dorado County TDM assumes will take place on the Project parcels.

Project Trips

Anticipated trips are based on Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021). **Table ES-1** shows anticipated Project Trip Generation. To be conservative, trip generation estimates are generally based on the higher rates for the peak hour of the generator rather than the peak hour of adjacent street traffic. The higher of either the average trip generation rate or equation-based trip generation rate was also used.

Avoided Trips

Avoided trips are additional peak hour trips that the TDM assumes in the future from growth within the Project TAZ. These avoided trips were estimated by running the TDM with and without assumed 2020[1] through 2040 employment growth for the effected portion of the Project's transportation analysis zone (TAZ 612). Creekside Village replaces 62% of the available land in TAZ 612 (**Figure ES-4**), therefor 62% of the employment growth was eliminated from TAZ 612 when estimating the number of avoided trips using the TDM. TDM employment assumptions for TAZ 612 are shown in **Table ES-2** below, along with the resulting avoided trips.

Trip Distribution with Adjustment for Latrobe Elementary

Project trip distribution was based on the El Dorado County TDM, observed counts, prior studies in the vicinity of the Project, and consultation with El Dorado County staff. Additional adjustments were made to reflect school trips to Latrobe Elementary based on student generation statistics published by the school district. Trip distribution is shown in **Figure ES-5**.

[1] 2020 is used rather than 2023 because the process of purchasing the land and de-annexing it from the business park meant that no new employment on this portion of the model TAZ occurred as of that year.

Table ES-1. 918 Single-family dwelling units trip generation

Land Use	Quantity	Metric	Daily	AM Peak Hour			PM Peak Hour		
				Total	Inbound	Outbound	Total	Inbound	Outbound
Single Family Detached Housing (ITE Use 210)	918 DU (1)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	9.43	0.75	26%	74%	0.99	64%	36%
		Trips	8657	689	179	510	909	582	327
Coffee/Donut Shop with Drive-Thru Window (ITE Use 937)	2.4 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	533.57	101.27	50%	50%	43.65	50%	50%
		Trips	1281	243	122	121	105	52	53
		Pass-by (3)	0	-110	-55	-55	-70	-35	-35
Fast Casual Restaurant (ITE Use 930)	1.5 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	97.14	5.71	63%	37%	18.57	62%	38%
		Trips	146	9	5	4	28	17	11
		Pass-by (4)	0	0	0	0	-12	-6	-6
High-Turnover (Sit-Down) Restaurant (ITE Use 932)	1.5 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	107.2	13.68	57%	43%	16.35	51%	49%
		Trips	161	21	12	9	25	13	12
		Pass-by (4)	0	0	0	0	-10	-5	-5
Total residential trips			8657	689	179	510	909	582	327
Less 2% internalization based on Travel Demand Model			-173	-14	-4	-10	-18	-12	-7
Net new residential trips to assign			**8484**	**675**	**175**	**500**	**891**	**570**	**321**
Total commercial trips			1588	163	84	79	66	36	30
Less 2% internalization based on Travel Demand Model			-32	-4	-2	-2	-2	-1	-1
Net new commercial trips to assign			**1556**	**159**	**82**	**77**	**64**	**35**	**29**
Total New Project Trips			**10040**	**834**	**257**	**577**	**955**	**605**	**350**
Commercial pass by trips from Latrobe Road (for assignment to commercial driveways)			**0**	**110**	**55**	**55**	**92**	**46**	**46**

(1) DU = Dwelling unit
(2) ksf = 1000 square feet
(3) Pass-by trips based on Land use 934 (Fast Food with Drive-Thru) which has an average 45.4% pass-by rate in the AM and 68% in the PM.
(4) Pass-by trips based on Land use 932 (High-Turnover (Sit-Down) Restaurant) which has an average 43% pass-by rate
Source: ITE (2021) Trip Generation Manual, 11th Ed., Institute of Transportation Engineers, Washington DC.

Figure ES-4. Creekside Village is 62% of available land in TAZ 612

Table ES-2. TDM employment assumptions and avoided trips

	2020	2040 without Project	2040 with Project	Notes
Employment				
Retail	224	433	304	Creekside Village is 62% of remaining land in TAZ 612. Housing is assumed to replace 62% of employment growth. (With Project there are 2097 fewer employees.)
Non-Retail	2115	5355	3387	
Total	2339	5788	3691	
Avoided Trips AM (PM) [Daily]				
in	526 (311) [4735]			
Out	207 (518) [4680]			

Figure ES-5. Creekside Village Project trip distribution

FINDINGS

Trip Generation Findings

The 918 dwelling unit Project with 5,400 sqft of neighborhood commercial space is anticipated to generate 834 AM peak hour trips, 955 PM peak hour trips, and 10,040 daily trips. Those trips are largely offset by 2040 through forgone commercial development on the 207.9 ac project site which the travel demand model anticipated would have generated 733 AM peak hour trips, 829 PM peak hour trips, and 9,415 daily trips. Net, the Project therefore adds only 101 AM peak hour trips during the AM peak hour, 126 trips during the PM peak hour, and 625 daily trips over what was assumed in travel demand model horizon year. Trip Generation is discussed in more detail in **Section 5.1**.

CEQA Findings

VMT: The 918 dwelling unit residential component of the Project is anticipated to have home based VMT per capita of 13.6 in 2023 and 13.1 in 2040, compared to a significance threshold (calculated using the same methodology and data as the Project impacts) of 17.3. Therefore the residential component of the Project has a **less-than significant** impact on VMT. The 5,400 sqft neighborhood commercial local serving retail component of the Project offers improved destination choices for local residents and can be assumed to have a **less-than significant** impact on VMT. The VMT analysis is discussed in **Section 3.4** and **Section 11**.

Transit: The Project does not interfere with existing or proposed transit service and has a **less-than-significant** impact on transit. Transit impacts are briefly discussed in **Section 12**.

Bicycles and Pedestrians: The Project enhances bicycle and pedestrian access to the El Dorado Hills Business Park and does not interfere with existing or planned bicycle and pedestrian facilities. The Project includes a variety of bike and pedestrian amenities providing connections both within the planned community and externally to the existing bike and pedestrian facilities along Latrobe Road and Royal Oaks Dr. Therefore, the Project has a **less-than-significant** impact on bicycle and pedestrian facilities. Bicycles and pedestrian impacts are briefly discussed in **Section 12**.

General Plan Level-of-Service and Queue Length Findings

Deficiencies that are caused or worsened by the Project, and abatement measures to address said deficiencies, are identified for existing 2023 plus Project, Existing Plus Approved Projects (EPAP) 2033 plus Project, and cumulative 2040 plus Project conditions.

Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = “A”, 2033 = “B”, and 2040 = “C”). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C). Locations with project causes new or worsen existing deficiencies are listed in **Table ES-2**. The first occurrence of an abatement measure is listed in **bold red** font, subsequent applications of an abatement measure are listed in a regular typeface. Abatement measures for existing 2023 plus Project conditions are described in more detail in **Section 6.3**, EPAP 2033 plus Project conditions in **Section 8.3**, and Cumulative 2040 plus Project in **Section 10.3**.

Table ES-2 Study area

ID	Location	2023 Plus Project	2033 Plus Project	2040 Plus Project	Related CIP Project
Arterial segments with worsened or new Project related deficiencies:					
ii	Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	**(ii)A: Widen**	Implement (ii)A	Implement (ii)A	"Latrobe 72"
v	White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	n/a	**(v)B: Widen**	n/a	36105042
Locations have preexisting level-of-service and/or queueing deficiencies which are worsened by the Project:					
2	El Dorado Hills Blvd/Saratoga Way	**2A: SB right pocket, adjust timing**	**2B: Implement 2A plus extend NB and SB left turn pockets, adjust timing**	n/a	36105076 and 36105035
3	El Dorado Hills Blvd/US 50 WB	**3A: Adjust timing**	Implement 3A	Implement 3A	"Traffic Signals Intersection"
4	El Dorado Hills Blvd/US 50 EB	n/a	**4B: Construct 3rd EB right turn lane**	Implement 4B	36104001
5	Latrobe Road/Town Center Boulevard	**5A: Extend WB left pocket, adjust timing**	Implement 5A	Implement 5A	"Traffic Signals Intersection"
6	Latrobe Road/White Rock Road	**6A: Adjust timing**	Implement 6A	Implement 6A	36105069
7	Latrobe Road/Golden Foothill Parkway (N)	n/a	**7B: Add SB right pocket**	n/a	36105069
8	Latrobe Rd/Suncast Ln	**8A: Restripe EB approach**	n/a	n/a	"Traffic Signals Intersection"
9	Latrobe Road/ Golden Foothill Parkway (S)	**9A: Restripe EB approach and add EB right pocket, adjust timing**	**9B: Implement 9A plus: restripe WB approach, add WB left pocket, add NB right pocket, extend NB left pocket, Add SB right pocket, adjust timing**	Implement 9B	"Latrobe 72"
10	(10) Latrobe Road/Investment Boulevard	**10A: Stripe EB approach as left and a shared left-right in a pocket**	Implement 10A	Implement 10A	"Latrobe 72"
13	Golden Foothill Parkway (S)/Robert J Mathews Pkwy	**13A: Construct roundabout**	Implement 13A	n/a	Anticipated
18	White Rock Road/Carson Crossing Road	**18A: Signalize**	Implement 18A	n/a	36105041
21	White Rock Road/Valley View Parkway	**21A: Add EB right pocket, extend EB left pocket, add WB right pocket, extend WB left pocket**	**21B: Implement 21A plus additional lengthening of WB left pocket.**	n/a	36105042
Locations where the Project is anticipated to cause new deficiencies:					
11	Latrobe Road/Avanti Drive	**11A: Add 100-foot NB and SB left turn pockets on Latrobe Rd, and add a 100-foot NB receiving lane on Latrobe Rd for EB left turns**	Implement 11A	Implement 11A	n/a
12	Latrobe Road/Royal Oaks Drive	**12A: Signalize, add SB right pocket, EB 3-lane approach (left, left-thru, right)**	Implement 12A	Implement 12A	n/a

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1.0 INTRODUCTION AND BACKGROUND

This transportation impact study (TIS) analyzes the proposed Creekside Village Specific Plan (the Project) for consistency with the El Dorado County General Plan level-of-service policies and for vehicle miles of travel (VMT) impacts under the California Environmental Quality Act (CEQA). Where appropriate, abatement measures are provided to address any deficiencies relative to adopted General Plan policies and mitigation measures are provided to address any potentially significant impacts under CEQA.

Creekside Village (the Project) is a planned community with housing, parks, open space, and neighborhood commercial located in the El Dorado Hills community region of El Dorado County. Requested entitlements include a tentative subdivision map allowing for up to 918 single family homes and 5,400 sqft of neighborhood commercial, a General Plan amendment, and a new Specific Plan. The Project proposes 668 residential lots, and two large lots for the remaining 250 single family homes on a vacant 207.9 acre parcel located on the southern end of the El Dorado Hills Business Park, south of Investment Boulevard and west of Latrobe Road. The Project parcels are APNs 117-010-032 and a portion of 117-010-031. A vicinity map is shown in **Figure 1**. The Project parcel is split by a creek, with most of the housing located on the south side of the creek. The north side of the creek would contain 87 of the residential lots and open space, and the south side of the creek would include 581 of the residential lots plus two large lots for the remaining 250 dwelling units.

The Project parcel has been de-annexed from the business park, and the applicant is requesting to change its General Plan land use designation and zoning from Research and Development (R&D) to Adopted Plan (AP) with Single Family Low Density (CV-SFL), Single Family Medium Density (CV-SFM) residential, and Neighborhood Commercial (CV-NC), Open Space (CV-OS) and Parks (CV-P) land use designations within the plan area.

Project Description

Figure 2 provides a preliminary site plan for the Project. The Project would:

- Amend the General Plan, change the zoning designation, and adopt a specific plan to allow the development of 207.9 acres for residential, neighborhood commercial and related uses on land that is undeveloped and currently designated as industrial and R&D.
- Create a Tentative Map for 668 homesites, 2 large-lot parcels that are analyzed as a combined total of 250 additional homes and 5,400 sqft of neighborhood commercial (918 homes and 5,400 sqft of commercial in total). The Tentative Map would include additional lots associated with parks and open space and various landscape lots.

Access to the Project will be provided by three roadways, a commercial driveway and a multiuse trail:

- The primary access will be from Latrobe Road via an extension of Royal Oaks Drive. The intersection of Latrobe Rd/Royal Oaks Dr is proposed to remain as full access, This intersection is analyzed with its existing two-way-stop-control, with signal-controlled recommended as an abatement to maintain acceptable level-of-service.

Figure 1. Project location map

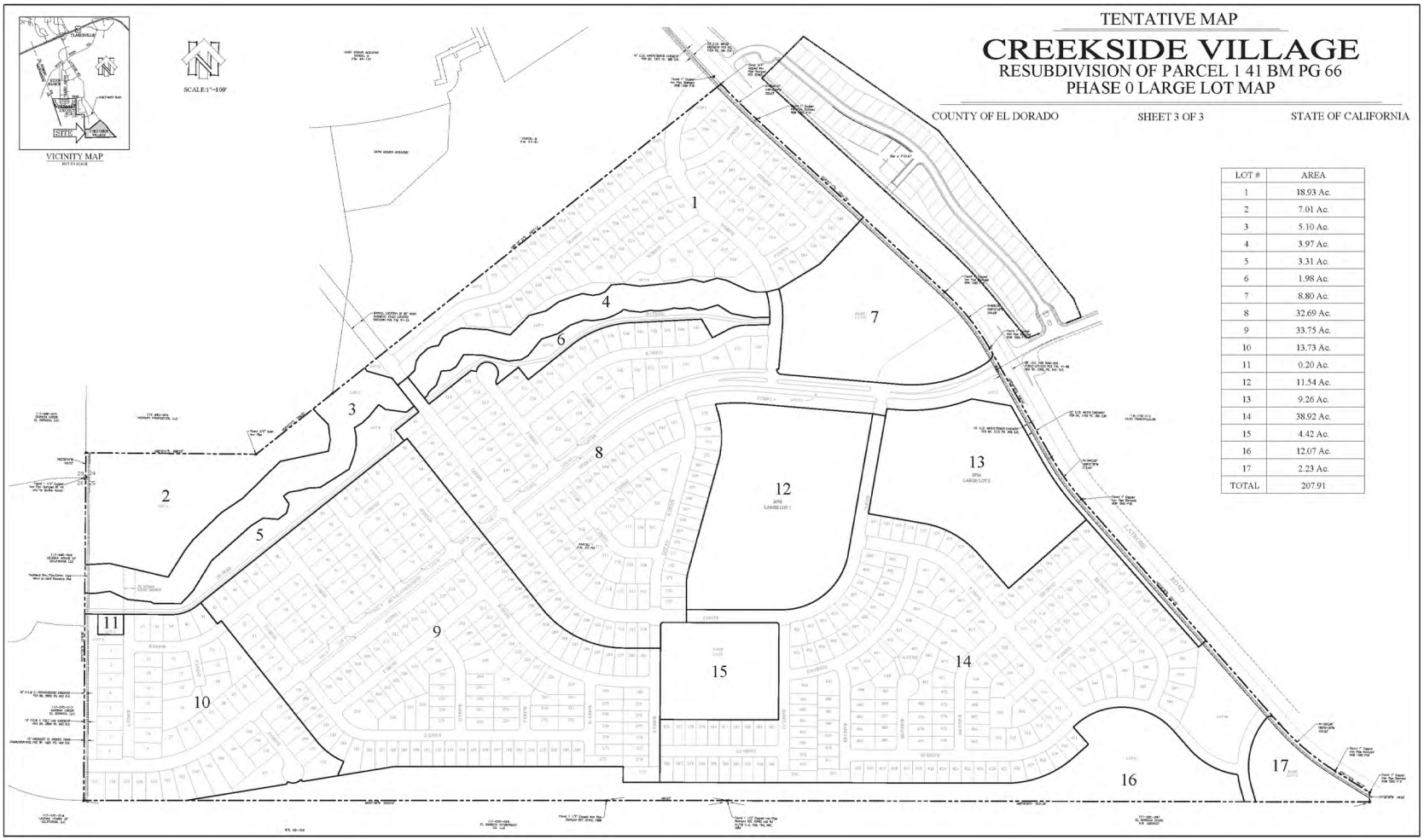

Figure 2. Preliminary Project site plan

- The first secondary access road is an extension of Avanti Dr. The intersection is proposed as full access with side-street-stop-control.
- The second secondary access is via a connection to Wetsel-Oviatt Road.
- A right-in/right-out (RIRO) commercial driveway is proposed providing the neighborhood commercial site with direct access to southbound Latrobe Rd. The commercial driveway would be located just north of the existing Latrobe Rd/Royal Oaks Dr intersection.
- A pedestrian and bicycle access route connecting to Robert J. Mathews Parkway will provide enhanced non-motorized access to the medical, education, fitness, service, food, and retail options within the El Dorado Hills Business Park.

Traffic is distributed across the driveways based on the rough proximity of each land use to the access points.

General Plan Consistency Considerations for Cumulative Impact Analysis

Projects that are consistent with the General Plan, and cumulative travel demand model assumptions, may rely upon the General Plan EIR's cumulative analysis. The Project parcel is currently designated as industrial and R&D in the General Plan and zoned accordingly. The Project requires a general plan amendment and rezoning to accommodate the proposed residential uses and is therefore not consistent with the General Plan or its related CEQA documents. Project-level cumulative analysis is included in this TIS.

2.0 STUDY AREA

The TIS area (**Figure 3**), which includes portions of White Rock Road, Latrobe Road, El Dorado Hills Boulevard, Silva Valley Parkway and US 50 in El Dorado County, California, was selected with consideration of the requirements of CEQA and General Plan policies TC-Xd and TC-Xe. Specifically, the study was selected to include El Dorado County locations where Project traffic would constitute:

D. A two percent increase in traffic during the AM peak hour, PM peak hour, or daily; or,
E. The addition of 100 or more daily trips; or,
F. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

2.1 Project Area Roadways

The following are descriptions of the primary roadways in the project vicinity.

- **El Dorado Hills Boulevard** is a north-south arterial roadway that extends from Green Valley Road on the north to US 50 on the south where it continues as Latrobe Road. North of Green Valley Road it continues as Salmon Falls Road. Between US 50 and Saratoga Way El Dorado Hills Boulevard is a six-lane urban arterial, between Saratoga Way and Serrano Parkway it is a five-lane urban arterial, north of Serrano Parkway it continues as a four-lane urban arterial until Governor Drive, and then as a two-lane urban arterial northward to Green Valley Road. Just north of US 50, El Dorado Hills Boulevard carries approximately 28,000 vehicles per day.

- **Latrobe Road** is a north-south arterial roadway that provides a primary connection to US-50 for western El Dorado County. It extends from US 50, where it continues as El Dorado Hills Boulevard, to State Route 16. It is a six-lane urban arterial road between US 50 and White Rock Road. Latrobe Road is a four-lane urban arterial road between White Rock Road and Golden Foothill Parkway (south). It is a two-lane urban road from Golden Foothill Parkway (south) to Investment Boulevard and a two-lane rural road south of Investment Boulevard. North of White Rock Road, Latrobe Road carries approximately 32,500 vehicles per day with three through travel lanes in each direction. South of US 50, El Dorado Hills Boulevard becomes Latrobe Road.

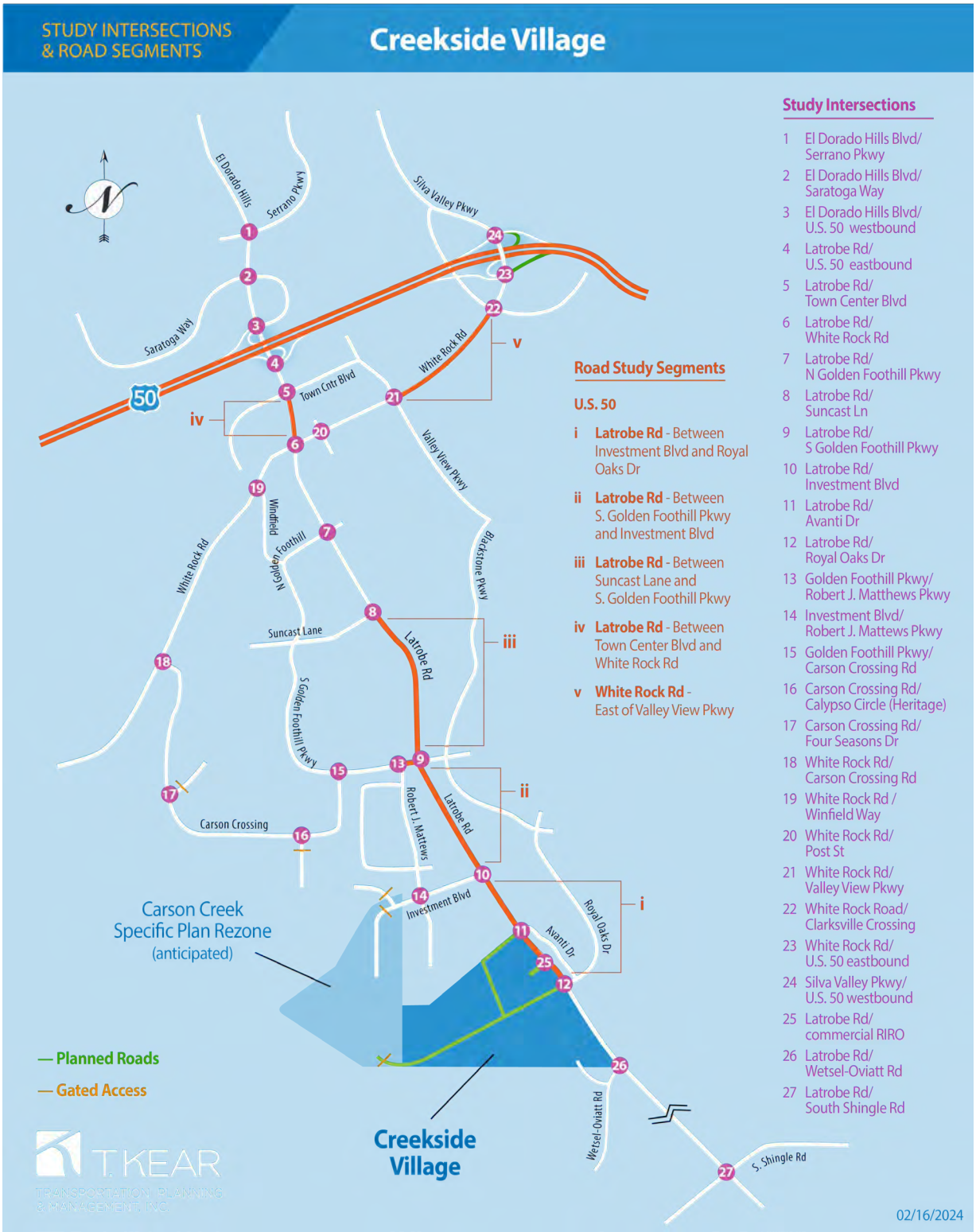

Figure 3. Study area

- **Park Drive** is a two-lane local roadway serving the shopping center located north of US 50 at the El Dorado Hills Boulevard interchange. Park Drive intersects El Dorado Hills Boulevard at two locations, opposite the reconstructed US 50 westbound ramps and then approximately 1000 feet to the north where Saratoga Way intersects El Dorado Hills Boulevard. Park Drive serves about 12,000 vehicles per day east of El Dorado Hills Boulevard.

- **Silva Valley Parkway** is a north-south roadway that generally runs parallel to El Dorado Hills Boulevard north of US 50. The General Plan identifies Silva Valley Parkway as a four-lane divided road. A new US 50 interchange at Silva Valley/White Rock Road opened in 2016, which provides a realigned Silva Valley Parkway that connects to the existing four-lane Silva Valley Parkway to the north and the existing two-lane White Rock Road on the south. The new interchange is located east of the existing underpass, which will be preserved for bike and pedestrian access. Silva Valley Parkway serves about 17,000 vehicles per day north of US 50.

- **White Rock Road** is an east-west arterial that extends through several jurisdictions from Silva Valley Parkway in El Dorado County to International Drive in Rancho Cordova. Within El Dorado County, it is a two-lane urban arterial road from the Sacramento County – El Dorado County line to Manchester Drive, a four-lane urban arterial between Manchester Drive and Post Street, and a two-lane urban arterial road between Post Street and Silva Valley Parkway. White Rock Road carries approximately 8,000 vehicles per day at the Sacramento County – El Dorado County Line and 17,000 vehicles per day just west (south) of the Silva Valley Parkway Interchange.

- **Investment Boulevard:** Is a two-lane local road, running east-west within the El Dorado Hills Business Park. It connects the eastern edge of the CCSP to Robert J. Mathews Parkway and Latrobe Road. Curb and gutter are provided. There are no bike lanes or sidewalks. Twenty-five-foot Lane widths are provided within the business park.

- **Robert J Mathews Parkway:** Is a two-lane local road, running north-south within the El Dorado Hills Business Park. It connects Investment Boulevard to Golden Foothill Parkway on the north. Curb and gutter are provided. There are no bike lanes or sidewalks. Twenty-five-foot Lane widths are provided within the business park. The Project includes an access connecting to Robert J. Mathews Parkway, to encourage residents to walk and bike to the plethora of schools, gyms, service and retail businesses and to minimize local traffic's use of Latrobe Road.

- **Royal Oaks Drive:** is a two-lane collector road within the Blackstone neighborhood of the Valley View Specific Plan. It provides the southernmost access for Blackstone to Latrobe Road. Royal Oaks Drive includes class 2 bike lanes, curb and gutter, and sidewalks fronting developed parcels.

2.2 Transit Service

El Dorado Transit is the primary public transit service provider in El Dorado County and provides local transit services within and between community areas of the county including Placerville and

Cameron Park. Within the study area, El Dorado Transit provides commuter service connecting a park-and-ride lot, located at the intersection of Latrobe Road and White Rock Road, with downtown Sacramento employment, and several locations in Folsom including the Iron Point Light Rail Station, Ingersoll Way & Parker Drive, Intel, Kaiser Permanente, and Folsom Lake College. Dial-a-ride services are also provided within many portions of El Dorado County, including El Dorado Hills.

2.3 Bicycle Facilities

There are existing class II bike lanes along White Rock Road, Silva Valley Parkway, Latrobe Road, Valley View Parkway, and Blackstone Parkway. A class 1 bike trail fronts the east side of Latrobe Road within the Valley View Specific Plan area between Royal Oaks Drive and the El Dorado Irrigation water treatment plant (4625 Latrobe Road). A short section of Class I trail also connects the Carson Crossing specific plan area to the El Dorado Hills Business Park.

The 2020 Active Transportation Plan[2] calls for a pedestrian overcrossing of US 50 connecting Class 1 bike and pedestrian trails through the Town Center shopping district with the bike and pedestrian trails adjacent to the Raley's shopping center north of US 50. There are also plans for a class 1 shared use path along the Placerville & Sacramento Valley Railroad rail line running to the Southeast from the City of Folsom and skirting the southwestern edge of the Carson Creek Specific Plan area.

2.4 Study Intersections and Segments

The following intersections are included in this evaluation and are marked in the preceding **Figure 3**:

1. El Dorado Hills Blvd/Serrano Pkwy
2. El Dorado Hills Blvd/Saratoga Way
3. El Dorado Hills Blvd/US 50 WB
4. El Dorado Hills Blvd/US 50 EB
5. Latrobe Road/Town Center Boulevard
6. Latrobe Road/White Rock Road
7. Latrobe Road/Golden Foothill Parkway (N)
8. Latrobe Road/Suncast Lane
9. Latrobe Road/ Golden Foothill Parkway (S)
10. Latrobe Road/Investment Boulevard
11. Latrobe Road/Avanti Drive
12. Latrobe Road/Royal Oaks Drive
13. Golden Foothill Pkwy/Robert J. Mathews Pkwy
14. Investment Boulevard/Robert J. Mathews Pkwy
15. Golden Foothill Parkway/Carson Crossing Road
16. Carson Crossing Road/Calypso Circle
17. Carson Crossing Road/Four Seasons Drive

[2] El Dorado County Transportation Commission (2020) El Dorado County Active Transportation Plan, https://www.edctc.org/atp-plans.

18. White Rock Road/Carson Crossing Road
19. White Rock Road/Windfield Way
20. White Rock Road/Post Street
21. White Rock Road/Valley View Parkway
22. White Rock Road/Clarksville Crossing
23. Silva Valley Parkway/US 50 EB ramps
24. Silva Valley Parkway/US 50 WB ramps
25. Latrobe Road/Commercial RIRO driveway
26. Latrobe Road/Wetsel-Oviatt Road
27. Latrobe Road/South Shingle Road

Merge/diverge/weave analysis for traffic entering and exiting US 50 will be conducted on US 50 at the following locations:

Westbound US 50

1. Bass Lake Rd to Silva Valley Pkwy (basic)
2. Silva Valley Pkwy offramp (diverge)
3. Silva Valley Pkwy offramp to the (future) loop onramp (basic)
4. (Future) Silva Valley loop onramp (merge)
5. Silva Valley Pkwy slip onramp to El Dorado Hills Blvd offramp (weave)
6. El Dorado Hills Blvd offramp to onramp (basic)
7. El Dorado Hills Blvd onramp (merge)
8. El Dorado Hills Blvd to EDC line (basic)

Eastbound US 50

9. EDC line to Latrobe Rd (basic)
10. Latrobe Rd slip offramp (diverge)
11. Latrobe Rd loop offramp (diverge)
12. Latrobe Rd offramp to onramp (basic)
13. Latrobe Rd to Silva Valley Pkwy (weave)
14. Silva Valley Pkwy offramp to loop onramp (basic)
15. Silva Valley Pkwy onramp (merge)
16. (Future) Silva Valley slip onramp (merge)
17. Silva Valley Pkwy to Bass Lake Rd (basic)

Arterial segment analysis was conducted for the portion of Latrobe Road and White Rock Road:

i. Latrobe Rd between Royal Oaks Dr and Investment Blvd
ii. Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)
iii. Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln)
iv. Latrobe Rd between White Rock Rd and Town Center Blvd
v. White Rock Rd between Valley View Pkwy to Silva Valley Pkwy

2.5 Study Scenarios

Six scenarios were identified for inclusion in this Traffic Impact Analysis through consultation with the development team and El Dorado County staff. The study determines the weekday AM peak

hour and PM peak hour level-of-service at the study intersections and segments under the following scenarios:

1. Existing 2023 (without Project);
2. Existing 2023 Plus Proposed Project;
3. Existing Plus Approved Projects (EPAP) 2033 (without project);
4. EPAP 2033 Plus Proposed Project;
5. Cumulative 2040 (without project); and
6. Cumulative 2040 Plus Proposed Project.

Existing 2023, and Existing 2023 Plus Proposed Project Scenarios

An analysis of the existing condition, which reflects the traffic volumes and roadway geometry at the time the study was initiated. This scenario is analyzed both with and without Project traffic to identify any Project related traffic deficiencies.

EPAP 2033, and EPAP 2033 Plus Proposed Project Scenarios

These scenarios, with and without the Project, will analyze conditions ten years from the current year calculated using a straight-line interpolation from existing traffic levels to the General Plan's 2040 traffic projections. These scenarios will expressly include an interpolated level of traffic from all projects with development agreements and approved tentative maps.

Cumulative 2040, and Cumulative 2040 Plus Proposed Scenarios

The Cumulative 2040 scenario reflects market rate buildout of the nearby specific plan areas and approved tentative maps in the El Dorado Hills area. This scenario was analyzed both with and without Project traffic to identify any Project related traffic deficiencies.

CEQA VMT analysis was performed for the existing and cumulative analysis scenarios.

3.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

This section provides a process overview, discusses traffic forecasting, and describes the methods/criteria used to evaluate level-of-service. A discussion of the criteria for conformity with General Plan level-of-service policies is included. California Environmental Quality Act (CEQA) analysis of transportation is limited to vehicle miles of travel (VMT). A discussion of CEQA significance thresholds for VMT is also included.

3.1 Process Overview

The overall analysis process was structured to identify potential adverse Project traffic effects relative to either conformity to General Plan level-of-service policies, or CEQA VMT impacts.

- Traffic counts collected in 2023 and crosschecked against historic 2017 and 2018 counts.
- Traffic volumes and turning movements for the Existing 2023 conditions were determined from traffic counts. Future-year volume forecasts were based on growth estimates from the El Dorado County travel demand mode (TDM)[3] applied to the observed count data. The NCHRP 255 procedure[4] was used to refine forecasted turning movements.
- Study intersections, arterial segments, and the US 50 segments were analyzed both with and without the proposed Project to identify potential Project impacts.
- General Plan level-of-service thresholds were based on El Dorado County General Plan, Transportation and Circulation Element policies TC-Xa (Measure Y and Measure E policies), TC-Xd and TC-Xe.
- CEQA thresholds of significance for VMT are based on guidance adopted by the Board of Supervisors on October 6, 2020.

3.2 Traffic Forecasting Methodology

The TDM catalog "EDC_CAT_082118" was used to generate existing and future traffic volume estimates for calculation of growth factors, and to estimate the distribution for trips generated by the Project. The TDM includes a 2018 baseline and 2040 cumulative scenario. Straight line interpolation was applied to estimate incremental growth from the base year through 2023, 2030, and 2040.

TDM Segment Level Calibration

The TDM was calibrated to local roadways by estimating and applying link level adjustment factors based on the difference between traffic counts and a 2023 TDM scenario. That calibration factor is applied to the 2023, 2033, and 2040 TDM results to improve the accuracy of the volume forecasts at each intersection. The NCHRP 255 process was used in combination with observed turning movements, and the calibrated 2020, 2030, and 2040 model volumes, to refine turning movements for no-Project conditions.

[3] El Dorado Travel Demand Model version "EDC_CAT_082118".
[4] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.

Baseline 2016 TDM Network

The TDM network within the Folsom Ranch area for the 2018 baseline model runs assumed that traffic crossing the El Dorado County Line on White Rock Road would use Scott Road (AKA East Bidwell Street) for US 50 access. Placerville Road and Alder Creek Parkway to East Bidwell Street provides a more direct path. This shorter route exists today and Folsom's General Plan update (adopted 8/28/2018) preserves that Placerville Road-Alder Creek Parkway route through the Folsom Plan Area. Therefore, these network links were connected and turned on for the baseline 2018 model runs.

2040 Traffic Forecasts and Interpolation of 2030 Link Volumes

Growth in traffic for the EPAP scenario was based on linear interpolation of segment volumes between the Baseline 2018 scenario (with the Saratoga Way extension), and a cumulative (2040) TDM scenario. Land use was checked to ensure that it reflected a reasonable degree of buildout of the nearby specific plan areas and to ensure that interpolation of that land use would account for all approved tentative maps in the El Dorado Hills area.

- The model reflects buildout of the Carson Creek Specific Plan housing. There are 1,700 age-restricted dwelling units currently allowed within the CCSP. Age restricted dwelling units have lower trip generation than traditional homes[5] and the TDM reflects this by coding the land use as a smaller number of traditional homes. The 1,700 age-restricted homes would be reflected as 765 traditional single-family homes in the TDM. The model includes 1,042 homes in the CCSP area (reflecting approximately 2315 age-restricted homes). The County's buildout estimate is conservatively high and was not adjusted.
- Buildout of the El Dorado Hills Specific Plan is included in the 2040 model land use.
- Buildout of Promontory is included in the 2040 model land use.
- Buildout of Valley View Specific Plan (VVSP) (Blackstone) White Rock Village and West Valley Village is included in the 2040 model land use.
- Bass Lake Hills is a little under 85% built out (1,217 DUs out of 1,448) by 2040. Based on the rate of buildout of the Bass Lake Hills Specific Plan area the assumption of 85% buildout appears conservative and was not increased.

The 2040 model network was also updated to include the Mangini Parkway connection between Placerville Road and East Bidwell Street in the Folsom Plan area.

3.3 Intersection Turn Movement Forecast Methodology

Directional link level volume estimates from the 2018 and 2040 TDM model forecasts were used to scale traffic counts using the NCHRP 255 methodology. The methodology was applied through the TurnsW32 v2.0 software[6]. TDM result plots are provided in **Appendix C**. The Furness reports

[5] Age restricted housing generates about 45% of the daily trips of traditional housing, 33% of the AM peak hour trips, and 30% of the PM peak hour trips (Source: ITE Trip Generation Manual, 10th edition).
[6] Dowling Associates (2002), http://sites.kittelson.com/kittelsondownloads/Downloads/Download/12544.

for the AM and PM peak hour turn movement forecasts under EPAP 2033 and Cumulative 2040 conditions are provided in **Appendix D**.

3.4 VMT Modeling Methodology and CEQA Significance Thresholds

VMT was analyzed based on extracting information from an unmodified version of the El Dorado County TDM. Before discussing the specific approach, background information on how the El Dorado County TDM works is appropriate. The TDM is a traditional trip based four-step travel demand model (trip generation, distribution, mode choice and assignment) with a 2018 base year and 2040 horizon year. Trip productions and attractions are estimated at the transportation analysis zone (TAZ) level. Within developed portions of the County, TAZs are roughly neighborhood size areas for which population socioeconomic data is tabulated. (TAZs are larger in less populated rural portions of the County). Trips are estimated by trip purpose based on eight purposes:

- Home based work,
- Home based shop,
- Home based school,
- Home based other,
- Work other,
- Other-other,
- Commercial two axle, and
- Commercial 3+ axle

As trips are estimated and processed by the model, they are converted from productions and attractions by purpose to origins and destinations by class (single occupancy, shared ride, commercial two-axle and commercial three-plus-axle. Trips are then assigned to the network by class using the origin-destination data. Through trips are also assigned based on an external origin-destination table. Both the production-attraction and origin-destination data are preserved in large matrices which can be leveraged to disaggregate the model's VMT estimates into VMT by trip purpose for evaluating the residential portion of the Project.

There are 674 TAZs in the model (25 of which represent external gateways) connected by 7,171 road segments. Each Taz is represented by a centroid corresponding to the approximate center of travel activity with the TAZ. Each road segments includes relevant characteristics (location, uncongested speed, number of lanes, capacity, etc.) that allow the model to estimate travel times as trips are assigned to the network. **Figure 4** depicts the model road network with dots reflecting the centroid of each TAZ and red dots reflecting the model gateways. TAZ 612 where the project is located is represented by a red star. **Figure 5** then shows the shape and extent of TAZ's near the Project site, with TAZ 612 (where the Project is located) and adjacent residential TAZes which are predominantly residential (167 and 611) labeled.

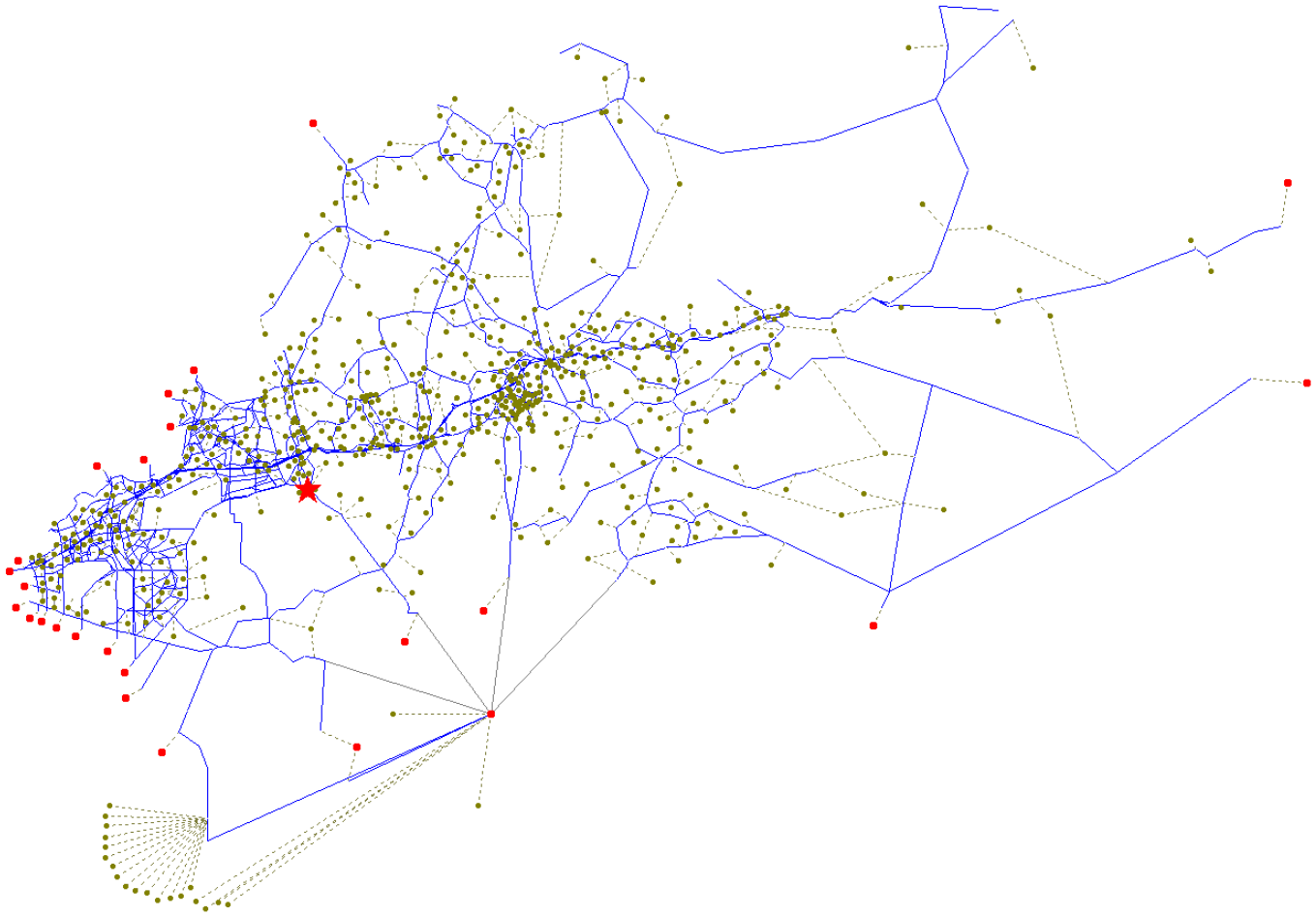

Figure 4. Travel demand model network and zone layout, Project TAZ (#612) shown as a star

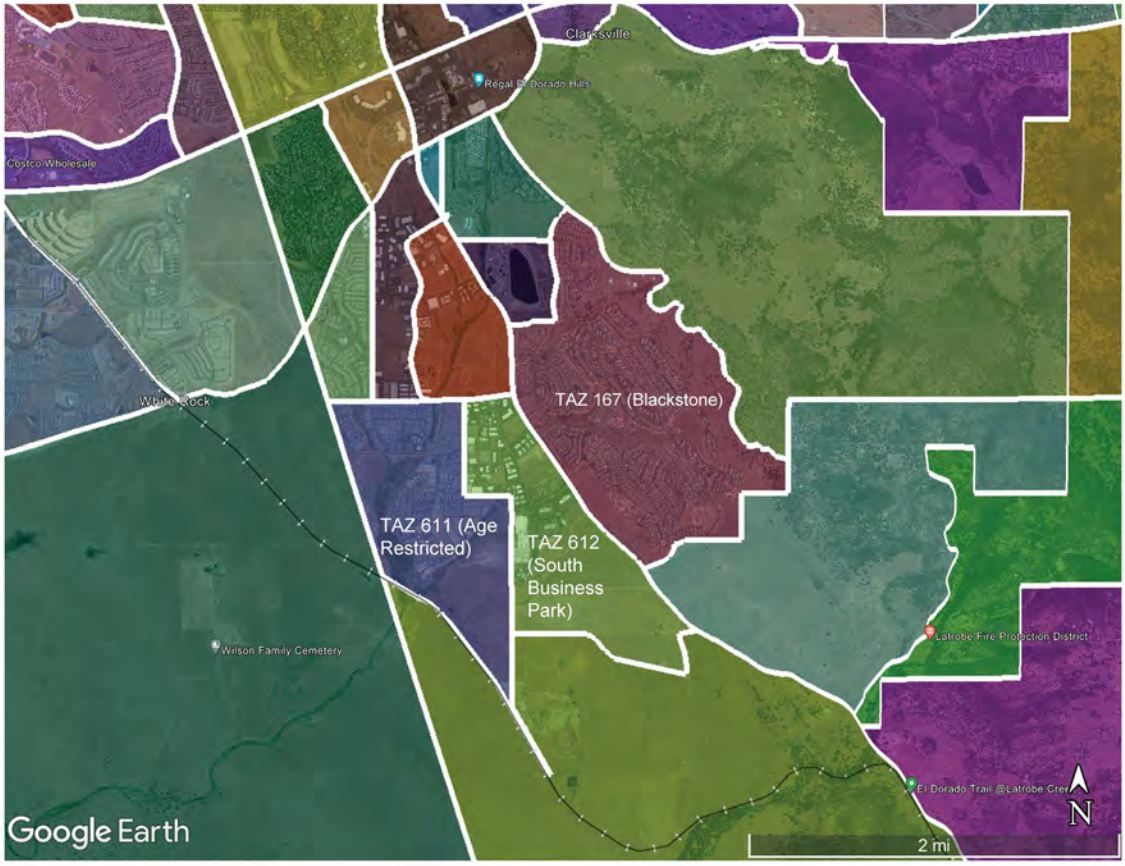

Figure 5. TAZ layout in the Project vicinity.

A three-step process for the baseline and cumulative analysis years was used to estimate per capita home based VMT.

Step 1. This step estimated TAZ[7]-to-TAZ distances from TDM skims, then combined those data with the number of TAZ-to-TAZ trips from the model's OD tables to estimate TAZ-to-TAZ VMT for drive along, shared ride, and commercial vehicles. Using the loaded networks accounts for any increases in trip distance that may result from congestion. In this step, model gateway trip lengths were adjusted based on **Table 1**. Those adjustments reflect the anticipated trip lengths for travel to/from El Dorado County from other parts of the region and state. This adjustment ensures that the TDM accounts for the full length of trips entering and exiting the County. The lengths for intrazonal trips (which have their origin and destination within the same TAZ) were estimated as half of the length of the

[7] TAZs are "transportation analysis zones", which are typically neighborhood size regions for which land use and demographic details, such as housing, employment, and population data are tabulated. The El Dorado County TDM has 674 TAZs.

TAZ's shortest centroid connector, which is the industry standard practice, and consistent with the County's VMT estimates.

Table 1. Average trip-length adjustments for TDM gateways

ID	Gateway Location	Average Additional Travel Distance (miles)	
		Internal to External (IX) Trips	External to Internal (XI) Trips
650	US 50 (to/from the west)	12.41	13.08
651	Dillard Rd	4.11	3.96
652	Sloughhouse Rd	0.00	0.00
653	Grant Line Rd/Sunrise Blvd	31.33	20.39
654	Excelsior Rd	11.07	10.38
655	Bradshaw Rd	11.32	8.80
656	Mayhew Rd	0.00	0.00
657	Jackson Rd (SR 16)	6.91	6.40
658	Local access between Bradshaw Rd and Excelsior Rd	0.00	0.00
659	Eagles Nest Rd	0.00	0.00
660	Folsom Blvd	7.73	7.19
661	Kiefer Blvd	8.88	8.54
662	Sunrise Blvd	5.47	6.14
663	Hazel Ave	8.16	5.41
664	Folsom Auburn Rd	10.17	12.66
665	Greenback Ln	5.43	5.17
666	Oak Ave	6.97	7.44
667	SR 49 (to/from the south)	0.00	0.00
668	Jackson Rd/Latrobe Rd/SR 49/Omo Ranch Rd	15.96	14.21
669	Jackson Rd	0.00	0.00
670	Latrobe Rd	0.00	0.00
671	SR 49 (to/from the north)	18.61	16.28
672	SR 88	0.00	0.00
673	N. South Rd	3.73	3.82
674	US 50 (to/from the east)	19.21	18.38

Note: Internal to External (IX) trips are trips that begin inside the El Dorado County model area and end outside. External to Internal (XI) trips are trips that begin outside the El Dorado County model area and end inside. Source: California Statewide Travel Demand Model.

Source: California Statewide Travel Demand Model as cited by Fehr and Peers in the Central El Dorado Hills Specific Plan VMT Analysis Memorandum dated January 5, 2021.

Step 2 This step estimated drive along, shared ride, and commercial vehicle trips by trip purpose from TDM trip production and attraction matrices. Then converted those data to the fraction of trip origins and destinations by trip purpose for each TAZ.

Step 2 The final step used the trip purpose data for each TAZ from task 2 to disaggregate the VMT data for each TAZ from task 1 into TAZ-to-TAZ VMT by trip purpose. Home based trips were assumed to consist of "home-based work", "home-based shop", "home-based school", "home-based other", and a portion of "other-other". Work-based trips were estimated as "work-other" and a portion of "other-other" trips. The other-other trips were allocated to the housing-based or work-based groups based on the ratio of home-other to work-other trips for each TAZ.

The resulting tables were summarized over unincorporated El Dorado County, and for TAZ 167 which was used as a surrogate for the Project[8]. TAZ 167 represents the Blackstone neighborhood across Latrobe Road from the Project. Blackstone was assumed to be the best available proxy for household size and income characteristics of the Project. It is likely a conservative comparison as the Project is envisioned to offer a wider variety of housing options with a diverse mix of housing styles and prices, where Blackstone was aimed at a higher income demographic. VMT per capita tends to increase as household income increases. The TDM is based in the CUBE software package by Bently Systems. Scripts used in each calculation step are provided **Appendix E**.

VMT Thresholds

The County's VMT thresholds set an identifiable metric by which the Project's effect on VMT will be determined to be significant or less-than-significant. Land use specific thresholds have been adopted as follows:

- Residential: 15% below baseline unincorporated countywide VMT per capita,
- Office: 15% below baseline unincorporated countywide VMT per capita,
- Retail: no net increase in VMT.

As noted by the Governor's Office of Planning and Research, adding local-serving retail into the urban fabric improves retail destination proximity. Local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies may presume such development creates a less-than-significant impact. (Regional serving retail on the other hand can substitute longer trips for shorter ones, which may lead to a significant impact.)

[8] Using a nearby TAZ as a surrogate avoids the need to artificially manipulate the socioeconomic distribution assumptions for the affected population. When a new TAZ is used, the distribution of socioeconomic characteristics for the households is copied and scaled from a similar nearby TAZ (i.e., TAZ 167). Using the existing TAZ as a surrogate maintains the County wide population and employment control totals that were adopted by the Board of Supervisors when the travel demand model and major TIF update are adopted. Artificially inflating the county wide population and employment can have nonsensical impacts on the resulting per capita VMT estimates.

The Governor's Office of Planning and Research advises lead agencies evaluate each component of a mixed-use project independently and apply the significance threshold for each project type included (e.g., residential and retail). Alternatively, a lead agency may consider only the project's dominant use. In the analysis of each use, a project should take credit for internal capture. Combining different land uses and applying one threshold to those land uses may result in an inaccurate impact assessment.

For Creekside Village, the residential portion of the Project is evaluated based on the 15% reduction from baseline threshold listed above. The retail portion of the Project is considered local-serving retail and presumed to have a less-than-significant impact on VMT.

3.5 Level-of-Service Methodology

Level-of-service (LOS) is a qualitative indication of the level of delay and congestion experienced by motorists using an intersection. Levels-of-service are designated by the letters A through F, with "A" being the best conditions and "F" being the worst (high delay and congestion). Calculation methodologies, measures of performance, and thresholds for each letter grade differ for road segments, signalized intersections, and unsignalized intersections. LOS is analyzed only to demonstrate consistency with the General Plan. LOS is no longer the metric by which traffic impacts are analyzed for CEQA and the LOS discussion is not relevant to assessing impacts to the environment for purposes of CEQA.

Based on guidance from El Dorado County Community Development Agency staff, and the *County of El Dorado Department of Transportation – Traffic Impact Study Protocols and Procedures* (Dated November 2014), the following procedures described below for intersection traffic operations analysis were selected for this study.

Intersection Traffic Operations Analysis

Signalized Intersections

The methodology from Highway Capacity Manual (HCM) 7th Edition[9] are used to analyze signalized intersections. Level-of-service can be characterized for the entire intersection, each approach, or by lane group. Control delay alone (the weighted average delay for all vehicles entering the intersection) is used to characterize level-of-service for the entire intersection or an approach. Control delay and volume to capacity ratio are used to characterize level-of-service for lane groups. The average delay criteria used to determine the level-of-service at signalized intersections is presented in **Table 2**.

[9] TRB (2022) Highway Capacity Manual 7th Edition, Transportation Research Board, Washington D.C.

Table 2. Level-of-service criteria for signalized intersections

Level -of- Service	Description	Average Delay[1] (Sec. /Vehicle.)
A	Very Low Delay: This level-of-service occurs when progression is extremely favorable, and most vehicles arrive during a green phase. Most vehicles do not stop at all.	≤ 10.0
B	Minimal Delays: This level-of-service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.	10.1-20.0
C	Acceptable Delay: Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (*to service all waiting vehicles*) may begin to appear at this level of service. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.	20.1-35.0
D	Approaching Unstable/Tolerable Delays: The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.1-55.0
E	Unstable Operation/Significant Delays: This is considered by many agencies the upper limit of acceptable delays. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	55.1-80.0
F	Excessive Delays: This level, considered to be unacceptable to most drivers, often occurs with oversaturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delay levels.	> 80.0 or v/c >1.0

Note 1: Weighted average of delay on all approaches. This is the measure used by the Highway Capacity Manual to determine level-of-service. Any movement with a volume to capacity ratio (v/c) greater than 1.0 is considered to be level-of-service "F".

Source: Transportation Research Board (2022) Highway Capacity Manual, 6th Edition, Washington D.C., Chapter 19;

Unsignalized Intersections

The methodology from HCM 7th Edition is used for the analysis of unsignalized intersections. For unsignalized intersections, most of the main street traffic is un-delayed, and, by definition, have acceptable conditions. The main street left-turn movements and the minor street movements are all susceptible to delay of varying degrees. Generally, the higher the main street traffic volumes, the higher the delay for the minor movements. Separate methods are utilized for two-way stop-controlled (TWSC) intersections, and all-way stop-controlled (AWSC) intersections.

- **TWSC**: The methodology for analysis of two-way stop-controlled intersections calculates an average total delay per vehicle for each minor street movement and for the major

street left-turn movements, based on the availability of adequate gaps in the main street through traffic. A level-of-service designation is assigned to individual movements or to combinations of movements (in the case of shared lanes) based upon delay, it is not defined for the intersection as a whole. Unsignalized intersection level-of-service reported herein is for each movement (or group of movements) based upon the respective average delay per vehicle. **Table 3** presents the average delay criteria used to determine the level-of-service at TWSC and at AWSC intersections.

- **AWSC:** At all-way stop-controlled intersections, the level-of-service is determined by the weighted average delay for all vehicles entering the intersection. The methodologies for these types of intersections calculate a single weighted average delay and level-of-service for the intersection, as a whole. The average delay criteria used to determine the level-of-service at all-way stop intersections is the same as that presented in **Table 3**. Level-of-service for specific movements can also be determined based on the TWSC methodology.

It is not unusual for some of the minor street movements at unsignalized intersections to have level-of-service D, E, or F conditions while the major street movements have level-of-service A, B, or C conditions. In such a case, the minor street traffic experiences delay that can be substantial for individual minor street vehicles, but the majority of vehicles using the intersection have very little delay. Usually in such cases, the minor street traffic volumes are relatively low. If the minor street volume is large enough, improvements to reduce the minor street delay may be justified, such as channelization, widening, roundabout, or signalization.

Table 3. Level-of-service criteria for unsignalized intersections

Level of Service (LOS)	Description	TWSC[1] Average Delay by Movement (seconds / vehicle)	AWSC[2] Intersection Wide Average Delay (seconds / vehicle)
A	Little or no delay	< 10	< 10
B	Short traffic delay	> 10 and < 15	> 10 and < 15
C	Average traffic delays	> 15 and < 25	> 15 and < 25
D	Long traffic delays	> 25 and < 35	> 25 and < 35
E	Very long traffic delays	> 35 and < 50	> 35 and < 50
F	Extreme delays potentially affecting other traffic movements in the intersection	> 50 (or, v/c >1.0)	> 50

Note 1: Two-way stop-control (TWSC) level-of-service is calculated separately for each minor street movement (or shared movement) as well as major street left turns using these criteria. Any movement with a volume to capacity ratio (v/c) greater than 1.0 is considered to be level-of-service F.

Note 2: All-way stop-control (AWSC) assessment of level-of-service at the approach and intersection levels is based solely on control delay.

Source: Transportation Research Board (2022) Highway Capacity Manual, 7th Edition, Washington D.C., Chapter 20 (TWSC) and Chapter 21 (AWSC).

Signal Warrants

At each unsignalized intersection, the potential need for a traffic signal was evaluated. Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrants are met, signalization of the intersection may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would increase delays on the previously uncontrolled major street and may increase the occurrence of particular types of accidents.

As stated in revision 8 of the 2014 California Edition of the Manual on Uniform Traffic Control Devices (California MUTCD 2014)[10], "*The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:*

- *Warrant 1, Eight-Hour Vehicular Volume*
- *Warrant 2, Four-Hour Vehicular Volume*
- *Warrant 3, Peak Hour*
- *Warrant 4, Pedestrian Volume*
- *Warrant 5, School Crossing*
- *Warrant 6, Coordinated Signal System*
- *Warrant 7, Crash Experience*
- *Warrant 8, Roadway Network*
- *Warrant 9, Intersection Near a Grade Crossing*

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal."

Consistent with the industry standard of practice, this Traffic Impact Analysis did not evaluate the full panoply of warrants for traffic signals, but instead focused on the peak hour warrant. The MUTCD states that, "*This [peak hour] signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.*" So, the peak hour warrant is being used in this impact analysis study as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed the peak hour warrant are considered (for the purposes of this impact analysis) to be likely to meet one or more of the other signal warrants (such as the 4-hour or 8-hour warrants). This peak hour analysis is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction.

[10] Caltrans (2024) California Manual on Uniform Traffic Control Devices - FHWA's MUTCD 2009 Edition as amended for use in California - 2014 Edition - Revision 8, January 11, 2024. Section 4C.

Unsignalized intersections were evaluated using the Peak Hour Volume Warrant (Warrant No. 3) in the California MUTCD 2014. The Peak Hour Volume Warrant was applied where the minor street experiences long delays in entering or crossing the major street for at least one hour in a day.

Even if the Peak Hour Volume Warrant is met, a more detailed signal warrant study is recommended before a signal is installed. The more detailed study should consider volumes during the daily peak hours of roadway traffic, pedestrian traffic, and accident histories.

El Dorado County Roadway Segments

Several methods are available to evaluate roadway segments. The methodology selected for this analysis was chosen to be consistent with the 2014 El Dorado County Transportation Impact Study Guidelines.

Table 1 of that document contains the maximum flow rates for each level-of-service grade as a function of roadway classification. Those level-of-service criteria are shown in **Table 4**.

Table 4. Level-of-service criteria for county roadway segments

		HCM 2010 Planning Level Volumes[1]				
Code	**Functional Class Codes (Updated to HCM 2010)**	**A**	**B**	**C**	**D**	**E**
2A	Two-Lane Arterial	-	-	850	1,540	1,650
4AU	Four-Lane Arterial, Undivided	-	-	1,760	3,070	3,130
4AD	Four-Lane Arterial, Divided	-	-	1,850	3,220	3,290
6AD	Six-Lane Arterial, Divided	-	-	2,760	4,680	4,710
4M	Four-Lane Multi-Highway (Two Dir.)	-	2,240	3,230	4,250	4,970
2F	Two Freeway Lanes (One Dir.)	-	2,070	2,880	3,590	4,150
2FA	Two Freeway Lanes + Auxiliary Lane (One Dir.)	-	2,610	3,630	4,520	5,230
3F	Three Freeway Lanes (One Dir.)	-	3,100	4,320	5,380	6,230
3FA	Three Freeway Lanes + Auxiliary Lane (One Dir.)	-	3,640	5,070	6,320	7,310
4F	Four Freeway Lanes (One Dir.)	-	4,140	5,760	7,180	8,310

1 *Freeway LOS based on HCM 2010, Exhibit 10-8, Urban Area, Rolling Terrain, K-factor of 0.09, and D-factor of 0.60*

2-lane highway (and arterial 2-lane) LOS based on HCM 2010, Exhibit 15-30, Class II Rolling, .09 K-factor, and D-factor of 0.6

Arterial LOS based on HCM 2010, Exhibit 16-14, K-factor of 0.09, posted speed 45 mi/h

Volumes are for both directions unless noted

Caltrans Merge/Diverge/Weave Level-of-Service Analysis

Freeway merge/diverge segments, basic segments, and weaving segments were analyzed utilizing the methodologies outlined in Chapters 12-14 of the Highway Capacity Manual, 7th Edition (HCM 2016)[11]. Freeway operations and level-of-service is defined by density (passenger cars per mile per lane) which depends upon traffic volumes and the ramp characteristics. These characteristics include the length and type of acceleration/deceleration lanes; free-flow speeds; number of lanes;

[11] Transportation Research Board (2022) Highway Capacity Manual, 7th Edition, Washington, D.C.

grade; and types of facilities. **Table 5** through **Table 7** shows the relationship of level-of-service to freeway density. Note that the Leisch Method[12], which Caltrans prefers for weaving segments, was not applied because the State of California no longer considers level-of-service under CEQA, and the Leisch Method is not relevant to adopted General Plan policies.

Table 5. Level-of-Service Criteria – Basic freeway segment

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-11
B	>11-18
C	>18-26
D	>26-35
E	>35-45
F	>45, or demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 12, Washington, D.C.

Table 6. Level-of-Service Criteria - Freeway ramp merge/diverge areas

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-10
B	>10-20
C	>20-28
D	>28-35
E	> 35
F	Demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 14, Washington, D.C.

Table 7. Level-of-service criteria - freeway weaving areas

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-10
B	>10-20
C	>20-28
D	>28-35
E	> 35-43
F	>43, or demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 13, Washington, D.C.

[12] Caltrans (2012) Highway Design Manual, Index 504.7

3.6 General Plan Level-of-Service Standards

Conformity to General Plan level-of-service policies for the Project were determined based on the methods described above and identified as either "significant" or "less-than-significant" in accordance with El Dorado County protocols and procedures[13] . However, level-of-service is only applicable to General Plan conformity. Delay and level-of-service is not a significant impact under CEQA.

General Plan Circulation Policy TC-Xd provides that level-of-service for county-maintained roads and state highways within the unincorporated areas of the county shall not be worse than level-of-service E in the community regions or level-of-service D in the rural centers and rural regions, unless specifically exempted as shown in **Table 8**.

Table 8. General plan exceptions to level-of-service standards

El Dorado County Roads Allowed to Operate at Level-of-Service F[a] (Through December 31, 2029)		
Road Segments		**Max. v/c[b]**
Cambridge Road	Country Club Drive to Oxford Road	1.07
Cameron Park Drive	Robin Lane to Coach Lane	1.11
Missouri Flat Road	US 50 to Mother Lode Drive	1.12
	Mother Lode Drive to China Garden Road	1.20
Pleasant Valley Road	El Dorado Road to State Route 49	1.28
US 50	Canal Street to junction of State Route 49 (Spring Street)	1.25
	Junction of State Route 49 (Spring Street) to Coloma Street	1.59
	Coloma Street to Bedford Avenue	1.61
	Bedford Avenue to beginning of freeway	1.73
	Beginning of freeway to Washington overhead	1.16
	Ice House Road to Echo Lake	1.16
State Route 49	Pacific/Sacramento Street to new four-lane section	1.31
	US 50 to State Route 193	1.32
	State Route 193 to county line	1.51

Note a: Roads improved to their maximum width given right-of-way and physical limitations
Note b: Volume-to-capacity ratio.
Source: 2004 General Plan (amended January 2009) Table TC-2

All but two study intersections are within the El Dorado Hills community region and shall operate at level-of-service E or better. Intersection #22 (White Rock Rd/Clarksville Crossing) and #23 (White Rock Road/US 50 EB) are outside of the community region and shall operate at level-of-service D or better. If a project causes the peak hour level-of-service or volume/capacity ratio on a county road or state highway that would otherwise meet the county standards (without the project) to exceed the values listed in the above tables and text, then the impact shall be considered significant. Because this Traffic Impact Analysis is not a CEQA document, facilities and intersections will be noted as having deficient level-of-service rather than an impact.

[13] Traffic Impact Study Protocols and Procedures, County of El Dorado, Department of Transportation, 2008.

If any county road or state highway fails to meet the above listed county standards for peak hour level-of-service or volume/capacity ratios under without Project conditions, and the Project will "significantly worsen" conditions on the road or highway, then the impact shall be considered significant. The term, "significantly worsen" is defined for the purpose of this paragraph according to General Plan Policy TC-Xe as follows:

A. A two percent increase in traffic during the AM peak hour, PM peak hour, or daily; or,

B. The addition of 100 or more daily trips; or,

C. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

Though not explicitly stated in the General Plan policies, 95% left turn queues that exceed available storage lengths are considered to operate deficiently. The highway capacity manual calculations assume that left turn queues do not typically spill out of turn pockets to block through traffic. In keeping with the state of the practice, where the Project adds less than one car length (25 feet) to 95% left turn queues that exceed available storage, that addition is considered to de minimis.

3.7 Analysis Tools

El Dorado County Travel Demand Model (TDM)

As noted in prior sections, The El Dorado County Travel Demand Model (version EDC_CAT_082118) was utilized to estimate VMT and forecast growth in traffic volumes on study area roadways.

NCHRP 255 Adjustment

The NCHRP 255[14] adjustment procedure was used to improve turning movement forecasts for EPAP 2030 and Cumulative 2040 conditions.

Macroscopic Intersection Analysis

Control delay and level-of-service for study intersections were calculated using PTV Vistro[15] traffic analysis software (Version 2024, SP 0-2). Vistro is a complete traffic analysis software package used for evaluating development impacts, optimizing traffic signal timings, and evaluating intersection levels of service. It implements the methodologies of the HCM 2000, 2010, and 6th Ed. for signalized and unsignalized intersections, and requires data on road characteristics (geometric), traffic counts, and the signal timing data for each analysis intersection.

When calculating intersection control delay and level-of-service for all study intersections, default parameters were used, except for locations where specific field data were available (e.g., peak-hour factors). Heavy vehicle percentages during the peak-hour of 2% were assumed.

[14] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.
[15] PTV Vistro (2017), Portland OR.

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4.0 EXISTING (2023) CONDITIONS

4.1 Data Sources

The analysis tools require a variety of data to generate the evaluation criteria. The following sections describe data collection procedures for Existing Conditions. There were three primary data elements (roadway characteristics, intersection turning movement counts, and traffic control data); and two supplementary elements (other recent studies, and field data) that comprised the data collection program for this traffic analysis.

Roadway Geometry and Usage Characteristics

The geometry and usage data for the analysis were collected using aerial photographs, field visits, and prior studies. Current intersection geometry was field validated. **Table 9** shows the key items included in the geometric data and the source for each item.

Table 9. Key items and sources for geometry and usage data

Key Item	Source
Lane configurations & width	Aerial photographs and field visits
Lane utilization	Prior studies, aerial photographs, and field visits
Intersection spacing	Aerial photographs and field visits
Length of storage bays	Aerial photographs and field visits
Transit stops and routes	Transit schedules, aerial photographs, and field visits
Turn prohibitions or allowance	Aerial photographs and field visits
Signal timing	Timing sheets provided by El Dorado County

Lane configurations and width – These data specify the number of lanes and the width of the roadway in each direction, and the directional turns that are allowed from each lane.

Lane utilization – These data specify how lanes are used by drivers, such as traffic distribution between lanes on a multi-lane roadway.

Intersection spacing – These data refer to the distance between intersections, which is recorded in feet.

Length of storage bays – These data refer to the length (feet) of available storage for left- or right-turning vehicles where exclusive turn lanes are available. These data are collected for right-turn lanes when the parking lane is used as a right- turn lane.

Transit stops and routes – A transit stop is an area where passengers await, board, alight, and transfer between transit vehicles. A transit route is the roadway that transit vehicles operate on.

Turn prohibitions or allowance – This data specifies if right turns on red (RTOR) are allowed on the roadway.

Intersection Turning Movement Counts

Existing morning and evening peak-period vehicle and pedestrian turning movement counts collected in April 2023 were used for this study. Historic 2017 and 2018 counts were also used as a “floor” to ensure that there were no COVID related reductions in the 2023 counts. Traffic count

data sheets are provided in **Appendix A** of this report. Traffic volumes between intersections were balanced where differences could not reasonably be attributed to a vehicle platoon being held at one of the lights, driveway access between intersections, or shifts in the time of the peak hour from one intersection to another. All balancing was done by adding vehicle trips to the 2023 turning movements. Observed intersection peak hour factors (PHF) were applied. **Figure 6** provides a summary of the intersection lane geometry and peak period turning movements under Existing 2023 conditions.

Segment Counts

Turning movement counts can significantly overstate segment volumes. The practice of balancing traffic flows between adjacent intersections when counts may have been collected on different days and/or the corresponding intersections experience slightly different peak-hours can make those counts too conservative to apply to the segments.

Segment counts collected by El Dorado County on multiple days in 2023 and the development team were used to analyze road segments. Segment counts are summarized in **Table 12** below. Raw count data can be found in **Appendix A.**

4.2 Existing Condition Intersection and Segment Level-of-Service

Table 10 through **Table 12** present a summary of level-of-service results for the study intersections and segments under Existing 2023 conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) is provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **bold black** typeface denote deficient traffic operations, and unsignalized intersections that meet the peak hour signal warrant are denoted with an asterisk and shading.

The results indicate fourteen study intersections operate deficiently with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way: AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard: PM;
- (6) Latrobe Road/White Rock Road AM and PM;
- (7) Latrobe Road/Golden Foothill Parkway (N): PM;
- (8) Latrobe Rd/Suncast Ln PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S): AM and PM;
- (10) Latrobe Road/Investment Boulevard: PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathewsws Pkwy PM;
- (18) White Rock Road/Carson Crossing Road PM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street: AM and PM; and
- (21) White Rock Road/Valley View Parkway: AM and PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. The remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

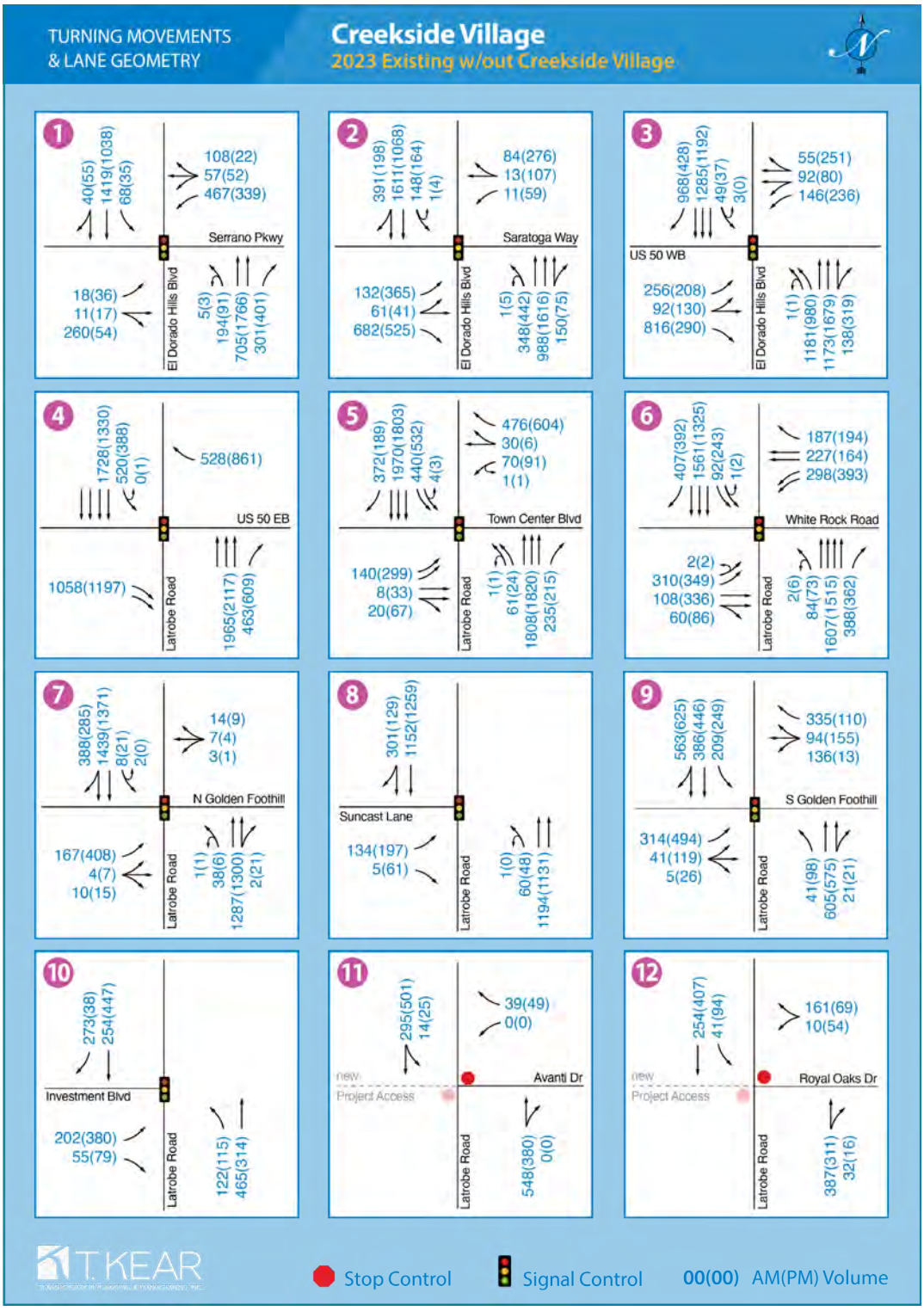

Figure 6. Existing 2023 conditions lane geometry and turning movements

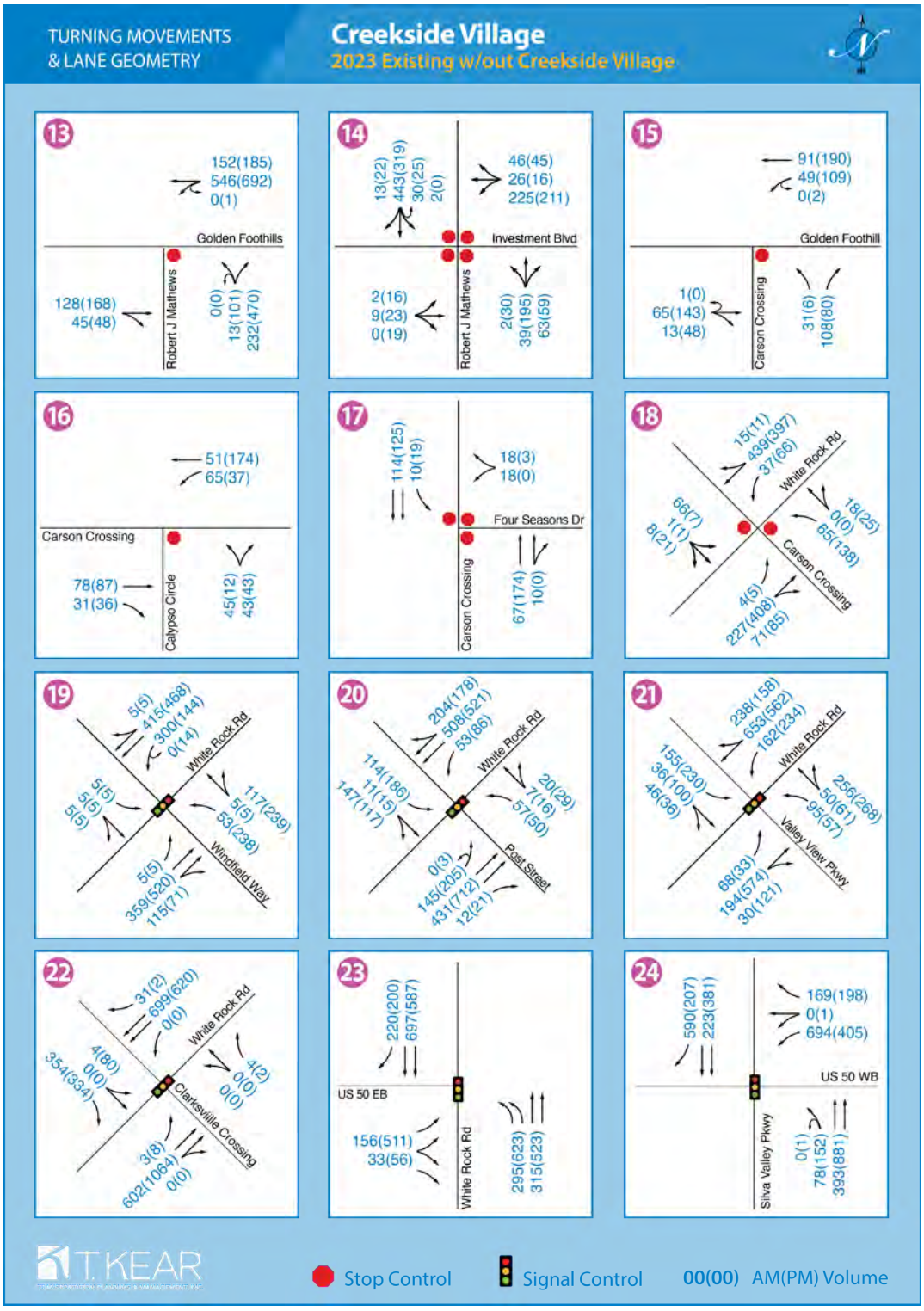

Figure 6. Existing 2023 conditions lane geometry and turning movements (continued)

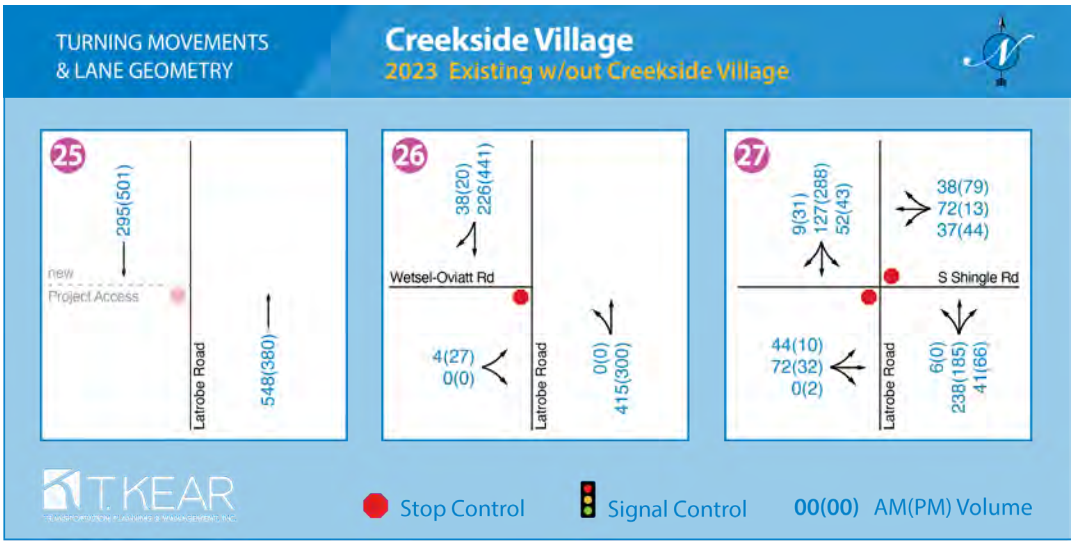

Figure 6. Existing 2023 conditions lane geometry and turning movements (continued)

Table 10. Existing 2023 intersection delay and level-of-service without the Project

ID	Intersection	Control	Left Turn Storage		2023 AM Peak No Project				2023 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB	260	**118.3**	**F**	NB	**296**	46.8	D	NB	91
			SB	110			SB	110			SB	38
			EB	100			EB	25			EB	34
			WB	430			WB	423			WB	197
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB	230	**147.8**	**F**	NB	**712**	**107.8**	**F**	NB	**1334**
			SB	100			SB	**202**			SB	**252**
			EB	150			EB	116			EB	**290**
			WB	N/A			WB	N/A			WB	N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left - turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB	N/A	**94.1**	**F**	NB	N/A	47.9	D	NB	N/A
			SB	220			SB	95			SB	68
			EB	N/A			EB	262			EB	297
			WB	150			WB	**175**			WB	**277**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB	N/A	23.0	C	NB	N/A	22.8	C	NB	N/A
			SB	570			SB	363			SB	298
			EB	N/A			EB	271			EB	445
			WB	N/A			WB	0			WB	0
5	Latrobe Road/Town Center Boulevard	Signal	NB	220	21.1	C	NB	29	38.1	D	NB	13
			SB	330			SB	198			SB	**472**
			EB	300			EB	65			EB	156
			WB	100			WB	59			WB	86
6	Latrobe Road/White Rock Road	Signal	NB	270	33.0	C	NB	172	51.0	D	NB	157
			SB	260			SB	86			SB	227
			EB	360			EB	275			EB	306
			WB	160			WB	**266**			WB	**507**
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB	200	20.9	C	NB	35	20.9	C	NB	7
			SB	200			SB	11			SB	24
			EB	100			EB	79			EB	**180**
			WB	N/A			WB	N/A			WB	N/A
8	Latrobe Road/Suncast Lane	Signal	NB	280	9.3	A	NB	39	10.8	B	NB	32
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	91			EB	**127**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB	220	26.0	C	NB	32	37.5	D	NB	86
			SB	530			SB	157			SB	253
			EB	100			EB	**130**			EB	**309**
			WB	N/A			WB	N/A			WB	N/A
10	Latrobe Road/Investment Boulevard	Signal	NB	180	10.8	B	NB	35	18.0	B	NB	66
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	68			EB	**232**
11	Latrobe Road/Avanti Drive	TWSC	NB	N/A	(WB) 12.7	B	NB	N/A	(WB) 11.1	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB	320	(WB) 14.0	B	NB	0	(WB) 21.8	C	NB	0
			SB	320			SB	4			SB	7
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB	N/A	(NB) 18.3	C	NB	N/A	**(NB) 2479.7 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

Table 10. Existing 2023 intersection delay and level-of-service without the Project (continued)

ID	Intersection	Control	Left Turn Storage		2023 AM Peak No Project				2023 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB SB EB WB	N/A N/A N/A N/A	25.0	C	NB SB EB WB	N/A N/A N/A N/A	19.6	C	NB SB EB WB	N/A N/A N/A N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB SB EB WB	N/A N/A N/A 220	(NBL) 10.5	B	NB SB EB WB	N/A N/A N/A 3	(NBL) 14.8	B	NB SB EB WB	N/A N/A N/A 8
16	Carson Crossing Road/Calypso Circle	TWSC	NB SB EB WB	N/A N/A N/A 190	(NB) 10.2	B	NB SB EB WB	N/A N/A N/A 4	(NB) 9.5	A	NB SB EB WB	N/A N/A N/A 2
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB SB WB	N/A 100 N/A	7.9	A	NB SB WB	N/A 1 N/A	8.1	A	NB SB WB	N/A 2 N/A
18	White Rock Road/Carson Crossing Road	TWSC	NB SB EB WB	N/A N/A 200 300	(NBL) 22.0	C	NB SB EB WB	N/A N/A 0 2	**(NBL) 69.3**	**F**	NB SB EB WB	N/A N/A 0 5
19	White Rock Road/Windfield Way	Signal	NB SB EB WB	150 100 200 200	25.8	C	NB SB EB WB	80 10 10 **363**	29.1	C	NB SB EB WB	**331** 10 10 **222**
20	White Rock Road/Post Street	Signal	NB SB EB WB	N/A 100 100 120	39.2	D	NB SB EB WB	N/A **319** **245** 99	70.4	E	NB SB EB WB	N/A **683** **327** **158**
21	White Rock Road/Valley View Parkway	Signal	NB SB EB WB	100 100 100 100	75.0	E	NB SB EB WB	**106** **206** 92 **206**	54.2	D	NB SB EB WB	70 **304** 50 **321**
22	White Rock Road/Clarksville Crossing	Signal	NB SB EB WB	N/A N/A 460 290	23.4	C	NB SB EB WB	N/A N/A 6 0	23.4	C	NB SB EB WB	N/A N/A 10 0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB SB EB WB	500 N/A N/A N/A	16.9	B	NB SB EB WB	172 N/A N/A N/A	31.7	C	NB SB EB WB	316 N/A N/A N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB SB EB WB	550 N/A N/A N/A	34.2	C	NB SB EB WB	98 N/A N/A N/A	19.3	B	NB SB EB WB	192 N/A N/A N/A
25	Latrobe Road/Commercial RIRO driveway	RIRO TWSC	NB SB EB	N/A N/A N/A	Does not exist				Does not exist			
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB SB EB	N/A N/A N/A	(EB) 13.5	B	NB SB EB	N/A N/A N/A	(EB) 15.2	C	NB SB EB	N/A N/A N/A
27	Latrobe Road/S. Shingle Road	TWSC	NB SB EB WB	N/A N/A N/A N/A	(EB) 18.1	C	NB SB EB WB	N/A N/A N/A N/A	(EB) 16.4	C	NB SB EB WB	N/A N/A N/A N/A

Table 11. Existing 2023 freeway facility density and level-of-service without the Project

No	Segment	Segment Type	Method	2023 No Project AM	2023 No Project PM
Westbound US 50					
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	22.1/C	16.8/B
2	Silva Valley offramp	diverge	HCM 7th Ed.	18.7/B	13.2/B
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	15.2/B	12.6/B
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	n/a	n/a
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	15.1/B	11.1/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	11.8/B	10.8/A
7	El Dorado Hills Blvd onramp	merge	HCM 7th Ed.	28.4/D	22.9/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	29.5/D	21.9/B
Eastbound US 50					
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	10.9/A	18.4/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	20.8/C	29.6/D
11	Latrobe loop offramp	diverge		20.0/C	28.8/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	3.7/A	8.8/A
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	7.2/A	11.8/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	7.3/A	10.7/A
15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	13.8/B	19./B
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	n/a	n/a
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	9.7/A	14.5/B

Density in units of passenger cars per mile per lane.

*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Table 12. Existing 2023 arterial level-of-service check without the Project

Arterial Segment	Description	2023 AM No Project	2023 PM No Project
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650)	593	655
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650)	1015	932
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln)	4-lane divided arterial (threshold 3290)	1998	2030
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280, extrapolated from 6-lane divided arterial)	2931	3018
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	2-lane arterial (threshold 1650)	1194	1440

5.0 ASSESSMENT OF PROPOSED CREEKSIDE VILLAGE PROJECT

5.1 Proposed Project Trip Generation

Anticipated Traffic generation by the Project reflects both trips generated by the Project itself, and, avoided trips in 2033 and 2040 from the commercial land uses that the El Dorado County TDM assumes will take place on the Project parcels.

Project Trips

Anticipated trips are based on Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021). **Table 13** shows anticipated Project Trip Generation. To be conservative, trip generation estimates are generally based on the higher rates for the peak hour of the generator rather than the peak hour of adjacent street traffic. The higher of either the average trip generation rate or equation-based trip generation rate was also used. Use of these higher rates has historically been preferred by El Dorado County. Pass by trip estimates for the commercial uses are based on both the ITE Trip Generation Manual 11th Edition's electronic appendices and the more detailed ITE Trip Generation Handbook 3rd Edition[16] The ITE data was parsed to better reflect the Project. Specifically pass-by rates for the morning were limited to locations where data was available for the 7-9 AM period (which eliminates the 68% rate from Kentucky, resulting in a lower pass-by rate). That Kentucky rate was for 6-9 AM, and for a larger store (3.3 ksf). The AM pass-by rate also included the 44% pass-by rate from Chicago which is in the 3rd Ed of the Trip Gen Handbook, but not in the newer electronic appendices. For the evening peak we only considered the studies reflecting 4-6 PM for sites that are no larger than the proposed use of 2.4 ksf. The resulting rate was 67.5% (the table footnote says 68%). Note that one needs to look at both the Trip Generation Handbook and the Trip Generation Manual to identify the time periods that the data in the electronic appendix reflect.

Trip Distribution with Adjustment for Latrobe Elementary

Project trip distribution was based on the El Dorado County TDM, observed counts, prior studies in the vicinity of the Project, and consultation with El Dorado County staff. Additional adjustments were made to reflect school trips to Latrobe Elementary based on student generation statistics published by the school district. Trip distribution is shown in **Figure 7**. Assignment of the Project trips to study intersections is shown in **Figure 8**.

[16] ITE (2017) Trip Generation Handbook, 3rd Ed. Institute of Transportation Engineers, Washington DC.

Table 13. 926 Single-family dwelling units trip generation

Land Use	Quantity	Metric	Daily	AM Peak Hour			PM Peak Hour		
				Total	Inbound	Outbound	Total	Inbound	Outbound
Single Family Detached Housing (ITE Use 210)	918 DU (1)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	9.43	0.75	26%	74%	0.99	64%	36%
		Trips	8657	689	179	510	909	582	327
Coffee/Donut Shop with Drive-Thru Window (ITE Use 937)	2.4 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	533.57	101.27	50%	50%	43.65	50%	50%
		Trips	1281	243	122	121	105	52	53
		Pass-by (3)	0	-110	-55	-55	-70	-35	-35
Fast Casual Restaurant (ITE Use 930)	1.5 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	97.14	5.71	63%	37%	18.57	62%	38%
		Trips	146	9	5	4	28	17	11
		Pass-by (4)	0	0	0	0	-12	-6	-6
High-Turnover (Sit-Down) Restaurant (ITE Use 932)	1.5 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	107.2	13.68	57%	43%	16.35	51%	49%
		Trips	161	21	12	9	25	13	12
		Pass-by (4)	0	0	0	0	-10	-5	-5
Total residential trips			8657	689	179	510	909	582	327
Less 2% internalization based on Travel Demand Model			-173	-14	-4	-10	-18	-12	-7
Net new residential trips to assign			**8484**	**675**	**175**	**500**	**891**	**570**	**321**
Total commercial trips			1588	163	84	79	66	36	30
Less 2% internalization based on Travel Demand Model			-32	-4	-2	-2	-2	-1	-1
Net new commercial trips to assign			**1556**	**159**	**82**	**77**	**64**	**35**	**29**
Total New Project Trips			**10040**	**834**	**257**	**577**	**955**	**605**	**350**
Commercial pass by trips from Latrobe Road (for assignment to commercial driveways)			**0**	**110**	**55**	**55**	**92**	**46**	**46**

(1) DU = Dwelling unit

(2) ksf = 1000 square feet

(3) Pass-by trips based on Land use 934 (Fast Food with Drive-Thru) which has an average 45.4% pass-by rate in the AM and 68% in the PM.

(4) Pass-by trips based on Land use 932 (High-Turnover (Sit-Down) Restaurant) which has an average 43% pass-by rate

Source: ITE (2021) Trip Generation Manual, 11th Ed., Institute of Transportation Engineers, Washington DC.

Figure 7. Creekside Village Project trip distribution

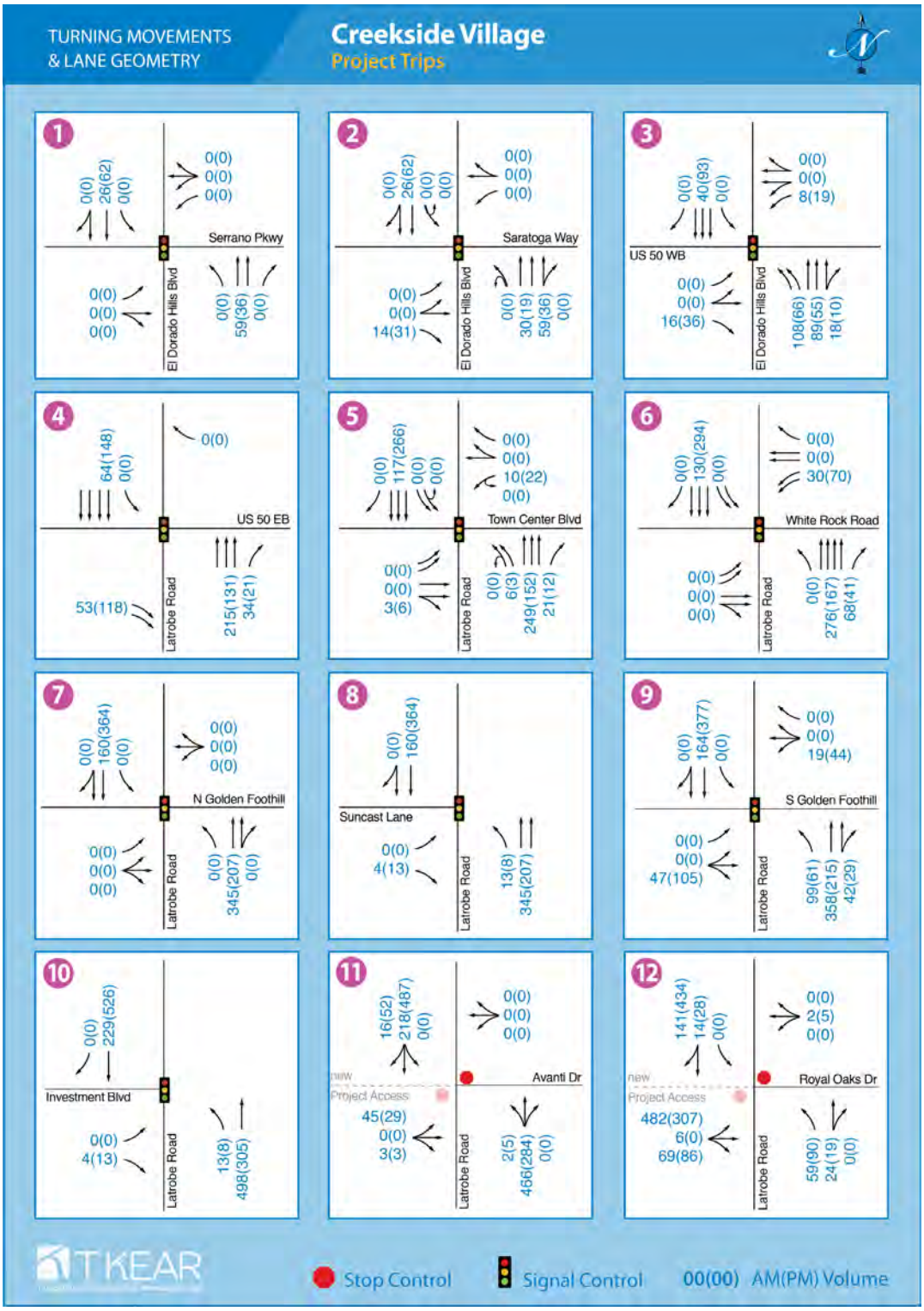

Figure 8. Project trip assignment for 918 dwelling units

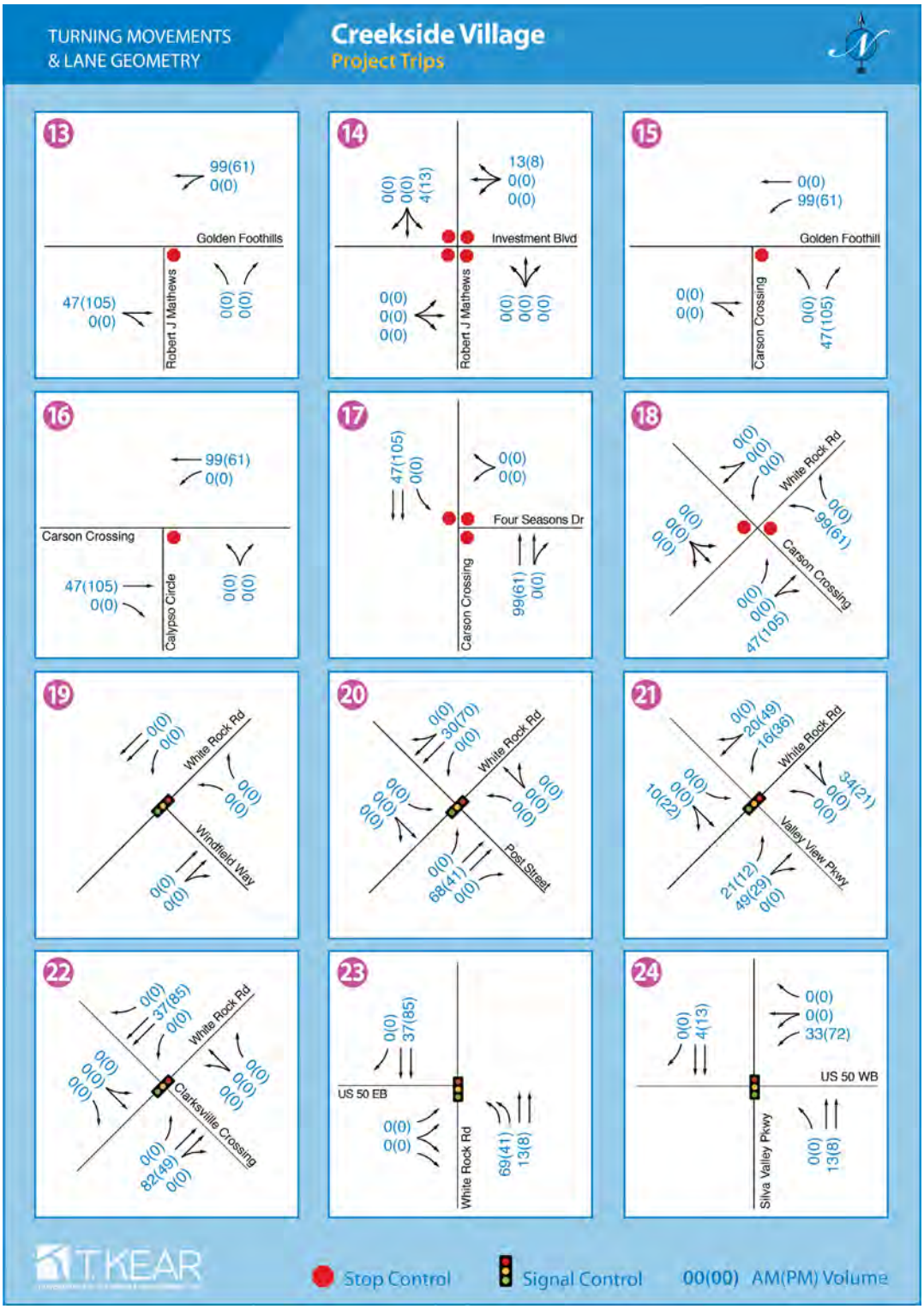

Figure 8. Project trip assignment for 918 dwelling units (continued)

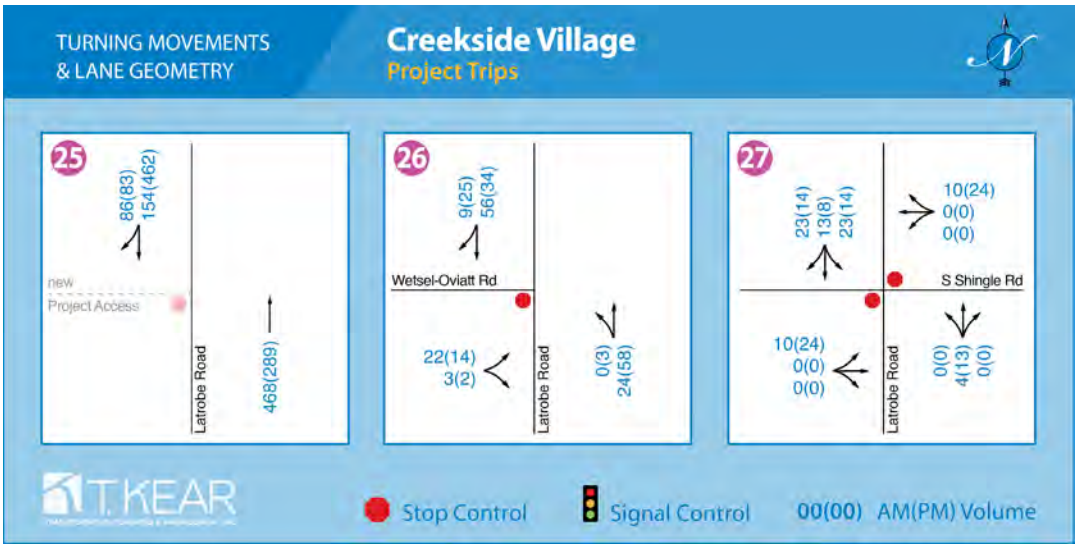

Figure 8. Project trip assignment for 918 dwelling units (continued)

Avoided Trips

Avoided trips are additional peak hour trips that the TDM assumes in the future from growth within the Project TAZ. These avoided trips were estimated by running the TDM with and without assumed 2020[17] through 2040 employment growth for the effected portion of the Project's transportation analysis zone (TAZ 612). Creekside Village replaces 62% of the available land in TAZ 612 (**Figure 9**), therefor 62% of the employment growth was eliminated from TAZ 612 when estimating the number of avoided trips using the TDM. TDM employment assumptions for TAZ 612 are shown in **Table 14** below, along with the resulting avoided trips. Avoided trips for 2040 are shown in **Figure 10**. Using straight line interpolation, 2033 avoided trips reflect the 13 years of unrealized growth from 2020.

[17] 2020 is used rather than 2023 because the process of purchasing the land and de-annexing it from the business park meant that no new employment on this portion of the model TAZ occurred as of that year.

Figure 9. Creekside Village is 62% of available land in TAZ 612

Table 14. TDM employment assumptions and avoided trips

	2020	2040 without Project	2040 with Project	Notes
Employment				
Retail	224	433	304	Creekside Village is 62% of remaining land in TAZ 612. Housing is assumed to replace 62% of employment growth. (With Project there are 2097 fewer employees.)
Non-Retail	2115	5355	3387	
Total	2339	5788	3691	
Avoided Trips AM (PM) [Daily]				
in			526 (311) [4735]	
Out			207 (518) [4680]	

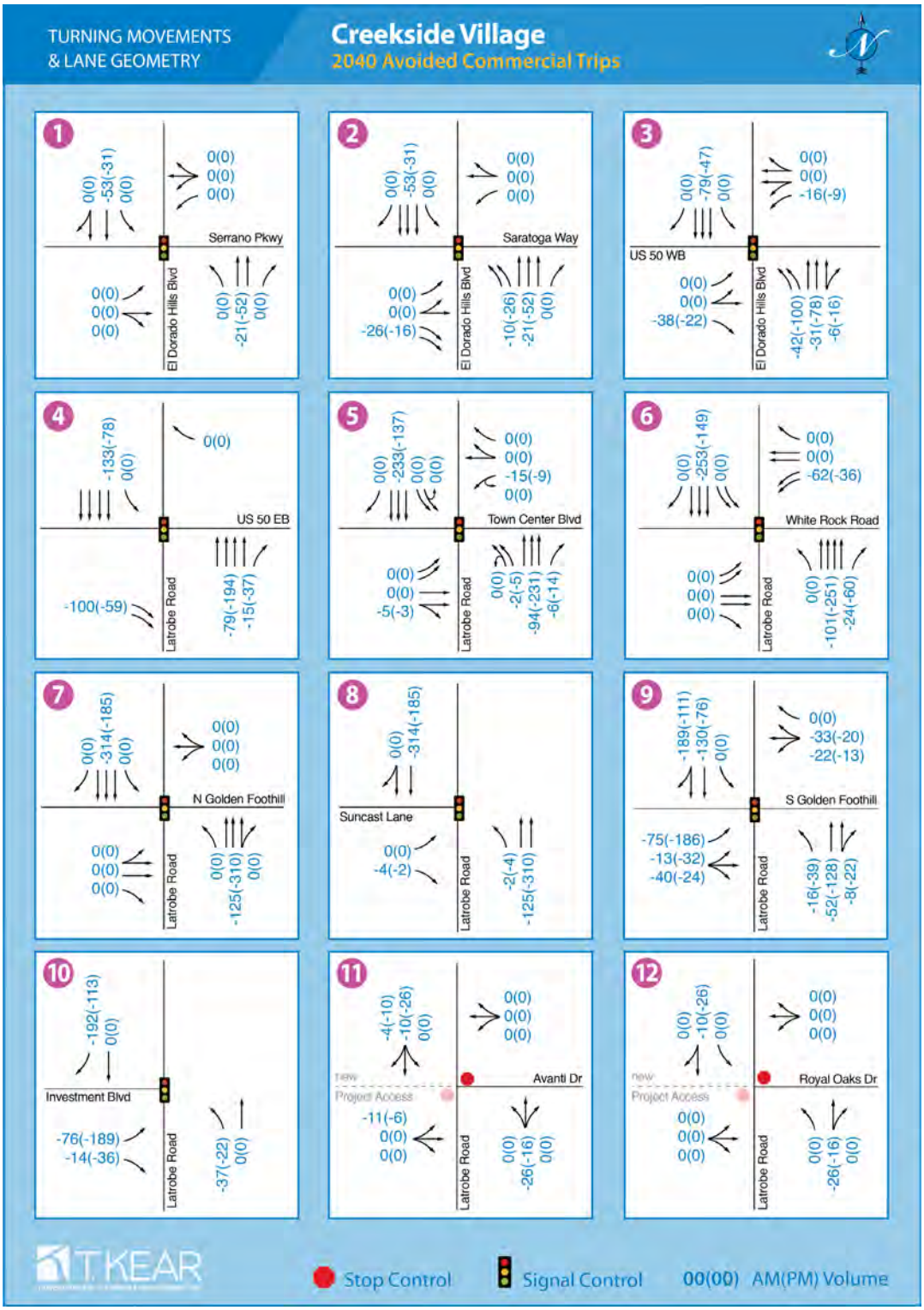

Figure 10. Creekside Village avoided industrial and R&D trips in 2040

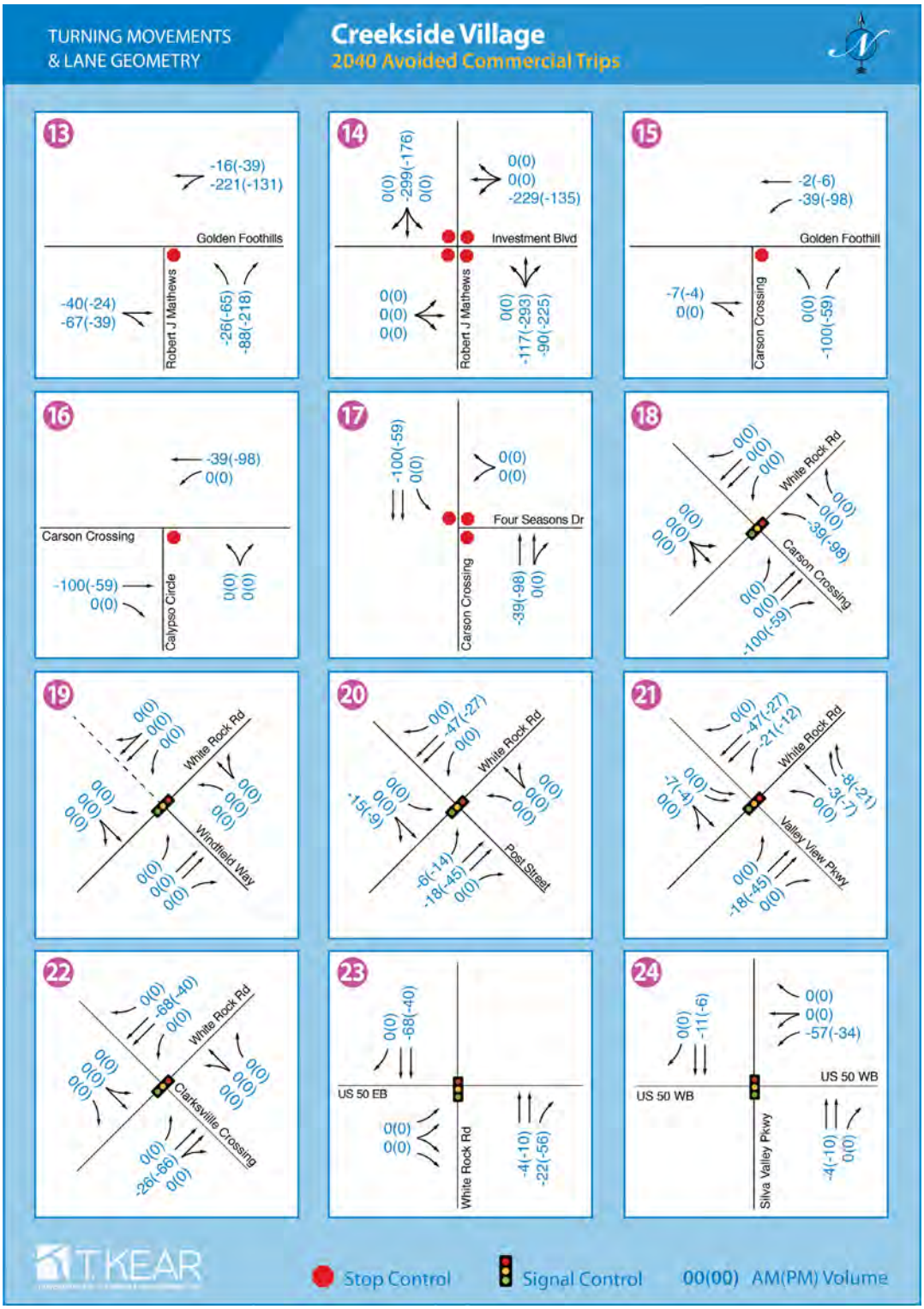

Figure 10. Creekside Village avoided industrial and R&D trips in 2040 (continued)

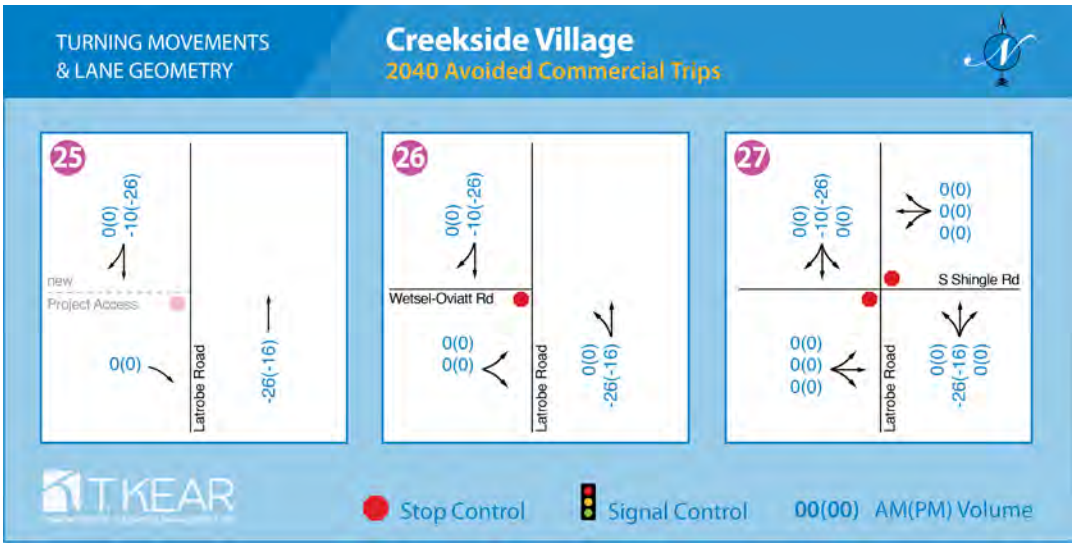

Figure 10. Creekside Village avoided industrial and R&D trips in 2040 (continued)

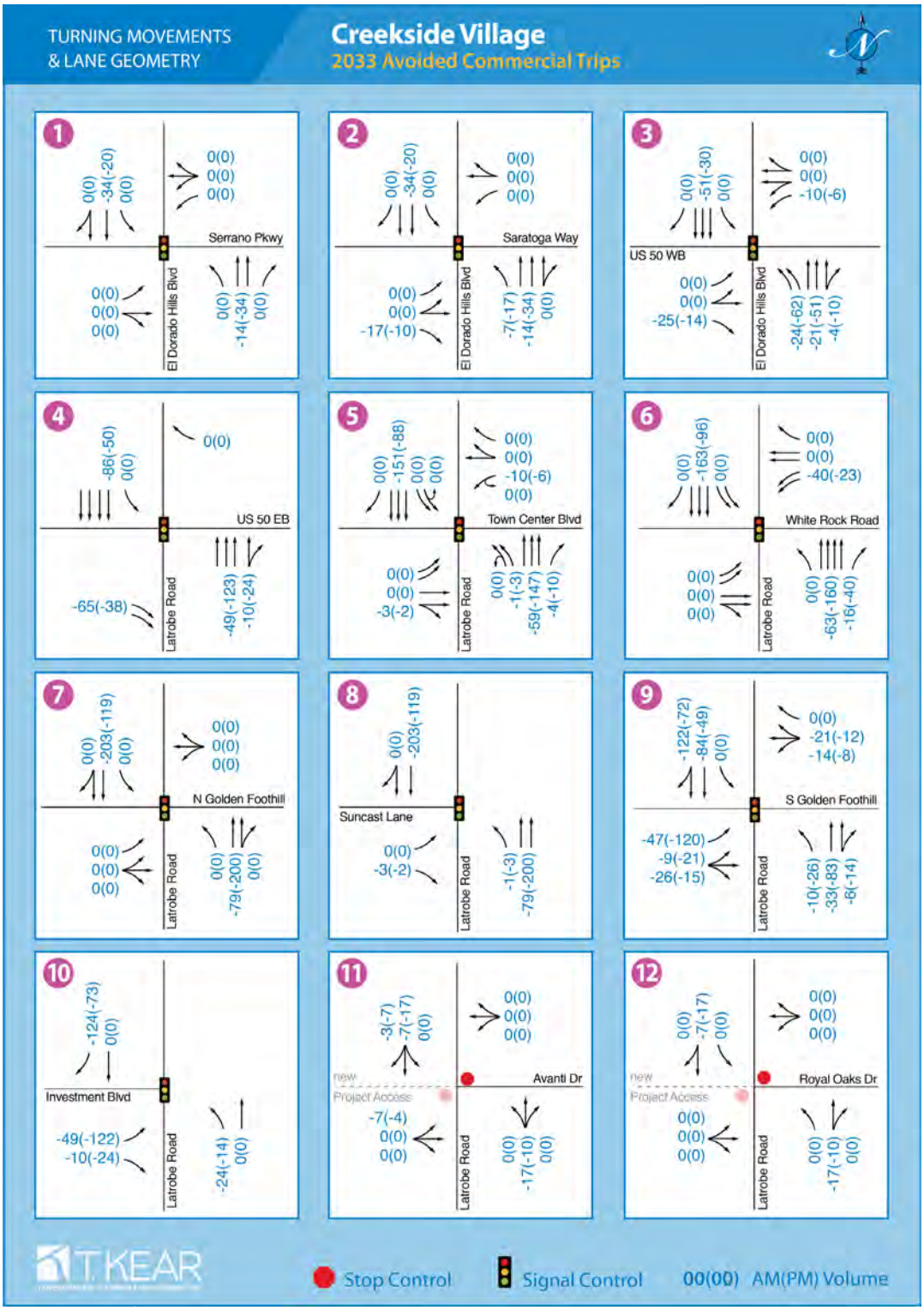

Figure 11. Creekside Village avoided industrial and R&D trips in 2033

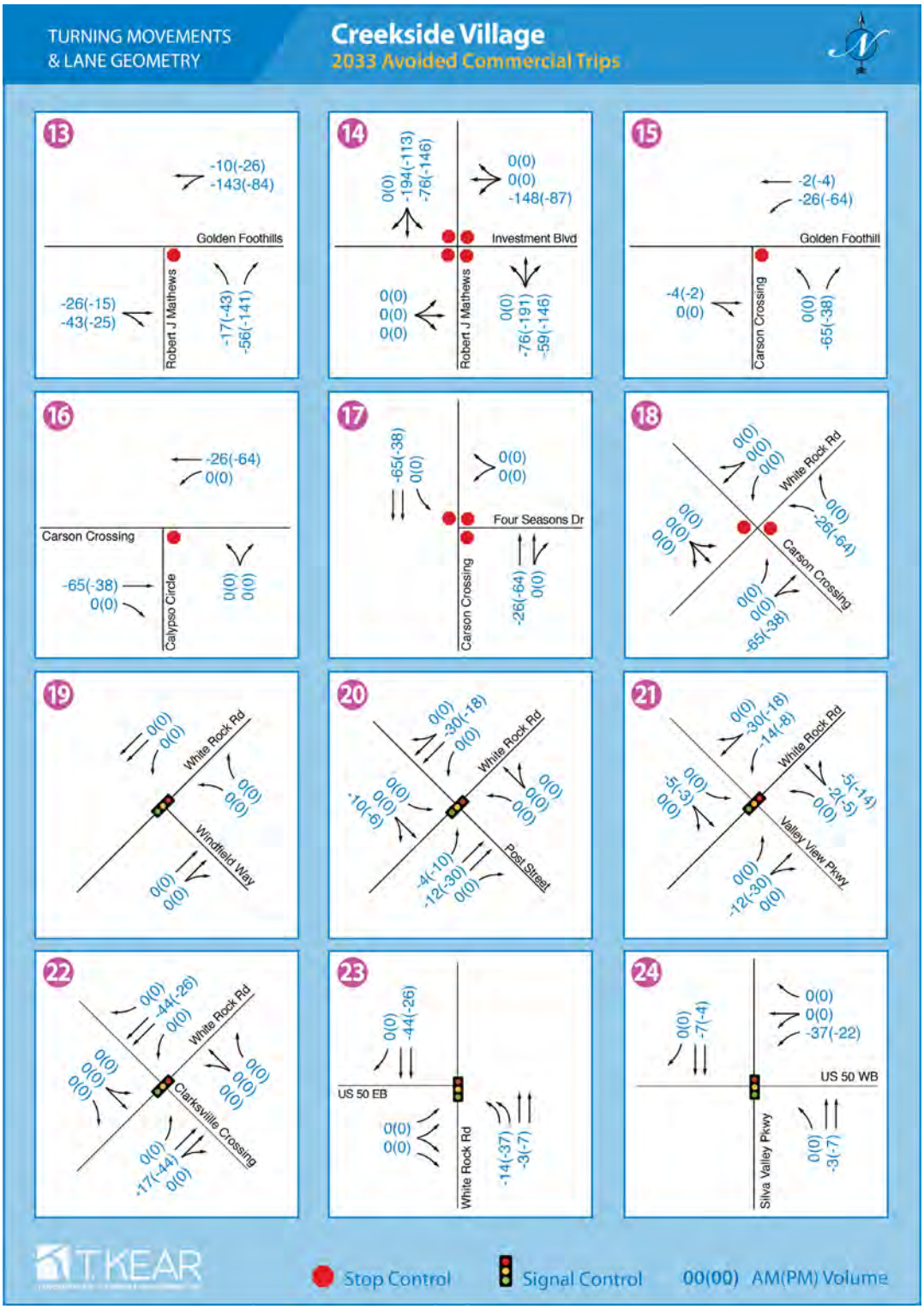

Figure 11. Creekside Village avoided industrial and R&D trips in 2033 (continued)

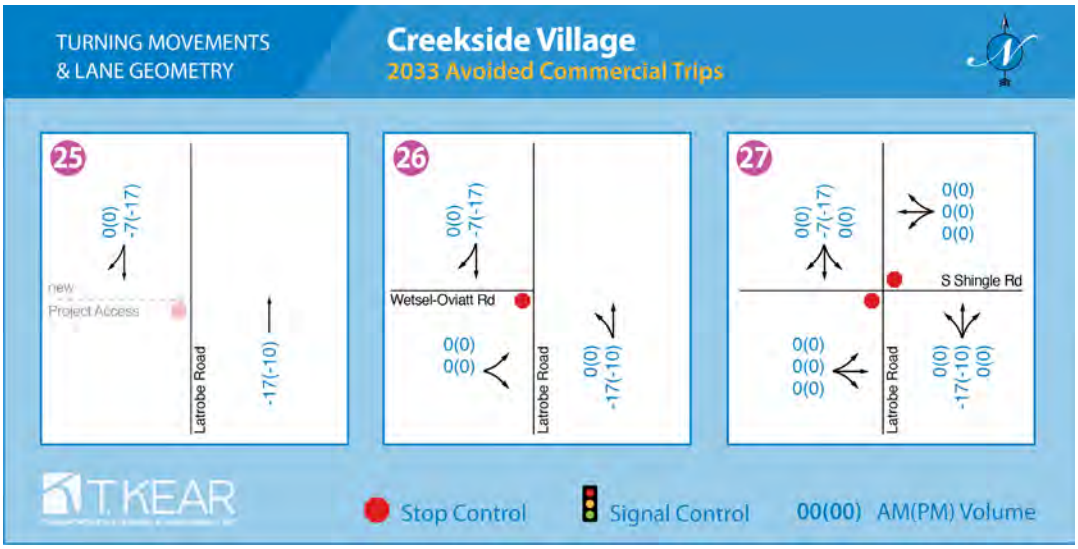

Figure 11. Creekside Village avoided industrial and R&D trips in 2033 (continued)

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6.0 EXISTING 2023 PLUS PROPOSED PROJECT CONDITIONS

6.1 Traffic Volumes

Peak hour traffic associated with the proposed Project was added to the Existing 2023 Condition scenario's traffic volumes, delay and level-of-service were determined at the study intersections and segments. **Figure 12** summarizes the turning movements and lane configurations for the Existing 2023 Plus Proposed Project scenario.

6.2 Level-of-Service

Table 15 through **Table 17** present a summary of level-of-service results for the study intersections and segments under Existing 2023 conditions with and without Project traffic. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) is provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **Bold black** text in **Table 15** through **Table 17** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. **Bold red** text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies. Unsignalized intersections that meet the peak hour signal warrant are shaded and denoted with an asterisk.

One arterial segment (Latrobe Road between Golden Foothill Pkwy (south) and Investment Blvd) is anticipated to operate at level-of-service F. Sixteen intersections are anticipated to have level-of-service and/or queue spillback deficiencies.

4 Locations that are deficient with or without the Project that are not worsened:

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (7) Latrobe Road/Golden Foothill Parkway (N): PM;
- (19) White Rock Road/Windfield Way AM and PM; and
- (20) White Rock Road/Post Street: AM and PM.

10 Locations that are deficient with or without the Project that are worsened:

- (2) El Dorado Hills Blvd/Saratoga Way: AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard: PM;
- (6) Latrobe Road/White Rock Road AM and PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S): AM and PM;
- (10) Latrobe Road/Investment Boulevard: AM and PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathewsws Pkwy PM;
- (18) White Rock Road/Carson Crossing Road PM; and
- (21) White Rock Road/Valley View Parkway: AM and PM.

2 Locations where the Project is anticipated to cause new deficiencies:

- (11) Latrobe Road/Avanti Drive AM and PM; and
- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. the remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

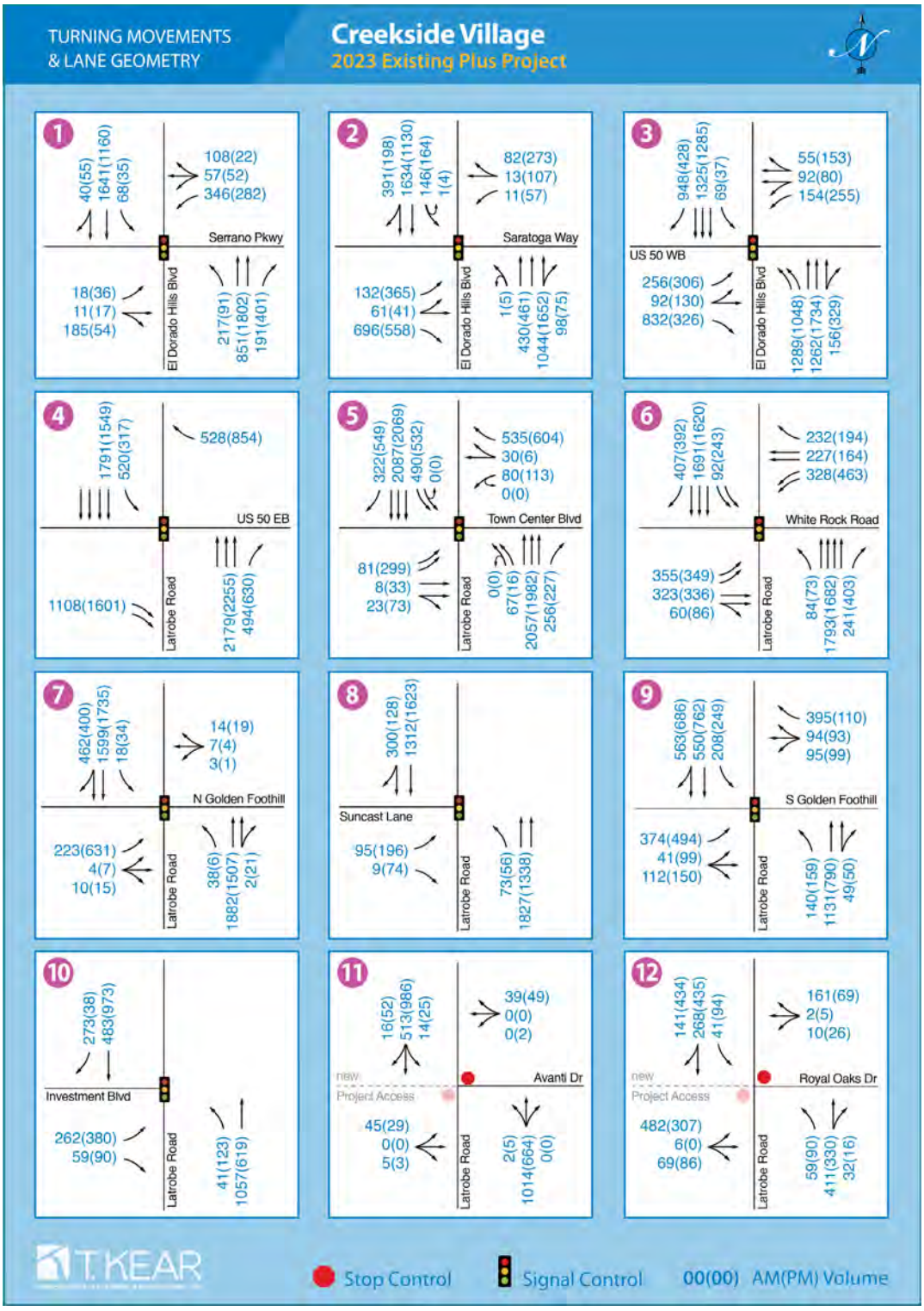

Figure 12. Existing 2023 plus project lane geometry and turning movements

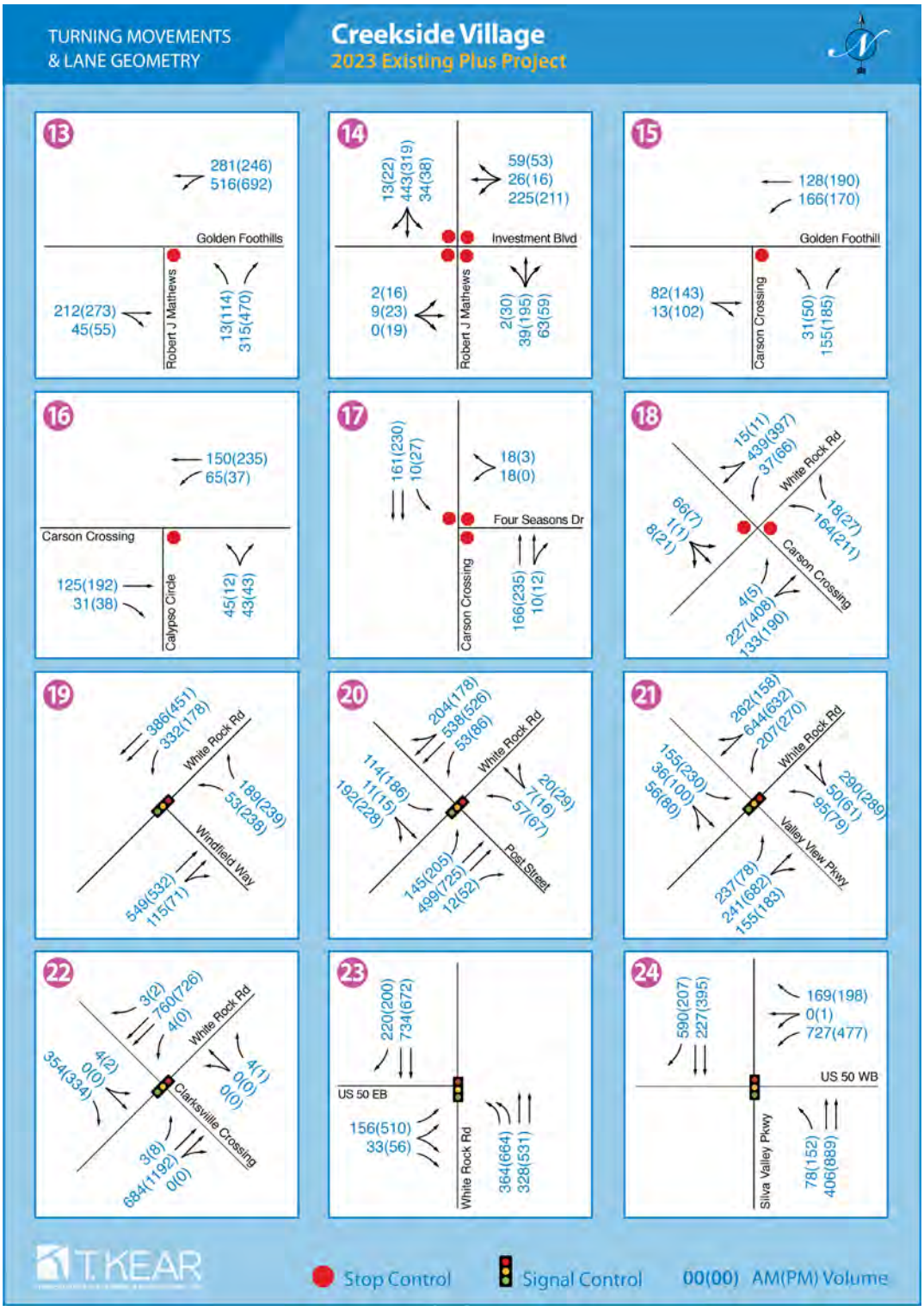

Figure 12. Existing 2023 plus project lane geometry and turning movements (continued)

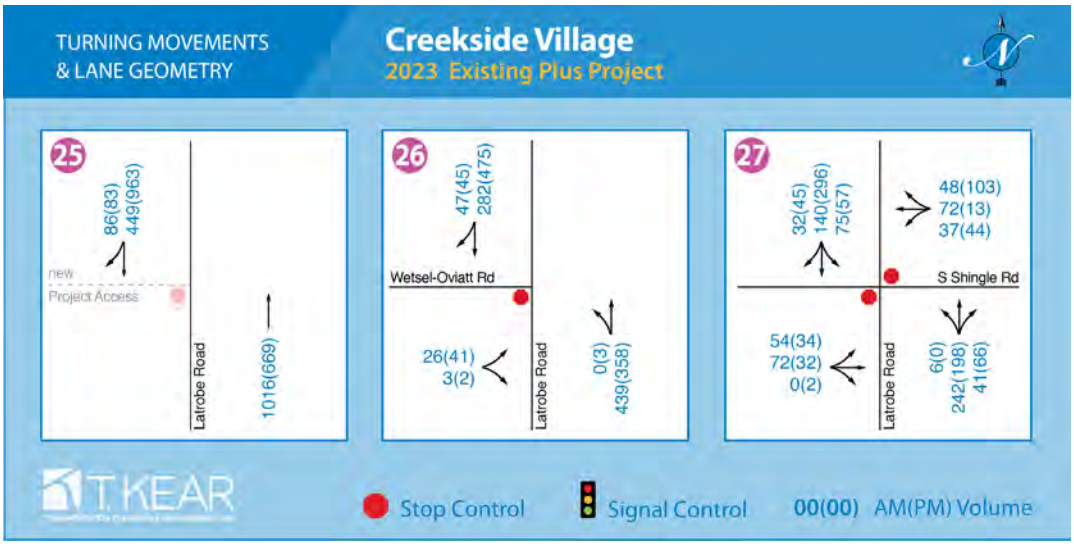

Figure 12. Existing 2023 plus project lane geometry and turning movements (continued)

Table 15. Existing 2023 intersection delay and level-of-service with and without the Project

ID	Intersection	Control	Left Turn Storage	2023 AM Peak No Project			2023 PM Peak No Project			2023 AM Peak with Project			2023 PM Peak with Project		
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB 260 SB 110 EB 100 WB 430	**118.3**	**F**	NB **296** SB 110 EB 25 WB 423	46.8	D	NB 91 SB 38 EB 34 WB 197	**116.7**	**F**	NB **296** SB 110 EB 25 WB 423	51.7	D	NB 91 SB 38 EB 35 WB 197
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB 230 SB 100 EB 150 WB N/A	**147.8**	**F**	NB **712** SB **202** EB 116 WB N/A	**107.8**	**F**	NB **1334** SB **252** EB **290** WB N/A	**155.9**	**F**	NB **855** SB **202** EB 116 WB N/A	**119.4**	**F**	NB **1458** SB **257** EB **296** WB N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left - turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**94.1**	**F**	NB N/A SB 95 EB 262 WB **175**	47.9	D	NB N/A SB 68 EB 297 WB **277**	**113.3**	**F**	NB N/A SB 95 EB 262 WB **179**	57.6	E	NB N/A SB 68 EB 297 WB **301**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB N/A SB 570 EB N/A WB N/A	23.0	C	NB N/A SB 363 EB 271 WB 0	22.8	C	NB N/A SB 298 EB 445 WB 0	36.7	D	NB N/A SB 363 EB 310 WB 0	32.1	C	NB N/A SB 298 EB 671 WB 0
5	Latrobe Road/Town Center Boulevard	Signal	NB 220 SB 330 EB 300 WB 100	21.1	C	NB 29 SB 198 EB 65 WB 59	38.1	D	NB 13 SB **472** EB 156 WB 86	23.4	C	NB 38 SB 231 EB 79 WB 83	47.4	D	NB 17 SB **615** EB 182 WB **129**
6	Latrobe Road/White Rock Road	Signal	NB 270 SB 260 EB 360 WB 160	33.0	C	NB 172 SB 86 EB 275 WB **266**	51.0	D	NB 157 SB 227 EB 306 WB **507**	32.9	C	NB 172 SB 86 EB 275 WB **287**	59.8	E	NB 157 SB 227 EB **306** WB **696**
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB 200 SB 200 EB 100 WB N/A	20.9	C	NB 35 SB 11 EB 79 WB N/A	20.9	C	NB 7 SB 24 EB **180** WB N/A	31.9	C	NB 35 SB 11 EB 80 WB N/A	44.00	D	NB 7 SB 23 EB **188** WB N/A
8	Latrobe Road/Suncast Lane	Signal	NB 280 SB N/A EB 100	9.3	A	NB 39 SB N/A EB 91	10.8	B	NB 32 SB N/A EB **127**	10.8	B	NB 56 SB N/A EB **103**	15.8	B	NB 47 SB N/A EB **161**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	26.0	C	NB 32 SB 157 EB **130** WB N/A	37.5	D	NB 86 SB 253 EB **309** WB N/A	51.8	D	NB 149 SB 257 EB **211** WB N/A	**106.6**	**F**	NB 167 SB 352 EB **610** WB N/A
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	10.8	B	NB 35 SB N/A EB 68	18.0	B	NB 66 SB N/A EB **232**	15.0	B	NB 70 SB N/A EB **117**	74.5	E	NB 157 SB N/A EB **468**
11	Latrobe Road/Avanti Drive	TWSC	NB N/A SB N/A EB N/A WB N/A	(WB) 12.7	B	NB N/A SB N/A EB N/A WB N/A	(WB) 11.1	B	NB N/A SB N/A EB N/A WB N/A	**(EB) 180.5**	**F**	NB N/A SB N/A EB N/A WB N/A	**(EB) 206.4**	**F**	NB N/A SB N/A EB N/A WB N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 14.0	B	NB 0 SB 4 EB N/A WB N/A	(WB) 21.8	C	NB 0 SB 7 EB N/A WB N/A	**(EB) 1678.4 ***	**F**	NB 4 SB 3 EB N/A WB N/A	**(EB) 1959.5 ***	**F**	NB 12 SB 7 EB N/A WB N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB N/A SB N/A EB N/A WB N/A	(NB) 18.3	C	NB N/A SB N/A EB N/A WB N/A	**(NB) 2479.7 ***	**F**	NB N/A SB N/A EB N/A WB N/A	(NB) 25.18	D	NB N/A SB N/A EB N/A WB N/A	**(NB) 4762.1 ***	**F**	NB N/A SB N/A EB N/A WB N/A

Table 15. Existing 2023 intersection delay and level-of-service with and without the Project (continued)

ID	Intersection	Control	Left Turn Storage		2023 AM Peak No Project				2023 PM Peak No Project				2023 AM Peak with Project				2023 PM Peak with Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB	N/A	25.0	C	NB	N/A	19.6	C	NB	N/A	26.6	D	NB	N/A	21.2	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB	N/A	(NBL) 10.5	B	NB	N/A	(NBL) 14.8	B	NB	N/A	(NBL) 12.9	B	NB	N/A	(NBL) 17.8	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	220			WB	3			WB	8			WB	5			WB	14
16	Carson Crossing Road/Calypso Circle	TWSC	NB	N/A	(NB) 10.2	B	NB	N/A	(NB) 9.5	A	NB	N/A	(NB) 11.2	B	NB	N/A	(NB) 10.5	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	190			WB	4			WB	2			WB	4			WB	2
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB	N/A	7.9	A	NB	N/A	8.1	A	NB	N/A	8.3	A	NB	N/A	8.6	A	NB	N/A
			SB	100			SB	1			SB	2			SB	1			SB	2
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
18	White Rock Road/Carson Crossing Road	TWSC	NB	N/A	(NBL) 22.0	C	NB	N/A	**(NBL) 69.3**	**F**	NB	N/A	(NBL) 38.7	E	NB	N/A	**(NBL) 193 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	200			EB	0			EB	0			EB	0			EB	0
			WB	300			WB	2			WB	5			WB	2			WB	6
19	White Rock Road/Windfield Way	Signal	NB	150	25.8	C	NB	80	29.1	C	NB	**331**	25.8	C	NB	80	29.1	C	NB	**331**
			SB	100			SB	10			SB	10			SB	10			SB	10
			EB	200			EB	10			EB	10			EB	10			EB	10
			WB	200			WB	**363**			WB	**222**			WB	**363**			WB	**222**
20	White Rock Road/Post Street	Signal	NB	N/A	39.2	D	NB	N/A	70.4	E	NB	N/A	37.7	D	NB	N/A	67.9	E	NB	N/A
			SB	100			SB	**319**			SB	**683**			SB	**318**			SB	**683**
			EB	100			EB	**245**			EB	**327**			EB	**245**			EB	**327**
			WB	120			WB	99			WB	**158**			WB	99			WB	**158**
21	White Rock Road/Valley View Parkway	Signal	NB	100	75.0	E	NB	**106**	54.2	D	NB	70	**91.5**	**F**	NB	**109**	68.8	E	NB	72
			SB	100			SB	**206**			SB	**304**			SB	**215**			SB	**318**
			EB	100			EB	92			EB	50			EB	**125**			EB	72
			WB	100			WB	**206**			WB	**321**			WB	**232**			WB	**398**
22	White Rock Road/Clarksville Crossing	Signal	NB	N/A	23.4	C	NB	N/A	23.4	C	NB	N/A	24.1	C	NB	N/A	23.9	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	460			EB	6			EB	10			EB	6			EB	10
			WB	290			WB	0			WB	0			WB	0			WB	0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB	500	16.9	B	NB	172	31.7	C	NB	316	18.1	B	NB	207	32.1	C	NB	339
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB	550	34.2	C	NB	98	19.3	B	NB	192	36.1	D	NB	98	20.4	C	NB	192
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
25	Latrobe Road/Commercial RIRO driveway	RIRO	NB	N/A	Does not exist				Does not exist				0.0	A	NB	N/A	0.0	A	NB	N/A
		TWSC	SB	N/A											SB	N/A			SB	N/A
			EB	N/A											EB	N/A			EB	N/A
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB	N/A	(EB) 13.5	B	NB	N/A	(EB) 15.2	C	NB	N/A	(EB) 14.6	B	NB	N/A	(EB) 17.4	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
27	Latrobe Road/S. Shingle Road	TWSC	NB	N/A	(EB) 18.1	C	NB	N/A	(EB) 16.4	C	NB	N/A	(EB) 22.4	C	NB	N/A	(EB) 20.8	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A

* Denotes intersections where the peak-hour signal warrant is met.

Table 16. Existing 2023 freeway facility density and level-of-service with and without the Project

No	Segment	Segment Type	Method	2023 No Project AM	2023 No Project PM	2023 Plus Project AM	2023 Plus Project PM
Westbound US 50							
1	Bass Lake Rd to Silva Valley Pkwy	Basic	HCM 7th Ed.	22.1/C	16.8/B	22.5/C	17.7/B
2	Silva Valley offramp	Diverge	HCM 7th Ed.	18.7/B	13.2/B	19.2/B	14.1/B
3	Silva Valley offramp to future loop onramp	Basic	HCM 7th Ed.	15.2/B	12.6/B	15.3/B	12.8/B
4	Future Silva Valley loop onramp	Merge	HCM 7th Ed.	n/a	n/a	n/a	n/a
5	Silva Valley Pkwy to Latrobe Rd	Weave	HCM 7th Ed.	15.1/B	11.1/B	15.2/B	11.3/B
6	El Dorado Hills Blvd offramp to onramp	Basic	HCM 7th Ed.	11.8/B	10.8/A	11.8/B	10.8/A
7	El Dorado Hills Blvd onramp	Merge	HCM 7th Ed.	28.4/D	22.9/C	28.4/D	23.4/C
8	El Dorado Hills Blvd to EDC Line *	Basic	HCM 7th Ed.	29.5/D	21.9/B	29.5/D	22.5/C
Eastbound US 50							
9	EDC Line to Latrobe Rd	Basic	HCM 7th Ed.	10.9/A	18.4/C	11.2/B	19.1/C
10	Latrobe slip offramp	Diverge	HCM 7th Ed.	20.8/C	29.6/D	21.3/C	30.6/D
11	Latrobe loop offramp	Diverge		20.0/C	28.8/D	20.3/C	29.3/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	Basic	HCM 7th Ed.	3.7/A	8.8/A	3.7/A	8.8/A
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	Weave	HCM 7th Ed.	7.2/A	11.8/B	7.3/A	11.9/B
14	Silva Valley Pkwy offramp to onramp	Basic	HCM 7th Ed.	7.3/A	10.7/A	7.5/A	10.8/A
15	Silva Valley Pkwy onramp	Merge	HCM 7th Ed.	13.8/B	19./B	14.5/B	20.0/C
16	Future Silva Valley Pkwy slip onramp	Merge	HCM 7th Ed.	n/a	n/a	n/a	n/a
17	Silva Valley Pkwy to Bass Lake Rd	Basic	HCM 7th Ed.	9.7/A	14.5/B	10.1/A	14.7/B

Density in units of passenger cars per mile per lane.

*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Table 17. Existing 2023 arterial level-of-service check with and without the Project

Arterial Segment	Description	2023 AM No Project	2023 PM No Project	2023 AM Plus Project	2023 PM Plus Project
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650)	593	655	1336	1507
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650)	1015	932	**1744**	**1763**
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln)	4-lane divided arterial (threshold 3290)	1998	2030	2529	2880
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280, extrapolated from 6-lane divided arterial)	2931	3018	4572	4483
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	2-lane arterial (threshold 1650)	1194	1440	1312	1574

6.3 Existing 2023 Plus Project General Plan Deficiency Findings

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "Project deficiency." There are ten intersections and one arterial segment where the Project is anticipated to create new or worsen existing deficiencies under existing 2023 conditions.

There are two sections that follow describing the segment level abatement measures and intersection level abatement measures. Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = "A", 2033 = "B", and 2040 = "C"). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing. For certain abatements, a building permit trigger has been analyzed and included to determine the necessary timing for the improvement. For all other abatements, it is assumed the timing would be prior to issuance of the first building permit. If desired, a building permit trigger could also be determined for those abatements.

2023 Segment Deficiencies and Abatement Measures

(ii)A. Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) in 2023 (CIP Project Latrobe 72)

Deficiency: Level-of-service is anticipated to worsen to F with the addition of Project traffic during the AM and PM peak-hours.

Abatement: Before issuance of the 658th residential building permit or the first commercial building permit, the CIP project Latrobe 72 (widen Latrobe Rd to four-lanes between Investment Blvd and Royal Oaks Dr) shall be included in the 10-year CIP. Latrobe 72 consists of widening Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) from two-lanes to four-lanes, and all associated improvements at the intersections of Latrobe Rd/Investment Blvd and Latrobe Rd/Golden Foothill Pkwy (south).

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** presents the segment level-of-service results with this abatement.

Project Responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after Latrobe 72 is added to the 10-year CIP. Addition of these improvements to the CIP will provide the mechanism to ensure the Project is responsible for its fair share.

Timing: Prior to issuance of the 658th residential building permit or the first commercial building permit. Note the 658th unit constraint is based on the cumulative 2040 scenario which is the most constrained scenario for this deficiency.

Table 18. Existing 2023 arterial level-of-service check with and without the abated Project

Arterial Segment	Description	2023 AM No Project	2023 PM No Project	2023 AM Plus Project	2023 PM Plus Project
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	**Un Abated** 2-lane arterial (threshold 1650)	1015	932	**1744**	**1763**
	Limit Project to 658 dwelling units: 2-lane arterial (threshold 1650)	1015	932	1438	1488
	Add Widening to CIP: 4-lane divided arterial (threshold 3290)	1015	932	1744	1763

2023 Intersection Deficiencies and Abatement Measures

2A. El Dorado Hills Blvd/Saratoga Way in 2023

Deficiency: Level-of-service is F prior to addition of Project traffic, with northbound left-turn queues spilling out of the turn pocket. Project traffic is anticipated to worsen level-of-service and northbound left-turn queues.

Abatement: Construct a 300-foot southbound right turn pocket and adjust signal timing.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project Responsibility: This abatement partially implements Project #36105076 in the 10-year Capital Improvement Program (CIP). The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 2B, which builds on abatement 2A.

3A. El Dorado Hills Blvd/US 50 WB in 2023

Deficiency: Existing AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

Abatement: Adjust signal splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: Project is responsible for its fair-share of signal timing adjustment. The CIP includes funding for intersection and safety improvements at “to be determined” locations. The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

5A. Latrobe Road/Town Center Boulevard in 2023

Deficiency: The southbound left turn queue spills back out of its pocket during the PM peak-hour under existing conditions prior to the addition of Project traffic. Project traffic is anticipated to worsen the southbound left turn queue spillback and cause the westbound left turn queue to exceed its pocket length.

Abatement: Adjust signal splits and extend the westbound left-turn pocket from 100 feet to 140 feet.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of these intersection improvements. These improvements could be addressed through the line item in the CIP for intersection improvements and the Project would contribute its fair share through payment of the TIF. Because a discrete CIP project is not approved or anticipated for the specific improvement, these intersections improvements were included within the area of potential effect (APE) for the Project.

Timing: Prior to issuance of 1st building permit.

6A. Latrobe Road/White Rock Road in 2023

Deficiency: The westbound left-turn queue spills back out of its turn pocket under existing conditions without the Project. Project traffic is anticipated to worsen that queue spillback.

Abatement: Adjust signal splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: This abatement partially implements Project #36105069 in the 20-year Capital Improvement Program (CIP). The Project is responsible for its fair share of modification of signal timing, which may be addressed through payment of fees if the CIP project is moved to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

8A. Latrobe Road/Suncast Lane in 2023

Deficiency: The eastbound left turn queue spills-back out of its pocket during the PM peak-hour under existing conditions prior to the addition of Project traffic. Project traffic is anticipated to worsen the existing deficiency.

Abatement: Restripe the eastbound approach to have a left and a shared left-right lane.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: Project is responsible for its fair-share of restriping. The CIP includes funding for intersection and safety improvements at "to be determined" locations. The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

9A. Latrobe Road/ Golden Foothill Parkway (south) in 2023

Deficiency: Project traffic is anticipated to create a new intersection level-of-service deficiency during the PM peak-hour, and worsen existing queue spillback from the eastbound left turn during both the AM and PM peak-hours.

Abatement: Stripe eastbound approach as 2-lanes between Robert J. Mathewsws Pkwy and Latrobe Rd and widen to three lanes at the intersection by constructing a 200-foot eastbound right turn pocket. Label the eastbound approach lanes as left, left, thru-right. Adjust cycle length and splits. These improvements are consistent with intersection improvements that would be constructed under Abatement (ii)A ("Latrobe 72") above. Therefore, addition of LATROBE 72 to the 10-year CIP would address the Project's fair share cost of these improvements as well.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after Latrobe 72 is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 9B, which builds on abatement 9a.

10A. Latrobe Road/Investment Boulevard in 2023

Deficiency: Project traffic is anticipated to cause the northeast bound (Investment Blvd) left turn queue to spill out of its left-turn pocket during the AM peak-hour, and worsen existing queue spill back for that same movement during the PM peak-hour.

Abatement: Stripe eastbound approach as left, shared left-right in 180-foot pocket. Adjust cycle length and splits. These improvements are consistent with intersection improvements that would be constructed under Abatement (ii)A ("Latrobe 72") above. Therefore, addition of LATROBE 72 to the 10-year CIP would address the Project's fair share cost of these improvements as well.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after Latrobe 72 is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

11A. Latrobe Road/Avanti Drive in 2023

Deficiency: Project traffic is anticipated to cause this intersection to operate at level-of-service F.

Abatement: Construct 100-foot left turn pockets on Latrobe (NB and SB). Construct 100-foot receiving lane on NB Latrobe for EB left turns from Project. This intersection is a Project access point and these improvements can likely be done as part of the Project's frontage improvements.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for construction of these intersection improvements.

Timing: Prior to issuance of 1st building permit.

12A. Latrobe Road/Royal Oaks Drive in 2023

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

Abatement: Reconstruct the intersection as a signal-controlled intersection. The eastbound approach should be constructed as a three-lane approach with a left-turn lane in a 220-foot pocket, a shared left-thru, and a right turn lane in a 100-foot pocket. This intersection is a Project access point and these improvements can likely be done as part of the Project's frontage improvements.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for construction of these intersection improvements.

Timing: Prior to issuance of 1st building permit.

13A. Golden Foothill Pkwy/Robert J. Mathews Pkwy in 2023

Deficiency: Project traffic is anticipated to worsen existing level-of-service F conditions.

Abatement: Reconstruct as a roundabout. Construct as follows:

- Northbound approach - a shared left-right lane and a right-turn lane in a 100-foot pocket.
- Westbound approach - a left-turn lane and a through lane.
- Eastbound approach – a shared through-right lane.

Figure 13 provides the traffic model's representation of this geometry and its relation to the adjacent intersection of Latrobe Rd/Golden foothill Pkwy (south) with abatement 9A implemented.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after the roundabout is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Figure 13. Golden Foothill Pkwy (south)/Robert J. Mathews Pkwy roundabout 2023 geometry

18A. White Rock Road/Carson Crossing Road in 2023

Deficiency: Project traffic is anticipated to worsen existing level-of-service F conditions and cause the peak-hour signal warrant to be met.

Abatement: Signalize the intersection utilizing existing geometry.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: This off-site improvement partially implements 20-year CIP project 36105041 (White Rock Road Widening 2 to 4 Lanes - Windfield Way to Sacramento County Line) and it should be advanced to the 10-year CIP. The Project is responsible for its fair share of cost, which would be met through payment of the TIF program fee.

Timing: Prior to issuance of 1st building permit.

21A. White Rock Road/Valley View Parkway in 2023

Deficiency: Project traffic is anticipated to worsen level-of-service to F and worsen existing left-turn queue spillback on eastbound and westbound White Rock Rd.

Abatement: Reconstruct White Rock Rd through the intersection as follows:

- Eastbound approach: restripe the left turn pocket to 400-feet, restripe the shared through-right lane as a through lane, construct a right-turn lane in a 220-foot pocket.
- Westbound approach (White Rock Rd): Widen to construct a right-turn lane in a 220-foot pocket and extend the left-turn pocket to 400-feet. Restripe the shared through-right lane as a through lane.

Widening should be done to the south or Latrobe Rd to avoid high voltage lines. Eastbound-westbound Lane alignment may require additional space.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36105042 (White Rock Road Widening 2 to 4 lanes - Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Payment of TIF at issuance of each building permit.

Cross reference: See abatement 21B, which builds on abatement 21a.

Table 19. Existing 2023 intersection delay and level-of-service with and without the abated Project

ID	Intersection	Control	Left Turn Storage	2023 AM Peak No Project			2023 PM Peak No Project			2023 AM Peak with Project			2023 PM Peak with Project			Abatement Strategy	Left Turn Storage	Abated AM Peak (+ Proj)			Abated PM Peak (+ Proj)			Existing or Anticipated CIP Project
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)			Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB 230 SB 100 EB 150 WB N/A	**147.8**	**F**	NB **712** SB **202** EB 116 WB N/A	**107.8**	**F**	NB **1334** SB **252** EB **290** WB N/A	155.9	F	NB 855 SB **202** EB 116 WB N/A	119.4	F	NB 1458 SB **257** EB **296** WB N/A	Construct 300' SBR Pocket. Adjust SBT/NBL splits	NB 230 SB 100 EB 150 WB N/A	**134.0**	**F**	NB **566** SB **202** EB 116 WB N/A	**99.5**	**F**	NB **1141** SB **258** EB **298** WB N/A	36105076 and 36105042
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**94.1**	**F**	NB N/A SB 95 EB 262 WB **175**	47.9	D	NB N/A SB 68 EB 297 WB **277**	113.3	F	NB N/A SB 95 EB 262 WB **179**	57.6	E	NB N/A SB 68 EB 297 WB **301**	Adjust splits for AM only	NB N/A SB 220 EB N/A WB 150	89.7	F	NB N/A SB 94 EB 297 WB **178**	No Changes			"Traffic Signals Intersection"
5	Latrobe Road/Town Center Boulevard	Signal	NB 220 SB 330 EB 300 WB 100	21.1	C	NB 29 SB 198 EB 65 WB 59	38.1	D	NB 13 SB **472** EB 156 WB 86	23.4	C	NB 38 SB 231 EB 79 WB 83	47.4	D	NB 17 SB 615 EB 182 WB 129	Adjust splits for PM only, extend westbound left pocket to 140 feet	NB 220 SB 330 EB 300 WB 140	no changes			37.5	D	NB 18 SB 284 EB 180 WB 124	"Traffic Signals Intersection"
6	Latrobe Road/White Rock Road	Signal	NB 270 SB 260 EB 360 WB 160	33.0	C	NB 172 SB 86 EB 275 WB **266**	51.0	D	NB 157 SB 227 EB 306 WB **507**	32.9	C	NB 172 SB 86 EB 275 WB **287**	59.8	E	NB 157 SB 227 EB **306** WB 696	Adjust splits for PM only	NB 270 SB 260 EB 360 WB 140	no changes			43.3	D	NB 160 SB 229 EB 310 WB **387**	36105069
8	Latrobe Road/Suncast Lane	Signal	NB 280 SB N/A EB 100	9.3	A	NB 39 SB N/A EB 91	10.8	B	NB 32 SB N/A EB **127**	10.8	B	NB 56 SB N/A EB **103**	15.8	B	NB 47 SB N/A EB 161	Restripe EB: L,L-R	NB 280 SB N/A EB 100	9.2	A	NB 51 SB N/A EB 49	16.8	B	NB 43 SB N/A EB **95**	"Traffic Signals Intersection"
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	26.0	C	NB 32 SB 157 EB **130** WB N/A	37.5	D	NB 86 SB 253 EB **309** WB N/A	51.8	D	NB 149 SB 257 EB 211 WB N/A	106.6	F	NB 167 SB 352 EB 610 WB N/A	Stripe EB approach as 2-lanes between Robert J Mathews Pkwy and Latrobe Rd. Construct a 200' EB right turn pocket. Label as left, left, thru-right. Adjust cycle length and splits.	NB 220 SB 530 EB N/A WB N/A	45.1	D	NB 142 SB 194 EB N/A WB N/A	75.7	E	NB 154 SB 219 EB N/A WB N/A	"Latrobe 72"
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	10.8	B	NB 35 SB N/A EB 68	18.0	B	NB 66 SB N/A EB **232**	15.0	B	NB 70 SB N/A EB 117	74.5	E	NB 157 SB N/A EB 468	EB: Stripe EB approach as left, shared left-right in 180' pocket. Adjust cycle length and splits.	NB 180 SB N/A EB 200	11.0	B	NB 44 SB N/A EB 47	50.2	D	NB 91 SB N/A EB 192	"Latrobe 72"
11	Latrobe Road/Avanti Drive	TWSC	NB N/A SB N/A EB N/A WB N/A	(WB) 12.7	B	NB N/A SB N/A EB N/A WB N/A	(WB) 11.1	B	NB N/A SB N/A EB N/A WB N/A	(EB) 180.5	F	NB N/A SB N/A EB N/A WB N/A	(EB) 206.4	F	NB N/A SB N/A EB N/A WB N/A	Construct 100' left t turn pockets on Latrobe (NB and SB). Construct 100' receiving lane on NB Latrobe for EB left turns from Project.	NB 100 SB 100 EB N/A WB N/A	(EB) 37.1	E	NB 0 SB 2 EB N/A WB N/A	(EB) 35.0	D	NB 0 SB 2 EB N/A WB N/A	n/a
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 14.0	B	NB 0 SB 4 EB N/A WB N/A	(WB) 21.8	C	NB 0 SB 7 EB N/A WB N/A	(EB) 1678.4 *	F	NB 4 SB 3 EB N/A WB N/A	(EB) 1959.5 *	F	NB 12 SB 7 EB N/A WB N/A	Signalize with second SB right in 200' pocket. Construct 3-lane EB approach as left, shared left-thru, and right, with EB left in 200' pocket and EB right in 100' pocket.	NB 320 SB 320 EB 220 WB N/A	19.4	B	NB 32 SB 22 EB 124 WB N/A	17.9	C	NB 45 SB 47 EB 70 WB N/A	n/a
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB N/A SB N/A EB N/A WB N/A	(NB) 18.3	C	NB N/A SB N/A EB N/A WB N/A	(NB) 2479.7 *	F	NB N/A SB N/A EB N/A WB N/A	(NB) 25.18	D	NB N/A SB N/A EB N/A WB N/A	(NB) 4762.1 *	F	NB N/A SB N/A EB N/A WB N/A	Construct roundabout NB: Two lane approach , one in a 100' right turn pocket, one labeled as right and one labeled as left. Two circulating lanes. EB: One lane approach. One circulating lane. WB: Two lane approach, one in a 150' thru pocket, one labeled as thru and one labeled as left. Two circulating lanes.	NB N/A SB N/A EB N/A WB N/A	(EB) 9.2	A	NB N/A SB N/A EB N/A WB N/A	(EB) 18.1	B	NB N/A SB N/A EB N/A WB N/A	Anticipated
18	White Rock Road/Carson Crossing Road	TWSC	NB N/A SB N/A EB 200 WB 300	(NBL) 22.0	C	NB N/A SB N/A EB 0 WB 2	(NBL) 69.3	F	NB N/A SB N/A EB 0 WB 5	(NBL) 38.7	E	NB N/A SB N/A EB 0 WB 2	(NBL) 193 *	F	NB N/A SB N/A EB 0 WB 6	Signalize	NB N/A SB N/A EB 200 WB 300	14.6	B	NB N/A SB N/A EB 4 WB 15	15.0	B	NB N/A SB N/A EB 5 WB 34	36105041
21	White Rock Road/Valley View Parkway	Signal	NB 100 SB 100 EB 100 WB 100	75.0	E	NB 106 SB 206 EB 92 WB **206**	**54.2**	**D**	NB 70 SB **304** EB 50 WB **321**	91.5	F	NB 109 SB 215 EB 125 WB 232	68.8	E	NB 72 SB **318** EB 72 WB 398	EB: L,T,R (EBR turn pocket 220') WB: L,T,R (WBR pocket 220') Extend left turn pockets on Latrobe to 400' Widening to south or Latrobe to avoid high voltage lines. NEB and SWB lane alignment may require additional space.	NB 100 SB 100 EB 400 WB 400	166.3	F	NB 149 SB 297 EB 383 WB 590	50.3	D	NB 71 SB **311** EB 70 WB 387	36105042

* Denotes intersections where the peak-hour signal warrant is met.

2/17/2024

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7.0 EPPAP 2033 CONDITIONS

The EPAP 2033 conditions analysis started with lane configurations from Existing 2023 conditions, turning movements derived from existing traffic counts, growth factors from the Travel Demand Model, and the NCHRP 255 adjustment procedure[18].

Several volume and network adjustments were then made.

One Capital Improvement Program (CIP) project that effects study intersection geometry was accounted for:

- CIP Project 36105076: "El Dorado Hills Saratoga Way Turn Pockets" will construct a southbound right turn pocket and extend the northbound and southbound left turn pockets on El Dorado Hills Blvd. The southbound right pocket was modeled as a 300-foot right turn pocket. The northbound and southbound left turn pockets were modeled as 500-foot left turn pockets.

Traffic volumes from 2023 without the Project were used as a floor before traffic from the avoided trips (see **Figure 11**, page 47) was shifted from where the TDM loads it directly onto Carson Crossing Drive to Investment Blvd.

Traffic for the approved Carson Creek/Heritage Project was added. Note that because the Creekside Village project also has avoided R&D and industrial vehicle trips, some turning movements are lower in 2033 than they were in 2023.

Figure *14* summarizes the turning movements and lane configurations for the EPPAP 2033 conditions scenario.

Delay and level-of-service is presented in **Table 20** through **Table 22**. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) is provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **bold black** typeface denote deficient traffic operations, and unsignalized intersections that meet the peak hour signal warrant are denoted with an asterisk and shading.

The results indicate that one study segment (White Rock Rd between Valley View Pkwy to Silva Valley Pkwy) and sixteen study intersections operate deficiency with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

[18] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way: AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard: AM and PM;
- (6) Latrobe Road/White Rock Road AM and PM;
- (7) Latrobe Road/Golden Foothill Parkway (N): AM and PM;
- (8) Latrobe Road/Suncast Lane AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S): AM and PM;
- (10) Latrobe Road/Investment Boulevard: PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathewsws Pkwy AM and PM;
- (14) Investment Boulevard/Robert J. Mathews Pkwy AM and PM
- (18) White Rock Road/Carson Crossing Road PM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street: AM and PM;
- (21) White Rock Road/Valley View Parkway: AM and PM; and
- (23) Silva Valley Parkway/US 50 EB ramps PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. The remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

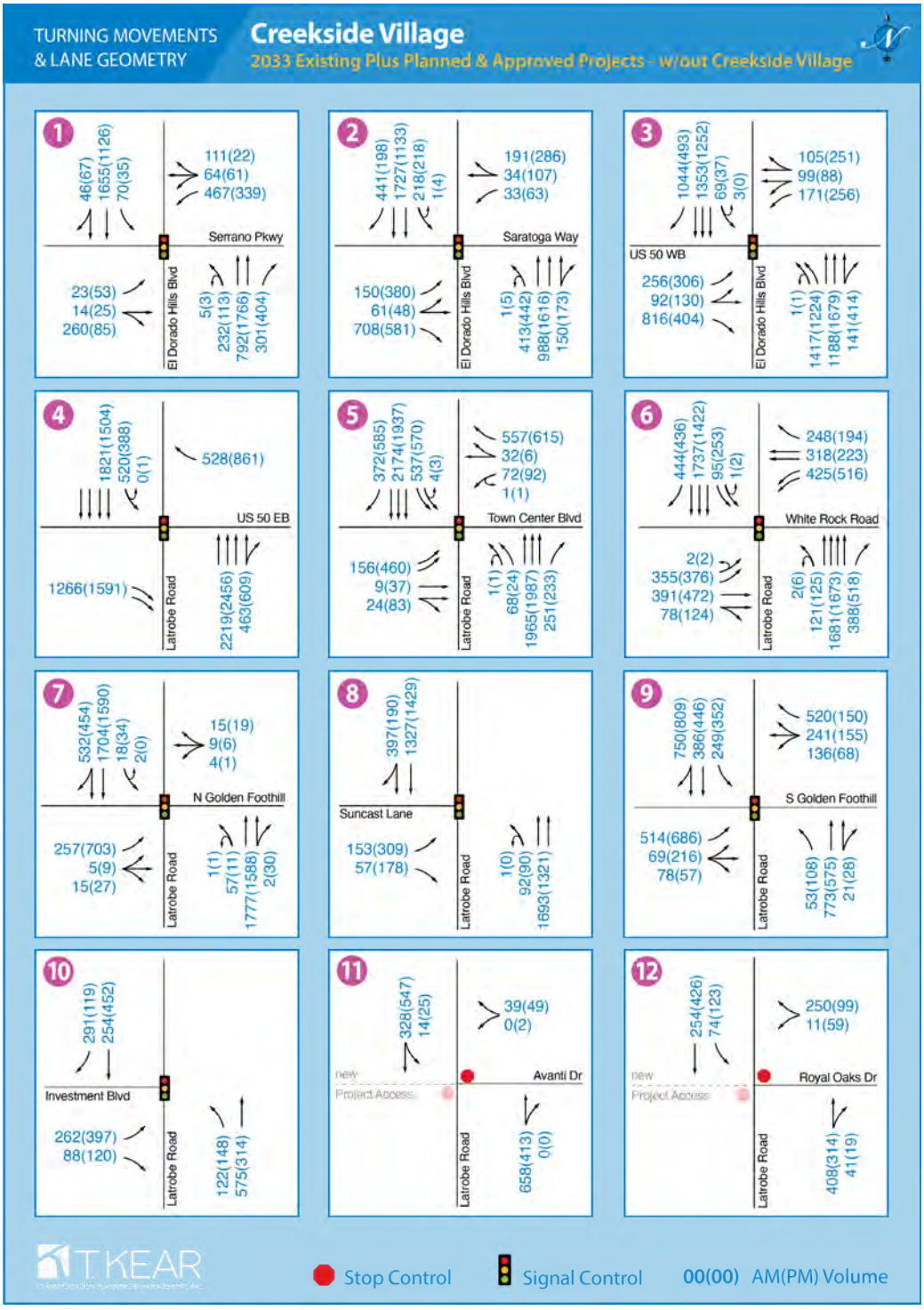

Figure 14. EPAP 2033 conditions lane geometry and turning movements

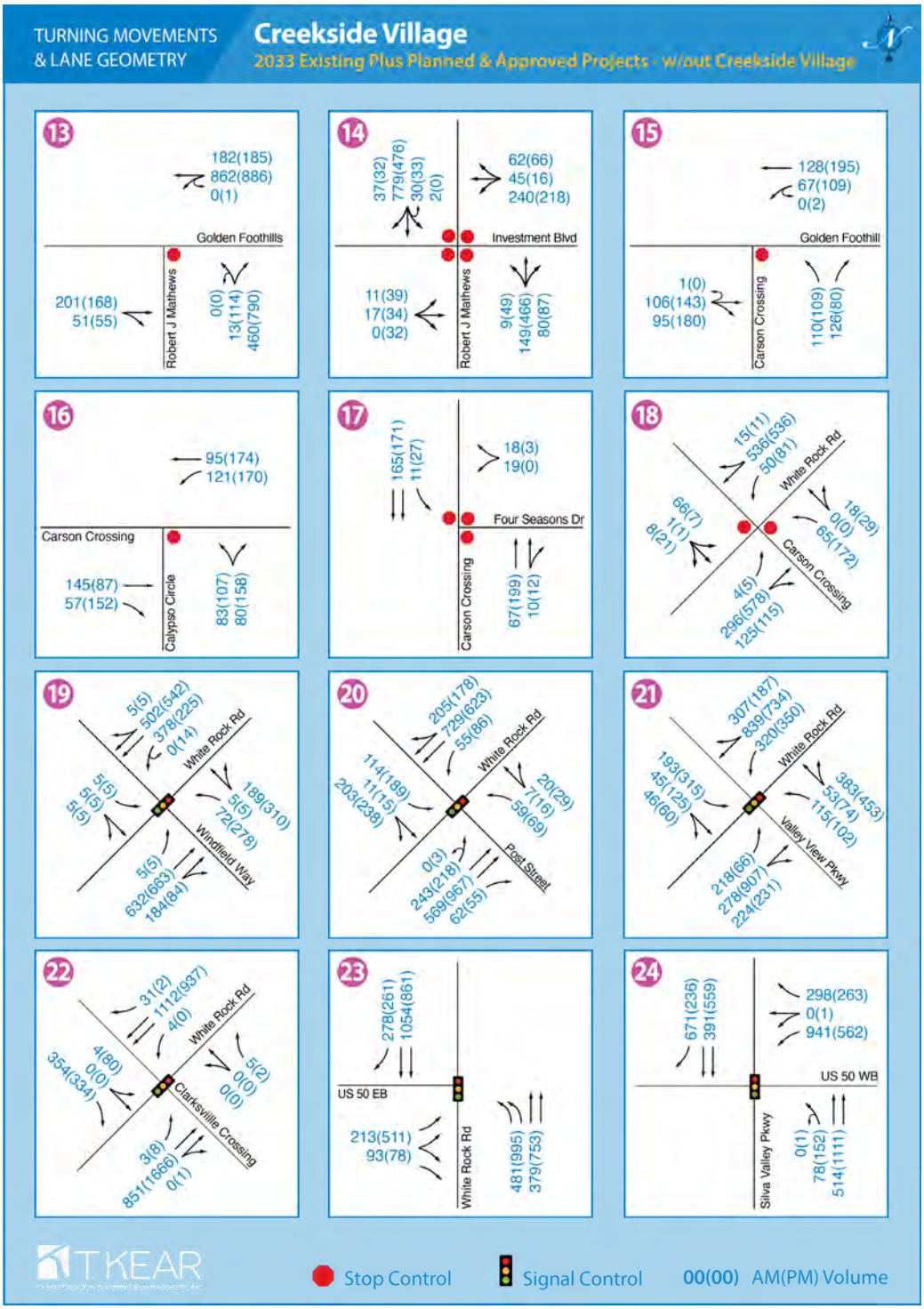

Figure 14. EPAP 2033 conditions lane geometry and turning movements (continued)

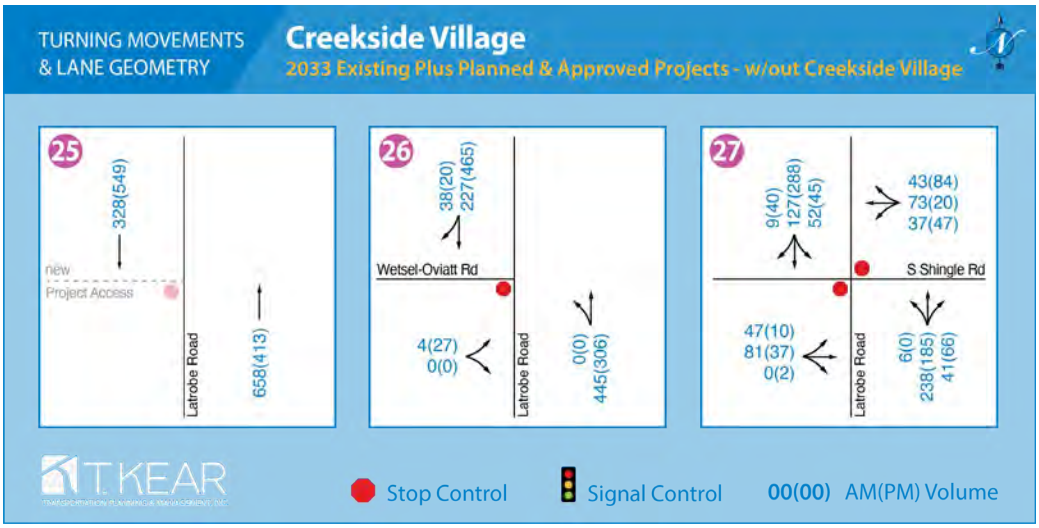

Figure 14. EPAP 2033 conditions lane geometry and turning movements (continued)

Table 20. EPAP 2033 intersection delay and level-of-service without the Project

ID	Intersection	Control	Left Turn Storage		2033 AM Peak No Project				2033 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB SB EB WB	260 110 100 430	**177.9**	**F**	NB SB EB WB	**382** **119** 33 **457**	55.7	E	NB SB EB WB	115 40 52 207
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB SB EB WB	500 500 150 N/A	**162.8**	**F**	NB SB EB WB	**1151** 332 140 N/A	**112.0**	**F**	NB SB EB WB	**1312** 341 **311** N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left - turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB SB EB WB	N/A 220 N/A 150	**92.6**	**F**	NB SB EB WB	N/A 113 227 **182**	50.7	D	NB SB EB WB	N/A 57 319 **238**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB SB EB WB	N/A 570 N/A N/A	32.3	C	NB SB EB WB	N/A 363 549 0	58.1	E	NB SB EB WB	N/A 298 **1251** 0
5	Latrobe Road/Town Center Boulevard	Signal	NB SB EB WB	220 330 300 100	39.4	D	NB SB EB WB	41 **479** 93 74	52.3	D	NB SB EB WB	15 **679** 249 99
6	Latrobe Road/White Rock Road	Signal	NB SB EB WB	270 260 360 160	44.3	D	NB SB EB WB	253 89 306 **378**	79.6	E	NB SB EB WB	246 234 325 **840**
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB SB EB WB	200 200 100 N/A	**84.0**	**F**	NB SB EB WB	56 22 **126** N/A	80.0	E	NB SB EB WB	13 38 **416** N/A
8	Latrobe Road/Suncast Lane	Signal	NB SB EB	280 N/A 100	13.7	B	NB SB EB	77 N/A **127**	22.6	C	NB SB EB	85 N/A **289**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB SB EB WB	220 530 100 N/A	**90.2**	**F**	NB SB EB WB	66 475 **638** N/A	**132.3**	**F**	NB SB EB WB	98 **786** **1066** N/A
10	Latrobe Road/Investment Boulevard	Signal	NB SB EB	180 N/A 100	12.2	B	NB SB EB	40 N/A 98	19.1	B	NB SB EB	**93** N/A 251
11	Latrobe Road/Avanti Drive	TWSC	NB SB EB WB	N/A N/A N/A N/A	(WB) 14.5	B	NB SB EB WB	N/A N/A N/A N/A	(WB) 11.9	B	NB SB EB WB	N/A N/A N/A N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB SB EB WB	320 320 N/A N/A	(WB) 17.4	B	NB SB EB WB	0 6 N/A N/A	(WB) 26.5	D	NB SB EB WB	0 9 N/A N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB SB EB WB	N/A N/A N/A N/A	**(NB) 939.5 ***	**F**	NB SB EB WB	N/A N/A N/A N/A	**(NB) 10000.0 * (v/c= 27)**	**F**	NB SB EB WB	N/A N/A N/A N/A

Table 20. EPAP 2033 intersection delay and level-of-service without the Project (continued)

ID	Intersection	Control	Left Turn Storage		2033 AM Peak No Project				2033 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB	N/A	**203.9 ***	**F**	NB	N/A	**135.9 ***	**f**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB	N/A	(NBL) 13.7	B	NB	N/A	(NBL) 21.4	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	220			WB	5			WB	8
16	Carson Crossing Road/Calypso Circle	TWSC	NB	N/A	(NB) 13.2	B	NB	N/A	(NB) 16.8	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	190			WB	8			WB	12
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB	N/A	8.0	A	NB	N/A	8.2	A	NB	N/A
			SB	100			SB	1			SB	3
			WB	N/A			WB	N/A			WB	N/A
18	White Rock Road/Carson Crossing Road	TWSC	NB	N/A	(NBL) 34.5	D	NB	N/A	**(NBL) 411.5***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	200			EB	0			EB	0
			WB	300			WB	4			WB	8
19	White Rock Road/Windfield Way	Signal	NB	150	29.2	C	NB	105	32.9	C	NB	**393**
			SB	100			SB	**10**			SB	10
			EB	200			EB	10			EB	10
			WB	200			WB	**452**			WB	**309**
20	White Rock Road/Post Street	Signal	NB	N/A	40.1	D	NB	N/A	67.2	E	NB	N/A
			SB	100			SB	**318**			SB	**702**
			EB	100			EB	**373**			EB	**341**
			WB	120			WB	102			WB	**158**
21	White Rock Road/Valley View Parkway	Signal	NB	100	**252.3**	**F**	NB	**170**	**259.5**	**F**	NB	**152**
			SB	100			SB	**324**			SB	**505**
			EB	100			EB	**387**			EB	**125**
			WB	100			WB	**708**			WB	**827**
22	White Rock Road/Clarksville Crossing	Signal	NB	N/A	35.7	D	NB	N/A	37.9	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	460			EB	7			EB	13
			WB	290			WB	8			WB	0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB	500	21.7	C	NB	257	49.9	D	NB	**698**
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB	550	69.7	E	NB	98	23.0	D	NB	192
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
25	Latrobe Road/Commercial RIRO driveway	TWSC	NB	N/A	Does not exist				Does not exist			
			SB	N/A								
			EB	N/A								
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB	N/A	(EB) 13.8	B	NB	N/A	(EB) 15.7	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
27	Latrobe Road/S. Shingle Road	TWSC	NB	N/A	(EB) 18.7	B	NB	N/A	(EB) 16.9	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

Table 21. EPAP 2033 freeway facility level-of-service without the Project

No	Segment	Segment Type	Method	2033 No Project AM	2333 No Project PM
Westbound US 50					
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	28.5/D	22.5/C
2	Silva Valley offramp	diverge	HCM 7th Ed.	24.1/C	19.1/B
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	16.2/B	15.8/B
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	n/a	n/a
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	16.5/B	13.7/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	13.3/B	12.6/B
7	El Dorado Hills Blvd onramp	merge	HCM 7th Ed.	30.1/D	27.5/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	32.5/D	28.0/D
Eastbound US 50					
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	14.0/B	22.8/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	25.2/C	34.9/D
11	Latrobe loop offramp	diverge		23.7/C	32.2/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	5.9/A	10.4/A
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	9.1/A	13.3/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	9.0/A	12.3/B
B15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	17.3/B	24.5/C
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	n/a	n/a
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	12.4/B	18.3/C

Notes:
Density in units of passenger cars per mile per lane.
*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Table 22. EPAP 2033 arterial level-of-service check without the Project

Arterial Segment	Description	2033 AM No Project	2033 PM No Project
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650)	736	734
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650)	1213	1035
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln	4-lane divided arterial (threshold 3290)	2756	2549
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280, extrapolated from 6-lane divided arterial)	3327	3354
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	2-lane arterial (threshold 1650)	**1856**	**2360**

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8.0 EPAP 2033 PLUS PROPOSED PROJECT CONDITIONS

8.1 Traffic Volumes

Peak hour Project trips (**Figure 8** page 40) and avoided R&D and industrial trips (**Figure 11** page 47) were added to the EPAP 2033 conditions traffic volumes. Delay and level-of-service were determined at the study intersections and segments. **Figure 15** summarizes the turning movements and lane configurations for the EPPAP 2033 Plus Proposed Project scenario.

8.2 Level-of-Service

Table 23 through **Table 25** present a summary of the level-of-service results for the study intersections and segments under EPAP 2033 Plus Proposed Project conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) is provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **Bold black** text in **Table 23** through **Table 25** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. **Bold red** text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies. Unsignalized intersections that meet the peak hour signal warrant are shaded and denoted with an asterisk.

Two arterial segments are anticipated to have a preexisting deficiency worsened by Project traffic or a new deficiency caused by Project traffic. Eighteen intersections are anticipated to have level-of-service and/or queue spillback deficiencies.

<u>2 Arterial segments with worsened or new Project related deficiencies:</u>

- White Rock Rd between Valley View Pkwy to Silva Valley Pkwy AM and PM; and
- Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) PM.

<u>6 Locations that are deficient with or without the Project that are not worsened:</u>

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (14) Investment Boulevard/Robert J. Mathews Pkwy AM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street AM and PM; and
- (23) Silva Valley Parkway/US 50 EB ramps AM.

<u>10 Locations that are deficient with or without the Project that are worsened:</u>

- (2) El Dorado Hills Blvd/Saratoga Way AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard PM;
- (6) Latrobe Road/White Rock Road AM and PM;
- (7) Latrobe Road/Golden Foothill Parkway (N) AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) AM and PM;

- (10) Latrobe Road/Investment Boulevard AM and PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathewsws Pkwy AM and PM;
- (18) White Rock Road/Carson Crossing Road PM; and
- (21) White Rock Road/Valley View Parkway: AM and PM.

<u>2 Locations where the Project is anticipated to cause new deficiencies:</u>

- (11) Latrobe Road/Avanti Drive AM and PM; and
- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. the remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

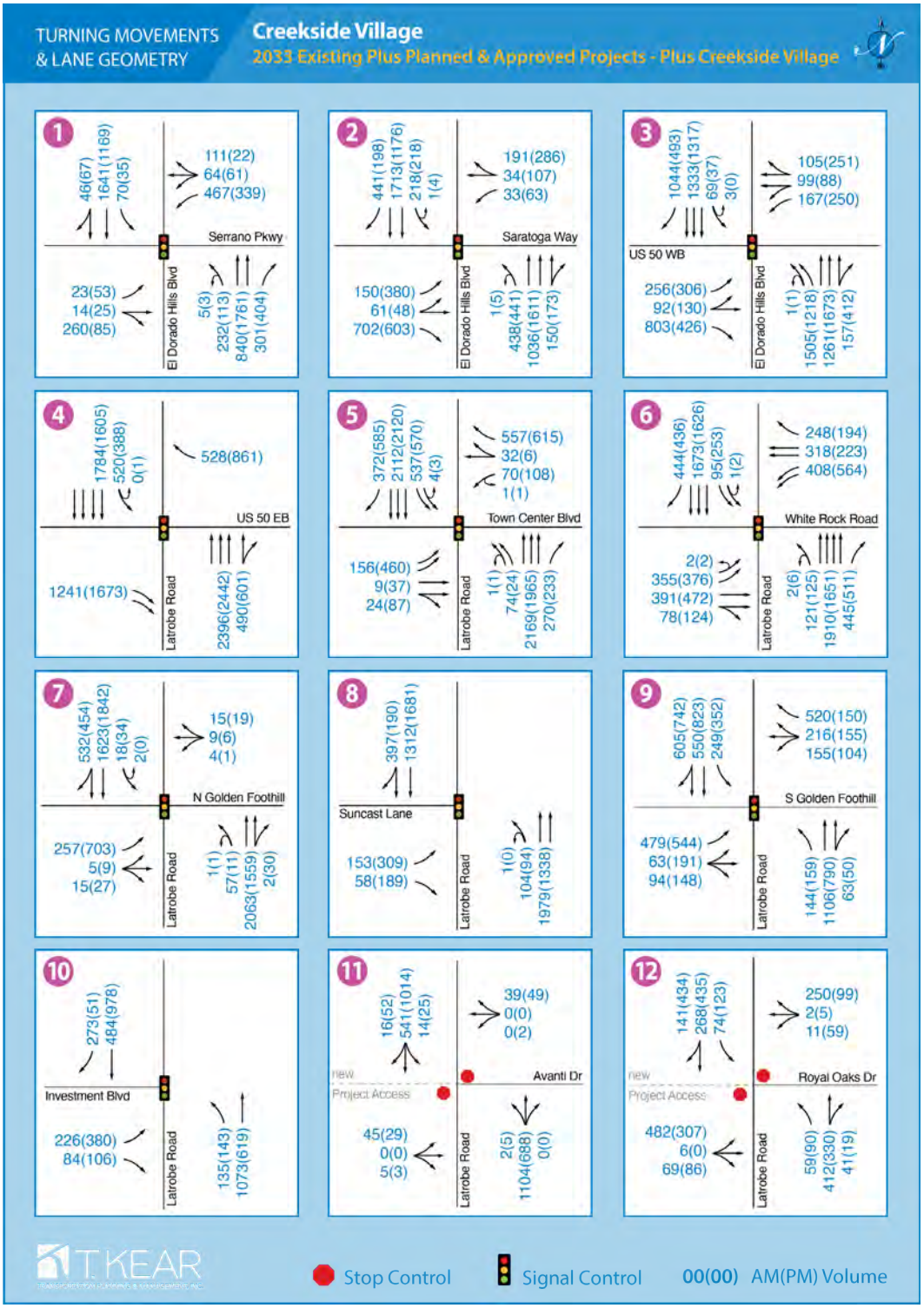

Figure 15. EPPAP 2033 plus Project lane geometry and turning movements

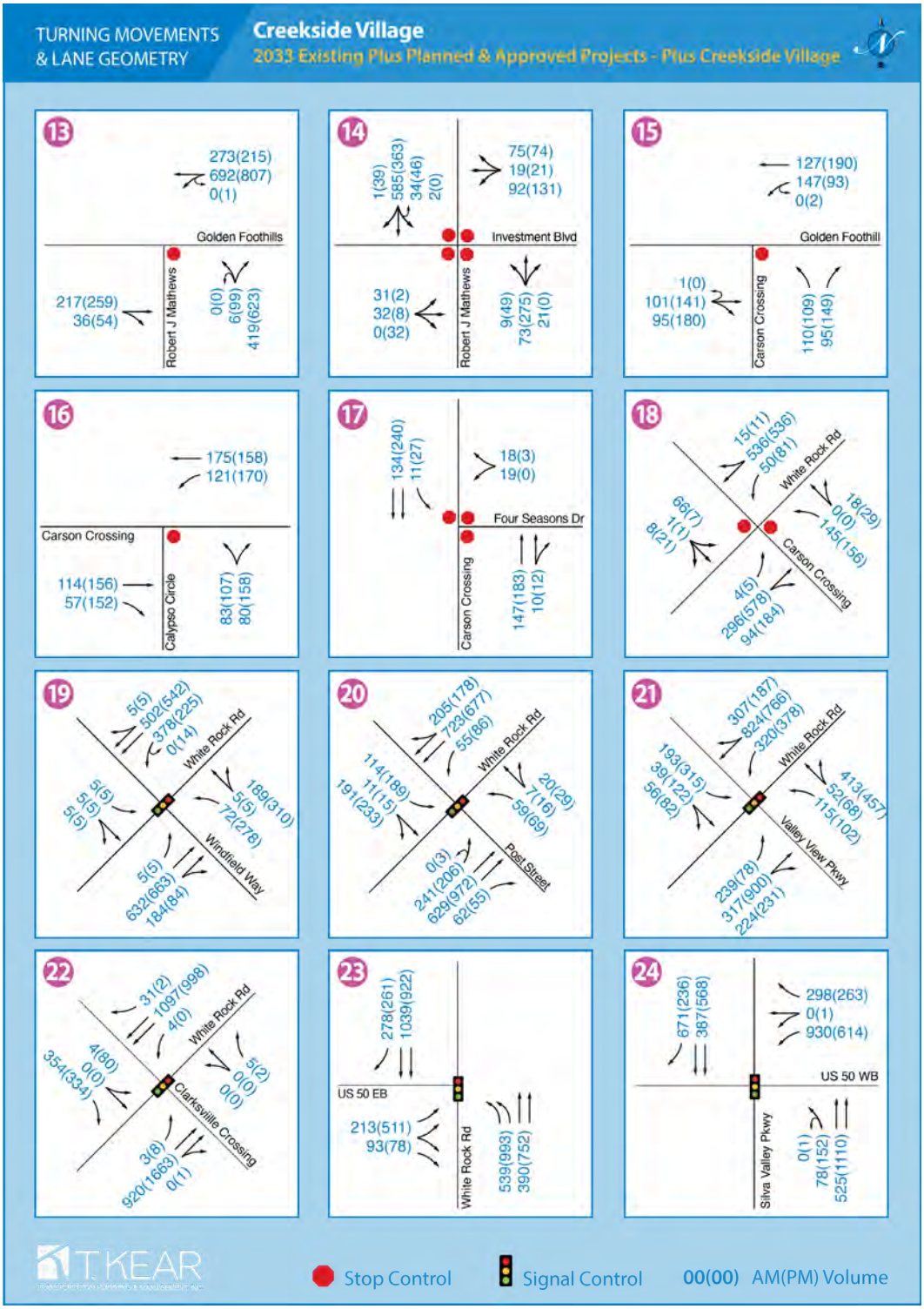

Figure 15. EPPAP 2033 plus Project lane geometry and turning movements (continued)

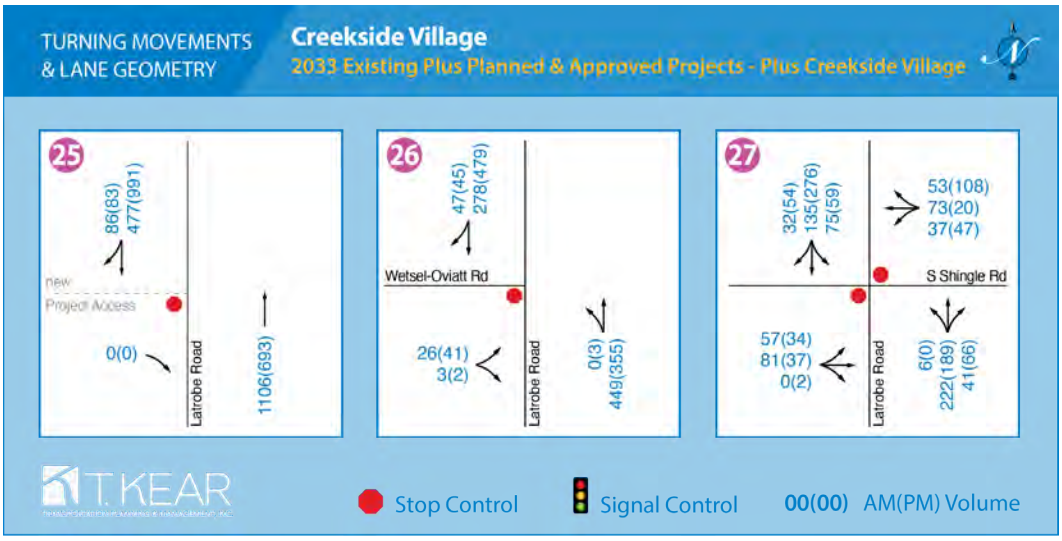

Figure 15. EPPAP 2033 plus Project lane geometry and turning movements (continued)

Table 23. EPPAP 2033 intersection delay and level-of-service with and without the Project

ID	Intersection	Control	Left Turn Storage	2033 AM Peak No Project				2033 PM Peak No Project				2033 AM Peak with Project				2033 PM Peak with Project			
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB 260 SB 110 EB 100 WB 430	**177.9**	**F**	NB SB EB WB	**382** **119** 33 **457**	55.7	E	NB SB EB WB	115 40 52 207	**174.6**	**F**	NB SB EB WB	**382** 119 33 457	56.5	E	NB SB EB WB	115 40 52 207
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB 500 SB 500 EB 150 WB N/A	**162.8**	**F**	NB SB EB WB	**1151** 332 140 N/A	**112.0**	**F**	NB SB EB WB	**1312** 341 **311** N/A	**164.3**	**F**	NB SB EB WB	**1272** 333 140 N/A	**117.2**	**F**	NB SB EB WB	**1338** 345 **316** N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left - turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**92.6**	**F**	NB SB EB WB	N/A 113 227 **182**	50.7	D	NB SB EB WB	N/A 57 319 **238**	**104.4**	**F**	NB SB EB WB	N/A 113 227 **181**	54.2	D	NB SB EB WB	N/A 57 319 **249**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB N/A SB 570 EB N/A WB N/A	32.3	C	NB SB EB WB	N/A 363 549 0	58.1	E	NB SB EB WB	N/A 298 **1251** 0	38.2	D	NB SB EB WB	N/A 363 528 0	66.0	E	NB SB EB WB	N/A 298 **1423** 0
5	Latrobe Road/Town Center Boulevard	Signal	NB 220 SB 330 EB 300 WB 100	39.4	D	NB SB EB WB	41 **479** 93 74	52.3	D	NB SB EB WB	15 **679** 249 99	42.2	D	NB SB EB WB	45 **491** 94 75	63.7	E	NB SB EB WB	17 **811** 281 **140**
6	Latrobe Road/White Rock Road	Signal	NB 270 SB 260 EB 360 WB 160	44.3	D	NB SB EB WB	253 89 306 **378**	79.6	E	NB SB EB WB	246 234 325 **840**	43.4	D	NB SB EB WB	253 89 306 **360**	**87.0**	**F**	NB SB EB WB	246 234 325 **964**
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB 200 SB 200 EB 100 WB N/A	**84.0**	**F**	NB SB EB WB	56 22 **126** N/A	80.0	E	NB SB EB WB	13 38 **416** N/A	79.0	E	NB SB EB WB	56 22 **126** N/A	**112.5**	**F**	NB SB EB WB	**13** 38 **416** N/A
8	Latrobe Road/Suncast Lane	Signal	NB 280 SB N/A EB 100	13.7	B	NB SB EB	77 N/A **127**	22.6	C	NB SB EB	85 N/A **289**	15.4	B	NB SB EB	88 N/A **131**	41.4	D	NB SB EB	91 N/A **295**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	**90.2**	**F**	NB SB EB WB	66 475 **638** N/A	**132.3**	**F**	NB SB EB WB	98 **786** **1066** N/A	**127.5**	**F**	NB SB EB WB	180 497 **577** N/A	**171.9**	**F**	NB SB EB WB	176 **886** **989** N/A
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	12.2	B	NB SB EB	40 N/A 98	19.1	B	NB SB EB	**93** N/A 251	22.4	C	NB SB EB	87 N/A **161**	80.2	F	NB SB EB	**186** N/A **479**
11	Latrobe Road/Avanti Drive	TWSC	NB N/A SB N/A EB N/A WB N/A	(WB) 14.5	B	NB SB EB WB	N/A N/A N/A N/A	(WB) 11.9	B	NB SB EB WB	N/A N/A N/A N/A	**284.4**	**F**	NB SB EB WB	N/A N/A N/A N/A	**(EB) 244.7**	**F**	NB SB EB WB	N/A N/A N/A N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 17.4	B	NB SB EB WB	0 6 N/A N/A	(WB) 26.5	D	NB SB EB WB	0 9 N/A N/A	**(EB) 2997.4 ***	**F**	NB SB EB WB	4 6 N/A N/A	**(EB) 2516.5 ***	**F**	NB SB EB WB	11 9 N/A N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB N/A SB N/A EB N/A WB N/A	**(NB) 939.5 ***	**F**	NB SB EB WB	N/A N/A N/A N/A	**(NB) 10000.0 * (v/c= 27)**	**F**	NB SB EB WB	N/A N/A N/A N/A	**(NB) 78.89 ***	**F**	NB SB EB WB	N/A N/A N/A N/A	**(NB) 10000.0 * (v/c = 30)**	**F**	NB SB EB WB	N/A N/A N/A N/A

Table 23. EPPAP 2033 intersection delay and level-of-service with and without the Project (continued)

ID	Intersection	Control	Left Turn Storage	2033 AM Peak No Project				2033 PM Peak No Project				2033 AM Peak with Project				2033 PM Peak with Project			
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB N/A SB N/A EB N/A WB N/A	**203.9 ***	**F**	NB N/A SB N/A EB N/A WB N/A		**135.9 ***	**f**	NB N/A SB N/A EB N/A WB N/A		**52.8**	**F**	NB N/A SB N/A EB N/A WB N/A		25.7	D	NB N/A SB N/A EB N/A WB N/A	
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB N/A SB N/A EB N/A WB 220	(NBL) 13.7	B	NB N/A SB N/A EB N/A WB 5		(NBL) 21.4	C	NB N/A SB N/A EB N/A WB 8		(NBL) 17.2	C	NB N/A SB N/A EB N/A WB 10		(NBL) 20.9	D	NB N/A SB N/A EB N/A WB 8	
16	Carson Crossing Road/Calypso Circle	TWSC	NB N/A SB N/A EB N/A WB 190	(NB) 13.2	B	NB N/A SB N/A EB N/A WB 8		(NB) 16.8	C	NB N/A SB N/A EB N/A WB 12		(NB) 13.8	B	NB N/A SB N/A EB N/A WB 9		(NB) 19.4	C	NB N/A SB N/A EB N/A WB 13	
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB N/A SB 100 WB N/A	8.0	A	NB N/A SB 1 WB N/A		8.2	A	NB N/A SB 3 WB N/A		8.2	A	NB N/A SB 1 WB N/A		8.4	A	NB N/A SB 3 WB N/A	
18	White Rock Road/Carson Crossing Road	TWSC	NB N/A SB N/A EB 200 WB 300	(NBL) 34.5	D	NB N/A SB N/A EB 0 WB 4		**(NBL) 411.5***	**F**	NB N/A SB N/A EB 0 WB 8		**(NBL) 64.3**	**F**	NB N/A SB N/A EB 0 WB 4		**(NBL) 448.9 ***	**F**	NB N/A SB N/A EB 0 WB 9	
19	White Rock Road/Windfield Way	Signal	NB 150 SB 100 EB 200 WB 200	29.2	C	NB 105 SB **10** EB 10 WB **452**		32.9	C	NB **393** SB 10 EB 10 WB **309**		29.2	C	NB 105 SB **10** EB 10 WB **452**		32.9	C	NB **393** SB 10 EB 10 WB **309**	
20	White Rock Road/Post Street	Signal	NB N/A SB 100 EB 100 WB 120	40.1	D	NB N/A SB **318** EB **373** WB 102		67.2	E	NB N/A SB **702** EB **341** WB **158**		39.0	D	NB N/A SB **318** EB **370** WB 102		66.0	E	NB N/A SB **702** EB **328** WB **158**	
21	White Rock Road/Valley View Parkway	Signal	NB 100 SB 100 EB 100 WB 100	**252.3**	**F**	NB **170** SB **324** EB **387** WB **708**		**259.5**	**F**	NB **152** SB **505** EB **125** WB **827**		**260.6**	**F**	NB **176** SB **335** EB **446** WB **766**		**268.6**	**F**	NB **152** SB **505** EB **147** WB **961**	
22	White Rock Road/Clarksville Crossing	Signal	NB N/A SB N/A EB 460 WB 290	35.7	D	NB N/A SB N/A EB 7 WB 8		37.9	D	NB N/A SB N/A EB 13 WB 0		35.1	D	NB N/A SB N/A EB 7 WB 8		37.8	C	NB N/A SB N/A EB 13 WB 0	
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB 500 SB N/A EB N/A WB N/A	21.7	C	NB 257 SB N/A EB N/A WB N/A		49.9	D	NB **698** SB N/A EB N/A WB N/A		22.5	C	NB 280 SB N/A EB N/A WB N/A		50.5	D	NB **710** SB N/A EB N/A WB N/A	
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB 550 SB N/A EB N/A WB N/A	69.7	E	NB 98 SB N/A EB N/A WB N/A		23.0	D	NB 192 SB N/A EB N/A WB N/A		68.8	E	NB 98 SB N/A EB N/A WB N/A		24.3	C	NB 192 SB N/A EB N/A WB N/A	
25	Latrobe Road/Commercial RIRO driveway	TWSC	NB N/A SB N/A EB N/A	Does not exist				Does not exist				0.0	A	NB N/A SB N/A EB N/A		-	A	NB N/A SB N/A EB N/A	
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB N/A SB N/A EB N/A	(EB) 13.8	B	NB N/A SB N/A EB N/A		(EB) 15.7	C	NB N/A SB N/A EB N/A		(EB) 14.7	B	NB N/A SB N/A EB N/A		(EB) 17.4	C	NB N/A SB N/A EB N/A	
27	Latrobe Road/S. Shingle Road	TWSC	NB N/A SB N/A EB N/A WB N/A	(EB) 18.7	B	NB N/A SB N/A EB N/A WB N/A		(EB) 16.9	C	NB N/A SB N/A EB N/A WB N/A		(EB) 22.3	C	NB N/A SB N/A EB N/A WB N/A		(EB) 20.9	C	NB N/A SB N/A EB N/A WB N/A	

Table 24. EPPAP 2033 freeway facility level-of-service with and without the proposed Project with park

No	Segment	Segment Type	Method	2033 No Project AM	2033 No Project PM	2033 Plus Project AM	2033 Plus Project PM
Westbound US 50							
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	28.5/D	22.5/C	29.4/D	23.2/C
2	Silva Valley offramp	diverge	HCM 7th Ed.	24.1/C	19.1/B	24.8/C	19.8/B
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	16.2/B	15.8/B	16.8/B	15.9/B
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	n/a	n/a	n/a	n/a
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	16.5/B	13.7/B	17.0/B	13.8/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	13.3/B	12.6/B	13.9/B	12.6/B
7	El Dorado Hills Blvd onramp	merge	HCM 7th Ed.	30.1/D	27.5/C	30.9/D	27.4/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	32.5/D	28.0/D	33.9/D	27.9/D
Eastbound US 50							
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	14.0/B	22.8/C	13.9/B	23.3/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	25.2/C	34.9/D	24.9/C	35.6/E
11	Latrobe loop offramp	diverge		23.7/C	32.2/D	23.5/C	32.6/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	5.9/A	10.4/A	5.9/A	10.4/A
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	9.1/A	13.3/B	9.2/A	13.3/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	9.0/A	12.3/B	9.1/A	12.2/B
15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	17.3/B	24.5/C	17.9/B	24.4/C
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	n/a	n/a	n/a	n/a
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	12.4/B	18.3/C	12.8/B	18.2/C

Notes:
Density in units of passenger cars per mile per lane.
*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Project plus forgone business park trips will reduce WB US 50 volume between Latrobe Rd and the El Dorado County line during the PM-peak.

Project plus forgone business park trips will reduce EB US 50 volume between EDC line and Latrobe Rd during the AM-peak, and between Silva Valley Pkwy and Bass Lake Rd during the PM peak.

Table 25. EPPAP 2033 arterial level-of-service check with and without the Project

Arterial Segment	Description	2033 AM No Project	2033 PM No Project	2033 AM Plus Project	2033 PM Plus Project
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650)	736	734	1476	1553
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650)	1213	1035	1891	1781
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln	4-lane divided arterial (threshold 3290)	2756	2549	3073	2622
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280, extrapolated from 6-lane divided arterial)	3327	3354	4727	4540
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	2-lane arterial (threshold 1650)	**1856**	**2360**	**1910**	**2417**

8.3 Existing 2033 Plus Project General Plan Deficiency Findings

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "project deficiency". There are twelve intersections and two arterial segments where the Project is anticipated to create new or worsen existing deficiencies under EPAP 2033 conditions.

There are two sections that follow describing the segment level abatement measures and intersection level abatement measures. Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = "A", 2033 = "B", and 2040 = "C"). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing. For certain abatements, a building permit trigger has been analyzed and included to determine the necessary timing for the improvement. For all other abatements, it is assumed the timing would be prior to issuance of the first building permit. If desired, a building permit trigger could also be determined for those abatements.

2033 Segment Deficiencies and Abatement Measures

(ii)B. Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) in 2033 (CIP Project Latrobe 72)

Deficiency: Level-of-service is anticipated to worsen to F with the addition of Project traffic during the AM and PM peak-hours.

Abatement: Implement as abatement (ii)A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 26** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement (ii)A.

Timing: Not applicable, addressed through abatement (ii)A.

(v)B. White Rock Rd between Valley View Pkwy to Silva Valley Pkwy in 2033

Deficiency: This segment operates at level-of-service F under EPAP 2033 conditions without the Project and the Project is anticipated to add more than 10 peak hour trips to this segment, worsening the existing level-of-service deficiency.

Abatement: Before issuance of the 173rd residential building permit or the first commercial building permit, advance CIP Project 36105042 to the 10-year CIP (widen White Rock Rd to four lanes between Valley View Pkwy and Silva Valley Pkwy.).

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 26** presents the segment level-of-service results with this abatement.

Project Responsibility: CIP Project 36105042 (White Rock Road Widening 2 to 4 lanes - Post Street to South of Silva Valley Parkway) includes funding for improvements to this segment in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Prior to issuance of the 173rd residential building permit or the first commercial building permit.

Table 26. EPAP 2033 arterial level-of-service check with and without the abated Project

Arterial Segment	Description	2033 AM No Project	2033 PM No Project	2033 AM Plus Project	2033 PM Plus Project
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	**Un Abated** 2-lane arterial (threshold 1650)	1213	1035	**1891**	**1781**
	Limit Project to 658 dwelling units: 2-lane arterial (threshold 1650)	1213	1035	1606	1534
	Add Widening to CIP: 4-lane divided arterial (threshold 3290)	1213	1035	1891	1781
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	**Un Abated** 2-lane arterial (threshold 1650)	**1856**	**2360**	**1910**	**2417**
	Limit Project to 172 dwelling units: 2-lane arterial (threshold 1650)	**1856**	**2360**	**1864.19**	**2369.96**
	Add Widening to CIP: 4-lane divided arterial (threshold 3290)	1213	1035	1891	1781

2033 Intersection Deficiencies and Abatement Measures

2B. El Dorado Hills Blvd/Saratoga Way in 2033

Deficiency: Level-of-service is F prior to addition of Project traffic, with northbound left-turn queues spilling out of the turn pocket. Project traffic is anticipated to worsen level-of-service and northbound left-turn queues.

2023-2033 Improvements Assumed: Southbound right-turn pocket (300-foot) and 500-foot northbound and southbound left turn pockets are assumed as part of CIP project 36105076.

Abatement: In addition to abatement 2A, prohibit northbound U-turns, overlap the eastbound right turn with the northbound left turn, and overlap the southbound right turn with the eastbound left turn.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project Responsibility: This abatement partially implements Project #36105076 in the 10-year Capital Improvement Program (CIP). The Project may satisfy its fair share of this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 2A.

3B. El Dorado Hills Blvd/US 50 WB in 2033

Deficiency: AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 3A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 3A.

Timing: Not applicable, addressed through abatement 3A.

4B. El Dorado Hills Blvd/US 50 EB in 2033

Deficiency: PM peak-hour 95th percentile queue on ramp is anticipated to reach 1251-feet, ending with 500-feet of the gore-point (where the ramp exits the freeway). Project traffic is anticipated to add 172-feet to the queue. This is a potentially traffic operations issue as the 2 lane portion of the ramp is limited to 430-feet.

2023-2033 Improvements Assumed: None.

Abatement: construct a 3rd eastbound right turn lane from the offramp to southbound Latrobe Road. The new turn lane shall match the approximate length of the existing 2-lane portion of the offramp.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: While this deficiency will occur with or without the Project, the Project is responsible for its fair share of the cost of this off-site improvement, which can be addressed through payment of fees after widening of the eastbound diagonal offramp has been added to 10-year CIP. Note that CIP Project 36104001 (US 50 / Latrobe Road/ El Dorado Hills Boulevard Interchange Improvements Phase 2B) includes reconstruction of the EB diagonal on-ramp, EB on-ramp auxiliary lane, and the EB loop off-ramp. That CIP project could potential address this eastbound offramp widening as well or be done as an independent CIP project.

Timing: Payment of TIF at issuance of each building permit.

Cross reference: See abatement 4C.

5B. Latrobe Road/Town Center Boulevard in 2033

Deficiency: The southbound left-turn queue spills back out of its pocket during the PM peak-hour prior to the addition of Project traffic. Project traffic is anticipated to worsen the southbound left-turn queue spillback and cause the westbound left-turn queue to exceed its pocket length.

2023-2033 Improvements Assumed: None.

Abatement: implement as abatement 5A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 5A.

Timing: Not applicable, addressed through abatement 5A.

6B. Latrobe Road/White Rock Road in 2033

Deficiency: The westbound left-turn queue spills back out of its turn pocket. Project traffic is anticipated to worsen that queue spillback.

2023-2033 Improvements Assumed: None.

2023-2033 Improvements Assumed: None.

Abatement: implement as abatement 6A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 6A.

Timing: Not applicable, addressed through abatement 6A.

7B. Latrobe Road/Golden Foothill Parkway (N) in 2033

Deficiency: Project traffic is anticipated to worsen level-of-service to F.

2023-2033 Improvements Assumed: None.

Abatement: Construct 180-foot southbound right turn pocket.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: CIP 36105069 will widen this portion of Latrobe Rd to six lanes by 2040 and should be advanced to the 10-year CIP. The Project's fair share cost of this improvement is payment of the TIF program fee.

Timing: Prior to issuance of 1st building permit.

9B. Latrobe Road/ Golden Foothill Parkway (S) in 2033

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F conditions.

2023-2033 Improvements Assumed: None.

Abatement: Abatement 9B is similar, but expands upon, abatement 9A:

- Eastbound approach: Implement abatement 9A.
- Westbound approach: Stripe westbound approach to 2-lanes between Blackstone Pkwy and Latrobe Rd, and construct a 250' right left pocket. Label the resulting three lanes as left, left, thru-right.
- Northbound approach: Widen northbound approach by constructing an additional 100' right turn pocket and extending the left turn pocket to 260'. Label the resulting four lanes as left, thru, thru, and right.
- Southbound approach: Widen southbound approach by constructing an additional 300' right turn pocket, label the resulting four lanes as left, thru, thru, right.

Figure 16 below shows the traffic model's representation of these improvements. Note that the depicted northbound right turn lane was drawn with a 24-foot width to reflect the assumed ultimate width of Latrobe Rd after widening to four lanes with the "Latrobe 72" improvements and an additional northbound through lane. The Project is not obligated to build improvements to that footprint, but it is advised that any relocation of traffic signals be placed outside of the intersection's ultimate footprint.

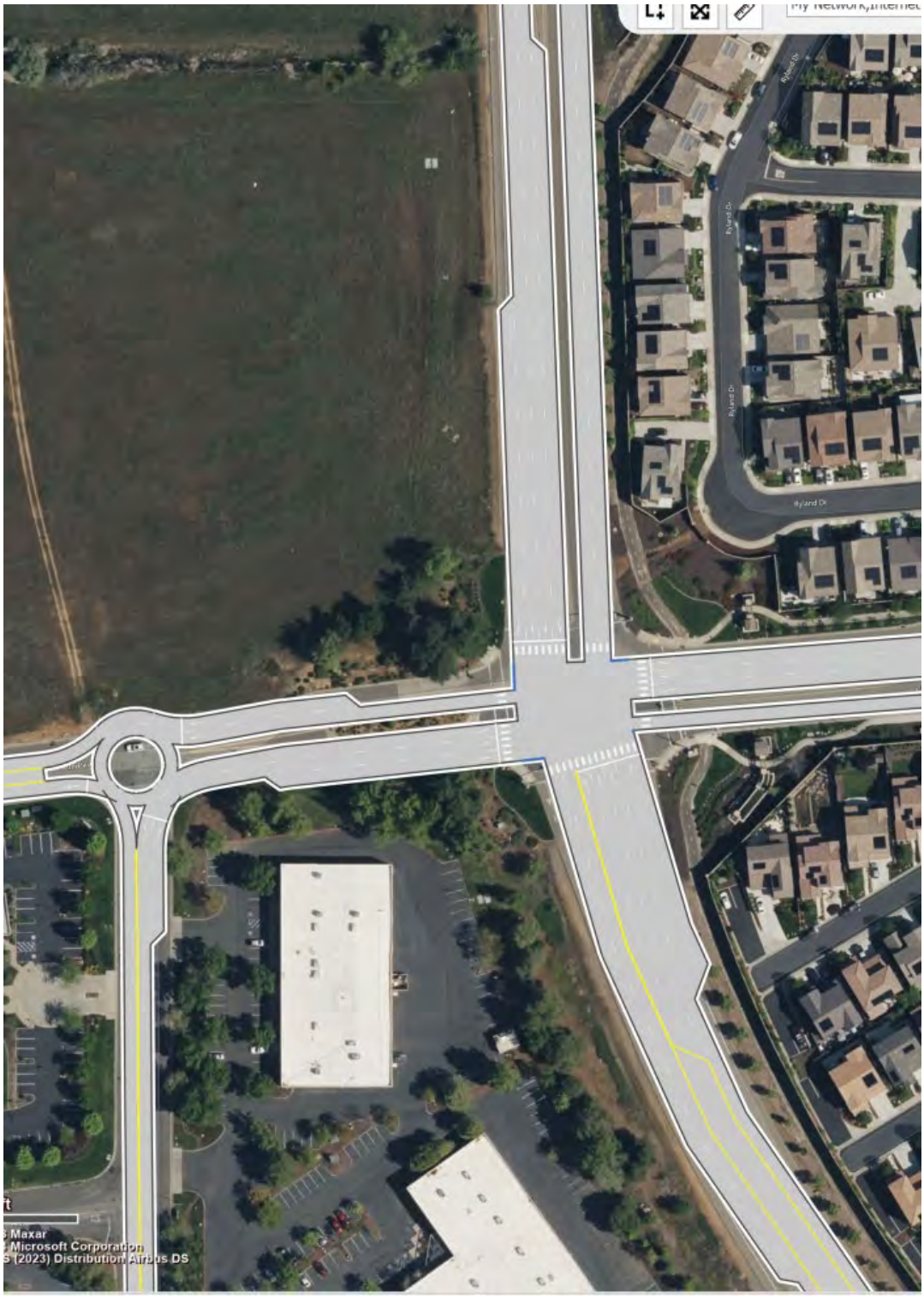

Figure 16. Latrobe Rd/Golden Foothill Pkwy (south) 2033 geometry with adjacent roundabout at Golden Foothill Pkwy/Robert J. Mathews Pkwy.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after Latrobe 72 is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 9A.

10B. Latrobe Road/Investment Boulevard in 2033

Deficiency: Project traffic is anticipated to cause the eastbound (Investment Blvd) left-turn queue to spill out of its left-turn pocket.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 10A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 10A.

Timing: Not applicable, addressed through abatement 10A.

11B. Latrobe Road/Avanti Drive in 2033

Deficiency: Project traffic is anticipated to cause this intersection to operate at level-of-service F.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 11A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 11A.

Timing: Not applicable, addressed through abatement 11A.

12B. Latrobe Road/Royal Oaks Drive in 2033

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 12A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 12A.

Timing: Not applicable, addressed through abatement 12A.

13B. Golden Foothill Pkwy/Robert J. Mathews Pkwy in 2033

Deficiency: The Project is anticipated to worsen existing level-of-service F conditions at this intersection.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 13A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 13A.

Timing: Not applicable, addressed through abatement 13A.

18B. White Rock Road/Carson Crossing Road in 2033

Deficiency: Project traffic is anticipated to cause new and worsen level-of-service F conditions. The peak-hour signal warrant is met with or without the Project.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 18A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this

location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 18A.

Timing: Not applicable, addressed through abatement 18A.

21B. White Rock Road/Valley View Parkway in 2033

Deficiency: Project traffic is anticipated to worsen level-of-service to F conditions and worsen left-turn queue spillback on eastbound and westbound White Rock Rd.

2023-2033 Improvements Assumed: None.

Abatement: Reconstruct White Rock Rd through the intersection as follows:

- Implement abatement 21 A.
- Further extend the westbound left turn pocket to 1000 feet. (note: abatement 21A will extend this pocket to 400 feet, abatement 21B reflects an additional 600 feet of westbound right turn storage.)

Widening should be done to the south of Latrobe Rd to avoid high voltage lines. Eastbound-westbound Lane alignment may require additional space.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36105042 (White Rock Road Widening 2 to 4 lanes – Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Prior to issuance of 1st building permit.

Table 27. EPAP 2033 intersection delay and level-of-service with and without the abated Project

ID	Intersection	Control	Left Turn Storage	2033 AM Peak No Project			2033 PM Peak No Project			2033 AM Peak with Project			2033 PM Peak with Project			Abatement Strategy	Left Turn Storage	Abated AM Peak (+ Proj)			Abated PM Peak (+ Proj)			Existing or Anticipated CIP Project
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / Queue Length (Ft.)			Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / Queue Length (Ft.)	
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB 500 SB 500 EB 150 WB N/A	**162.8**	**F**	NB **1151** SB 332 EB 140 WB N/A	**112.0**	**F**	NB **1312** SB 341 EB **311** WB N/A	**164.3**	**F**	NB **1272** SB 333 EB 140 WB N/A	117.2	F	NB **1338** SB 345 EB **316** WB N/A	Abatement 2A and extension of NB and SB left turn pockets to 500' by CIP 361050076. Extend cycle length to match interchange. Eliminate NB U-turns, overlap SB right with EB left, overlap EB right with NB left.	NB **500** SB **500** EB 150 WB N/A	**123.7**	**F**	NB **890** SB 355 EB **159** WB N/A	76.9	E	NB **925** SB 340 EB **328** WB N/A	36105076 and 36105042
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**92.6**	**F**	NB N/A SB 113 EB 227 WB **182**	50.7	D	NB N/A SB 57 EB 319 WB **238**	104.4	F	NB N/A SB 113 EB 227 WB **181**	54.2	D	NB N/A SB 57 EB 319 WB **249**	Implement Abatement 3A	NB N/A SB 220 EB N/A WB 150	**92.7**	**F**	NB N/A SB 112 EB 224 WB **179**	no change			"Traffic Signals Intersection"
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB N/A SB 570 EB N/A WB N/A	32.3	C	NB N/A SB 363 EB 549 WB 0	58.1	E	NB N/A SB 298 EB **1251** WB 0	38.2	D	NB N/A SB 363 EB 528 WB 0	66.0	E	NB N/A SB 298 EB **1423** WB 0	Add 3rd right turn lane	NB N/A SB 570 EB N/A WB N/A	29.4	C	NB N/A SB 365 EB 219 WB 0	19.3	B	NB N/A SB 298 EB 308 WB 0	36104001
5	Latrobe Road/Town Center Boulevard	Signal	NB 220 SB 330 EB 300 WB 100	39.4	D	NB 41 SB **479** EB 93 WB 74	52.3	D	NB 15 SB **679** EB 249 WB 99	42.2	D	NB 45 SB **491** EB 94 WB 75	63.7	E	NB 17 SB **811** EB 281 WB **140**	Implement Abatement 5A.	NB 220 SB 330 EB 300 WB 140	no changes			50.1	D	NB 17 SB 347 EB 279 WB 132	"Traffic Signals Intersection"
6	Latrobe Road/White Rock Road	Signal	NB 270 SB 260 EB 360 WB 160	44.3	D	NB 253 SB 89 EB 306 WB **378**	79.6	E	NB 246 SB 234 EB 325 WB **840**	43.4	D	NB 253 SB 89 EB 306 WB **360**	87.0	F	NB 246 SB 234 EB 325 WB **964**	Implement Abatement 6A.	NB 270 SB 260 EB 360 WB 160	no changes			53.2	D	NB 256 SB 237 EB 329 WB **456**	36105069
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB 200 SB 200 EB 100 WB N/A	**84.0**	**F**	NB 56 SB 22 EB **126** WB N/A	80.0	E	NB 13 SB 38 EB **416** WB N/A	79.0	E	NB 56 SB 22 EB **126** WB N/A	112.5	F	NB **13** SB 38 EB **416** WB N/A	Add 180' SB right turn pocket	NB 200 SB 200 EB 100 WB N/A	43.4	D	NB 56 SB 22 EB **126** WB N/A	64.9	E	NB 13 SB 39 EB **429** WB N/A	36105069
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	**90.2**	**F**	NB 66 SB 475 EB **638** WB N/A	**132.3**	**F**	NB 98 SB **786** EB **1066** WB N/A	127.5	F	NB 180 SB 497 EB **577** WB N/A	171.9	F	NB 176 SB **886** EB **989** WB N/A	EB: Implement abatement 9A. WB: Stripe WB approach to 2-lanes between Blakstone Pkwy and Latrobe Rd, construct a 250' right left pocket. Label as left, left, thru-right. NB: Widen NB approach by constructing an additional 100' right turn pocket, and extending the left turn pocket to 260'. Label lanes as left, thru, thru, right. SB: Widen SB approach by constructing an additional 300' right turn pocket, label lanes as left, thru, thru, right. Adjust splits and cycle length with SB right overlap (SB right with EB left) and WB right overlap (WB right with SB left).	NB 260 SB 530 EB N/A WB N/A	**50.2**	**D**	NB 246 SB 390 EB N/A WB N/A	40.1	D	NB 226 SB 522 EB N/A WB N/A	"Latrobe 72"
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	12.2	B	NB 40 SB N/A EB 98	19.1	B	NB **93** SB N/A EB 251	22.4	C	NB 87 SB N/A EB **161**	80.2	F	NB **186** SB N/A EB **479**	Implement Abatement 10A	NB 180 SB N/A EB 220	13.8	B	NB 65 SB N/A EB 82	59.8	E	NB 110 SB N/A EB **213**	"Latrobe 72"
11	Latrobe Road/Avanti Drive	TWSC	NB N/A SB N/A EB N/A WB N/A	(WB) 14.5	B	NB N/A SB N/A EB N/A WB N/A	(WB) 11.9	B	NB N/A SB N/A EB N/A WB N/A	284.4	F	NB N/A SB N/A EB N/A WB N/A	(EB) 244.7	F	NB N/A SB N/A EB N/A WB N/A	Implement Abatement 11A	NB 100 SB 100 EB N/A WB N/A	(EB) 45.0	E	NB 0 SB 2 EB N/A WB N/A	(EB) 36.8	E	NB 1 SB 2 EB N/A WB N/A	n/a
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 17.4	B	NB 0 SB 6 EB N/A WB N/A	(WB) 26.5	D	NB 0 SB 9 EB N/A WB N/A	(EB) 2997.4 *	F	NB 4 SB 6 EB N/A WB N/A	(EB) 2516.5 *	F	NB 11 SB 9 EB N/A WB N/A	Implement Abatement 12A	NB 320 SB 320 EB 200 WB N/A	23.5	C	NB 41 SB 53 EB 150 WB N/A	19.1	B	NB 48 SB 63 EB 75 WB N/A	n/a
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB N/A SB N/A EB N/A WB N/A	(NB) 939.5 *	F	NB N/A SB N/A EB N/A WB N/A	(NB) 10000.0 * (v/c= 27)	F	NB N/A SB N/A EB N/A WB N/A	(NB) 78.89 *	F	NB N/A SB N/A EB N/A WB N/A	(NB) 10000.0 * (v/c = 30)	F	NB N/A SB N/A EB N/A WB N/A	Implement Abatement 13A	NB N/A SB N/A EB N/A WB N/A	(EB) 13.1	B	NB N/A SB N/A EB N/A WB N/A	(EB) 23.4	B	NB N/A SB N/A EB N/A WB N/A	Anticipated
18	White Rock Road/Carson Crossing Road	TWSC	NB N/A SB N/A EB 200 WB 300	(NBL) 34.5	D	NB N/A SB N/A EB 0 WB 4	(NBL) 411.5*	F	NB N/A SB N/A EB 0 WB 8	(NBL) 64.3	F	NB N/A SB N/A EB 0 WB 4	(NBL) 448.9 *	F	NB N/A SB N/A EB 0 WB 9	Implement Abatement 18A	NB N/A SB N/A EB 200 WB 300	16.0	B	NB N/A SB N/A EB 5 WB 25	28.6	C	NB N/A SB N/A EB 6 WB 67	36105041
21	White Rock Road/Valley View Parkway	Signal	NB 100 SB 100 EB 100 WB 100	**252.3**	**F**	NB **170** SB **324** EB **387** WB **708**	**259.5**	**F**	NB **152** SB **505** EB **125** WB **827**	260.6	F	NB **176** SB **335** EB **446** WB **766**	268.6	F	NB **152** SB **505** EB **147** WB **961**	Implement Abatement 21A. Additional lengthening of WB left turn pocket to from 400' to 1000'.	NB 100 SB 100 EB 400 WB 1000	**166.3**	**F**	NB **149** SB **297** EB 383 WB 590	178.2	**F**	NB **152** SB **505** EB 147 WB 961	36105042

* Denotes intersections where the peak-hour signal warrant is met.

2/17/2024

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9.0 CUMULATIVE 2040 CONDITIONS

The Cumulative 2040 conditions analysis started with lane configurations from Existing 2020 conditions and turning movements derived from existing traffic counts, growth factors from the Travel Demand Model, and the NCHRP 255 adjustment procedure. Several volume and network adjustments were then made.

Seven Capital Improvement Program (CIP) projects that effect study intersection geometry were accounted for:

- CIP Project 36105042: Widening of White Rock Road to four-lanes between Post Street and the US 50 Silva Valley interchange.
- CIP Project 36105007: Country Club Drive Extension to El Dorado Hills Blvd.
- CIP Project 36105035: Saratoga Way Extension Phase 2 (widening to 4-lanes and associated intersection improvements).
- CIP Project 36104021: US 50 auxiliary lane westbound - El Dorado Hills Blvd to El Dorado County line.
- CIP Project 36104001: US 50/El Dorado Hills Blvd interchange improvements phase 2B (adds another NB through lane at study intersection #4.
- CIP Project 36104004: US 50/Silva Valley Parkway interchange Phase 2 – on ramps and auxiliary lanes. (adds eastbound slip onramp and westbound loop onramp).
- CIP Project 36105041: White Rock Road widening to four-lanes between Manchester Drive and the El Dorado County Line.

Traffic volumes from 2033 without the Project were used as a floor before traffic from the avoided trips (see **Figure 10**, page 44) was shifted from where the TDM loads it directly onto Carson Crossing Drive to Investment Blvd. Traffic for the approved Carson Creek/Heritage project was added. Note that because the Creekside Village project also has avoided R&D and industrial vehicle trips, some turning movements are lower in 2040 than they were in 2033. For 2040, a peak hour factor of 0.92 was also used as a floor.

Figure *17* summarizes the turning movements and lane configurations for the Cumulative 2040 conditions scenario.

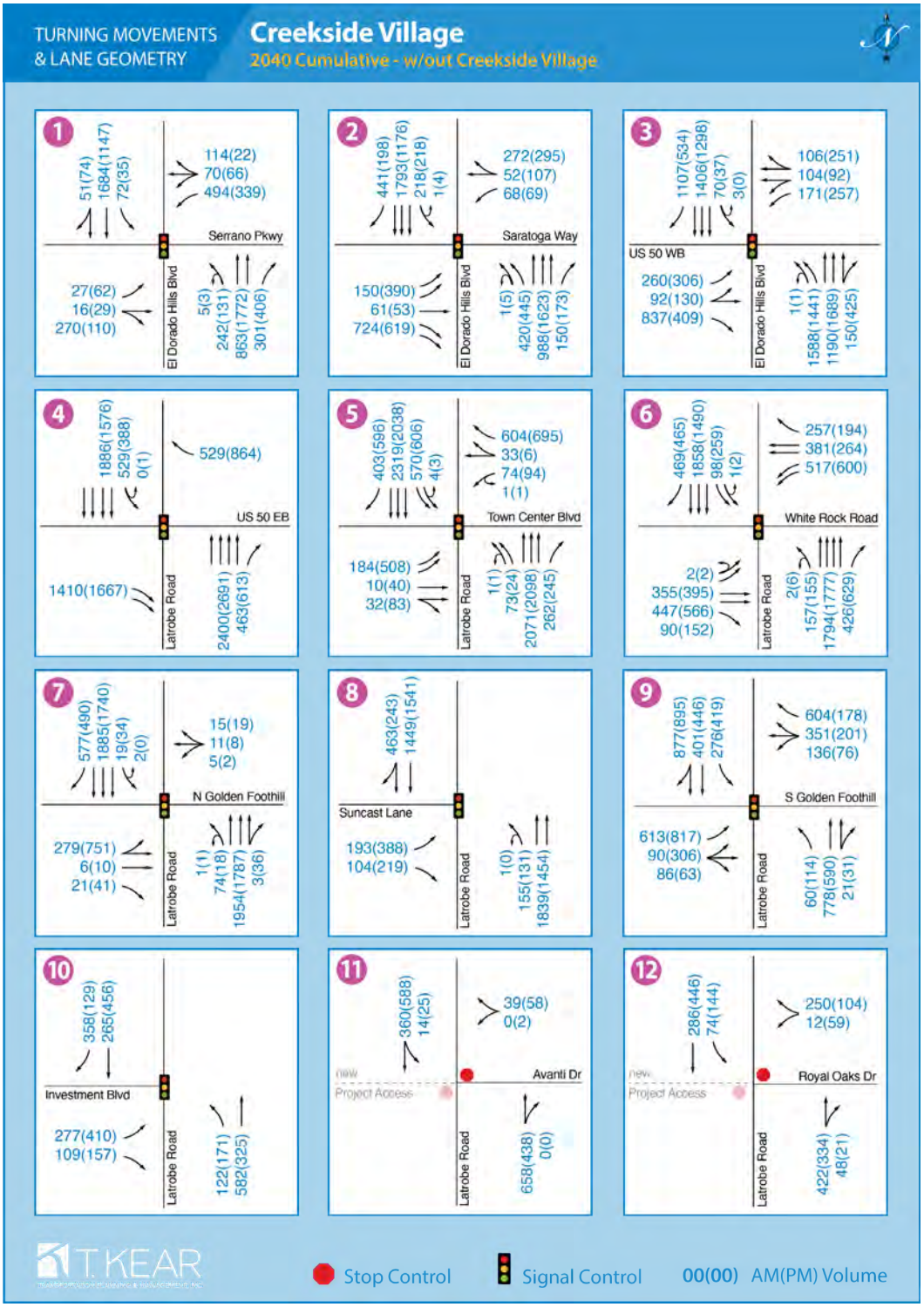

Figure 17. Cumulative 2040 lane geometry and turning movements

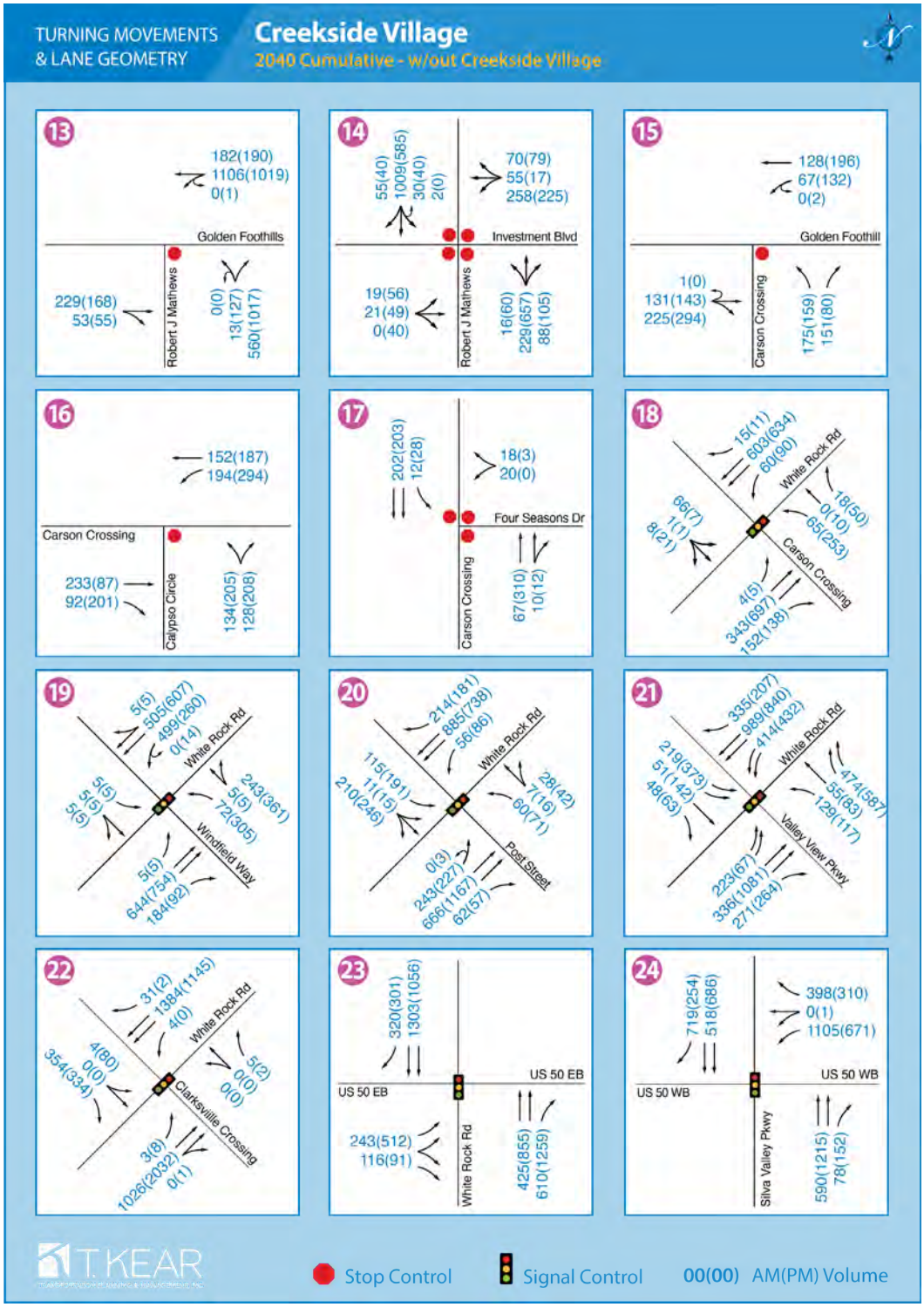

Figure 17. Cumulative 2040 lane geometry and turning movements (continued)

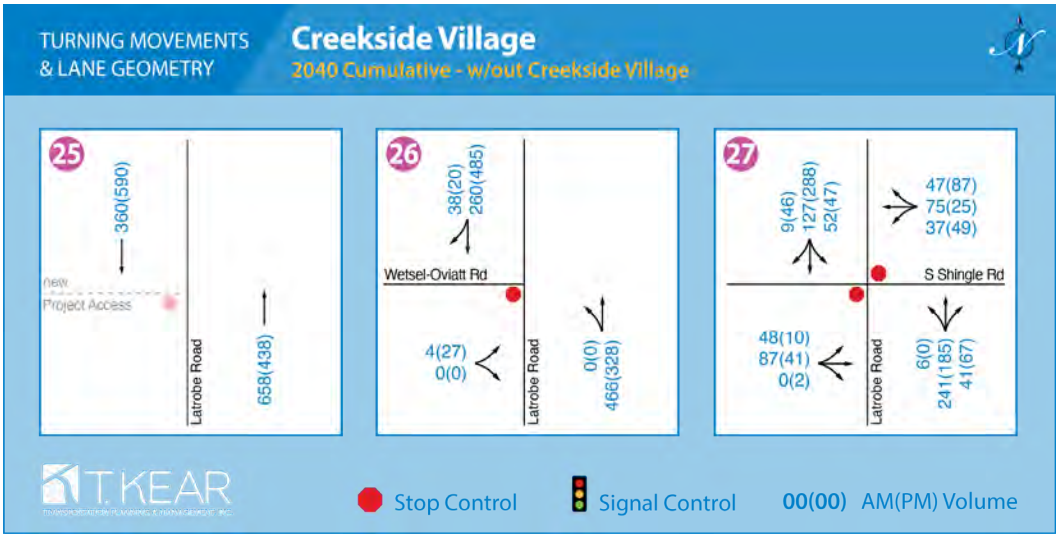

Figure *17*. Cumulative 2040 lane geometry and turning movements (continued)

Delay and level-of-service is presented in **Table 28** through **Table 30**. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) is provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **bold black** typeface denote deficient traffic operations, and unsignalized intersections that meet the peak hour signal warrant are denoted with an asterisk and shading.

The results indicate that thirteen study intersections operate deficiency with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard AM and PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) AM and PM;
- (10) Latrobe Road/Investment Boulevard PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathewsws Pkwy AM and PM;
- (14) Investment Boulevard/Robert J. Mathews Pkwy AM and PM
- (16) Carson Crossing Road/Calypso Circle PM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street AM and PM; and
- (21) White Rock Road/Valley View Parkway PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. the remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

Table 28. Cumulative 2040 intersection delay and level-of-service without the Project

ID	Intersection	Control	Left Turn Storage		2040 AM Peak No Project				2040 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB	260	**196.7**	**F**	NB	**418**	63.1	E	NB	136
			SB	110			SB	**129**			SB	41
			EB	100			EB	40			EB	61
			WB	430			WB	506			WB	214
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB	500	55.5	E	NB	284	69.6	E	NB	612
			SB	500			SB	341			SB	332
			EB	150			EB	145			EB	**332**
			WB	N/A			WB	N/A			WB	N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left - turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB	N/A	**120.8**	**F**	NB	N/A	71.5	E	NB	N/A
			SB	220			SB	115			SB	57
			EB	N/A			EB	227			EB	318
			WB	150			WB	**184**			WB	**259**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB	N/A	37.3	D	NB	N/A	61.7	E	NB	N/A
			SB	570			SB	372			SB	298
			EB	N/A			EB	810			EB	**1400**
			WB	N/A			WB	0			WB	0
5	Latrobe Road/Town Center Boulevard	Signal	NB	220	36.2	D	NB	44	70.5	E	NB	16
			SB	330			SB	**460**			SB	**864**
			EB	300			EB	109			EB	295
			WB	100			WB	74			WB	**113**
6	Latrobe Road/White Rock Road	Signal	NB	270	41.5	D	NB	159	48.9	D	NB	162
			SB	260			SB	95			SB	241
			EB	360			EB	313			EB	343
			WB	400			WB	364			WB	360
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB	200	15.4	B	NB	19	23.9	C	NB	19
			SB	200			SB	21			SB	37
			EB	320			EB	118			EB	305
			WB	N/A			WB	N/A			WB	N/A
8	Latrobe Road/Suncast Lane	Signal	NB	280	28.5	C	NB	151	45.6	D	NB	134
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	**186**			EB	**486**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB	220	**143.8**	**F**	NB	72	**217.0**	**F**	NB	102
			SB	530			SB	**601**			SB	**1186**
			EB	100			EB	**917**			EB	**1643**
			WB	N/A			WB	N/A			WB	N/A
10	Latrobe Road/Investment Boulevard	Signal	NB	180	12.1	B	NB	35	19.6	B	NB	108
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	92			EB	**251**
11	Latrobe Road/Avanti Drive	TWSC	NB	N/A	(WB) 14.1	B	NB	N/A	(WB) 12.3	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB	320	(WB) 18.2	C	NB	0	(WB) 32.3	D	NB	0
			SB	320			SB	6			SB	11
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB	N/A	**B) 10000.0 ***	**F**	NB	N/A	**(NB) 10000.0 * (v/c = 229)**	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

Table 28. Cumulative 2040 intersection delay and level-of-service without the Project (continued)

ID	Intersection	Control	Left Turn Storage		2040 AM Peak No Project				2040 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB	N/A	**372.9 ***	**F**	NB	N/A	**273.2 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB	N/A	(NBL) 17.4	C	NB	N/A	(NBL) 35.4	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	220			WB	5			WB	11
16	Carson Crossing Road/Calypso Circle	TWSC	NB	N/A	(NB) 29.8	D	NB	N/A	**(NB) 163.7 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	190			WB	15			WB	25
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB	N/A	8.1	A	NB	N/A	8.7	A	NB	N/A
			SB	100			SB	1			SB	3
			WB	N/A			WB	N/A			WB	N/A
18	White Rock Road/Carson Crossing Road	**Signal**	NB	200	16.6	B	NB	29	17.4	B	NB	127
			SB	N/A			SB	N/A			SB	N/A
			EB	200			EB	3			EB	4
			WB	300			WB	27			WB	49
19	White Rock Road/Windfield Way	Signal	NB	150	35.0	C	NB	105	34.8	C	NB	**434**
			SB	100			SB	10			SB	10
			EB	200			EB	10			EB	10
			WB	200			WB	**610**			WB	**345**
20	White Rock Road/Post Street	Signal	NB	N/A	44.8	D	NB	N/A	44.9	D	NB	N/A
			SB	100			SB	**216**			SB	**344**
			EB	300			EB	**305**			EB	272
			WB	200			WB	117			WB	183
21	White Rock Road/Valley View Parkway	Signal	NB	300	26.9	C	NB	148	33.5	C	NB	159
			SB	200			SB	119			SB	**229**
			EB	300			EB	121			EB	44
			WB	500			WB	209			WB	255
22	White Rock Road/Clarksville Crossing	Signal	NB	N/A	43.1	D	NB	N/A	57.2	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	460			EB	7			EB	14
			WB	290			WB	8			WB	0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB	N/A	11.1	B	NB	N/A	38.0	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB	N/A	52.2	D	NB	N/A	27.5	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
25	Latrobe Road/Commercial RIRO driveway	TWSC	NB	N/A	Does not exist				Does not exist			
			SB	N/A								
			EB	N/A								
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB	N/A	(EB) 14.4	B	NB	N/A	(EB) 16.3	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
27	Latrobe Road/S. Shingle Road	TWSC	NB	N/A	(EB) 19.0	C	NB	N/A	(EB) 17.2	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

Table 29. Cumulative 2040 freeway facility level-of-service without the Project

No	Segment	Segment Type	Method	2040 No Project AM	2340 No Project PM
Westbound US 50					
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	33.6/D	27.3/D
2	Silva Valley offramp	diverge	HCM 7th Ed.	27.5/C	23.2/C
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	17.1/B	18.1/C
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	22.7/C	24.3/C
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	17.4/B	15.2/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	14.2/B	14.8/B
7	El Dorado Hills Blvd onramp	Merge	HCM 7th Ed.	29.7/D	24.6/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	23.7/C	19.8/C
Eastbound US 50					
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	16.1/B	25.0/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	28.0/D	36.9/E
11	Latrobe loop offramp	diverge		25.9/C	33.7/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	7.2/A	11.6/B
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	10.4/B	14.4/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	10.1/A	13.4/B
B15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	15.2/B	18.5/B
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	15.5/B	23.7C
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	14.3/B	21.4/C

Table 30. Cumulative 2040 arterial level-of-service check without the Project

Arterial Segment	Description	2040 AM No Project	2040 PM No Project
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650)	775	809
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650)	1303	1073
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln	4-lane divided arterial (threshold 3290)	3134	2776
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280, extrapolated from 6-lane divided arterial)	3598	3580
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	4-lane divided arterial (threshold 3290)	2303	2934

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10.0 CUMULATIVE 2040 PLUS PROPOSED PROJECT CONDITIONS

10.1 Traffic Volumes

Peak hour Project trips (**Figure 8** page 40) and avoided R&D and industrial trips (**Figure 10** page 44) were added to the EPPAP 2040 conditions traffic volumes. Delay and level-of-service were determined at the study intersections and segments. **Figure 18** summarizes the turning movements and lane configurations for the Cumulative 2040 Plus Proposed Project scenario.

10.2 Level-of-Service

Table 31 through **Table 33** present a summary of the level-of-service results for the study intersections and segments under Cumulative 2040 Plus Proposed Project conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) is provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **Bold black** text in **Table 31** through **Table 33** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. **Bold red** text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies. Unsignalized intersections that meet the peak hour signal warrant are shaded and denoted with an asterisk.

One arterial segment is anticipated to have new deficiency caused by Project traffic (Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south). Fifteen intersections are anticipated to have level-of-service and/or queue spillback deficiencies.

<u>9 Locations that are deficient with or without the Project that are not worsened:</u>

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathewsws Pkwy AM and PM;
- (14) Investment Boulevard/Robert J. Mathews Pkwy AM;
- (16) Carson Crossing Road/Calypso Circle PM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street AM and PM; and
- (21) White Rock Road/Valley View Parkway PM.

<u>4 Locations that are deficient with or without the Project that are worsened:</u>

- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) AM and PM;
- (10) Latrobe Road/Investment Boulevard AM and PM;

2 Locations where the Project is anticipated to cause new deficiencies:

- (11) Latrobe Road/Avanti Drive AM and PM; and
- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. the remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

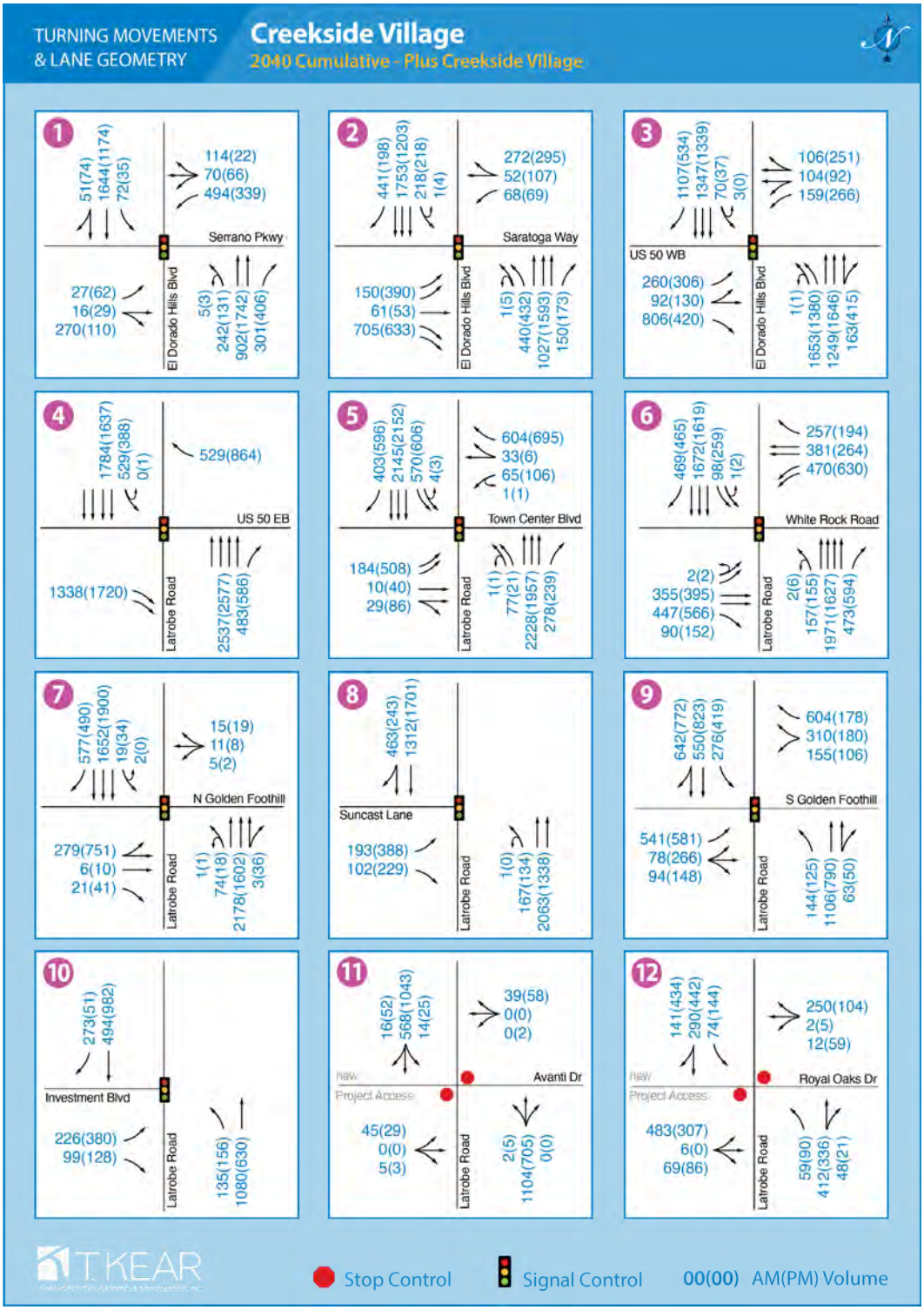

Figure 18. Cumulative 2040 plus Project lane geometry and turning movements

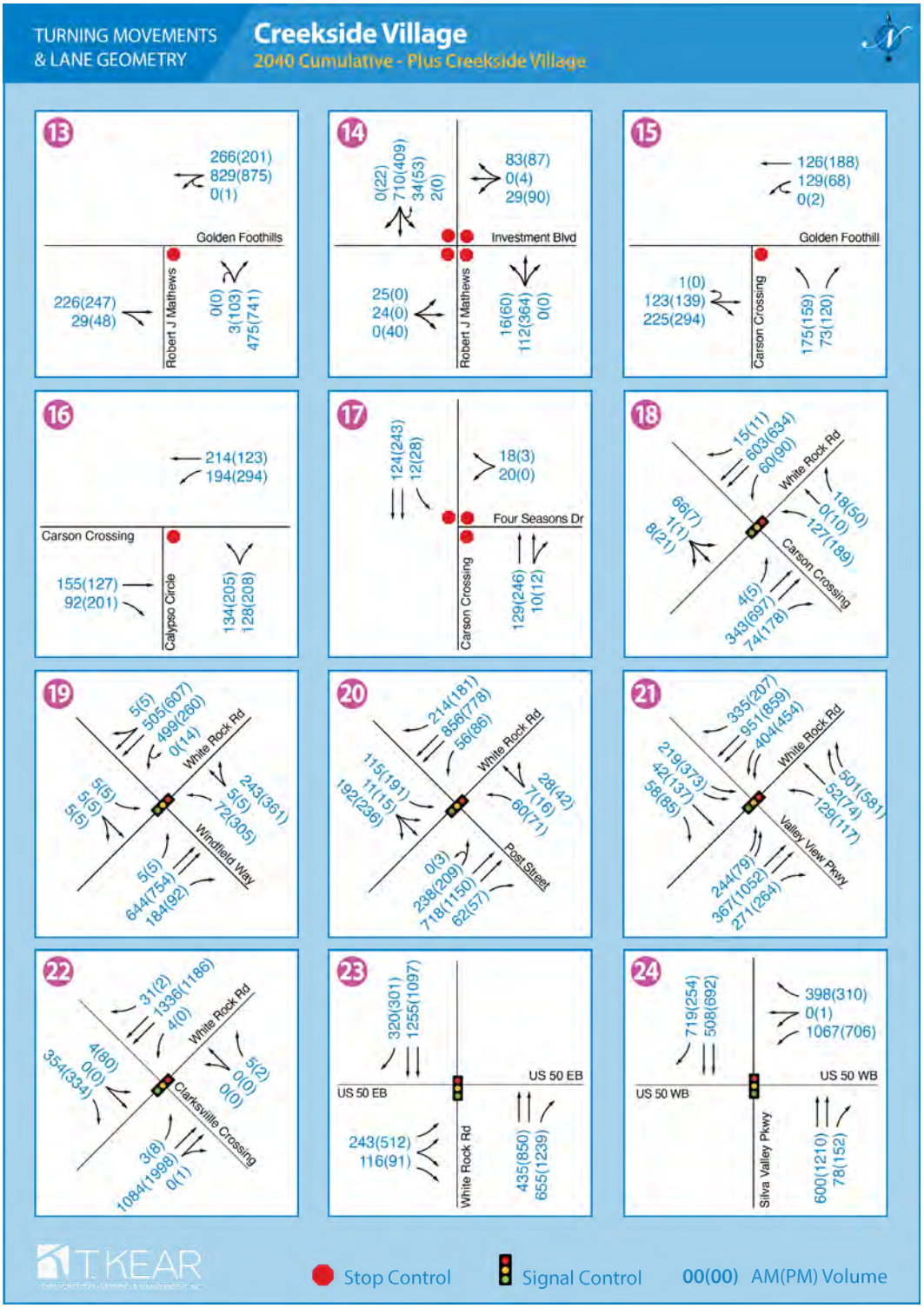

Figure 18. Cumulative 2040 plus Project lane geometry and turning movements (continued)

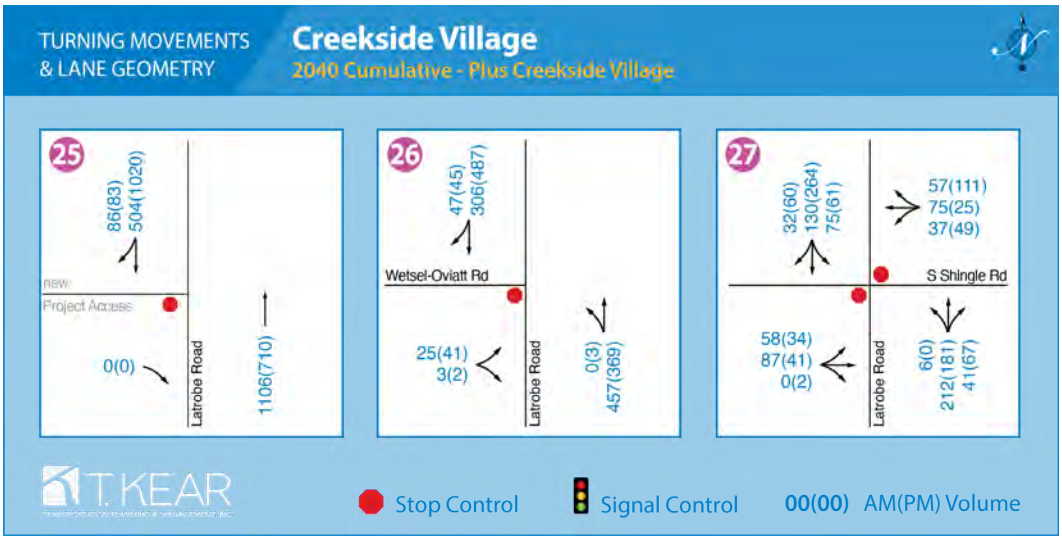

Figure 18. Cumulative 2040 plus Project lane geometry and turning movements (continued)

Table 31. Cumulative 2040 intersection delay and level-of-service with and without the proposed Project

ID	Intersection	Control	Left Turn Storage	2040 AM Peak No Project			2040 PM Peak No Project			2040 AM Peak with Project			2040 PM Peak with Project		
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback / 95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB 260 SB 110 EB 100 WB 430	**196.7**	**F**	NB **418** SB **129** EB 40 WB 506	63.1	E	NB 136 SB 41 EB 61 WB 214	**188.9**	**F**	NB **418** SB **129** EB 40 WB 506	59.2	E	NB 139 SB 42 EB 62 WB 217
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB 500 SB 500 EB 150 WB N/A	55.5	E	NB 284 SB 341 EB 145 WB N/A	69.6	E	NB 612 SB 332 EB **332** WB N/A	54.7	D	NB 297 SB 324 EB 146 WB N/A	68.2	E	NB **596** SB 331 EB **331** WB N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**120.8**	**F**	NB N/A SB 115 EB 227 WB **184**	71.5	E	NB N/A SB 57 EB 318 WB **259**	**130.5**	**F**	NB N/A SB 115 EB 227 WB **179**	70.7	E	NB N/A SB 57 EB 318 WB **268**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB N/A SB 570 EB N/A WB N/A	37.3	D	NB N/A SB 372 EB 810 WB 0	61.7	E	NB N/A SB 298 EB **1400** WB 0	35.5	D	NB N/A SB 372 EB 716 WB 0	67.9	E	NB N/A SB 298 EB **1524** WB 0
5	Latrobe Road/Town Center Boulevard	Signal	NB 220 SB 330 EB 300 WB 100	36.2	D	NB 44 SB **460** EB 109 WB 74	70.5	E	NB 16 SB **864** EB 295 WB **113**	37.5	D	NB 47 SB **475** EB 111 WB 70	77.0	E	NB 16 SB **920** EB **313** WB **140**
6	Latrobe Road/White Rock Road	Signal	NB 270 SB 260 EB 360 WB 400	41.5	D	NB 159 SB 95 EB 313 WB 364	48.9	D	NB 162 SB 241 EB 343 WB 360	60.1	E	NB 156 SB 95 EB 313 WB 171	49.1	D	NB 162 SB 241 EB 343 WB 340
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB 200 SB 200 EB 320 WB N/A	15.4	B	NB 19 SB 21 EB 118 WB N/A	23.9	C	NB 19 SB 37 EB 305 WB N/A	16.4	B	NB 65 SB 22 EB 118 WB N/A	25.3	C	NB 19 SB 37 EB 305 WB N/A
8	Latrobe Road/Suncast Lane	Signal	NB 280 SB N/A EB 100	28.5	C	NB 151 SB N/A EB **186**	45.6	D	NB 134 SB N/A EB **486**	42.5	D	NB 173 SB N/A EB **188**	68.3	E	NB 139 SB N/A EB **491**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	**143.8**	**F**	NB 72 SB **601** EB **917** WB N/A	**217.0**	**F**	NB 102 SB **1186** EB **1643** WB N/A	**161.2**	**F**	NB 180 SB **626** EB **762** WB N/A	**206.7**	**F**	NB 129 SB **1250** EB **1299** WB N/A
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	12.1	B	NB 35 SB N/A EB 92	19.6	B	NB 108 SB N/A EB **251**	23.4	C	NB 88 SB N/A EB **161**	84.0	F	NB **201** SB N/A EB **487**
11	Latrobe Road/Avanti Drive	TWSC	NB N/A SB N/A EB N/A WB N/A	(WB) 14.1	B	NB N/A SB N/A EB N/A WB N/A	(WB) 12.3	B	NB N/A SB N/A EB N/A WB N/A	**(EB) 310.8**	**F**	NB N/A SB N/A EB N/A WB N/A	**(EB) 303.2**	**F**	NB N/A SB N/A EB N/A WB N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 18.2	C	NB 0 SB 6 EB N/A WB N/A	(WB) 32.3	D	NB 0 SB 11 EB N/A WB N/A	**(EB) 3182.4 ***	**F**	NB 5 SB 6 EB N/A WB N/A	**(EB) 2962.7 ***	**F**	NB 11 SB 11 EB N/A WB N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB N/A SB N/A EB N/A WB N/A	**(EB) 10000.0 ***	**F**	NB N/A SB N/A EB N/A WB N/A	**(NB) 10000.0 * (v/c = 229)**	**F**	NB N/A SB N/A EB N/A WB N/A	**(NB) 148.8 ***	**F**	NB N/A SB N/A EB N/A WB N/A	**(NB) 10000.0 * (v/c =55)**	**F**	NB N/A SB N/A EB N/A WB N/A

Table 31. Cumulative 2040 intersection delay and level-of-service with and without the proposed Project (continued)

ID	Intersection	Control	Left Turn Storage	2040 AM Peak No Project				2040 PM Peak No Project				2040 AM Peak with Project				2040 PM Peak with Project			
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB N/A SB N/A EB N/A WB N/A	**372.9 ***	**F**	NB N/A SB N/A EB N/A WB N/A		**273.2 ***	**F**	NB N/A SB N/A EB N/A WB N/A		**88.3**	**F**	NB N/A SB N/A EB N/A WB N/A		36.5	E	NB N/A SB N/A EB N/A WB N/A	
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB N/A SB N/A EB N/A WB 220	(NBL) 17.4	C	NB N/A SB N/A EB N/A WB 5		(NBL) 35.4	D	NB N/A SB N/A EB N/A WB 11		(NBL) 22.8	C	NB N/A SB N/A EB N/A WB 10		(NBL) 25.6	D	NB N/A SB N/A EB N/A WB 7	
16	Carson Crossing Road/Calypso Circle	TWSC	NB N/A SB N/A EB N/A WB 190	(NB) 29.8	D	NB N/A SB N/A EB N/A WB 15		**(NB) 163.7 ***	**F**	NB N/A SB N/A EB N/A WB 25		(NB) 28.7	D	NB N/A SB N/A EB N/A WB 15		**(NB) 164.1 ***	**F**	NB N/A SB N/A EB N/A WB 27	
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB N/A SB 100 WB N/A	8.1	A	NB N/A SB 1 WB N/A		8.7	A	NB N/A SB 3 WB N/A		8.1	A	NB N/A SB 1 WB N/A		8.7	A	NB N/A SB 3 WB N/A	
18	White Rock Road/Carson Crossing Road	**Signal**	NB 200 SB N/A EB 200 WB 300	16.6	B	NB 29 SB N/A EB 3 WB 27		17.4	B	NB 127 SB N/A EB 4 WB 49		17.7	B	NB 58 SB N/A EB 3 WB 29		16.8	B	NB 101 SB N/A EB 4 WB 49	
19	White Rock Road/Windfield Way	Signal	NB 150 SB 100 EB 200 WB 200	35.0	C	NB 105 SB 10 EB 10 WB **610**		34.8	C	NB **434** SB 10 EB 10 WB **345**		35.0	C	NB 105 SB 10 EB 10 WB **610**		34.8	C	NB **434** SB 10 EB 10 WB **345**	
20	White Rock Road/Post Street	Signal	NB N/A SB 100 EB 300 WB 200	44.8	D	NB N/A SB **216** EB **305** WB 117		44.9	D	NB N/A SB **344** EB 272 WB 183		43.6	D	NB N/A SB **218** EB 288 WB 117		43.9	D	NB N/A SB **339** EB 262 WB 183	
21	White Rock Road/Valley View Parkway	Signal	NB 300 SB 200 EB 300 WB 500	26.9	C	NB 148 SB 119 EB 121 WB 209		33.5	C	NB 159 SB **229** EB 44 WB 255		26.8	C	NB 146 SB 118 EB 130 WB 205		33.7	C	NB 160 SB **230** EB 52 WB 267	
22	White Rock Road/Clarksville Crossing	Signal	NB N/A SB N/A EB 460 WB 290	43.1	D	NB N/A SB N/A EB 7 WB 8		57.2	B	NB N/A SB N/A EB 14 WB 0		42.2	D	NB N/A SB N/A EB 7 WB 8		16.7	B	NB N/A SB N/A EB 11 WB 0	
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB N/A SB N/A EB N/A WB N/A	11.1	B	NB N/A SB N/A EB N/A WB N/A		38.0	D	NB N/A SB N/A EB N/A WB N/A		11.1	B	NB N/A SB N/A EB N/A WB N/A		36.2	D	NB N/A SB N/A EB N/A WB N/A	
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB N/A SB N/A EB N/A WB N/A	52.2	D	NB N/A SB N/A EB N/A WB N/A		27.5	C	NB N/A SB N/A EB N/A WB N/A		49.4	D	NB N/A SB N/A EB N/A WB N/A		28.2	C	NB N/A SB N/A EB N/A WB N/A	
25	Latrobe Road/Commercial RIRO driveway	TWSC	NB N/A SB N/A EB N/A	Does not exist				Does not exist				0.0	A	NB N/A SB N/A EB N/A		0.0	A	NB N/A SB N/A EB N/A	
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB N/A SB N/A EB N/A	(EB) 14.4	B	NB N/A SB N/A EB N/A		(EB) 16.3	C	NB N/A SB N/A EB N/A		(EB) 15.1	C	NB N/A SB N/A EB N/A		(EB) 17.8	C	NB N/A SB N/A EB N/A	
27	Latrobe Road/S. Shingle Road	TWSC	NB N/A SB N/A EB N/A WB N/A	(EB) 19.0	C	NB N/A SB N/A EB N/A WB N/A		(EB) 17.2	C	NB N/A SB N/A EB N/A WB N/A		(EB) 22.2	C	NB N/A SB N/A EB N/A WB N/A		(EB) 20.9	C	NB N/A SB N/A EB N/A WB N/A	

Table 32. Cumulative 2040 freeway facility level-of-service with and without the proposed Project

No	Segment	Segment Type	Method	2040 No Project AM	2040 No Project PM	2040 Plus Project AM	2040 Plus Project PM
Westbound US 50							
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	33.6/D	27.3/D	32.6/D	27.8/D
2	Silva Valley offramp	diverge	HCM 7th Ed.	27.5/C	23.2/C	26.9/C	23.6/C
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	17.1/B	18.1/C	16.9/B	18.2/C
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	22.7/C	24.3/C	22.5/C	24.4/C
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	17.4/B	15.2/B	17.2/B	15.3/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	14.2/B	14.8/B	14.2/B	14.8/B
7	El Dorado Hills Blvd onramp	Merge	HCM 7th Ed.	29.7/D	24.6/C	30.2/D	24.1/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	23.7/C	19.8/C	24.1/C	19.5/C
Eastbound US 50							
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	16.1/B	25.0/C	15.8/B	25.4/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	28.0/D	36.9/E	27.4/C	37.4/E
11	Latrobe loop offramp	diverge		25.9/C	33.7/D	25.6/C	33.9/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	7.2/A	11.6/B	7.2/A	11.6/B
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	10.4/B	14.4/B	10.5/B	14.3/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	10.1/A	13.4/B	10.2/A	13.3/B
15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	15.2/B	18.5/B	15.3/B	18.4/B
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	15.5/B	23.7C	15.9/B	23.5C
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	14.3/B	21.4/C	14.6/B	21.1/C

Density in units of passenger cars per mile per lane.

*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Project plus forgone business park trips will reduce WB US 50 volume between Bass Lake Rd and Latrobe Rd in the morning, and between Latrobe Rd and the El Dorado County Line during the afternoon.

Project plus forgone business park trips will reduce EB US 50 volume between EDC line and Latrobe Rd during the AM-peak, and between Silva Valley Pkwy and Bass Lake Rd during the PM peak.

Table 33. Cumulative 2040 arterial level-of-service check with and without the Project

Arterial Segment	Description	2040 AM No Project	2040 PM No Project	2040 AM Plus Project	2040 PM Plus Project
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650)	775	809	1510	1606
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650)	1303	1073	**1901**	**1751**
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln	4-lane divided arterial (threshold 3290)	3134	2776	3284	3017
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280, extrapolated from 6-lane divided arterial)	3598	3580	4284	4563
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	4-lane divided arterial (threshold 3290)	2303	2934	2313	2941

10.3 Findings of Project General Plan Level-of-Service and Queueing Deficiencies

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "Project deficiency". There are twelve intersections and two arterial segments where the Project is anticipated to create new or worsen existing deficiencies under EPAP 2033 conditions.

There are two sections that follow describing the segment level abatement measures and intersection level abatement measures. Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = "A", 2033 = "B", and 2040 = "C"). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C).

All deficiencies and abatements described below include the deficiency number/abetment number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing. For certain abatements, a building permit trigger has been analyzed and included to determine the necessary timing for the improvement. For all other abatements, it is assumed the timing would be prior to issuance of the first building permit. If desired, a building permit trigger could also be determined for those abatements.

2040 Segment Deficiencies and Abatement Measures

(ii)C. Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) in 2040 (CIP Project Latrobe 72)

Deficiency: Level-of-service is anticipated to worsen to F with the addition of Project traffic during the AM and PM peak-hours.

Abatement: Implement as abatement (ii)A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 34** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement (ii)A.

Timing: Not applicable, addressed through abatement (ii)A.

Table 34. EPAP 2033 arterial level-of-service check with and without the abated Project

Arterial Segment	Description	2033 AM No Project	2033 PM No Project	2033 AM Plus Project	2033 PM Plus Project
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	**Un Abated** 2-lane arterial (threshold 1650)	1303	1073	**1901**	**1751**
	Limit Project to 658 dwelling units: 2-lane arterial (threshold 1650)	1303	1073	1649.9	1526.4
	Add Widening to CIP: 4-lane divided arterial (threshold 3290)	1303	1073	1901	1751

2040 Intersection Deficiencies and Abatement Measures

3C. El Dorado Hills Blvd/US 50 WB in 2040

Deficiency: AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2040 Improvements Assumed: 2023 CIP 36104001.

Abatement: Implement as abatement 3A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 3A.

Timing: Not applicable, addressed through abatement 3A.

4C. El Dorado Hills Blvd/US 50 EB in 2040

Deficiency: PM peak-hour 95th percentile queue on ramp is anticipated to reach 1400-feet, ending with 500-feet of the gore-point (where the ramp exits the freeway). Project traffic is anticipated to add 124-feet to the queue. This is a potentially traffic operations issue as the 2-lane portion of the ramp is limited to 430-feet.

2023-2040 Improvements Assumed: 2023 CIP 36104001.

Abatement: Implement as abatement 4B

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 4B.

Timing: Not applicable, addressed through abatement 4B.

5C. Latrobe Road/Town Center Boulevard in 2040

Deficiency: The southbound left-turn queue spills back out of its pocket during the PM peak-hour prior to the addition of Project traffic. Project traffic is anticipated to worsen the southbound left-turn queue spillback and cause the westbound left-turn queue to exceed its pocket length.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 5A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 5A.

Timing: Not applicable, addressed through abatement 5A.

9C. Latrobe Road/ Golden Foothill Parkway (S) in 2040

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F conditions.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 9B

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 9B.

Timing: Not applicable, addressed through abatement 9B.

Cross reference: See abatement 9A, 9B.

10C. Latrobe Road/Investment Boulevard in 2040

Deficiency: Project traffic is anticipated to cause the eastbound (Investment Blvd) left-turn queue to spill out of its left-turn pocket.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 10A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 10A.

Timing: Not applicable, addressed through abatement 10A.

11C. Latrobe Road/Avanti Drive in 2040

Deficiency: Project traffic is anticipated to cause this intersection to operate at level-of-service F.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 11A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 11A.

Timing: Not applicable, addressed through abatement 11A.

12C. Latrobe Road/Royal Oaks Drive in 2040

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 12A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 12A.

Timing: Not applicable, addressed through abatement 12A.

Table 35. EPAP 2040 intersection delay and level-of-service with and without the abated Project

ID	Intersection	Control	Left Turn Storage	2040 AM Peak No Project				2040 PM Peak No Project				2040 AM Peak with Project				2040 PM Peak with Project				Abatement Strategy	Left Turn Storage	2040 Abated AM Peak (+ Proj)				2040 Abated PM Peak (+ Proj)				Existing or Anticipated CIP Project
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)			Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**120.8**	**F**	NB N/A SB 115 EB 227 WB **184**		71.5	E	NB N/A SB 57 EB 318 WB **259**		130.5	F	NB N/A SB 115 EB 227 WB **179**		70.7	E	NB N/A SB 57 EB 318 WB **268**		Implement Abetment 3A	NB N/A SB 220 EB N/A WB 150	**115.8**	**F**	NB N/A SB 114 EB 227 WB **178**		no change				"Traffic Signals Intersection"
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB N/A SB 570 EB N/A WB N/A	37.3	D	NB N/A SB 372 EB 810 WB 0		61.7	E	NB N/A SB 298 EB **1400** WB 0		35.5	D	NB N/A SB 372 EB 716 WB 0		67.9	E	NB N/A SB 298 EB **1524** WB 0		Add 3rd right turn lane	NB N/A SB 570 EB N/A WB N/A	21.0	C	NB N/A SB 373 EB 232 WB 0		19.3	B	NB N/A SB 298 EB 352 WB 0		36104001
5	Latrobe Road/Town Center Boulevard	Signal	NB 220 SB 330 EB 300 WB 100	36.2	D	NB 44 SB **460** EB 109 WB 74		70.5	E	NB 16 SB **864** EB 295 WB **113**		37.5	D	NB 47 SB **475** EB 111 WB 70		77.0	E	NB 16 SB **920** EB **313** WB **140**		Implement Abatement 5A.	NB 220 SB 330 EB 300 WB 140	no changes				58.9	E	NB 16 SB **453** EB **315** WB 132		"Traffic Signals Intersection"
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	**143.8**	**F**	NB 72 SB **601** EB **917** WB N/A		**217.0**	**F**	NB 102 SB **1186** EB **1643** WB N/A		161.2	F	NB 180 SB **626** EB **762** WB N/A		**206.7**	**F**	NB 129 SB **1250** EB **1299** WB N/A		Implement Abatement 9B.	NB 260 SB 530 EB N/A WB N/A	61.7	E	NB 253 SB 485 EB N/A WB N/A		50.1	D	NB 193 SB **822** EB N/A WB N/A		"Latrobe 72"
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	12.1	B	NB 35 SB N/A EB 92		19.6	B	NB 108 SB N/A EB **251**		23.4	C	NB 88 SB N/A EB 161		84.0	F	NB **201** SB N/A EB **487**		Implement Abatement 10A	NB 180 SB N/A EB 220	13.8	B	NB 65 SB N/A EB 77		61.4	E	NB 120 SB N/A EB 209		"Latrobe 72"
11	Latrobe Road/Avanti Drive	TWSC	NB N/A SB N/A EB N/A WB N/A	(WB) 14.1	B	NB N/A SB N/A EB N/A WB N/A		(WB) 12.3	B	NB N/A SB N/A EB N/A WB N/A		(EB) 310.8	F	NB N/A SB N/A EB N/A WB N/A		(EB) 303.2	F	NB N/A SB N/A EB N/A WB N/A		Implement Abatement 11A	NB 100 SB 100 EB N/A WB N/A	(EB) 45.8	E	NB 0 SB 2 EB N/A WB N/A		(EB) 39.1.4	E	NB 1 SB 2 EB N/A WB N/A		n/a
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 18.2	C	NB 0 SB 6 EB N/A WB N/A		(WB) 32.3	D	NB 0 SB 11 EB N/A WB N/A		(EB) 3182.4 *	F	NB 5 SB 6 EB N/A WB N/A		(EB) 2962.7 *	F	NB 11 SB 11 EB N/A WB N/A		Implement Abatement 12A	NB 320 SB 320 EB 200 WB N/A	28.4	C	NB 51 SB 66 EB 188 WB N/A		21.9	C	NB 61 SB 87 EB 93 WB N/A		n/a

* Denotes intersections where the peak-hour signal warrant is met.

2/17/2024

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11.0 CEQA VMT ANALYSIS

Residential and local serving retail components of the Project are each addressed below based on the methods and thresholds specified in Section 3.4.

11.1 Residential Component

The unincorporated countywide VMT per capita for determining the significance threshold for residential projects, and the Project analysis itself are estimated using the same tools and methodology. For this analysis 2018 baseline model results and 2040 cumulative model results were used to estimate the baseline, 15% reduction threshold adopted by the County in Resolution 141-2020 and incorporated herein by reference, and Project VMT as shown in **Table 36**. The significance threshold determined by this calculation is 17.3 VMT per capita. The residential component of the Project is anticipated to generate 13.6 VMT per capita based on 2018 land use and drop to 13.1 VMT per capita by 2040. CEQA Finding: The residential portion of the Project is anticipated to have a **less-than-significant** impact on VMT.

Table 36. Creekside Village residential VMT analysis

	El Dorado County		Project (Based on TAZ 167)	
	2018	**2040**	**2018**	**2040**
Home based VMT	2,813,221	3,158,464	39,441	45,417
Population	137,989	162,164	2,904	3,478
Trips	616,395	746,555	10,217	12,453
VMT per capita	20.4	19.5	13.6	13.1
VMT threshold with 15% reduction	17.3	n/a	n/a	n/a
Avg. trip length (miles)	4.6	4.2	3.9	3.6

11.2 Local Serving Retail Component

The Project includes 5.4 ksf of neighborhood commercial/local serving retail, which will add coffee and dining opportunities within walking distance of the Project, the neighboring Blackstone and Heritage communities, and vehicles passing by on Latrobe Rd. There is not a clear definition of local serving vs regional serving retail; OPR guidance states that retail projects of 50,000 sqft or larger are generally regional rather than local serving. The proposed retail Project component is well under the OPR threshold and is anticipated to be local serving. Therefore, the retail component of Creekside Village is anticipated to be less-than-significant.

The 1.8 ac/5.4 ksf neighborhood commercial/local serving retail is proposed for potential uses such as convenience stores, coffee shops and professional offices. If built entirely as professional office rather than retail, its anticipated trip generation is under the County's 100 trip per day de minimis threshold for small projects and the VMT impact would remain less-than-significant.

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12.0 BICYCLE PEDESTRIAN AND TRANSIT IMPACTS

The Project does not interfere with existing or proposed transit service and has a **less-than-significant** impact on transit.

The Project enhances bicycle and pedestrian access to the El Dorado Hills Business Park (**Figure 19**) and does not interfere with existing or planned bicycle and pedestrian facilities. The Project includes a variety of bike and pedestrian amenities providing connections both within the planned community and externally to the existing bike and pedestrian facilities along Latrobe Road and Royal Oaks Dr:

- The Creekside Village entry road will feature class II bike lanes from its intersection with Latrobe Road.
- The Project features a complete system of paved and unpaved trails located in the open space buffer areas and landscape corridors. The trails will be destination-oriented and link the various residential neighborhoods, parks, and the business park.
- The majority of Creekside Village streets will include attached or separated sidewalks on both sides of the street. Sidewalks will comply with ADA standards and be a minimum of 4-feet in width.

The Project has a **less-than-significant** impact on bicycle and pedestrian facilities.

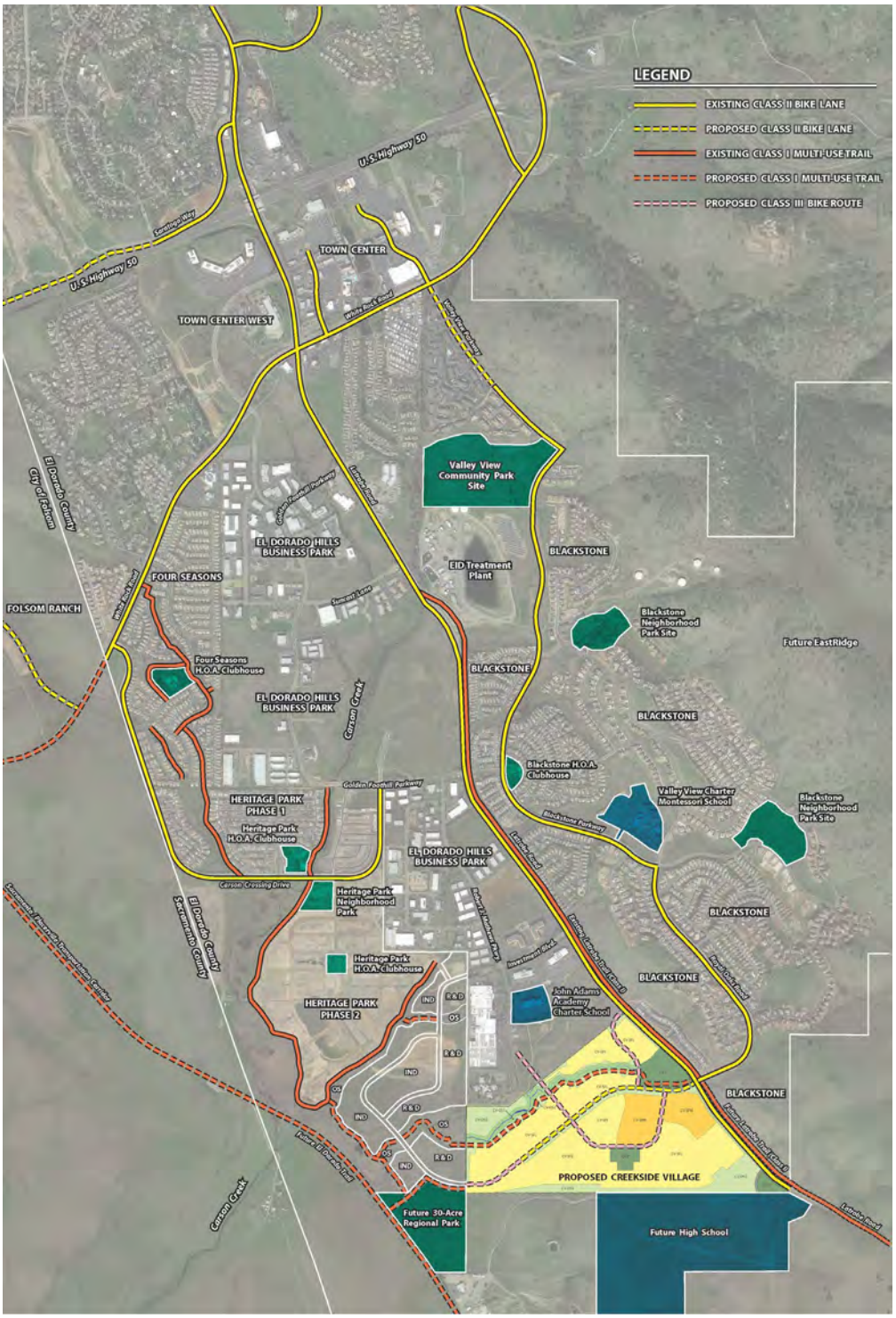

Figure 19. Bike and pedestrian facilities map (Project would construct on-site facilities)

13.0 FINDINGS

13.1 Trip Generation Findings

The 918 dwelling unit Project with 5,400 sqft of neighborhood commercial space is anticipated to generate 834 AM peak hour trips, 955 PM peak hour trips, and 10,040 daily trips. Those trips are largely offset by 2040 through forgone commercial development on the 207.9 ac project site which the travel demand model anticipated would have generated 733 AM peak hour trips, 829 PM peak hour trips, and 9,415 daily trips. Net, the Project therefore adds only 101 AM peak hour trips during the AM peak hour, 126 trips during the PM peak hour, and 625 daily trips over what was assumed in travel demand model horizon year. Trip Generation is discussed in more detail in **Section 5.1**.

13.2 CEQA Findings

VMT: The 918 dwelling unit residential component of the Project is anticipated to have home based VMT per capita of 13.6 in 2023 and 13.1 in 2040, compared to a significance threshold (calculated using the same methodology and data as the Project impacts) of 17.3. Therefore the residential component of the Project has a **less-than significant** impact on VMT. The 5,400 sqft neighborhood commercial local serving retail component of the Project offers improved destination choices for local residents and can be assumed to have a **less-than significant** impact on VMT. The VMT analysis is discussed in **Section 3.4** and **Section 11**.

Transit: The Project does not interfere with existing or proposed transit service and has a **less-than-significant** impact on transit. Transit impacts are briefly discussed in **Section 12**.

Bicycles and Pedestrians: The Project enhances bicycle and pedestrian access to the El Dorado Hills Business Park and does not interfere with existing or planned bicycle and pedestrian facilities. The Project includes a variety of bike and pedestrian amenities providing connections both within the planned community and externally to the existing bike and pedestrian facilities along Latrobe Road and Royal Oaks Dr. Therefore, the Project has a **less-than-significant** impact on bicycle and pedestrian facilities. Bicycles and pedestrian impacts are briefly discussed in **Section 12**.

13.3 General Plan Level-of-Service and Queue Length Findings

Deficiencies that are caused or worsened by the Project, and abatement measures to address said deficiencies, are identified for existing 2023 plus Project, EPAP 2033 plus Project, and cumulative 2040 plus Project conditions.

Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = “A”, 2033 = “B”, and 2040 = “C”). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C).

Existing 2023 Plus Project Conditions

Existing 2023 plus Project conditions are discussed in **Section 6.** The Project is anticipated to cause new or worsen existing level-of-service/queuing deficiencies on one road segment and at twelve intersections (deficiencies may be caused by anticipated level-of-service and/or queue spillback):

1 Arterial segments with worsened or new Project related deficiencies:

- Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) AM and PM

10 Locations that are deficient with or without the Project that are worsened:

- (2) El Dorado Hills Blvd/Saratoga Way AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard PM;
- (6) Latrobe Road/White Rock Road AM and PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) AM and PM;
- (10) Latrobe Road/Investment Boulevard AM and PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathewsws Pkwy PM;
- (18) White Rock Road/Carson Crossing Road PM; and
- (21) White Rock Road/Valley View Parkway AM and PM.

2 Locations where the Project is anticipated to cause new deficiencies:

- (11) Latrobe Road/Avanti Drive AM and PM; and
- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Deficiency/Abatement (ii)A. Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) in 2023 (CIP Project Latrobe 72)

Deficiency: Level-of-service is anticipated to worsen to F with the addition of Project traffic during the AM and PM peak-hours.

Abatement: Before issuance of the 658th residential building permit or the first commercial building permit, the CIP project Latrobe 72 (widen Latrobe Rd to four-lanes between Investment Blvd and Royal Oaks Dr) shall be included in the 10-year CIP. Latrobe 72 consists of widening Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) from two-lanes to four-lanes, and all associated improvements at the intersections of Latrobe Rd/Investment Blvd and Latrobe Rd/Golden Foothill Pkwy (south).

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** presented the segment level-of-service results with this abatement.

Project Responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after Latrobe 72 is added to the 10-year CIP. Addition of these improvements to the CIP will provide the mechanism to ensure the Project is responsible for its fair share.

Timing: Prior to issuance of the 658th residential building permit or the first commercial building permit. Note the 658 th unit constraint is based on the cumulative 2040 scenario which is the most constrained scenario for this deficiency.

Deficiency/Abatement 2A. El Dorado Hills Blvd/Saratoga Way in 2023

Deficiency: Level-of-service is F prior to addition of Project traffic, with northbound left-turn queues spilling out of the turn pocket. Project traffic is anticipated to worsen level-of-service and northbound left-turn queues.

Abatement: Construct a 300-foot southbound right turn pocket and adjust signal timing.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project Responsibility: This abatement partially implements Project #36105076 in the 10-year Capital Improvement Program (CIP). The Project may satisfy its fair share requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 2B, which builds on abatement 2A.

Deficiency/Abatement 3A. El Dorado Hills Blvd/US 50 WB in 2023

Deficiency: Existing AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

Abatement: Adjust signal splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: Project is responsible for its fair-share of signal timing adjustment. The CIP includes funding for intersection and safety improvements at "to be determined" locations. The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 5A. Latrobe Road/Town Center Boulevard in 2023

Deficiency: The southbound left turn queue spills back out of its pocket during the PM peak-hour under existing conditions prior to the addition of Project traffic. Project traffic is anticipated to worsen the southbound left turn queue spillback and cause the westbound left turn queue to exceed its pocket length.

Abatement: Adjust signal splits and extend the westbound left-turn pocket from 100 feet to 140 feet.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of these intersection improvements. These improvements could be addressed through the line item in the CIP for intersection improvements and the Project would contribute its fair share through payment of the TIF. Because a discrete CIP project is not approved or anticipated for the specific improvement, these intersections improvements were included within the area of potential effect (APE) for the Project.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 6A. Latrobe Road/White Rock Road in 2023

Deficiency: The westbound left-turn queue spills back out of its turn pocket under existing conditions without the Project. Project traffic is anticipated to worsen that queue spillback.

Abatement: Adjust signal splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: This abatement partially implements Project #36105069 in the 20-year Capital Improvement Program (CIP). The Project is responsible for its fair share of

modification of signal timing, which may be addressed through payment of fees if the CIP project is moved to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 8A. Latrobe Road/Suncast Lane in 2023

Deficiency: The eastbound left turn queue spills-back out of its pocket during the PM peak-hour under existing conditions prior to the addition of Project traffic. Project traffic is anticipated to worsen the existing deficiency.

Abatement: Restripe the eastbound approach to have a left and a shared left-right lane.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: Project is responsible for its fair-share of restriping. The CIP includes funding for intersection and safety improvements at "to be determined" locations. The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 9A. Latrobe Road/ Golden Foothill Parkway (south) in 2023

Deficiency: Project traffic is anticipated to create a new intersection level-of-service deficiency during the PM peak-hour and worsen existing queue spillback from the eastbound left turn during both the AM and PM peak-hours.

Abatement: Stripe eastbound approach as 2-lanes between Robert J. Mathewsws Pkwy and Latrobe Rd and widen to three lanes at the intersection by constructing a 200-foot eastbound right turn pocket. Label the eastbound approach lanes as left, left, thru-right. Adjust cycle length and splits. These improvements are consistent with intersection improvements that would be constructed under abatement (ii)A ("Latrobe 72") above. Therefore, addition of Latrobe 72 to the 10-year CIP would address the Project's fair share cost of these improvements as well.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after Latrobe 72 is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 9B, which builds on abatement 9a.

Deficiency/Abatement 10A. Latrobe Road/Investment Boulevard in 2023

Deficiency: Project traffic is anticipated to cause the northeast bound (Investment Blvd) left turn queue to spill out of its left-turn pocket during the AM peak-hour and worsen existing queue spill back for that same movement during the PM peak-hour.

Abatement: Stripe eastbound approach as left, shared left-right in 180-foot pocket. Adjust cycle length and splits. These improvements are consistent with intersection improvements that would be constructed under abatement (ii)A ("Latrobe 72") above. Therefore, addition of Latrobe 72 to the 10-year CIP would address the Project's fair share cost of these improvements as well.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after Latrobe 72 is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 11A. Latrobe Road/Avanti Drive in 2023

Deficiency: Project traffic is anticipated to cause this intersection to operate at level-of-service F.

Abatement: Construct 100-foot left turn pockets on Latrobe (NB and SB). Construct 100-foot receiving lane on NB Latrobe for EB left turns from Project. This intersection is a Project access point, and these improvements can likely be done as part of the Project's frontage improvements.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for construction of these intersection improvements.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 12A. Latrobe Road/Royal Oaks Drive in 2023

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

Abatement: Reconstruct the intersection as a signal-controlled intersection. The eastbound approach should be constructed as a three-lane approach with a left-turn lane in a 220-foot pocket, a shared left-thru, and a right turn lane in a 100-foot pocket. This intersection is a Project access point, and these improvements can likely be done as part of the Project's frontage improvements.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for construction of these intersection improvements.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 13A. Golden Foothill Pkwy/Robert J. Mathews Pkwy in 2023

Deficiency: Project traffic is anticipated to worsen level-of-service F conditions.

Abatement: Reconstruct as a roundabout. Construct as follows:

- Northbound approach - a shared left-right lane and a right-turn lane in a 100-foot pocket.
- Westbound approach - a left-turn lane and a through lane.
- Eastbound approach – a shared through-right lane.

Figure 13 provides the traffic model's representation of this geometry and its relation to the adjacent intersection of Latrobe Rd/Golden foothill Pkwy (south) with abatement 9A implemented.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after the roundabout is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 18A. White Rock Road/Carson Crossing Road in 2023

Deficiency: Project traffic is anticipated to worsen level-of-service F conditions and cause the peak-hour signal warrant to be met.

Abatement: Signalize the intersection utilizing existing geometry.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: This off-site improvement partially implements 20-year CIP project 36105041 (White Rock Road widening 2 to 4 Lanes - Windfield Way to Sacramento County Line) and should be advanced to the 10-year CIP. Through payment of the TIF,. the Project would be responsible for its fair share of cost.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 21A. White Rock Road/Valley View Parkway in 2023

Deficiency: Project traffic is anticipated to worsen level-of-service to F and worsen left-turn queue spillback on eastbound and westbound White Rock Rd.

Abatement: Reconstruct White Rock Rd through the intersection as follows:

- Eastbound approach: restripe the left turn pocket to 400-feet, restripe the shared through-right lane as a through lane, construct a right-turn lane in a 220-foot pocket.
- Westbound approach (White Rock Rd): Widen to construct a right-turn lane in a 220-foot pocket and extend the left-turn pocket to 400-feet. Restripe the shared through-right lane as a through lane.

Widening should be done to the south or Latrobe Rd to avoid high voltage lines. Eastbound-westbound Lane alignment may require additional space.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 19** presented intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36105042 (White Rock Road widening 2 to 4 lanes - Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Payment of TIF at issuance of each building permit.

Cross reference: See abatement 21B, which builds on abatement 21a.

EPAP 2033 Plus Project Conditions

EPAP 2033 plus Project conditions are discussed in **Section 8.** The Project is anticipated to cause new or worsen existing level-of-service/queuing deficiencies on two road segments and at thirteen intersections (deficiencies may be caused by anticipated level-of-service and/or queue spillback):

2 Arterial segments with worsened or new Project related deficiencies:

- White Rock Rd between Valley View Pkwy to Silva Valley Pkwy AM and PM; and
- Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) PM.

11 Locations that are deficient with or without the Project that are worsened:

- (2) El Dorado Hills Blvd/Saratoga Way AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (4) El Dorado Hills Blvd/US 50 EB PM;
- (5) Latrobe Road/Town Center Boulevard PM;
- (6) Latrobe Road/White Rock Road AM and PM;
- (7) Latrobe Road/Golden Foothill Parkway (N) AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) AM and PM;
- (10) Latrobe Road/Investment Boulevard AM and PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathewsws Pkwy AM and PM;
- (18) White Rock Road/Carson Crossing Road PM; and
- (21) White Rock Road/Valley View Parkway AM and PM.

2 Locations where the Project is anticipated to cause new deficiencies:

- (11) Latrobe Road/Avanti Drive AM and PM; and
- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Deficiency/Abatement (ii)B. Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) in 2033 (CIP Project Latrobe 72)

Deficiency: Level-of-service is anticipated to worsen to F with the addition of Project traffic during the AM and PM peak-hours.

Abatement: Implement as abatement (ii)A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 26** presented the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement (ii)A.

Timing: Not applicable, addressed through abatement (ii)A.

Deficiency/Abatement (v)B. White Rock Rd between Valley View Pkwy to Silva Valley Pkwy in 2033

Deficiency: This segment operates at level-of-service F under EPAP 2033 conditions without the Project and the Project is anticipated to add more than 10 peak hour trips to this segment, worsening the existing level-of-service deficiency.

Abatement: Before issuance of the 173rd residential building permit or the first commercial building permit, advance CIP Project 36105042 to the 10-year CIP (widen White Rock Rd to four lanes between Valley View Pkwy and Silva Valley Pkwy.).

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 26** presented the segment level-of-service results with this abatement.

Project Responsibility: CIP Project 36105042 (White Rock Road widening 2 to 4 lanes - Post Street to South of Silva Valley Parkway) includes funding for improvements to this segment in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Prior to issuance of the 173rd residential building permit or the first commercial building permit.

Deficiency/Abatement 2B. El Dorado Hills Blvd/Saratoga Way in 2023

Deficiency: Level-of-service is F prior to addition of Project traffic, with northbound left-turn queues spilling out of the turn pocket. Project traffic is anticipated to worsen level-of-service and northbound left-turn queues.

2023-2033 Improvements Assumed: Southbound right-turn pocket (300-foot) and 500-foot northbound and southbound left turn pockets are assumed as part of CIP project 36105076.

Abatement: In addition to abatement 2A, prohibit northbound U-turns, overlap the eastbound right turn with the northbound left turn, and overlap the southbound right turn with the eastbound left turn.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project Responsibility: This abatement partially implements Project #36105076 in the 10-year Capital Improvement Program (CIP). The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 2A.

Deficiency/Abatement 3B. El Dorado Hills Blvd/US 50 WB in 2033

Deficiency: AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 3A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 3A.

Timing: Not applicable, addressed through abatement 3A.

Deficiency/Abatement 4B. El Dorado Hills Blvd/US 50 EB in 2033

Deficiency: PM peak-hour 95th percentile queue on ramp is anticipated to reach 1251-feet, ending with 500-feet of the gore-point (where the ramp exits the freeway). Project traffic is anticipated to add 172-feet to the queue. This is a potentially traffic operations issue as the 2 lane portion of the ramp is limited to 430-feet.

2023-2033 Improvements Assumed: None.

Abatement: construct a 3rd eastbound right turn lane from the offramp to southbound Latrobe Road. The new turn lane shall match the approximate length of the existing 2-lane portion of the offramp.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36104001 (US 50 / Latrobe Road/ El Dorado Hills Boulevard Interchange Improvements Phase 2B) includes reconstruction of the EB diagonal on-ramp, EB on-ramp auxiliary lane, and the EB loop off-ramp. The Project is responsible for its fair share of the cost of this off-site improvement. Which would be addressed through payment of fees after widening of the eastbound diagonal offramp has been added to CIP Project 36104001.

Timing: Payment of TIF at issuance of each building permit.

Cross reference: See abatement 4C.

Deficiency/Abatement 5B. Latrobe Road/Town Center Boulevard in 2033

Deficiency: The southbound left-turn queue spills back out of its pocket during the PM peak-hour prior to the addition of Project traffic. Project traffic is anticipated to worsen the southbound left-turn queue spillback and cause the westbound left-turn queue to exceed its pocket length.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 5A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 5A.

Timing: Not applicable, addressed through abatement 5A.

Deficiency/Abatement 6B. Latrobe Road/White Rock Road in 2033

Deficiency: The westbound left-turn queue spills back out of its turn pocket. Project traffic is anticipated to worsen that queue spillback.

2023-2033 Improvements Assumed: None.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 6A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 6A.

Timing: Not applicable, addressed through abatement 6A.

Deficiency/Abatement 7B. Latrobe Road/Golden Foothill Parkway (N) in 2033

Deficiency: Project traffic is anticipated to worsen level-of-service to F.

2023-2033 Improvements Assumed: None.

Abatement: Construct 180-foot southbound right turn pocket.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: CIP 36105069 will widen this portion of Latrobe Rd to six lanes by 2040 and should be advanced to the 10-year CIP. The Project's fair share cost of this improvement is payment of the TIF program fee.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 9B. Latrobe Road/ Golden Foothill Parkway (S) in 2033

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F conditions.

2023-2033 Improvements Assumed: None.

Abatement: Abatement 9B is similar, but expands upon, abatement 9A:

- Eastbound approach: Implement abatement 9A.

- Westbound approach: Stripe westbound approach to 2-lanes between Blackstone Pkwy and Latrobe Rd, and construct a 250' right left pocket. Label the resulting three lanes as left, left, thru-right.
- Northbound approach: Widen northbound approach by constructing an additional 100' right turn pocket and extending the left turn pocket to 260'. Label the resulting four lanes as left, thru, thru, and right.
- Southbound approach: Widen southbound approach by constructing an additional 300' right turn pocket, label the resulting four lanes as left, thru, thru, right.

Figure 16 below shows the traffic model's representation of these improvements. Note that the depicted northbound right turn lane was drawn with a 24-foot width to reflect the assumed ultimate width of Latrobe Rd after widening to four lanes with the "Latrobe 72" improvements and an additional northbound through lane. The Project is not obligated to build improvements to that footprint, but it is advised that any relocation of traffic signals be placed outside of the intersection's ultimate footprint.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after Latrobe 72 is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 9A.

Deficiency/Abatement 10B. Latrobe Road/Investment Boulevard in 2033

Deficiency: Project traffic is anticipated to cause the eastbound (Investment Blvd) left-turn queue to spill out of its left-turn pocket.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 10A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 10A.

Timing: Not applicable, addressed through abatement 10A.

Deficiency/Abatement 11B. Latrobe Road/Avanti Drive in 2033

Deficiency: Project traffic is anticipated to cause this intersection to operate at level-of-service F.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 11A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 11A.

Timing: Not applicable, addressed through abatement 11A.

Deficiency/Abatement 12B. Latrobe Road/Royal Oaks Drive in 2033

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 12A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 12A.

Timing: Not applicable, addressed through abatement 12A.

Deficiency/Abatement 13B. Golden Foothill Pkwy/Robert J. Mathews Pkwy in 2033

Deficiency: The Project is anticipated to worsen existing level-of-service F conditions at this intersection.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 13A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 13A.

Timing: Not applicable, addressed through abatement 13A.

Deficiency/Abatement 18B. White Rock Road/Carson Crossing Road in 2033

Deficiency: Project traffic is anticipated to cause new and worsen level-of-service F conditions. The peak-hour signal warrant is met with or without the Project.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 18A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 18A.

Timing: Not applicable, addressed through abatement 18A.

Deficiency/Abatement 21B. White Rock Road/Valley View Parkway in 2033

Deficiency: Project traffic is anticipated to worsen level-of-service to F conditions and worsen left-turn queue spillback on eastbound and westbound White Rock Rd.

2023-2033 Improvements Assumed: None.

Abatement: Reconstruct White Rock Rd through the intersection as follows:

- Implement abatement 21 A.
- Further extend the westbound left turn pocket to 1000 feet. (Note: abatement 21A will extend this pocket to 400 feet, abatement 21B reflects an additional 600 feet of westbound right turn storage.)

Widening should be done to the south of Latrobe Rd to avoid high voltage lines. Eastbound-westbound Lane alignment may require additional space.

Finding: CIP Project 36105042 (White Rock Road widening 2 to 4 lanes - Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's responsibility for this improvement can be met through payment of TIF program fees. With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy

deficiencies at this location. **Table 27** presented intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36105042 (White Rock Road widening 2 to 4 lanes - Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Prior to issuance of 1st building permit.

Cumulative 2040 Plus Project Conditions

Existing 2040 plus Project conditions are discussed in **Section 10.** The Project is anticipated to cause new or worsen existing level-of-service/queuing deficiencies on one road segment and at seven intersections (deficiencies may be caused by anticipated level-of-service and/or queue spillback):

1 Arterial segments with worsened or new Project related deficiencies:

- Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) PM.

5 Locations that are deficient with or without the Project that are worsened:

- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (4) El Dorado Hills Blvd/US 50 EB PM;
- (5) Latrobe Road/Town Center Boulevard PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) AM and PM;
- (10) Latrobe Road/Investment Boulevard AM and PM;

2 Locations where the Project is anticipated to cause new deficiencies:

- (11) Latrobe Road/Avanti Drive AM and PM; and
- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Deficiency/Abatement (ii)C. Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south) in 2040 (CIP Project Latrobe 72)

Deficiency: Level-of-service is anticipated to worsen to F with the addition of Project traffic during the AM and PM peak-hours.

Abatement: Implement as abatement (ii)A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 34** presents the segment level-of-service results with this abatement.

Project responsibility: None, addressed through abatement (ii)A.

Timing: Not applicable, addressed through abatement (ii)A.

Deficiency/Abatement 3C. El Dorado Hills Blvd/US 50 WB in 2040

Deficiency: AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2040 Improvements Assumed: 2023 CIP 36104001.

Abatement: Implement as abatement 3A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 3A.

Timing: Not applicable, addressed through abatement 3A.

Deficiency/Abatement 4C. El Dorado Hills Blvd/US 50 EB in 2040

Deficiency: PM peak-hour 95th percentile queue on ramp is anticipated to reach 1400-feet, ending with 500-feet of the gore-point (where the ramp exits the freeway). Project traffic is anticipated to add 124-feet to the queue. This is a potentially traffic operations issue as the 2-lane portion of the ramp is limited to 430-feet.

2023-2040 Improvements Assumed: 2023 CIP 36104001.

Abatement: Implement as abatement 4B

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 4B.

Timing: Not applicable, addressed through abatement 4B.

Deficiency/Abatement 5C. Latrobe Road/Town Center Boulevard in 2040

Deficiency: The southbound left-turn queue spills back out of its pocket during the PM peak-hour prior to the addition of Project traffic. Project traffic is anticipated to worsen the southbound left-turn queue spillback and cause the westbound left-turn queue to exceed its pocket length.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 5A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 5A.

Timing: Not applicable, addressed through abatement 5A.

Deficiency/Abatement 9C. Latrobe Road/ Golden Foothill Parkway (S) in 2040

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F conditions.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 9B

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 9B.

Timing: Not applicable, addressed through abatement 9B.

Cross reference: See abatement 9A, 9B.

Deficiency/Abatement 10C. Latrobe Road/Investment Boulevard in 2040

Deficiency: Project traffic is anticipated to cause the eastbound (Investment Blvd) left-turn queue to spill out of its left-turn pocket.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 10A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 10A.

Timing: Not applicable, addressed through abatement 10A.

Deficiency/Abatement 11C. Latrobe Road/Avanti Drive in 2040

Deficiency: Project traffic is anticipated to cause this intersection to operate at level-of-service F.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 11A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 11A.

Timing: Not applicable, addressed through abatement 11A.

Deficiency/Abatement 12C. Latrobe Road/Royal Oaks Drive in 2040

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 12A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 35** presented intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 12A.

Timing: Not applicable, addressed through abatement 12A.

Appendix A: Traffic Counts and Signal Timing Sheets

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EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1400018	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	**8.88**
Road Name:	**Latrobe Road**	Location:	**100 Ft. S. of Investment Blvd.**
Lanes:	2	Direction:	SOUTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day Time	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
100	30		14	11	18	7	23		13
200	13		3	6	8	10	9		7
300	5		1	3	6	8	4		5
400	7		8	8	8	11	5		9
500	9		24	17	24	17	15		21
600	29		80	61	72	54	66		67
700	58		99	145	138	129	120		128
800	102		189	229	189	203	174		203
900	133		198	217	218	216	217		212
1000	199		183	185	173	201	197		186
1100	249		175	193	191	213	248		193
1200	289		219	192	234	221	278		217
1300	290		250	252	265	257	274		256
1400	270		251	293	295	247	346		272
1500	284		308	326	340	274	357		312
1600	279		369	400	346	280	415		349
1700	300		412	361	409	306	416		372
1800	276		354	367	371	296	394		347
1900	216		224	257	255	208	273		236
2000	180		171	179	165	204	205		180
2100	142		121	138	171	125	156		139
2200	104		51	89	86	103	115		82
2300	80		43	43	50	58	96		49
2400	55		18	19	26	36	68		25
Totals	3599		3765	3991	4058	3684	4471		3875
AM Peak Hr	12:00		12:00	8:00	12:00	12:00	12:00		12:00
AM Count	289		219	229	234	221	278		217
PM Peak Hr	5:00		5:00	4:00	5:00	5:00	5:00		5:00
PM Count	300		412	400	409	306	416		372

TOTAL ADT: 7,605

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1400018	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	**8.88**
Road Name:	**Latrobe Road**	Location:	**100 Ft. S. of Investment Blvd.**
Lanes:	2	Direction:	NORTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	12		8	5	5	6	9		6
200	6		5	3	3	5	3		4
300	13		6	3	5	9	6		6
400	8		15	10	13	10	6		12
500	6		35	41	44	38	33		40
600	33		121	131	108	107	92		117
700	51		207	195	214	201	177		204
800	115		344	427	402	375	343		387
900	192		315	364	346	353	314		345
1000	247		279	296	305	245	287		281
1100	251		255	274	269	270	283		267
1200	283		247	253	236	246	258		246
1300	286		220	230	255	226	271		233
1400	213		242	233	216	215	269		227
1500	262		303	309	294	267	340		293
1600	279		262	238	253	250	296		251
1700	265		255	284	245	260	331		261
1800	251		196	229	230	234	277		222
1900	167		126	153	128	177	165		146
2000	124		89	72	95	87	118		86
2100	115		46	44	48	36	93		44
2200	82		23	25	30	28	54		27
2300	53		18	15	15	20	66		17
2400	30		8	13	8	14	23		11
Totals	3344		3625	3847	3767	3679	4114		3730
AM Peak Hr	12:00		8:00	8:00	8:00	8:00	8:00		8:00
AM Count	283		344	427	402	375	343		387
PM Peak Hr	1:00		3:00	3:00	3:00	3:00	3:00		3:00
PM Count	286		303	309	294	267	340		293

TOTAL ADT: 7,605

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1450018	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	**8.92**
Road Name:	**Latrobe Road**	Location:	**100 Ft. N. of Investment Blvd.**
Lanes:	2	Direction:	NORTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	12	12	9	8	10	7	11	10	9
200	9	13	11	7	7	11	6	9	10
300	15	6	9	6	6	12	8	9	8
400	8	7	17	10	15	11	12	11	12
500	8	20	63	44	53	47	34	38	45
600	74	45	140	160	145	141	129	119	126
700	83	76	212	228	240	230	208	182	197
800	118	81	369	609	606	392	349	361	411
900	199	155	374	560	533	400	361	369	404
1000	245	231	317	336	315	300	338	297	300
1100	260	239	311	317	322	345	341	305	307
1200	295	276	324	404	297	337	340	325	328
1300	293	222	335	315	550	305	359	340	345
1400	234	244	311	281	526	300	343	320	332
1500	273	202	387	518	402	366	421	367	375
1600	288	268	410	602	438	434	410	407	430
1700	281	280	386	514	420	384	412	382	397
1800	279	229	297	415	340	341	350	322	324
1900	184	156	170	197	177	224	204	187	185
2000	125	118	104	91	110	100	128	111	105
2100	118	68	52	57	56	42	101	71	55
2200	82	38	29	31	39	45	63	47	36
2300	58	40	24	22	24	30	72	39	28
2400	31	12	8	15	15	15	26	17	13
Totals	3572	3038	4669	5747	5646	4819	5026	4645	4784
AM Peak Hr	12:00	12:00	9:00	8:00	8:00	9:00	9:00	9:00	8:00
AM Count	295	276	374	609	606	400	361	369	411
PM Peak Hr	1:00	5:00	4:00	4:00	1:00	4:00	3:00	4:00	4:00
PM Count	293	280	410	602	550	434	421	407	430

TOTAL ADT: 9,671

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1450018	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	**8.92**
Road Name:	**Latrobe Road**	Location:	**100 Ft. N. of Investment Blvd.**
Lanes:	2	Direction:	SOUTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	30	38	15	17	18	10	23	22	20
200	17	14	8	9	13	16	16	13	12
300	6	10	3	5	9	10	5	7	7
400	10	7	10	11	12	17	10	11	11
500	13	12	31	20	32	24	21	22	24
600	105	89	192	174	191	168	175	156	163
700	73	34	246	295	290	283	254	211	230
800	117	59	362	577	521	415	328	340	387
900	146	84	327	429	452	334	355	304	325
1000	214	190	268	268	273	290	265	253	258
1100	271	201	233	260	251	289	311	259	247
1200	292	266	292	278	303	307	353	299	289
1300	296	281	335	335	460	378	351	348	358
1400	285	232	327	347	403	312	389	328	324
1500	298	238	351	468	405	324	386	353	357
1600	291	224	425	548	373	303	429	370	375
1700	315	223	438	432	428	327	427	370	370
1800	353	307	424	460	448	375	466	405	403
1900	226	193	241	263	269	227	279	243	239
2000	182	171	176	193	170	209	210	187	184
2100	144	129	123	142	180	130	160	144	141
2200	107	66	54	97	91	110	131	94	84
2300	83	54	45	47	54	64	101	64	53
2400	59	40	19	21	28	38	73	40	29
Totals	3933	3162	4945	5696	5674	4960	5518	4841	4887
AM Peak Hr	12:00	12:00	8:00	8:00	8:00	8:00	9:00	8:00	8:00
AM Count	292	266	362	577	521	415	355	340	387
PM Peak Hr	6:00	6:00	5:00	4:00	1:00	1:00	6:00	6:00	6:00
PM Count	353	307	438	548	460	378	466	405	403

TOTAL ADT: 9,671

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 30, 2024

Count Station:	Special	Counter ID:	75
City/Town:	El Dorado Hills	Mile Post:	
Road Name:	**Latrobe Road**	Location:	**S of Suncast Ln**
Lanes:	2	Direction:	NORTHBOUND

Date	4	5	30	31	1	2	3	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100			17	13	16				15
200			18	6	10				11
300			14	20	17				17
400			22	29	23				25
500			128	64	47				80
600			196	178	202				192
700			352	383	363				366
800			966	954	861				927
900			1048	1065	1010				1041
1000			600	633	500				578
1100			668	678	548				631
1200			830	762	764				785
1300			670	688	668				675
1400			654	722	544				640
1500			870	774	822				822
1600			1241	1121	1120				1161
1700			1033	928	884				948
1800			826	750	866				814
1900			435	449	547				477
2000			292	260	288				280
2100			176	159	143				159
2200			168	124	114				135
2300			38	52	34				41
2400			38	30	6				25
Totals			11300	10842	10397				10846
AM Peak Hr			9:00	9:00	9:00				9:00
AM Count			1048	1065	1010				1041
PM Peak Hr			4:00	4:00	4:00				4:00
PM Count			1241	1121	1120				1161

TOTAL ADT: 21,709

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 30, 2024

Count Station:	Special	Counter ID:	75
City/Town:	El Dorado Hills	Mile Post:	
Road Name:	**Latrobe Road**	Location:	**S of Suncast Ln**
Lanes:	2	Direction:	SOUTHBOUND

Date	4	5	30	31	1	2	3	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100			16	28	18				21
200			20	10	14				15
300			6	6	3				5
400			14	8	14				12
500			72	58	65				65
600			284	280	260				275
700			407	413	351				390
800			1108	1098	1008				1071
900			986	1000	866				951
1000			600	599	536				578
1100			526	500	499				508
1200			652	620	570				614
1300			688	734	681				701
1400			711	734	672				706
1500			1032	926	952				970
1600			862	824	922				869
1700			858	758	816				811
1800			886	786	814				829
1900			640	549	543				577
2000			356	316	418				363
2100			250	235	266				250
2200			154	144	178				159
2300			89	72	94				85
2400			41	30	44				38
Totals			11258	10728	10604				10863
AM Peak Hr			8:00	8:00	8:00				8:00
AM Count			1108	1098	1008				1071
PM Peak Hr			3:00	3:00	3:00				3:00
PM Count			1032	926	952				970

TOTAL ADT: 21,709

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1600018	Counter ID:	80
City/Town:	El Dorado Hills	Mile Post:	**11.06**
Road Name:	**Latrobe Road**	Location:	**300 Ft. N. of White Rock Rd.**
Lanes:	2	Direction:	NORTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100			33	40					37
200			20	26					23
300			25	23					24
400			27	30					29
500			103	82					93
600			276	246					261
700			482	540					511
800			1078	1085					1082
900			1346	1358					1352
1000			898	952					925
1100			982	986					984
1200			1146	1184					1165
1300			1052	1134					1093
1400			992	1141					1067
1500			1295	1224					1260
1600			1510	1674					1592
1700			1628	1550					1589
1800			1306	1318					1312
1900			924	978					951
2000			518	520					519
2100			318	370					344
2200			180	294					237
2300			104	104					104
2400			52	54					53
Totals			16295	16913					16604
AM Peak Hr			9:00	9:00					9:00
AM Count			1346	1358					1352
PM Peak Hr			5:00	4:00					4:00
PM Count			1628	1674					1592

TOTAL ADT: 34,058

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1600018	Counter ID:	81
City/Town:	El Dorado Hills	Mile Post:	**11.06**
Road Name:	**Latrobe Road**	Location:	**300 Ft. N. of White Rock Rd.**
Lanes:	2	Direction:	SOUTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100			34	46					40
200			18	37					28
300			20	18					19
400			28	24					26
500			98	98					98
600			360	408					384
700			648	658					653
800			1672	1640					1656
900			1544	1614					1579
1000			996	1028					1012
1100			929	964					947
1200			1038	1082					1060
1300			1131	1158					1145
1400			1139	1257					1198
1500			1396	1404					1400
1600			1506	1346					1426
1700			1190	1267					1229
1800			1194	1258					1226
1900			828	970					899
2000			604	599					602
2100			376	404					390
2200			234	249					242
2300			116	132					124
2400			66	82					74
Totals			17165	17743					17454
AM Peak Hr			8:00	8:00					8:00
AM Count			1672	1640					1656
PM Peak Hr			4:00	3:00					4:00
PM Count			1506	1404					1426

TOTAL ADT: 34,058

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: December 5, 2023

Count Station:	1400034	Counter ID:	75
City/Town:	El Dorado Hills	Mile Post:	**2.08**
Road Name:	**White Rock Road**	Location:	**100 Ft. S. of Silva Valley Pkwy.**
Lanes:	2	Direction:	EASTBOUND

Date	10	11	5	6	7	8	9	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	45	25	21	35	30	30	47	33	28
200	15	10	15	9	9	12	22	13	11
300	13	5	4	6	6	6	11	7	5
400	6	10	5	13	9	4	2	7	8
500	10	21	15	13	19	13	10	14	16
600	10	42	53	42	49	56	19	39	48
700	38	127	147	140	128	124	37	106	133
800	73	464	461	483	482	458	122	363	470
900	156	475	507	465	494	475	260	405	483
1000	303	322	323	366	362	314	411	343	337
1100	376	409	386	414	375	441	417	403	405
1200	483	497	463	464	471	480	486	478	475
1300	500	488	482	604	503	558	505	520	527
1400	541	570	572	567	564	688	523	575	592
1500	476	593	590	579	583	710	536	581	611
1600	465	755	737	708	763	715	575	674	736
1700	448	881	866	830	825	708	538	728	822
1800	391	716	777	735	723	686	472	643	727
1900	288	460	498	491	477	565	360	448	498
2000	234	295	329	304	338	418	325	320	337
2100	164	203	282	253	280	358	254	256	275
2200	152	153	242	181	189	280	238	205	209
2300	64	91	53	82	88	145	181	101	92
2400	38	24	40	33	33	83	77	47	43
Totals	5289	7636	7868	7817	7800	8327	6428	7309	7890
AM Peak Hr	12:00	12:00	9:00	8:00	9:00	12:00	12:00	12:00	9:00
AM Count	483	497	507	483	494	480	486	478	483
PM Peak Hr	2:00	5:00	5:00	5:00	5:00	4:00	4:00	5:00	5:00
PM Count	541	881	866	830	825	715	575	728	822

TOTAL ADT: 15,755

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: December 5, 2023

Count Station:	1400034	Counter ID:	75
City/Town:	El Dorado Hills	Mile Post:	**2.08**
Road Name:	**White Rock Road**	Location:	**100 Ft. S. of Silva Valley Pkwy.**
Lanes:	2	Direction:	WESTBOUND

Date	10	11	5	6	7	8	9	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	34	18	14	16	11	22	35	21	16
200	17	3	8	9	9	11	18	11	8
300	14	8	7	6	12	9	10	9	8
400	11	13	17	12	16	17	13	14	15
500	12	51	46	35	37	34	19	33	41
600	25	104	121	132	115	105	64	95	115
700	75	182	217	228	202	201	138	178	206
800	149	596	583	588	596	532	279	475	579
900	352	702	686	709	722	686	397	608	701
1000	440	534	515	537	514	534	484	508	527
1100	513	510	533	506	488	552	521	518	518
1200	572	566	521	525	533	624	538	554	554
1300	523	553	540	583	527	591	579	557	559
1400	467	523	557	553	516	565	531	530	543
1500	401	644	602	646	599	636	515	578	625
1600	381	649	615	599	621	631	523	574	623
1700	444	572	608	586	604	586	509	558	591
1800	383	552	594	577	582	607	543	548	582
1900	286	397	465	366	400	493	422	404	424
2000	197	242	270	231	255	270	272	248	254
2100	125	151	166	209	200	222	182	179	190
2200	97	79	97	98	99	131	154	108	101
2300	55	44	54	47	43	85	101	61	55
2400	34	24	27	28	24	52	57	35	31
Totals	5607	7717	7863	7826	7725	8196	6904	7405	7865
AM Peak Hr	12:00	9:00	9:00	9:00	9:00	9:00	12:00	9:00	9:00
AM Count	572	702	686	709	722	686	538	608	701
PM Peak Hr	1:00	4:00	4:00	3:00	4:00	3:00	1:00	3:00	3:00
PM Count	523	649	615	646	621	636	579	578	625

TOTAL ADT: 15,755

Prepared by National Data & Surveying Services

Occupancy Counts

Location: US 50/El Dorado Fwy E/O Bass Lake Rd/Marble Valley Rd
City: El Dorado Hills

Date: 5/25/2022
Day: Wednesday

Time	HOV Lane				Totals
	EB		WB		
	Cars	HT	Cars	HT	
6:30 AM	31	0	62	0	**93**
6:45 AM	37	1	59	0	**97**
7:00 AM	30	1	51	1	**83**
7:15 AM	55	0	76	0	**131**
7:30 AM	73	0	110	0	**183**
7:45 AM	96	0	94	0	**190**
8:00 AM	77	1	75	0	**153**
8:15 AM	67	0	85	0	**152**
8:30 AM	62	0	70	0	**132**
8:45 AM	57	0	56	0	**113**
4:30 PM	120	0	67	1	**188**
4:45 PM	102	0	98	0	**200**
5:00 PM	90	0	81	0	**171**
5:15 PM	96	0	105	0	**201**
5:30 PM	91	0	91	2	**184**
5:45 PM	87	0	86	0	**173**
6:00 PM	70	0	85	0	**155**
6:15 PM	54	0	63	0	**117**
Totals	**1295**	**3**	**1414**	**4**	**2716**

Time	Mixed Lane				Totals
	EB		WB		
	Cars	HT	Cars	HT	
6:30 AM	244	24	485	31	**784**
6:45 AM	253	32	488	25	**798**
7:00 AM	290	28	496	22	**836**
7:15 AM	372	43	583	22	**1020**
7:30 AM	431	32	610	16	**1089**
7:45 AM	514	27	642	20	**1203**
8:00 AM	447	35	513	29	**1024**
8:15 AM	408	35	528	33	**1004**
8:30 AM	399	34	612	29	**1074**
8:45 AM	368	32	482	26	**908**
4:30 PM	659	11	456	18	**1144**
4:45 PM	658	7	488	16	**1169**
5:00 PM	612	11	582	11	**1216**
5:15 PM	629	7	572	14	**1222**
5:30 PM	564	11	463	19	**1057**
5:45 PM	504	10	479	15	**1008**
6:00 PM	477	13	423	11	**924**
6:15 PM	479	6	344	10	**839**
Totals	**8308**	**398**	**9246**	**367**	**18319**

Analysis ID: 1472965
Analysis: Creekside #1 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	EDH Blvd north (Southbound)			Serrano Pkwy (Westbound)			EDH Blvd south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:15am	4	251	5	56	12	22	28	167	32
8:30am	5	260	11	57	18	23	53	165	40
8:45am	7	346	10	79	11	13	42	155	34
9:00am	2	368	13	86	3	3	24	159	34
Hourly Tot	18	1225	39	278	44	61	147	646	140
Hourly Tot	0.014	0.9555	0.0304	0.7258	0.1149	0.1593	0.1576	0.6924	0.1501
PHF	0.64	0.83	0.75	0.81	0.61	0.66	0.69	0.97	0.88

All Days, Peak PM

	EDH Blvd north (Southbound)			Serrano Pkwy (Westbound)			EDH Blvd south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	5	277	12	66	14	6	16	329	90
4:00pm	4	269	14	58	12	1	20	346	87
4:15pm	6	205	11	58	16	3	18	303	86
4:30pm	10	227	8	64	12	2	17	381	78
Hourly Tot	25	978	45	246	54	12	71	1359	341
Hourly Tot	0.0239	0.9332	0.0429	0.7885	0.1731	0.0385	0.0401	0.7674	0.1925
PHF	0.62	0.88	0.8	0.93	0.84	0.5	0.89	0.89	0.95

Tues-Thurs, Peak AM

	EDH Blvd north (Southbound)			Serrano Pkwy (Westbound)			EDH Blvd south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:15am	3	291	2	59	14	29	35	186	43
8:30am	6	298	10	62	25	29	68	167	53
8:45am	8	384	12	91	14	11	55	169	40
9:00am	2	436	16	92	4	1	36	183	33
Hourly Tot	19	1409	40	304	57	70	194	705	169
Hourly Tot	0.0129	0.9598	0.0272	0.7053	0.1323	0.1624	0.1816	0.6601	0.1582
PHF	0.59	0.81	0.62	0.83	0.57	0.6	0.71	0.95	0.8

Tues-Thurs, Peak PM

	EDH Blvd north (Southbound)			Serrano Pkwy (Westbound)			EDH Blvd south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	5	320	12	75	7	5	15	327	93
4:00pm	6	292	18	63	11	1	16	363	78
4:15pm	10	207	16	68	18	1	15	407	81
4:30pm	14	219	9	76	16	0	17	421	87
Hourly Tot	35	1038	55	282	52	7	63	1518	339
Hourly Tot	0.031	0.9202	0.0488	0.827	0.1525	0.0205	0.0328	0.7906	0.1766
PHF	0.62	0.81	0.76	0.93	0.72	0.35	0.93	0.9	0.91

Lassen Ln (Eastbound)

Left	Thru	Right	Total	Total %
5	0	17	599	0.2203
0	0	26	658	0.242
0	0	38	735	0.2703
0	0	35	727	0.2674
5	0	116	2719	1
0.0413	0	0.9587		
0.25	0	0.76		

Lassen Ln (Eastbound)

Left	Thru	Right	Total	Total %
6	2	9	832	0.2577
5	6	12	834	0.2584
9	7	13	735	0.2277
7	4	17	827	0.2562
27	19	51	3228	1
0.2784	0.1959	0.5258		
0.75	0.68	0.75		

Lassen Ln (Eastbound)

Left	Thru	Right	Total	Total %
4	0	25	691	0.2205
0	0	36	754	0.2406
0	0	52	836	0.2668
0	1	49	853	0.2722
4	1	162	3134	1
0.024	0.006	0.9701		
0.25	0.25	0.78		

Lassen Ln (Eastbound)

Left	Thru	Right	Total	Total %
7	0	7	873	0.2504
8	1	10	867	0.2487
9	4	13	849	0.2435
12	6	20	897	0.2573
36	11	50	3486	1
0.3711	0.1134	0.5155		
0.75	0.46	0.62		

Prepared by National Data & Surveying Services

#1

El Dorado Hills Blvd & Serrano Pkwy

Peak Hour Turning Movement Count

ID: 18-07183-001
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 06:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 07:00 PM

SOUTHBOUND (El Dorado Hills Blvd)

AM	24	1419	68	0	719	AM
NOON	0	0	0	0	0	NOON
PM	22	733	30	0	1333	PM

EASTBOUND (Serrano Pkwy)

AM	NOON	PM		
93	0	130		
0	0	0	0	
18	0	19	1	
11	0	17	0.5	
57	0	54	0.5	
AM	NOON	PM		

WESTBOUND (Serrano Pkwy)

PM	NOON	AM	
22	0	108	0
17	0	17	0.5
127	0	193	1.5
0	0	0	0
284	0	180	
PM	NOON	AM	

NORTHBOUND (El Dorado Hills Blvd)

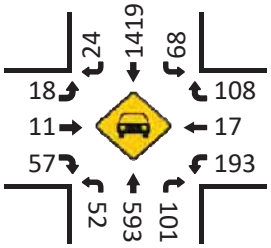
PM	917	3	91	1292	237	PM
NOON	0	0	0	0	0	NOON
AM	1674	5	52	593	101	AM

	0	2	1	0
	0	1	2	1

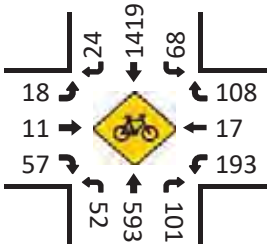
CONTROL: Signalized

TEV	2666	0	2664
	AM	NOON	PM
PHF	0.87		0.98

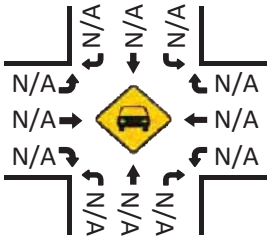
Total Vehicles (AM)



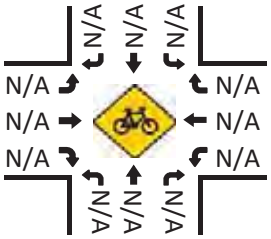
(AM)



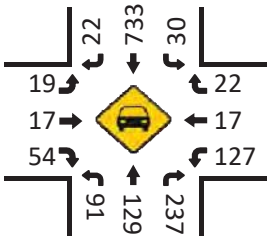
Total Vehicles (Noon)



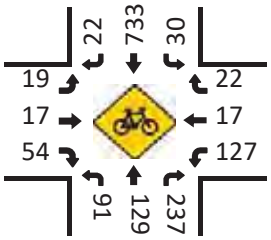
(NOON)



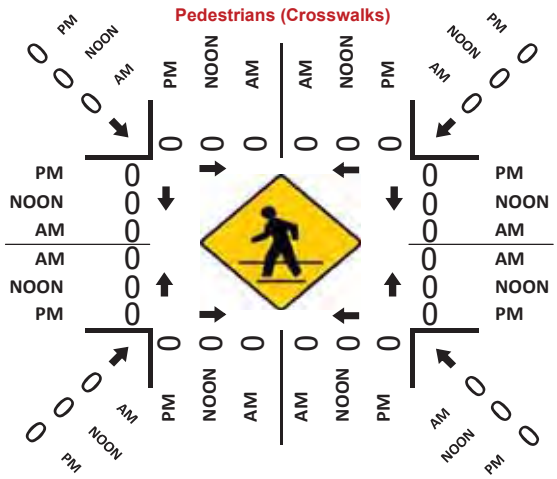
Total Vehicles (PM)



(PM)



Pedestrians (Crosswalks)



Analysis ID: 1472961
Analysis: Creekside #2 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	EDH north (Southbound)			Park (Westbound)			EDH south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:30am	20	352	58	2	1	8	87	262	25
8:45am	38	377	111	2	3	20	68	210	12
9:00am	45	354	120	2	3	23	63	186	2
9:15am	42	311	79	2	6	19	67	166	5
Hourly Tot	145	1394	368	8	13	70	285	824	44
Hourly Tot	0.076	0.731	0.193	0.0879	0.1429	0.7692	0.2472	0.7147	0.0382
PHF	0.81	0.92	0.77	1	0.54	0.76	0.82	0.79	0.44

All Days, Peak PM

	EDH north (Southbound)			Park (Westbound)			EDH south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	39	257	62	14	3	52	102	381	13
3:30pm	42	233	70	17	2	49	90	261	14
3:45pm	46	266	73	11	3	45	89	352	15
4:00pm	39	238	60	9	5	61	77	362	17
Hourly Tot	166	994	265	51	13	207	358	1356	59
Hourly Tot	0.1165	0.6975	0.186	0.1882	0.048	0.7638	0.2019	0.7648	0.0333
PHF	0.9	0.93	0.91	0.75	0.65	0.85	0.88	0.89	0.87

Tues-Thurs, Peak AM

	EDH north (Southbound)			Park (Westbound)			EDH south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:15am	11	352	62	0	1	16	98	264	33
8:30am	23	397	70	1	1	11	102	279	37
8:45am	47	389	130	1	5	25	78	231	15
9:00am	57	470	129	3	6	30	70	211	0
Hourly Tot	138	1608	391	5	13	82	348	985	85
Hourly Tot	0.0646	0.7525	0.183	0.05	0.13	0.82	0.2454	0.6946	0.0599
PHF	0.61	0.86	0.75	0.42	0.54	0.68	0.85	0.88	0.57

Tues-Thurs, Peak PM

	EDH north (Southbound)			Park (Westbound)			EDH south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:15pm	30	228	41	4	16	61	92	422	10
4:30pm	33	260	49	8	28	37	121	445	10
4:45pm	39	332	55	10	29	27	128	359	19
5:00pm	24	248	53	19	34	46	101	390	28
Hourly Tot	126	1068	198	41	107	171	442	1616	67
Hourly Tot	0.0905	0.7672	0.1422	0.1285	0.3354	0.5361	0.208	0.7605	0.0315
PHF	0.81	0.8	0.9	0.54	0.79	0.7	0.86	0.91	0.6

Saratoga (Eastbound)

Left	Thru	Right	Total	Total %
34	15	156	1020	0.2622
37	14	175	1067	0.2743
36	11	128	973	0.2501
27	7	99	830	0.2134
134	47	558	3890	1
0.1813	0.0636	0.7551		
0.91	0.78	0.8		

Saratoga (Eastbound)

Left	Thru	Right	Total	Total %
66	11	203	1203	0.2695
67	20	159	1024	0.2294
88	20	137	1145	0.2566
83	12	128	1091	0.2445
304	63	627	4463	1
0.3058	0.0634	0.6308		
0.86	0.79	0.77		

Saratoga (Eastbound)

Left	Thru	Right	Total	Total %
14	11	144	1006	0.2221
36	20	189	1166	0.2574
45	17	205	1188	0.2623
37	13	144	1170	0.2583
132	61	682	4530	1
0.1509	0.0697	0.7794		
0.73	0.76	0.83		

Saratoga (Eastbound)

Left	Thru	Right	Total	Total %
90	11	125	1130	0.237
91	16	129	1227	0.2574
91	8	140	1237	0.2595
93	6	131	1173	0.2461
365	41	525	4767	1
0.3921	0.044	0.5639		
0.98	0.64	0.94		

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

File Name : 17-7192-001 El Dorado Hills Blvd & Saratoga Way North
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	El Dorado Hills Blvd Southbound					Saratoga Way North Westbound					El Dorado Hills Blvd Northbound					Saratoga Way North Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	12	125	1	0	138	0	0	4	0	4	1	43	0	0	44	2	0	9	0	11	197	0
6:15	6	153	0	0	159	2	1	2	0	5	3	45	1	1	50	1	0	8	0	9	223	1
6:30	18	237	0	0	255	0	1	4	0	5	1	65	3	0	69	3	0	9	0	12	341	0
6:45	18	238	1	0	257	2	2	6	0	10	7	86	1	0	94	2	0	16	0	18	379	0
Total	54	753	2	0	809	4	4	16	0	24	12	239	5	1	257	8	0	42	0	50	1140	1
7:00	27	280	2	1	310	1	1	13	0	15	9	144	2	1	156	10	4	23	0	37	518	2
7:15	28	336	4	0	368	2	2	22	0	26	8	122	2	0	132	5	1	16	0	22	548	0
7:30	27	362	4	0	393	1	2	12	0	15	12	134	4	0	150	8	4	28	0	40	598	0
7:45	53	376	10	0	439	4	1	22	0	27	25	164	3	0	192	1	0	23	0	24	682	0
Total	135	1354	20	1	1510	8	6	69	0	83	54	564	11	1	630	24	9	90	0	123	2346	2
8:00	37	397	1	0	435	1	5	23	0	29	18	128	8	1	155	3	2	38	0	43	662	1
8:15	29	286	6	1	322	5	2	13	0	20	16	175	14	0	205	6	1	33	0	40	587	1
8:30	22	284	6	0	312	4	0	16	0	20	26	168	9	1	204	7	4	27	0	38	574	1
8:45	33	328	6	2	369	3	3	13	0	19	44	163	14	0	221	9	8	47	0	64	673	2
Total	121	1295	19	3	1438	13	10	65	0	88	104	634	45	2	785	25	15	145	0	185	2496	5
16:00	30	184	11	0	225	9	3	58	0	70	17	283	13	1	314	14	8	23	0	45	654	1
16:15	38	178	9	1	226	15	4	45	0	64	24	242	19	3	288	9	8	26	0	43	621	4
16:30	28	165	6	1	200	17	7	53	0	77	30	273	14	1	318	8	1	27	0	36	631	2
16:45	34	180	5	2	221	10	7	70	0	87	24	290	18	0	332	15	4	15	0	34	674	2
Total	130	707	31	4	872	51	21	226	0	298	95	1088	64	5	1252	46	21	91	0	158	2580	9
17:00	32	180	8	1	221	16	1	59	0	76	30	284	15	1	330	15	7	34	0	56	683	2
17:15	41	199	5	0	245	13	2	74	0	89	31	377	16	2	426	8	6	21	0	35	795	2
17:30	51	190	8	2	251	14	9	75	0	98	35	310	22	1	368	8	8	25	0	41	758	3
17:45	40	192	8	1	241	14	6	65	0	85	26	308	22	1	357	6	4	18	0	28	711	2
Total	164	761	29	4	958	57	18	273	0	348	122	1279	75	5	1481	37	25	98	0	160	2947	9
18:00	41	148	10	0	199	10	8	79	0	97	24	307	14	0	345	14	2	14	0	30	671	0
18:15	28	156	3	1	188	10	2	59	0	71	19	316	13	0	348	14	4	19	0	37	644	1
18:30	36	151	1	0	188	8	2	62	0	72	18	287	19	0	324	10	3	13	0	26	610	0
18:45	25	158	14	2	199	12	2	43	0	57	20	230	7	0	257	10	3	9	0	22	535	2
Total	130	613	28	3	774	40	14	243	0	297	81	1140	53	0	1274	48	12	55	0	115	2460	3
Grand Total	734	5483	129	15	6361	173	73	892	0	1138	468	4944	253	14	5679	188	82	521	0	791	13969	29
Apprch %	11.5%	86.2%	2.0%	0.2%		15.2%	6.4%	78.4%	0.0%		8.2%	87.1%	4.5%	0.2%		23.8%	10.4%	65.9%	0.0%			
Total %	5.3%	39.3%	0.9%	0.1%	45.5%	1.2%	0.5%	6.4%	0.0%	8.1%	3.4%	35.4%	1.8%	0.1%	40.7%	1.3%	0.6%	3.7%	0.0%	5.7%	100.0%	

AM PEAK HOUR	El Dorado Hills Blvd Southbound					Saratoga Way North Westbound					El Dorado Hills Blvd Northbound					Saratoga Way North Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	27	362	4	0	393	1	2	12	0	15	12	134	4	0	150	8	4	28	0	40	598
7:45	53	376	10	0	439	4	1	22	0	27	25	164	3	0	192	1	0	23	0	24	682
8:00	37	397	1	0	435	1	5	23	0	29	18	128	8	1	155	3	2	38	0	43	662
8:15	29	286	6	1	322	5	2	13	0	20	16	175	14	0	205	6	1	33	0	40	587
Total Volume	146	1421	21	1	1589	11	10	70	0	91	71	601	29	1	702	18	7	122	0	147	2529
% App Total	9.2%	89.4%	1.3%	0.1%		12.1%	11.0%	76.9%	0.0%		10.1%	85.6%	4.1%	0.1%		12.2%	4.8%	83.0%	0.0%		
PHF	.689	.895	.525	.250	.905	.550	.500	.761	.000	.784	.710	.859	.518	.250	.856	.563	.438	.803	.000	.855	.927

PM PEAK HOUR	El Dorado Hills Blvd Southbound					Saratoga Way North Westbound					El Dorado Hills Blvd Northbound					Saratoga Way North Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	32	180	8	1	221	16	1	59	0	76	30	284	15	1	330	15	7	34	0	56	683
17:15	41	199	5	0	245	13	2	74	0	89	31	377	16	2	426	8	6	21	0	35	795
17:30	51	190	8	2	251	14	9	75	0	98	35	310	22	1	368	8	8	25	0	41	758
17:45	40	192	8	1	241	14	6	65	0	85	26	308	22	1	357	6	4	18	0	28	711
Total Volume	164	761	29	4	958	57	18	273	0	348	122	1279	75	5	1481	37	25	98	0	160	2947
% App Total	17.1%	79.4%	3.0%	0.4%		16.4%	5.2%	78.4%	0.0%		8.2%	86.4%	5.1%	0.3%		23.1%	15.6%	61.3%	0.0%		
PHF	.804	.956	.906	.500	.954	.891	.500	.910	.000	.888	.871	.848	.852	.625	.869	.617	.781	.721	.000	.714	.927

Analysis ID: 1472996
Analysis: Creekside #3 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	EDH north (Southbound)			Park (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	13	320	141	30	4	11	239	204	24
8:00am	8	283	141	33	11	12	228	234	26
8:15am	11	235	158	35	11	12	251	226	21
8:30am	15	289	172	30	18	9	279	294	34
Hourly Tot	47	1127	612	128	44	44	997	958	105
Hourly Tot	0.0263	0.631	0.3427	0.5926	0.2037	0.2037	0.484	0.465	0.051
PHF	0.78	0.88	0.89	0.91	0.61	0.92	0.89	0.81	0.77

All Days, Peak PM

	EDH north (Southbound)			Park (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	11	357	102	25	22	18	266	410	56
3:30pm	12	281	89	49	21	11	239	303	53
3:45pm	15	339	93	57	23	19	221	365	56
4:00pm	17	220	105	52	25	22	191	380	58
Hourly Tot	55	1197	389	183	91	70	917	1458	223
Hourly Tot	0.0335	0.7294	0.2371	0.532	0.2645	0.2035	0.353	0.5612	0.0858
PHF	0.81	0.84	0.93	0.8	0.91	0.8	0.86	0.89	0.96

Tues-Thurs, Peak AM

	EDH north (Southbound)			Park (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	19	325	167	41	4	14	301	239	25
8:00am	8	324	158	37	15	13	286	260	25
8:15am	7	303	165	36	16	13	316	297	19
8:30am	15	333	182	32	19	11	278	377	36
Hourly Tot	49	1285	672	146	54	51	1181	1173	105
Hourly Tot	0.0244	0.6406	0.335	0.5817	0.2151	0.2032	0.4803	0.477	0.0427
PHF	0.64	0.96	0.92	0.89	0.71	0.91	0.93	0.78	0.73

Tues-Thurs, Peak PM

	EDH north (Southbound)			Park (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:00pm	17	260	115	62	29	27	209	425	61
4:15pm	10	230	107	62	19	26	233	387	63
4:30pm	6	275	110	61	18	25	216	493	64
4:45pm	4	427	96	51	14	25	199	374	73
Hourly Tot	37	1192	428	236	80	103	857	1679	261
Hourly Tot	0.0223	0.7194	0.2583	0.5632	0.1909	0.2458	0.3064	0.6003	0.0933
PHF	0.54	0.7	0.93	0.95	0.69	0.95	0.92	0.85	0.89

WB 50 ramp (Eastbound)

Left	Thru	Right	Total	Total %
50	21	238	1295	0.2589
56	19	185	1236	0.2472
59	19	127	1165	0.233
61	16	88	1305	0.2609
226	75	638	5001	1
0.2407	0.0799	0.6794		
0.93	0.89	0.67		

WB 50 ramp (Eastbound)

Left	Thru	Right	Total	Total %
40	11	69	1387	0.2765
42	6	42	1148	0.2288
47	12	48	1295	0.2581
42	23	52	1187	0.2366
171	52	211	5017	1
0.394	0.1198	0.4862		
0.91	0.57	0.76		

WB 50 ramp (Eastbound)

Left	Thru	Right	Total	Total %
65	20	301	1521	0.2587
65	24	235	1450	0.2466
60	26	166	1424	0.2422
66	22	114	1485	0.2526
256	92	816	5880	1
0.2199	0.079	0.701		
0.97	0.88	0.68		

WB 50 ramp (Eastbound)

Left	Thru	Right	Total	Total %
40	32	59	1336	0.2429
49	38	74	1298	0.236
60	31	76	1435	0.2609
59	29	81	1432	0.2603
208	130	290	5501	1
0.3312	0.207	0.4618		
0.87	0.86	0.9		

Prepared by National Data & Surveying Services

#3

El Dorado Hills Blvd & U.S. 50 WB

Peak Hour Turning Movement Count

ID: 18-07183-003
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	06:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	04:00 PM - 07:00 PM

El Dorado Hills Blvd — SOUTHBOUND

AM	657	880	49	3	777	AM
NOON	0	0	0	0	0	NOON
PM	329	544	31	0	1532	PM

U.S. 50 WB — EASTBOUND

AM	NOON	PM		
1287	0	1385	⇦	
0	0	0	↶	0
169	0	125	↱	1.5
69	0	67	→	0.5
532	0	132	↴	1
AM	NOON	PM		

CONTROL

Signalized

TEV	3850 AM	0 NOON	4169 PM
PHF	0.84		0.99

U.S. 50 WB — WESTBOUND

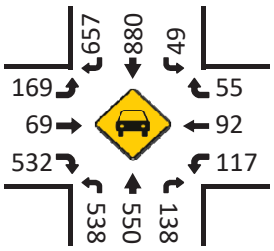
PM	NOON	AM		
78	0	55	↰	0.5
76	0	92	←	1
158	0	117	↰	1.5
0	0	0	↶	0
417	0	256	⇨	
PM	NOON	AM		

El Dorado Hills Blvd — NORTHBOUND

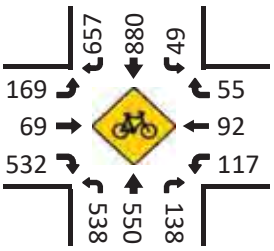
PM	835	1	980	1329	319	PM
NOON	0	0	0	0	0	NOON
AM	1530	1	538	550	138	AM

0 2 2.5 0.5

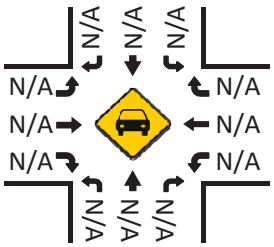
Total Vehicles (AM)



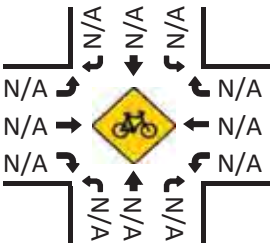
(AM)



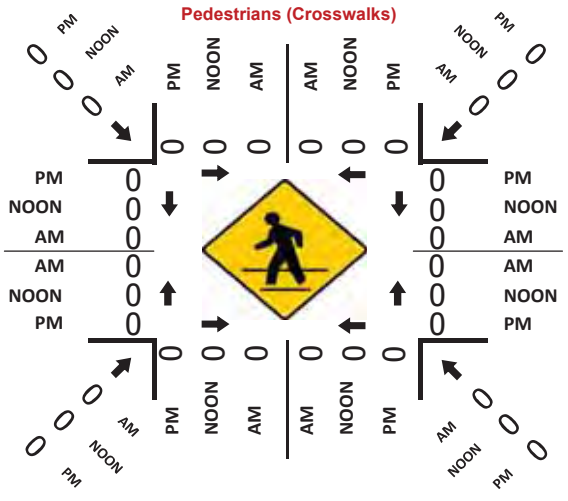
Total Vehicles (Noon)



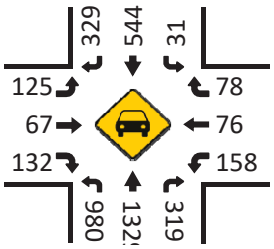
(NOON)



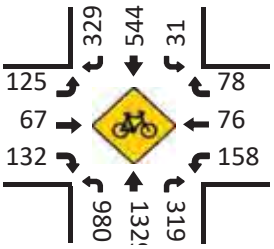
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1472979
Analysis: Creekside #4 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	EDH (Southbound)			us 50 on & loop off (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	79	460	0	0	0	78	0	392	92
8:00am	72	407	0	0	0	68	0	374	101
8:15am	80	328	0	0	0	64	0	432	111
8:30am	99	263	0	2	0	77	0	450	92
Hourly Tot	330	1458	0	2	0	287	0	1648	396
Hourly Tot	0.1846	0.8154	0	0.0069	0	0.9931	0	0.8063	0.1937
PHF	0.83	0.79	0	0.25	0	0.92	0	0.92	0.89

All Days, Peak PM

	EDH (Southbound)			us 50 on & loop off (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	83	306	0	0	0	214	0	483	141
3:30pm	81	303	0	0	0	165	0	446	133
3:45pm	80	332	0	0	0	158	0	476	130
4:00pm	80	269	0	0	0	154	0	437	150
Hourly Tot	324	1210	0	0	0	691	0	1842	554
Hourly Tot	0.2112	0.7888	0	0	0	1	0	0.7688	0.2312
PHF	0.98	0.91	0	0	0	0.81	0	0.95	0.92

Tues-Thurs, Peak AM

	EDH (Southbound)			us 50 on & loop off (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	83	530	0	1	0	81	0	462	104
8:00am	75	508	0	0	0	59	0	455	116
8:15am	89	398	0	1	0	71	0	513	129
8:30am	114	291	0	3	0	85	0	534	111
Hourly Tot	361	1727	0	5	0	296	0	1964	460
Hourly Tot	0.1729	0.8271	0	0.0166	0	0.9834	0	0.8102	0.1898
PHF	0.79	0.81	0	0.42	0	0.87	0	0.92	0.89

Tues-Thurs, Peak PM

	EDH (Southbound)			us 50 on & loop off (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	80	312	0	0	0	182	0	563	146
3:30pm	82	362	0	0	0	179	0	458	143
3:45pm	78	363	0	0	0	176	0	474	143
4:00pm	77	293	0	0	0	167	0	503	177
Hourly Tot	317	1330	0	0	0	704	0	1998	609
Hourly Tot	0.1925	0.8075	0	0	0	1	0	0.7664	0.2336
PHF	0.97	0.92	0	0	0	0.97	0	0.89	0.86

EB 50 off (Eastbound)

Left	Thru	Right	Total	Total %
0	0	182	1283	0.2654
0	0	175	1197	0.2476
0	0	185	1200	0.2482
0	0	172	1155	0.2389
0	0	714	4835	1
0	0	1		
0	0	0.96		

EB 50 off (Eastbound)

Left	Thru	Right	Total	Total %
0	0	249	1476	0.2563
0	0	268	1396	0.2424
0	0	322	1498	0.2602
0	0	298	1388	0.2411
0	0	1137	5758	1
0	0	1		
0	0	0.88		

EB 50 off (Eastbound)

Left	Thru	Right	Total	Total %
0	0	196	1457	0.2588
0	0	215	1428	0.2537
0	0	197	1398	0.2484
0	0	208	1346	0.2391
0	0	816	5629	1
0	0	1		
0	0	0.95		

EB 50 off (Eastbound)

Left	Thru	Right	Total	Total %
0	0	251	1534	0.2492
0	0	293	1517	0.2465
0	0	351	1585	0.2575
0	0	302	1519	0.2468
0	0	1197	6155	1
0	0	1		
0	0	0.85		

Prepared by National Data & Surveying Services

#4

Latrobe Rd & U.S. 50 EB

Peak Hour Turning Movement Count

ID: 18-07183-004
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 06:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 07:00 PM

Latrobe Rd — SOUTHBOUND

AM	0	1349	164	0	1269	AM
NOON	0	0	0	0	0	NOON
PM	0	673	173	1	2636	PM

U.S. 50 EB — EASTBOUND

AM	NOON	PM		
0	0	0		
0	0	0	↰	0
0	0	0	↱	0
0	0	0	→	0
1055	0	813	↱	2
AM	NOON	PM		

WESTBOUND — U.S. 50 EB

PM	NOON	AM		
726	0	269	↰	1
0	0	0	←	0
0	0	0	↰	0
0	0	0	↰	0
624	0	360		
PM	NOON	AM		

CONTROL: Signalized

TEV	4033 AM	0 NOON	4746 PM
PHF	0.84		0.95

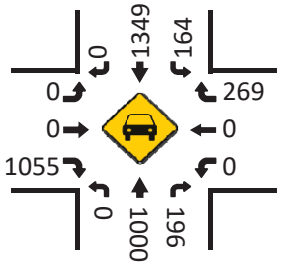
Latrobe Rd — NORTHBOUND

PM	1486	0	0	1909	451	PM
NOON	0	0	0	0	0	NOON
AM	2404	0	0	1000	196	AM

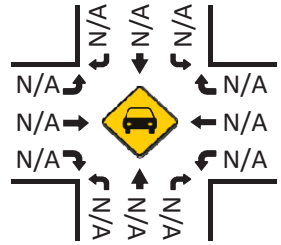
0 0 3 1

0 4 1 0

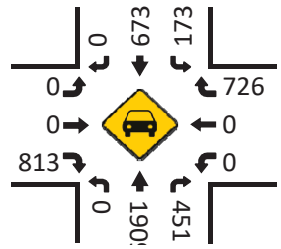
Total Vehicles (AM)



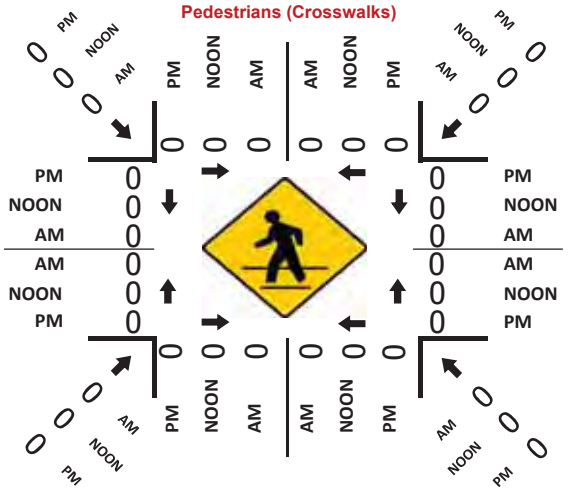
Total Vehicles (Noon)



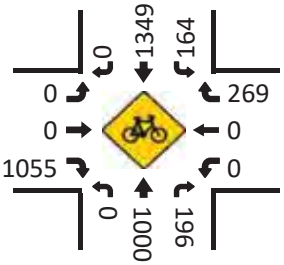
Total Vehicles (PM)



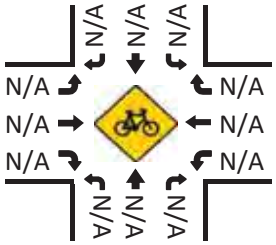
Pedestrians (Crosswalks)



(AM)



(NOON)



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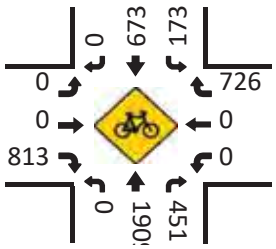

Analysis ID: 1472998
Analysis: Creekside #5 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			Town Cntr easy (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	104	465	3	14	0	110	0	347	44
8:00am	109	434	8	21	0	114	0	375	61
8:15am	83	401	9	13	0	97	0	378	58
8:30am	97	288	11	17	0	102	0	410	29
Hourly Tot	393	1588	31	65	0	423	0	1510	192
Hourly Tot	0.1953	0.7893	0.0154	0.1332	0	0.8668	0	0.8872	0.1128
PHF	0.9	0.85	0.7	0.77	0	0.93	0	0.92	0.79

All Days, Peak PM

	Latrobe north (Southbound)			Town Cntr easy (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	114	394	2	22	0	143	5	438	49
3:30pm	142	390	1	17	1	145	3	406	47
3:45pm	189	422	4	24	2	146	3	371	34
4:00pm	147	359	8	24	1	162	3	394	36
Hourly Tot	592	1565	15	87	4	596	14	1609	166
Hourly Tot	0.2726	0.7205	0.0069	0.1266	0.0058	0.8675	0.0078	0.8994	0.0928
PHF	0.78	0.93	0.47	0.91	0.5	0.92	0.7	0.92	0.85

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			Town Cntr easy (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	115	572	3	14	0	125	0	401	52
8:00am	113	533	9	16	0	126	0	473	74
8:15am	86	513	14	11	0	115	0	434	72
8:30am	106	322	15	16	0	110	0	500	37
Hourly Tot	420	1940	41	57	0	476	0	1808	235
Hourly Tot	0.1749	0.808	0.0171	0.1069	0	0.8931	0	0.885	0.115
PHF	0.91	0.85	0.68	0.89	0	0.94	0	0.9	0.79

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			Town Cntr easy (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:00pm	95	447	6	30	0	129	1	473	57
3:15pm	117	454	3	22	0	139	5	545	62
3:30pm	151	421	2	16	2	138	3	414	54
3:45pm	169	481	3	23	4	144	4	388	42
Hourly Tot	532	1803	14	91	6	550	13	1820	215
Hourly Tot	0.2265	0.7676	0.006	0.1406	0.0093	0.8501	0.0063	0.8887	0.105
PHF	0.79	0.94	0.58	0.76	0.38	0.95	0.65	0.83	0.87

Town Cntr west (Eastbound)

Left	Thru	Right	Total	Total %
0	0	2	1089	0.2582
0	0	4	1126	0.267
0	0	6	1045	0.2477
1	0	3	958	0.2271
1	0	15	4218	1
0.0625	0	0.9375		
0.25	0	0.62		

Town Cntr west (Eastbound)

Left	Thru	Right	Total	Total %
6	3	3	1179	0.252
4	0	2	1158	0.2475
4	1	1	1201	0.2567
4	1	2	1141	0.2439
18	5	8	4679	1
0.5806	0.1613	0.2581		
0.75	0.42	0.67		

Town Cntr west (Eastbound)

Left	Thru	Right	Total	Total %
0	0	1	1283	0.2567
0	0	6	1350	0.2701
0	0	8	1253	0.2507
2	0	5	1113	0.2226
2	0	20	4999	1
0.0909	0	0.9091		
0.25	0	0.62		

Town Cntr west (Eastbound)

Left	Thru	Right	Total	Total %
13	0	2	1253	0.2466
4	1	4	1356	0.2668
5	0	4	1210	0.2381
4	0	1	1263	0.2485
26	1	11	5082	1
0.6842	0.0263	0.2895		
0.5	0.25	0.69		

National Data and Surveying Services

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7192-004 Latrobe Rd & Town Center Blvd
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Town Center Blvd Westbound					Latrobe Rd Northbound					Town Center Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	44	89	21	0	154	6	1	16	0	23	1	101	4	0	106	0	0	0	0	0	283	0
6:15	42	129	20	1	192	4	1	37	0	42	3	86	4	0	93	2	0	0	0	2	329	1
6:30	64	198	24	0	286	8	2	40	0	50	0	115	12	0	127	2	0	0	0	2	465	0
6:45	66	306	41	0	413	10	2	48	0	60	3	92	12	0	107	3	0	0	0	3	583	0
Total	216	722	106	1	1045	28	6	141	0	175	7	394	32	0	433	7	0	0	0	7	1660	1
7:00	65	284	40	0	389	9	2	41	0	52	4	147	10	0	161	1	1	1	0	3	605	0
7:15	86	252	42	0	380	15	4	45	0	64	13	156	12	0	181	0	2	0	0	2	627	0
7:30	80	302	58	2	442	17	1	49	0	67	8	144	15	0	167	4	0	0	0	4	680	2
7:45	112	388	71	1	572	10	9	45	0	64	12	193	11	0	216	3	1	2	0	6	858	1
Total	343	1226	211	3	1783	51	16	180	0	247	37	640	48	0	725	8	4	3	0	15	2770	3
8:00	113	408	57	0	578	15	8	50	0	73	15	188	20	0	223	2	0	1	0	3	877	0
8:15	96	332	76	2	506	22	5	73	1	101	13	203	26	0	242	4	4	2	0	10	859	3
8:30	106	265	78	1	450	15	5	68	0	88	16	243	21	0	280	1	2	1	0	4	822	1
8:45	125	308	86	1	520	18	12	80	0	110	17	198	25	1	241	4	2	2	0	8	879	2
Total	440	1313	297	4	2054	70	30	271	1	372	61	832	92	1	986	11	8	6	0	25	3437	6
16:00	121	239	6	1	367	14	2	143	0	159	0	354	39	1	394	44	6	19	0	69	989	2
16:15	115	236	5	0	356	16	0	145	1	162	1	322	33	0	356	48	5	11	0	64	938	1
16:30	120	212	4	2	338	8	1	160	0	169	0	384	33	1	418	77	8	20	0	105	1030	3
16:45	163	237	6	0	406	14	1	136	0	151	1	302	28	0	331	80	11	10	0	101	989	0
Total	519	924	21	3	1467	52	4	584	1	641	2	1362	133	2	1499	249	30	60	0	339	3946	6
17:00	129	213	4	0	346	21	3	159	1	184	0	399	44	0	443	79	9	15	0	103	1076	1
17:15	137	247	1	1	386	15	1	149	0	165	1	347	44	0	392	63	5	22	0	90	1033	1
17:30	111	231	1	3	346	21	0	149	1	171	0	306	27	0	333	60	5	12	0	77	927	4
17:45	123	252	0	5	380	16	0	137	0	153	0	310	39	0	349	27	3	5	0	35	917	5
Total	500	943	6	9	1458	73	4	594	2	673	1	1362	154	0	1517	229	22	54	0	305	3953	11
18:00	118	156	3	0	277	10	0	159	0	169	0	348	32	0	380	29	8	4	0	41	867	0
18:15	115	172	1	2	290	19	0	154	1	174	0	200	25	0	225	18	1	8	0	27	716	3
18:30	87	178	1	6	272	20	1	129	0	150	0	187	15	0	202	15	3	0	0	18	642	6
18:45	83	160	0	4	247	9	0	108	0	117	0	153	23	1	177	10	0	3	0	13	554	5
Total	403	666	5	12	1086	58	1	550	1	610	0	888	95	1	984	72	12	15	0	99	2779	14
Grand Total	2421	5794	646	32	8893	332	61	2320	5	2718	108	5478	554	4	6144	576	76	138	0	790	18545	41
Apprch %	27.2%	65.2%	7.3%	0.4%		12.2%	2.2%	85.4%	0.2%		1.8%	89.2%	9.0%	0.1%		72.9%	9.6%	17.5%	0.0%			
Total %	13.1%	31.2%	3.5%	0.2%	48.0%	1.8%	0.3%	12.5%	0.0%	14.7%	0.6%	29.5%	3.0%	0.0%	33.1%	3.1%	0.4%	0.7%	0.0%	4.3%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Town Center Blvd Westbound					Latrobe Rd Northbound					Town Center Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	113	408	57	0	578	15	8	50	0	73	15	188	20	0	223	2	0	1	0	3	877
8:15	96	332	76	2	506	22	5	73	1	101	13	203	26	0	242	4	4	2	0	10	859
8:30	106	265	78	1	450	15	5	68	0	88	16	243	21	0	280	1	2	1	0	4	822
8:45	125	308	86	1	520	18	12	80	0	110	17	198	25	1	241	4	2	2	0	8	879
Total Volume	440	1313	297	4	2054	70	30	271	1	372	61	832	92	1	986	11	8	6	0	25	3437
% App Total	21.4%	63.9%	14.5%	0.2%		18.8%	8.1%	72.8%	0.3%		6.2%	84.4%	9.3%	0.1%		44.0%	32.0%	24.0%	0.0%		
PHF	.880	.805	.863	.500	.888	.795	.625	.847	.250	.845	.897	.856	.885	.250	.880	.688	.500	.750	.000	.625	.978

PM PEAK HOUR	Latrobe Rd Southbound					Town Center Blvd Westbound					Latrobe Rd Northbound					Town Center Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	120	212	4	2	338	8	1	160	0	169	0	384	33	1	418	77	8	20	0	105	1030
16:45	163	237	6	0	406	14	1	136	0	151	1	302	28	0	331	80	11	10	0	101	989
17:00	129	213	4	0	346	21	3	159	1	184	0	399	44	0	443	79	9	15	0	103	1076
17:15	137	247	1	1	386	15	1	149	0	165	1	347	44	0	392	63	5	22	0	90	1033
Total Volume	549	909	15	3	1476	58	6	604	1	669	2	1432	149	1	1584	299	33	67	0	399	4128
% App Total	37.2%	61.6%	1.0%	0.2%		8.7%	0.9%	90.3%	0.1%		0.1%	90.4%	9.4%	0.1%		74.9%	8.3%	16.8%	0.0%		
PHF	.842	.920	.625	.375	.909	.690	.500	.944	.250	.909	.500	.897	.847	.250	.894	.934	.750	.761	.000	.950	.959

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Analysis ID: 1472999
Analysis: Creekside #6 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			WRR east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	10	401	71	57	28	21	10	280	32
8:00am	15	350	82	57	37	20	12	372	45
8:15am	23	266	92	52	30	20	12	312	40
8:30am	33	168	98	61	38	25	10	279	35
Hourly Tot	81	1185	343	227	133	86	44	1243	152
Hourly Tot	0.0503	0.7365	0.2132	0.509	0.2982	0.1928	0.0306	0.8638	0.1056
PHF	0.61	0.74	0.88	0.93	0.88	0.86	0.92	0.84	0.84

All Days, Peak PM

	Latrobe north (Southbound)			WRR east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:45pm	36	359	75	87	47	52	19	218	51
3:00pm	32	289	63	82	40	48	11	315	71
3:15pm	53	260	100	74	27	43	3	409	82
3:30pm	61	217	97	63	32	43	5	289	75
Hourly Tot	182	1125	335	306	146	186	38	1231	279
Hourly Tot	0.1108	0.6851	0.204	0.4796	0.2288	0.2915	0.0245	0.7952	0.1802
PHF	0.75	0.78	0.84	0.88	0.78	0.89	0.5	0.75	0.85

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			WRR east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	11	490	83	74	34	25	15	344	35
8:00am	7	432	100	74	38	26	18	489	59
8:15am	17	361	114	64	26	30	18	348	38
8:30am	30	278	110	78	39	30	13	336	41
Hourly Tot	65	1561	407	290	137	111	64	1517	173
Hourly Tot	0.032	0.7678	0.2002	0.539	0.2546	0.2063	0.0365	0.8649	0.0986
PHF	0.54	0.8	0.89	0.93	0.88	0.93	0.89	0.78	0.73

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			WRR east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:45pm	22	433	75	110	60	54	23	281	62
3:00pm	37	349	74	106	43	52	9	400	87
3:15pm	62	293	120	96	29	43	2	510	113
3:30pm	75	244	123	81	32	37	4	324	100
Hourly Tot	196	1319	392	393	164	186	38	1515	362
Hourly Tot	0.1028	0.6917	0.2056	0.5289	0.2207	0.2503	0.0198	0.7911	0.189
PHF	0.65	0.76	0.8	0.89	0.68	0.86	0.41	0.74	0.8

ERR west (Eastbound)

Left	Thru	Right	Total	Total %
39	15	7	971	0.2492
60	26	4	1080	0.2772
83	33	4	967	0.2482
90	37	4	878	0.2254
272	111	19	3896	1
0.6766	0.2761	0.0473		
0.76	0.75	0.68		

ERR west (Eastbound)

Left	Thru	Right	Total	Total %
70	49	9	1072	0.2505
59	36	8	1054	0.2463
57	36	9	1153	0.2695
68	41	9	1000	0.2337
254	162	35	4279	1
0.5632	0.3592	0.0776		
0.91	0.83	0.97		

ERR west (Eastbound)

Left	Thru	Right	Total	Total %
42	14	7	1174	0.2462
69	21	4	1337	0.2804
99	33	7	1155	0.2422
100	40	7	1102	0.2311
310	108	25	4768	1
0.6998	0.2438	0.0564		
0.78	0.68	0.89		

ERR west (Eastbound)

Left	Thru	Right	Total	Total %
82	53	12	1267	0.2501
69	35	10	1271	0.2509
59	36	9	1372	0.2709
75	48	12	1155	0.228
285	172	43	5065	1
0.57	0.344	0.086		
0.87	0.81	0.9		

#6

National Data and Surveying Services

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7192-005 Latrobe Rd & White Rock Rd
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					White Rock Rd Westbound					Latrobe Rd Northbound					White Rock Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	9	76	18	0	103	13	11	12	0	36	5	83	11	0	99	11	5	0	0	16	254	0
6:15	4	109	22	0	135	34	12	16	0	62	9	72	9	0	90	10	4	5	0	19	306	0
6:30	13	158	33	0	204	27	26	19	0	72	12	88	6	0	106	14	10	13	0	37	419	0
6:45	16	271	32	2	321	67	32	18	0	117	11	73	14	0	98	18	10	21	0	49	585	2
Total	42	614	105	2	763	141	81	65	0	287	37	316	40	0	393	53	29	39	0	121	1564	2
7:00	16	209	53	0	278	49	40	22	0	111	26	104	18	1	149	38	12	7	0	57	595	1
7:15	15	199	63	1	278	58	39	34	0	131	16	108	19	0	143	30	20	17	0	67	619	1
7:30	14	235	71	0	320	57	53	23	0	133	25	109	11	1	146	39	28	13	0	80	679	1
7:45	23	291	87	0	401	102	59	22	0	183	19	141	25	0	185	53	32	23	0	108	877	0
Total	68	934	274	1	1277	266	191	101	0	558	86	462	73	2	623	160	92	60	0	312	2770	3
8:00	31	298	83	0	412	82	58	29	0	169	25	135	29	1	190	58	21	13	0	92	863	1
8:15	19	266	83	1	369	58	50	28	0	136	14	160	42	1	217	53	25	10	1	89	811	3
8:30	19	176	73	0	268	56	60	41	0	157	26	165	35	0	226	71	22	14	1	108	759	1
8:45	28	224	73	0	325	62	49	33	0	144	6	140	17	0	163	62	19	16	0	97	729	0
Total	97	964	312	1	1374	258	217	131	0	606	71	600	123	2	796	244	87	53	2	386	3162	5
16:00	66	138	64	3	271	49	29	39	0	117	21	293	87	1	402	67	56	25	1	149	939	5
16:15	54	142	59	0	255	45	51	49	0	145	17	228	58	2	305	69	71	34	0	174	879	2
16:30	68	121	61	0	250	36	27	45	0	108	18	303	84	2	407	85	90	18	0	193	958	2
16:45	51	147	43	1	242	53	40	46	1	140	20	213	82	0	315	79	79	30	0	188	885	2
Total	239	548	227	4	1018	183	147	179	1	510	76	1037	311	5	1429	300	296	107	1	704	3661	11
17:00	65	133	58	1	257	47	41	54	0	142	17	307	104	4	432	92	94	16	1	203	1034	6
17:15	59	173	61	0	293	58	56	49	0	163	18	226	76	0	320	93	73	22	1	189	965	1
17:30	58	142	45	2	247	42	45	41	0	128	21	238	86	1	346	83	77	20	1	181	902	4
17:45	50	171	65	1	287	48	26	49	0	123	24	186	57	0	267	78	52	21	0	151	828	1
Total	232	619	229	4	1084	195	168	193	0	556	80	957	323	5	1365	346	296	79	3	724	3729	12
18:00	59	88	34	0	181	43	25	44	0	112	20	264	53	2	339	76	49	14	1	140	772	3
18:15	49	111	41	0	201	31	40	35	0	106	16	142	34	0	192	37	44	11	0	92	591	0
18:30	50	121	31	0	202	24	25	49	0	98	7	115	39	1	162	41	39	11	1	92	554	2
18:45	32	101	38	0	171	38	11	35	0	84	2	101	31	1	135	32	19	16	0	67	457	1
Total	190	421	144	0	755	136	101	163	0	400	45	622	157	4	828	186	151	52	2	391	2374	6
Grand Total	868	4100	1291	12	6271	1179	905	832	1	2917	395	3994	1027	18	5434	1289	951	390	8	2638	17260	39
Apprch %	13.8%	65.4%	20.6%	0.2%		40.4%	31.0%	28.5%	0.0%		7.3%	73.5%	18.9%	0.3%		48.9%	36.1%	14.8%	0.3%			
Total %	5.0%	23.8%	7.5%	0.1%	36.3%	6.8%	5.2%	4.8%	0.0%	16.9%	2.3%	23.1%	6.0%	0.1%	31.5%	7.5%	5.5%	2.3%	0.0%	15.3%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					White Rock Rd Westbound					Latrobe Rd Northbound					White Rock Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	23	291	87	0	401	102	59	22	0	183	19	141	25	0	185	53	32	23	0	108	877
8:00	31	298	83	0	412	82	58	29	0	169	25	135	29	1	190	58	21	13	0	92	863
8:15	19	266	83	1	369	58	50	28	0	136	14	160	42	1	217	53	25	10	1	89	811
8:30	19	176	73	0	268	56	60	41	0	157	26	165	35	0	226	71	22	14	1	108	759
Total Volume	92	1031	326	1	1450	298	227	120	0	645	84	601	131	2	818	235	100	60	2	397	3310
% App Total	6.3%	71.1%	22.5%	0.1%		46.2%	35.2%	18.6%	0.0%		10.3%	73.5%	16.0%	0.2%		59.2%	25.2%	15.1%	0.5%		
PHF	.742	.865	.937	.250	.880	.730	.946	.732	.000	.881	.808	.911	.780	.500	.905	.827	.781	.652	.500	.919	.944

PM PEAK HOUR	Latrobe Rd Southbound					White Rock Rd Westbound					Latrobe Rd Northbound					White Rock Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	68	121	61	0	250	36	27	45	0	108	18	303	84	2	407	85	90	18	0	193	958
16:45	51	147	43	1	242	53	40	46	1	140	20	213	82	0	315	79	79	30	0	188	885
17:00	65	133	58	1	257	47	41	54	0	142	17	307	104	4	432	92	94	16	1	203	1034
17:15	59	173	61	0	293	58	56	49	0	163	18	226	76	0	320	93	73	22	1	189	965
Total Volume	243	574	223	2	1042	194	164	194	1	553	73	1049	346	6	1474	349	336	86	2	773	3842
% App Total	23.3%	55.1%	21.4%	0.2%		35.1%	29.7%	35.1%	0.2%		5.0%	71.2%	23.5%	0.4%		45.1%	43.5%	11.1%	0.3%		
PHF	.893	.829	.914	.500	.889	.836	.732	.898	.250	.848	.913	.854	.832	.375	.853	.938	.894	.717	.500	.952	.929

Analysis ID: 1473000
Analysis: Creekside #7 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			Monte Verde (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	1	166	38	1	0	0	7	321	0
7:45am	2	348	54	0	1	1	6	264	0
8:00am	1	387	53	0	1	2	6	271	0
8:15am	0	231	50	0	4	1	6	221	0
Hourly Tot	4	1132	195	1	6	4	25	1077	0
Hourly Tot	0.003	0.8505	0.1465	0.0909	0.5455	0.3636	0.0227	0.9773	0
PHF	0.5	0.73	0.9	0.25	0.38	0.5	0.89	0.84	0

All Days, Peak PM

	Latrobe north (Southbound)			Monte Verde (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	7	277	32	0	3	1	3	200	0
2:45pm	7	401	52	0	1	1	0	207	0
3:00pm	4	253	61	1	2	2	0	295	5
3:15pm	4	271	56	1	2	1	0	332	7
Hourly Tot	22	1202	201	2	8	5	3	1034	12
Hourly Tot	0.0154	0.8435	0.1411	0.1333	0.5333	0.3333	0.0029	0.9857	0.0114
PHF	0.79	0.75	0.82	0.5	0.67	0.62	0.25	0.78	0.43

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			Monte Verde (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	2	256	48	0	0	0	9	381	0
7:45am	4	427	71	0	0	2	7	316	0
8:00am	2	439	79	0	0	5	11	339	0
8:15am	0	317	74	0	2	2	11	251	0
Hourly Tot	8	1439	272	0	2	9	38	1287	0
Hourly Tot	0.0047	0.8371	0.1582	0	0.1818	0.8182	0.0287	0.9713	0
PHF	0.5	0.82	0.86	0	0.25	0.45	0.86	0.84	0

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			Monte Verde (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:45pm	12	473	72	0	0	2	0	266	0
3:00pm	7	317	92	0	2	5	0	376	7
3:15pm	2	294	70	0	2	2	0	412	9
3:30pm	0	287	51	0	0	0	0	246	5
Hourly Tot	21	1371	285	0	4	9	0	1300	21
Hourly Tot	0.0125	0.8175	0.1699	0	0.3077	0.6923	0	0.9841	0.0159
PHF	0.44	0.72	0.77	0	0.5	0.45	0	0.79	0.58

GF (north) (Eastbound)

Left	Thru	Right	Total	Total %
8	0	0	542	0.2107
26	0	0	702	0.2729
46	0	0	767	0.2982
46	0	2	561	0.2181
126	0	2	2572	1
0.9844	0	0.0156		
0.68	0	0.25		

GF (north) (Eastbound)

Left	Thru	Right	Total	Total %
56	0	19	598	0.216
58	0	9	736	0.2659
62	0	1	686	0.2478
73	1	0	748	0.2702
249	1	29	2768	1
0.8925	0.0036	0.1039		
0.85	0.25	0.38		

GF (north) (Eastbound)

Left	Thru	Right	Total	Total %
9	0	0	705	0.2187
32	0	0	859	0.2664
61	0	0	936	0.2903
65	0	2	724	0.2246
167	0	2	3224	1
0.9882	0	0.0118		
0.64	0	0.25		

GF (north) (Eastbound)

Left	Thru	Right	Total	Total %
77	0	11	913	0.2702
87	0	1	894	0.2646
97	2	0	890	0.2634
87	5	1	682	0.2018
348	7	13	3379	1
0.9457	0.019	0.0353		
0.9	0.35	0.3		

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-005
Date : 11/16/2017

#7

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Golden Foothill Pkwy Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	103	15	1	119	0	0	1	0	1	1	85	0	0	86	8	0	0	0	8	214	1
6:15	0	112	19	0	131	0	0	2	0	2	1	90	0	0	91	3	0	0	0	3	227	0
6:30	1	135	29	0	165	0	0	1	0	1	0	115	0	0	115	1	0	0	0	1	282	0
6:45	1	208	57	0	266	0	0	2	0	2	3	110	0	0	113	5	0	0	0	5	386	0
Total	2	558	120	1	681	0	0	6	0	6	5	400	0	0	405	17	0	0	0	17	1109	1
7:00	0	183	77	1	261	0	1	3	0	4	0	113	0	0	113	12	0	1	0	13	391	1
7:15	0	209	50	0	259	1	1	3	0	5	3	132	1	0	136	13	0	0	0	13	413	0
7:30	0	306	61	1	368	0	0	4	0	4	1	153	0	0	154	9	0	0	0	9	535	1
7:45	0	301	117	0	418	0	3	4	0	7	6	178	1	1	186	19	2	1	0	22	633	1
Total	0	999	305	2	1306	1	5	14	0	20	10	576	2	1	589	53	2	2	0	57	1972	3
8:00	1	268	140	1	410	1	2	3	0	6	6	215	0	0	221	41	2	6	0	49	686	1
8:15	0	234	70	0	304	2	2	3	0	7	3	166	1	0	170	35	0	3	0	38	519	0
8:30	0	195	70	0	265	1	2	1	0	4	3	127	1	0	131	18	0	4	0	22	422	0
8:45	1	216	68	0	285	2	1	2	0	5	2	141	1	0	144	13	0	1	0	14	448	0
Total	2	913	348	1	1264	6	7	9	0	22	14	649	3	0	666	107	2	14	0	123	2075	1
16:00	1	162	30	0	193	0	0	1	0	1	3	210	1	0	214	67	0	4	0	71	479	0
16:15	3	178	33	0	214	0	1	1	0	2	0	327	2	0	329	122	1	3	0	126	671	0
16:30	3	205	29	0	237	0	0	0	0	0	0	230	2	0	232	93	1	3	0	97	566	0
16:45	4	161	34	0	199	0	1	2	0	3	3	295	3	0	301	117	1	5	0	123	626	0
Total	11	706	126	0	843	0	2	4	0	6	6	1062	8	0	1076	399	3	15	0	417	2342	0
17:00	5	158	42	0	205	1	2	4	0	7	3	223	1	1	228	76	1	4	0	81	521	1
17:15	8	191	29	1	229	1	1	6	0	8	1	199	0	0	200	69	1	4	0	74	511	1
17:30	3	188	23	0	214	1	0	2	0	3	1	215	1	0	217	46	1	2	0	49	483	0
17:45	2	150	19	1	172	1	3	0	0	4	3	229	0	0	232	43	1	3	0	47	455	1
Total	18	687	113	2	820	4	6	12	0	22	8	866	2	1	877	234	4	13	0	251	1970	3
18:00	1	161	17	1	180	3	0	1	0	4	1	128	1	0	130	42	1	2	0	45	359	1
18:15	3	124	14	1	142	1	0	5	0	6	0	107	1	0	108	58	1	0	0	59	315	1
18:30	6	127	16	0	149	0	0	0	0	0	0	93	0	0	93	34	0	3	0	37	279	0
18:45	6	127	16	0	149	0	0	0	0	0	0	93	0	0	93	34	0	3	0	37	279	0
Total	16	539	63	2	620	4	0	6	0	10	1	421	2	0	424	168	2	8	0	178	1232	2
Grand Total	49	4402	1075	8	5534	15	20	51	0	86	44	3974	17	2	4037	978	13	52	0	1043	10700	10
Apprch %	0.9%	79.5%	19.4%	0.1%		17.4%	23.3%	59.3%	0.0%		1.1%	98.4%	0.4%	0.0%		93.8%	1.2%	5.0%	0.0%			
Total %	0.5%	41.1%	10.0%	0.1%	51.7%	0.1%	0.2%	0.5%	0.0%	0.8%	0.4%	37.1%	0.2%	0.0%	37.7%	9.1%	0.1%	0.5%	0.0%	9.7%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Golden Foothill Pkwy Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	306	61	1	368	0	0	4	0	4	1	153	0	0	154	9	0	0	0	9	535
7:45	0	301	117	0	418	0	3	4	0	7	6	178	1	1	186	19	2	1	0	22	633
8:00	1	268	140	1	410	1	2	3	0	6	6	215	0	0	221	41	2	6	0	49	686
8:15	0	234	70	0	304	2	2	3	0	7	3	166	1	0	170	35	0	3	0	38	519
Total Volume	1	1109	388	2	1500	3	7	14	0	24	16	712	2	1	731	104	4	10	0	118	2373
% App Total	0.1%	73.9%	25.9%	0.1%		12.5%	29.2%	58.3%	0.0%		2.2%	97.4%	0.3%	0.1%		88.1%	3.4%	8.5%	0.0%		
PHF	.250	.906	.693	.500	.897	.375	.583	.875	.000	.857	.667	.828	.500	.250	.827	.634	.500	.417	.000	.602	.865

PM PEAK HOUR	Latrobe Rd Southbound					Golden Foothill Pkwy Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	3	178	33	0	214	0	1	1	0	2	0	327	2	0	329	122	1	3	0	126	671
16:30	3	205	29	0	237	0	0	0	0	0	0	230	2	0	232	93	1	3	0	97	566
16:45	4	161	34	0	199	0	1	2	0	3	3	295	3	0	301	117	1	5	0	123	626
17:00	5	158	42	0	205	1	2	4	0	7	3	223	1	1	228	76	1	4	0	81	521
Total Volume	15	702	138	0	855	1	4	7	0	12	6	1075	8	1	1090	408	4	15	0	427	2384
% App Total	1.8%	82.1%	16.1%	0.0%		8.3%	33.3%	58.3%	0.0%		0.6%	98.6%	0.7%	0.1%		95.6%	0.9%	3.5%	0.0%		
PHF	.750	.856	.821	.000	.902	.250	.500	.438	.000	.429	.500	.822	.667	.250	.828	.836	1.000	.750	.000	.847	.888

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Analysis ID: 1473003
Analysis: Creekside #8 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Suncaste (Eastbound)		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
7:30am	164	9	4	0	2	310	489	0.2428
7:45am	260	23	7	0	8	227	525	0.2607
8:00am	242	42	11	0	11	256	562	0.279
8:15am	166	36	7	0	22	207	438	0.2175
Hourly Tot	832	110	29	0	43	1000	2014	1
Hourly Tot	0.8832	0.1168	1	0	0.0412	0.9588		
PHF	0.8	0.65	0.66	0	0.49	0.81		

All Days, Peak PM

	Latrobe north (Southb		Suncaste (Eastbound)		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
2:30pm	292	18	25	14	7	172	528	0.2359
2:45pm	338	24	15	13	11	207	608	0.2717
3:00pm	160	25	25	9	11	277	507	0.2265
3:15pm	241	24	35	10	8	277	595	0.2659
Hourly Tot	1031	91	100	46	37	933	2238	1
Hourly Tot	0.9189	0.0811	0.6849	0.3151	0.0381	0.9619		
PHF	0.76	0.91	0.71	0.82	0.84	0.84		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Suncaste (Eastbound)		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
7:30am	184	13	2	0	4	365	568	0.2397
7:45am	299	34	9	0	9	275	626	0.2641
8:00am	254	55	10	0	16	306	641	0.2705
8:15am	209	46	9	0	31	240	535	0.2257
Hourly Tot	946	148	30	0	60	1186	2370	1
Hourly Tot	0.8647	0.1353	1	0	0.0482	0.9518		
PHF	0.79	0.67	0.75	0	0.48	0.81		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Suncaste (Eastbound)		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
2:30pm	347	21	28	20	12	188	616	0.2259
2:45pm	406	29	19	18	15	257	744	0.2728
3:00pm	245	28	30	11	12	346	672	0.2464
3:15pm	261	31	42	12	9	340	695	0.2549
Hourly Tot	1259	109	119	61	48	1131	2727	1
Hourly Tot	0.9203	0.0797	0.6611	0.3389	0.0407	0.9593		
PHF	0.78	0.88	0.71	0.76	0.8	0.82		

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

#8

File Name : 17-07982-004
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Suncast Ln Westbound					Latrobe Rd Northbound					Suncast Ln Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	102	5	0	107	0	0	0	0	0	1	89	0	0	90	2	0	0	0	2	199	0
6:15	0	108	5	0	113	0	0	0	0	0	0	90	0	0	90	2	0	1	0	3	206	0
6:30	0	132	9	0	141	0	0	0	0	0	1	122	0	0	123	1	0	0	0	1	265	0
6:45	0	195	17	0	212	0	0	0	0	0	1	109	0	0	110	2	0	0	0	2	324	0
Total	0	537	36	0	573	0	0	0	0	0	3	410	0	0	413	7	0	1	0	8	994	0
7:00	0	176	16	0	192	0	0	0	0	0	1	119	0	0	120	5	0	1	0	6	318	0
7:15	0	211	20	0	231	0	0	0	0	0	3	136	0	0	139	2	0	1	0	3	373	0
7:30	0	255	24	0	279	0	0	0	0	0	6	147	0	0	153	2	0	0	0	2	434	0
7:45	0	294	31	0	325	0	0	0	0	0	8	191	0	0	199	7	0	0	0	7	531	0
Total	0	936	91	0	1027	0	0	0	0	0	18	593	0	0	611	16	0	2	0	18	1656	0
8:00	0	207	41	0	248	0	0	0	0	0	14	205	0	1	220	16	0	1	0	17	485	1
8:15	0	223	22	0	245	0	0	0	0	0	5	133	0	0	138	10	0	4	0	14	397	0
8:30	0	180	25	0	205	0	0	0	0	0	3	144	0	0	147	5	0	1	0	6	358	0
8:45	0	174	41	0	215	0	0	0	0	0	3	129	0	0	132	10	0	0	0	10	357	0
Total	0	784	129	0	913	0	0	0	0	0	25	611	0	1	637	41	0	6	0	47	1597	1
16:00	0	140	23	0	163	0	0	0	0	0	5	270	0	0	275	43	0	10	0	53	491	0
16:15	0	151	17	0	168	0	0	0	0	0	0	180	0	0	180	29	0	4	0	33	381	0
16:30	0	167	21	0	188	0	0	0	0	0	0	292	0	0	292	45	0	3	0	48	528	0
16:45	0	185	16	0	201	0	0	0	0	0	2	213	0	0	215	30	0	6	0	36	452	0
Total	0	643	77	0	720	0	0	0	0	0	7	955	0	0	962	147	0	23	0	170	1852	0
17:00	0	169	12	0	181	0	0	0	0	0	3	234	0	0	237	71	0	6	0	77	495	0
17:15	0	156	14	0	170	0	0	0	0	0	3	182	0	0	185	35	0	6	0	41	396	0
17:30	0	186	9	0	195	0	0	0	0	0	0	193	0	1	194	26	0	4	0	30	419	1
17:45	0	175	11	0	186	0	0	0	0	0	0	179	0	0	179	29	0	4	0	33	398	0
Total	0	686	46	0	732	0	0	0	0	0	6	788	0	1	795	161	0	20	0	181	1708	1
18:00	0	152	19	0	171	0	0	0	0	0	1	205	0	0	206	23	0	3	0	26	403	0
18:15	0	139	13	0	152	0	0	0	0	0	1	106	0	0	107	10	0	2	0	12	271	0
18:30	0	116	9	0	125	0	0	0	0	0	2	101	0	0	103	10	0	1	0	11	239	0
18:45	0	119	12	0	131	0	0	0	0	0	0	75	0	0	75	12	0	1	0	13	219	0
Total	0	526	53	0	579	0	0	0	0	0	4	487	0	0	491	55	0	7	0	62	1132	0
Grand Total	0	4112	432	0	4544	0	0	0	0	0	63	3844	0	2	3909	427	0	59	0	486	8939	2
Apprch %	0.0%	90.5%	9.5%	0.0%		0.0%	0.0%	0.0%	0.0%		1.6%	98.3%	0.0%	0.1%		87.9%	0.0%	12.1%	0.0%			
Total %	0.0%	46.0%	4.8%	0.0%	50.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	43.0%	0.0%	0.0%	43.7%	4.8%	0.0%	0.7%	0.0%	5.4%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Suncast Ln Westbound					Latrobe Rd Northbound					Suncast Ln Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	255	24	0	279	0	0	0	0	0	6	147	0	0	153	2	0	0	0	2	434
7:45	0	294	31	0	325	0	0	0	0	0	8	191	0	0	199	7	0	0	0	7	531
8:00	0	207	41	0	248	0	0	0	0	0	14	205	0	1	220	16	0	1	0	17	485
8:15	0	223	22	0	245	0	0	0	0	0	5	133	0	0	138	10	0	4	0	14	397
Total Volume	0	979	118	0	1097	0	0	0	0	0	33	676	0	1	710	35	0	5	0	40	1847
% App Total	0.0%	89.2%	10.8%	0.0%		0.0%	0.0%	0.0%	0.0%		4.6%	95.2%	0.0%	0.1%		87.5%	0.0%	12.5%	0.0%		
PHF	.000	.832	.720	.000	.844	.000	.000	.000	.000	.000	.589	.824	.000	.250	.807	.547	.000	.313	.000	.588	.870

PM PEAK HOUR	Latrobe Rd Southbound					Suncast Ln Westbound					Latrobe Rd Northbound					Suncast Ln Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	167	21	0	188	0	0	0	0	0	0	292	0	0	292	45	0	3	0	48	528
16:45	0	185	16	0	201	0	0	0	0	0	2	213	0	0	215	30	0	6	0	36	452
17:00	0	169	12	0	181	0	0	0	0	0	3	234	0	0	237	71	0	6	0	77	495
17:15	0	156	14	0	170	0	0	0	0	0	3	182	0	0	185	35	0	6	0	41	396
Total Volume	0	677	63	0	740	0	0	0	0	0	8	921	0	0	929	181	0	21	0	202	1871
% App Total	0.0%	91.5%	8.5%	0.0%		0.0%	0.0%	0.0%	0.0%		0.9%	99.1%	0.0%	0.0%		89.6%	0.0%	10.4%	0.0%		
PHF	.000	.915	.750	.000	.920	.000	.000	.000	.000	.000	.667	.789	.000	.000	.795	.637	.000	.875	.000	.656	.886

25-1836 D.3 Page 1932 of 4853

Analysis ID: 1475494
Analysis: Creekside #9 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			Clubview (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	42	25	95	0	5	179	3	116	0
7:45am	48	39	158	0	13	90	9	144	2
8:00am	46	54	130	1	24	51	8	124	3
8:15am	35	61	101	0	24	41	3	107	0
Hourly Tot	171	179	484	1	66	361	23	491	5
Hourly Tot	0.205	0.2146	0.5803	0.0023	0.1542	0.8435	0.0443	0.9461	0.0096
PHF	0.89	0.73	0.77	0.25	0.69	0.5	0.64	0.85	0.42

All Days, Peak PM

	Latrobe north (Southbound)			Clubview (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	52	109	139	0	17	32	2	109	0
2:45pm	54	100	199	2	19	28	4	111	3
3:00pm	55	78	106	3	14	26	4	124	5
3:15pm	58	75	72	4	6	28	10	123	4
Hourly Tot	219	362	516	9	56	114	20	467	12
Hourly Tot	0.1996	0.33	0.4704	0.0503	0.3128	0.6369	0.0401	0.9359	0.024
PHF	0.94	0.83	0.65	0.56	0.74	0.89	0.5	0.94	0.6

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			Clubview (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	40	23	122	1	8	143	6	139	0
7:45am	47	36	163	0	19	98	16	183	2
8:00am	55	54	159	0	35	48	14	159	4
8:15am	36	60	119	0	32	46	5	124	1
Hourly Tot	178	173	563	1	94	335	41	605	7
Hourly Tot	0.1947	0.1893	0.616	0.0023	0.2186	0.7791	0.0628	0.9265	0.0107
PHF	0.81	0.72	0.86	0.25	0.67	0.59	0.64	0.83	0.44

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			Clubview (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	56	120	182	1	22	33	3	113	0
2:45pm	62	114	192	2	26	24	6	129	2
3:00pm	63	78	131	4	20	22	8	153	5
3:15pm	67	73	98	6	9	24	12	150	4
Hourly Tot	248	385	603	13	77	103	29	545	11
Hourly Tot	0.2006	0.3115	0.4879	0.0674	0.399	0.5337	0.0496	0.9316	0.0188
PHF	0.93	0.8	0.79	0.54	0.74	0.78	0.6	0.89	0.55

GF (south) (Eastbound)

Left	Thru	Right	Total	Total %
25	7	0	497	0.2399
50	8	0	561	0.2708
90	9	1	541	0.2611
92	7	2	473	0.2283
257	31	3	2072	1
0.8832	0.1065	0.0103		
0.7	0.86	0.38		

GF (south) (Eastbound)

Left	Thru	Right	Total	Total %
53	14	2	529	0.2319
104	20	6	650	0.285
128	26	6	575	0.2521
121	19	7	527	0.231
406	79	21	2281	1
0.8024	0.1561	0.0415		
0.79	0.76	0.75		

GF (south) (Eastbound)

Left	Thru	Right	Total	Total %
26	9	0	517	0.2193
62	13	0	639	0.2711
110	11	2	651	0.2762
116	8	3	550	0.2333
314	41	5	2357	1
0.8722	0.1139	0.0139		
0.68	0.79	0.42		

GF (south) (Eastbound)

Left	Thru	Right	Total	Total %
62	14	2	608	0.2309
128	24	8	717	0.2723
154	35	8	681	0.2586
150	26	8	627	0.2381
494	99	26	2633	1
0.7981	0.1599	0.042		
0.8	0.71	0.81		

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-003
Date : 11/16/2017

#9

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Golden Foothill Pkwy /Clubview Dr Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy /Clubview Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	6	46	64	0	116	3	0	23	0	26	3	50	1	0	54	19	4	0	0	23	219	0
6:15	9	46	33	0	88	1	1	30	0	32	2	53	2	0	57	7	0	0	0	7	184	0
6:30	14	64	59	0	137	2	3	36	0	41	2	62	1	0	65	11	0	0	0	11	254	0
6:45	27	82	64	0	173	1	6	50	0	57	4	60	2	0	66	5	3	0	0	8	304	0
Total	56	238	220	0	514	7	10	139	0	156	11	225	6	0	242	42	7	0	0	49	961	0
7:00	30	65	81	0	176	1	2	32	0	35	6	63	1	0	70	13	1	1	0	15	296	0
7:15	34	75	71	0	180	2	4	52	0	58	2	78	1	0	81	11	0	3	0	14	333	0
7:30	56	105	107	0	268	5	11	47	0	63	5	81	2	0	88	16	1	1	0	18	437	0
7:45	82	104	81	0	267	5	14	104	0	123	7	83	0	0	90	10	5	1	0	16	496	0
Total	202	349	340	0	891	13	31	235	0	279	20	305	4	0	329	50	7	6	0	63	1562	0
8:00	41	98	119	0	258	4	18	105	0	127	9	93	0	0	102	21	5	0	0	26	513	0
8:15	29	79	100	0	208	2	13	43	0	58	4	75	2	0	81	33	6	0	0	39	386	0
8:30	23	81	87	0	191	2	9	46	1	58	7	55	1	0	63	30	4	1	0	35	347	1
8:45	21	81	71	1	174	3	10	58	0	71	4	63	0	0	67	13	4	5	0	22	334	1
Total	114	339	377	1	831	11	50	252	1	314	24	286	3	0	313	97	19	6	0	122	1580	2
16:00	48	69	32	0	149	2	6	35	0	43	4	110	3	0	117	104	6	3	0	113	422	0
16:15	31	68	51	0	150	0	9	27	1	37	5	87	4	1	97	74	12	1	0	87	371	2
16:30	45	78	34	0	157	1	4	24	0	29	0	135	7	0	142	130	14	5	0	149	477	0
16:45	84	79	34	0	197	2	11	25	0	38	2	112	0	0	114	72	8	3	0	83	432	0
Total	208	294	151	0	653	5	30	111	1	147	11	444	14	1	470	380	40	12	0	432	1702	2
17:00	55	79	29	0	163	1	6	32	0	39	3	92	6	0	101	116	28	2	0	146	449	0
17:15	65	83	26	0	174	0	6	29	0	35	3	93	8	0	104	58	6	2	0	66	379	0
17:30	59	91	29	0	179	0	6	23	0	29	4	85	1	0	90	78	16	0	0	94	392	0
17:45	43	98	46	0	187	0	9	36	0	45	2	89	4	0	95	58	13	4	0	75	402	0
Total	222	351	130	0	703	1	27	120	0	148	12	359	19	0	390	310	63	8	0	381	1622	0
18:00	44	67	29	0	140	0	4	37	0	41	1	94	2	0	97	77	5	4	0	86	364	0
18:15	57	73	29	0	159	0	2	15	0	17	1	59	2	0	62	33	4	1	0	38	276	0
18:30	46	58	18	0	122	1	1	23	0	25	0	42	2	0	44	36	13	1	0	50	241	0
18:45	46	54	20	0	120	2	5	14	0	21	2	26	2	0	30	34	8	1	0	43	214	0
Total	193	252	96	0	541	3	12	89	0	104	4	221	8	0	233	180	30	7	0	217	1095	0
Grand Total	995	1823	1314	1	4133	40	160	946	2	1148	82	1840	54	1	1977	1059	166	39	0	1264	8522	4
Apprch %	24.1%	44.1%	31.8%	0.0%		3.5%	13.9%	82.4%	0.2%		4.1%	93.1%	2.7%	0.1%		83.8%	13.1%	3.1%	0.0%			
Total %	11.7%	21.4%	15.4%	0.0%	48.5%	0.5%	1.9%	11.1%	0.0%	13.5%	1.0%	21.6%	0.6%	0.0%	23.2%	12.4%	1.9%	0.5%	0.0%	14.8%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Golden Foothill Pkwy /Clubview Dr Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy /Clubview Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	56	105	107	0	268	5	11	47	0	63	5	81	2	0	88	16	1	1	0	18	437
7:45	82	104	81	0	267	5	14	104	0	123	7	83	0	0	90	10	5	1	0	16	496
8:00	41	98	119	0	258	4	18	105	0	127	9	93	0	0	102	21	5	0	0	26	513
8:15	29	79	100	0	208	2	13	43	0	58	4	75	2	0	81	33	6	0	0	39	386
Total Volume	208	386	407	0	1001	16	56	299	0	371	25	332	4	0	361	80	17	2	0	99	1832
% App Total	20.8%	38.6%	40.7%	0.0%		4.3%	15.1%	80.6%	0.0%		6.9%	92.0%	1.1%	0.0%		80.8%	17.2%	2.0%	0.0%		
PHF	.634	.919	.855	.000	.934	.800	.778	.712	.000	.730	.694	.892	.500	.000	.885	.606	.708	.500	.000	.635	.893

PM PEAK HOUR	Latrobe Rd Southbound					Golden Foothill Pkwy /Clubview Dr Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy /Clubview Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	45	78	34	0	157	1	4	24	0	29	0	135	7	0	142	130	14	5	0	149	477
16:45	84	79	34	0	197	2	11	25	0	38	2	112	0	0	114	72	8	3	0	83	432
17:00	55	79	29	0	163	1	6	32	0	39	3	92	6	0	101	116	28	2	0	146	449
17:15	65	83	26	0	174	0	6	29	0	35	3	93	8	0	104	58	6	2	0	66	379
Total Volume	249	319	123	0	691	4	27	110	0	141	8	432	21	0	461	376	56	12	0	444	1737
% App Total	36.0%	46.2%	17.8%	0.0%		2.8%	19.1%	78.0%	0.0%		1.7%	93.7%	4.6%	0.0%		84.7%	12.6%	2.7%	0.0%		
PHF	.741	.961	.904	.000	.877	.500	.614	.859	.000	.904	.667	.800	.656	.000	.812	.723	.500	.600	.000	.745	.910

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Analysis ID: 1475496
Analysis: Creekside #10 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Investment (Eastboun		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
7:45am	47	0	47	2	6	123	225	0.2679
8:00am	68	0	46	8	6	97	225	0.2679
8:15am	71	0	38	12	3	74	198	0.2357
8:30am	66	0	16	8	2	100	192	0.2286
Hourly Tot	252	0	147	30	17	394	840	1
Hourly Tot	1	0	0.8305	0.1695	0.0414	0.9586		
PHF	0.89	0	0.78	0.62	0.71	0.8		

All Days, Peak PM

	Latrobe north (Southb		Investment (Eastboun		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
2:30pm	119	0	27	12	7	88	253	0.2336
2:45pm	117	0	45	9	11	76	258	0.2382
3:00pm	97	0	96	14	7	62	276	0.2548
3:15pm	107	0	102	19	3	65	296	0.2733
Hourly Tot	440	0	270	54	28	291	1083	1
Hourly Tot	1	0	0.8333	0.1667	0.0878	0.9122		
PHF	0.92	0	0.66	0.71	0.64	0.83		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Investment (Eastboun		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
7:45am	45	0	64	1	9	158	277	0.2809
8:00am	67	0	65	11	9	119	271	0.2748
8:15am	71	0	49	16	6	80	222	0.2252
8:30am	71	0	24	9	4	108	216	0.2191
Hourly Tot	254	0	202	37	28	465	986	1
Hourly Tot	1	0	0.8452	0.1548	0.0568	0.9432		
PHF	0.89	0	0.78	0.58	0.78	0.74		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Investment (Eastboun		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
2:45pm	135	0	48	11	14	84	292	0.2345
3:00pm	99	0	128	20	9	72	328	0.2635
3:15pm	108	0	132	26	4	71	341	0.2739
3:30pm	105	0	72	20	0	87	284	0.2281
Hourly Tot	447	0	380	77	27	314	1245	1
Hourly Tot	1	0	0.8315	0.1685	0.0792	0.9208		
PHF	0.83	0	0.72	0.74	0.48	0.9		

#10

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-002
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Investment Blvd Westbound					Latrobe Rd Northbound					Investment Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	17	22	0	39	0	0	0	0	0	2	27	0	0	29	23	0	0	0	23	91	0
6:15	0	23	32	0	55	0	0	0	0	0	1	61	0	0	62	5	0	0	0	5	122	0
6:30	0	27	30	0	57	0	0	0	0	0	2	52	0	0	54	0	0	0	0	0	111	0
6:45	0	23	50	0	73	0	0	0	0	0	5	62	0	0	67	0	0	0	0	0	140	0
Total	0	90	134	0	224	0	0	0	0	0	10	202	0	0	212	28	0	0	0	28	464	0
7:00	0	37	36	0	73	0	0	0	0	0	1	68	0	0	69	3	0	0	0	3	145	0
7:15	0	37	40	0	77	0	0	0	0	0	2	70	0	0	72	3	0	0	0	3	152	0
7:30	0	30	87	0	117	0	0	0	0	0	2	85	0	0	87	5	0	1	0	6	210	0
7:45	0	33	75	0	108	0	0	0	0	0	6	81	0	0	87	8	0	0	0	8	203	0
Total	0	137	238	0	375	0	0	0	0	0	11	304	0	0	315	19	0	1	0	20	710	0
8:00	0	38	63	0	101	0	0	0	0	0	5	74	0	0	79	8	0	0	0	8	188	0
8:15	0	35	48	0	83	0	0	0	0	0	5	65	0	0	70	3	0	1	0	4	157	0
8:30	0	32	50	0	82	0	0	0	0	0	1	56	0	0	57	4	0	1	0	5	144	0
8:45	0	35	53	0	88	0	0	0	0	0	3	51	0	0	54	4	0	1	0	5	147	0
Total	0	140	214	0	354	0	0	0	0	0	14	246	0	0	260	19	0	3	0	22	636	0
16:00	0	74	6	0	80	0	0	0	0	0	1	36	0	0	37	71	0	5	0	76	193	0
16:15	0	65	3	0	68	0	0	0	0	0	0	40	0	0	40	39	0	0	0	39	147	0
16:30	0	76	8	0	84	0	0	0	0	0	2	49	0	0	51	112	0	7	0	119	254	0
16:45	0	75	7	0	82	0	0	0	0	0	1	40	0	0	41	55	0	3	0	58	181	0
Total	0	290	24	0	314	0	0	0	0	0	4	165	0	0	169	277	0	15	0	292	775	0
17:00	0	73	8	0	81	0	0	0	0	0	1	43	0	0	44	58	0	7	0	65	190	0
17:15	0	69	15	0	84	0	0	0	0	0	1	38	0	0	39	56	0	1	0	57	180	0
17:30	0	69	21	0	90	0	0	0	0	0	0	50	0	0	50	49	0	1	0	50	190	0
17:45	0	68	32	0	100	0	0	0	0	0	0	51	0	0	51	25	0	5	0	30	181	0
Total	0	279	76	0	355	0	0	0	0	0	2	182	0	0	184	188	0	14	0	202	741	0
18:00	0	60	9	0	69	0	0	0	0	0	0	39	0	0	39	58	0	4	0	62	170	0
18:15	0	67	8	0	75	0	0	0	0	0	0	35	0	0	35	15	0	0	0	15	125	0
18:30	0	53	5	0	58	0	0	0	0	0	0	24	0	0	24	16	0	1	0	17	99	0
18:45	0	51	6	0	57	0	0	0	0	0	1	26	0	0	27	5	0	1	0	6	90	0
Total	0	231	28	0	259	0	0	0	0	0	1	124	0	0	125	94	0	6	0	100	484	0
Grand Total	0	1167	714	0	1881	0	0	0	0	0	42	1223	0	0	1265	625	0	39	0	664	3810	0
Apprch %	0.0%	62.0%	38.0%	0.0%		0.0%	0.0%	0.0%	0.0%		3.3%	96.7%	0.0%	0.0%		94.1%	0.0%	5.9%	0.0%			
Total %	0.0%	30.6%	18.7%	0.0%	49.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	32.1%	0.0%	0.0%	33.2%	16.4%	0.0%	1.0%	0.0%	17.4%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Investment Blvd Westbound					Latrobe Rd Northbound					Investment Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	30	87	0	117	0	0	0	0	0	2	85	0	0	87	5	0	1	0	6	210
7:45	0	33	75	0	108	0	0	0	0	0	6	81	0	0	87	8	0	0	0	8	203
8:00	0	38	63	0	101	0	0	0	0	0	5	74	0	0	79	8	0	0	0	8	188
8:15	0	35	48	0	83	0	0	0	0	0	5	65	0	0	70	3	0	1	0	4	157
Total Volume	0	136	273	0	409	0	0	0	0	0	18	305	0	0	323	24	0	2	0	26	758
% App Total	0.0%	33.3%	66.7%	0.0%		0.0%	0.0%	0.0%	0.0%		5.6%	94.4%	0.0%	0.0%		92.3%	0.0%	7.7%	0.0%		
PHF	.000	.895	.784	.000	.874	.000	.000	.000	.000	.000	.750	.897	.000	.000	.928	.750	.000	.500	.000	.813	.902

PM PEAK HOUR	Latrobe Rd Southbound					Investment Blvd Westbound					Latrobe Rd Northbound					Investment Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	76	8	0	84	0	0	0	0	0	2	49	0	0	51	112	0	7	0	119	254
16:45	0	75	7	0	82	0	0	0	0	0	1	40	0	0	41	55	0	3	0	58	181
17:00	0	73	8	0	81	0	0	0	0	0	1	43	0	0	44	58	0	7	0	65	190
17:15	0	69	15	0	84	0	0	0	0	0	1	38	0	0	39	56	0	1	0	57	180
Total Volume	0	293	38	0	331	0	0	0	0	0	5	170	0	0	175	281	0	18	0	299	805
% App Total	0.0%	88.5%	11.5%	0.0%		0.0%	0.0%	0.0%	0.0%		2.9%	97.1%	0.0%	0.0%		94.0%	0.0%	6.0%	0.0%		
PHF	.000	.964	.633	.000	.985	.000	.000	.000	.000	.000	.625	.867	.000	.000	.858	.627	.000	.643	.000	.628	.792

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Analysis ID: 1473012
Analysis: Creekside #11 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Avanti (Westbound)		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	0	66	0	4	88	0	158	0.2293
11:15am	0	77	0	7	92	0	176	0.2554
11:30am	0	98	0	2	85	0	185	0.2685
11:45am	0	93	0	4	73	0	170	0.2467
Hourly Tot	0	334	0	17	338	0	689	1
Hourly Tot	0	1	0	1	1	0		
PHF	0	0.85	0	0.61	0.92	0		

All Days, Peak PM

	Latrobe north (Southb		Avanti (Westbound)		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
3:45pm	2	129	0	3	82	0	216	0.2477
4:00pm	0	124	0	9	86	0	219	0.2511
4:15pm	1	107	0	16	94	0	218	0.25
4:30pm	3	101	0	17	98	0	219	0.2511
Hourly Tot	6	461	0	45	360	0	872	1
Hourly Tot	0.0128	0.9872	0	1	1	0		
PHF	0.5	0.89	0	0.66	0.92	0		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Avanti (Westbound)		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
8:00am	0	64	0	5	122	0	191	0.252
8:15am	0	72	0	5	82	0	159	0.2098
8:30am	0	75	0	16	103	0	194	0.2559
8:45am	0	84	0	13	117	0	214	0.2823
Hourly Tot	0	295	0	39	424	0	758	1
Hourly Tot	0	1	0	1	1	0		
PHF	0	0.88	0	0.61	0.87	0		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Avanti (Westbound)		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
3:45pm	0	131	0	2	88	0	221	0.2415
4:00pm	0	137	0	10	85	0	232	0.2536
4:15pm	2	111	0	19	102	0	234	0.2557
4:30pm	5	100	0	18	105	0	228	0.2492
Hourly Tot	7	479	0	49	380	0	915	1
Hourly Tot	0.0144	0.9856	0	1	1	0		
PHF	0.35	0.87	0	0.64	0.9	0		

Analysis ID: 1475498
Analysis: Creekside #12 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Royal Oaks (Westbour		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	17	47	1	14	72	11	162	0.2411
11:15am	17	60	5	15	73	5	175	0.2604
11:30am	22	73	2	15	64	0	176	0.2619
11:45am	26	64	0	14	55	0	159	0.2366
Hourly Tot	82	244	8	58	264	16	672	1
Hourly Tot	0.2515	0.7485	0.1212	0.8788	0.9429	0.0571		
PHF	0.79	0.84	0.4	0.97	0.9	0.36		

All Days, Peak PM

	Latrobe north (Southb		Royal Oaks (Westbour		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
2:15pm	22	79	3	21	67	12	204	0.2503
2:30pm	21	104	6	14	77	4	226	0.2773
2:45pm	22	102	8	11	68	0	211	0.2589
3:00pm	27	78	6	16	47	0	174	0.2135
Hourly Tot	92	363	23	62	259	16	815	1
Hourly Tot	0.2022	0.7978	0.2706	0.7294	0.9418	0.0582		
PHF	0.85	0.87	0.72	0.74	0.84	0.33		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Royal Oaks (Westbour		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
7:30am	5	27	0	36	99	7	174	0.2403
7:45am	5	35	0	35	127	18	220	0.3039
8:00am	2	61	0	20	98	7	188	0.2597
8:15am	2	65	0	12	63	0	142	0.1961
Hourly Tot	14	188	0	103	387	32	724	1
Hourly Tot	0.0693	0.9307	0	1	0.9236	0.0764		
PHF	0.7	0.72	0	0.72	0.76	0.44		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Royal Oaks (Westbour		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
2:15pm	22	82	4	24	68	12	212	0.234
2:30pm	22	122	7	15	91	4	261	0.2881
2:45pm	23	118	10	14	79	0	244	0.2693
3:00pm	27	85	5	16	56	0	189	0.2086
Hourly Tot	94	407	26	69	294	16	906	1
Hourly Tot	0.1876	0.8124	0.2737	0.7263	0.9484	0.0516		
PHF	0.87	0.83	0.65	0.72	0.81	0.33		

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-001
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Royal Oaks Dr Westbound					Latrobe Rd Northbound					Royal Oaks Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	17	0	0	17	0	0	4	0	4	0	24	0	0	24	0	0	0	0	0	45	0
6:15	1	20	0	0	21	0	0	9	0	9	0	46	0	0	46	0	0	0	0	0	76	0
6:30	3	27	0	0	30	0	0	12	0	12	0	48	0	0	48	0	0	0	0	0	90	0
6:45	8	23	0	0	31	2	0	8	0	10	0	49	2	0	51	0	0	0	0	0	92	0
Total	12	87	0	0	99	2	0	33	0	35	0	167	2	0	169	0	0	0	0	0	303	0
7:00	3	26	0	0	29	0	0	15	0	15	0	58	0	0	58	0	0	0	0	0	102	0
7:15	6	36	0	0	42	1	0	12	0	13	0	57	1	0	58	0	0	0	0	0	113	0
7:30	7	21	0	0	28	0	0	21	0	21	0	62	2	0	64	0	0	0	0	0	113	0
7:45	15	23	0	0	38	0	0	19	0	19	0	69	3	0	72	0	0	0	0	0	129	0
Total	31	106	0	0	137	1	0	67	0	68	0	246	6	0	252	0	0	0	0	0	457	0
8:00	13	27	0	0	40	2	0	14	0	16	0	69	0	0	69	0	0	0	0	0	125	0
8:15	4	29	0	0	33	1	0	9	0	10	0	58	0	0	58	0	0	0	0	0	101	0
8:30	5	25	0	0	30	0	0	11	0	11	0	42	0	0	42	0	0	0	0	0	83	0
8:45	6	35	0	0	41	0	0	11	0	11	0	45	1	0	46	0	0	0	0	0	98	0
Total	28	116	0	0	144	3	0	45	0	48	0	214	1	0	215	0	0	0	0	0	407	0
16:00	8	63	0	0	71	0	0	6	0	6	0	26	1	0	27	0	0	0	0	0	104	0
16:15	9	64	0	0	73	0	0	5	0	5	0	29	0	0	29	0	0	0	0	0	107	0
16:30	9	67	0	0	76	1	0	4	0	5	0	51	0	0	51	0	0	0	0	0	132	0
16:45	10	76	0	0	86	0	0	5	0	5	0	38	2	0	40	0	0	0	0	0	131	0
Total	36	270	0	0	306	1	0	20	0	21	0	144	3	0	147	0	0	0	0	0	474	0
17:00	11	68	0	0	79	0	0	7	0	7	0	31	0	0	31	0	0	0	0	0	117	0
17:15	15	56	0	0	71	0	0	5	0	5	0	34	0	0	34	0	0	0	0	0	110	0
17:30	8	68	0	0	76	0	0	6	0	6	0	43	1	0	44	0	0	0	0	0	126	0
17:45	23	52	0	0	75	2	0	3	0	5	0	50	1	0	51	0	0	0	0	0	131	0
Total	57	244	0	0	301	2	0	21	0	23	0	158	2	0	160	0	0	0	0	0	484	0
18:00	15	53	0	0	68	1	0	7	0	8	0	31	0	0	31	0	0	0	0	0	107	0
18:15	9	56	0	0	65	0	0	5	0	5	0	25	1	0	26	0	0	0	0	0	96	0
18:30	6	51	0	0	57	0	0	5	0	5	0	19	0	0	19	0	0	0	0	0	81	0
18:45	11	41	0	0	52	1	0	7	0	8	0	19	0	0	19	0	0	0	0	0	79	0
Total	41	201	0	0	242	2	0	24	0	26	0	94	1	0	95	0	0	0	0	0	363	0
Grand Total	205	1024	0	0	1229	11	0	210	0	221	0	1023	15	0	1038	0	0	0	0	0	2488	0
Apprch %	16.7%	83.3%	0.0%	0.0%		5.0%	0.0%	95.0%	0.0%		0.0%	98.6%	1.4%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	8.2%	41.2%	0.0%	0.0%	49.4%	0.4%	0.0%	8.4%	0.0%	8.9%	0.0%	41.1%	0.6%	0.0%	41.7%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Royal Oaks Dr Westbound					Latrobe Rd Northbound					Royal Oaks Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	6	36	0	0	42	1	0	12	0	13	0	57	1	0	58	0	0	0	0	0	113
7:30	7	21	0	0	28	0	0	21	0	21	0	62	2	0	64	0	0	0	0	0	113
7:45	15	23	0	0	38	0	0	19	0	19	0	69	3	0	72	0	0	0	0	0	129
8:00	13	27	0	0	40	2	0	14	0	16	0	69	0	0	69	0	0	0	0	0	125
Total Volume	41	107	0	0	148	3	0	66	0	69	0	257	6	0	263	0	0	0	0	0	480
% App Total	27.7%	72.3%	0.0%	0.0%		4.3%	0.0%	95.7%	0.0%		0.0%	97.7%	2.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.683	.743	.000	.000	.881	.375	.000	.786	.000	.821	.000	.931	.500	.000	.913	.000	.000	.000	.000	.000	.930

PM PEAK HOUR	Latrobe Rd Southbound					Royal Oaks Dr Westbound					Latrobe Rd Northbound					Royal Oaks Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	9	67	0	0	76	1	0	4	0	5	0	51	0	0	51	0	0	0	0	0	132
16:45	10	76	0	0	86	0	0	5	0	5	0	38	2	0	40	0	0	0	0	0	131
17:00	11	68	0	0	79	0	0	7	0	7	0	31	0	0	31	0	0	0	0	0	117
17:15	15	56	0	0	71	0	0	5	0	5	0	34	0	0	34	0	0	0	0	0	110
Total Volume	45	267	0	0	312	1	0	21	0	22	0	154	2	0	156	0	0	0	0	0	490
% App Total	14.4%	85.6%	0.0%	0.0%		4.5%	0.0%	95.5%	0.0%		0.0%	98.7%	1.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.750	.878	.000	.000	.907	.250	.000	.750	.000	.786	.000	.755	.250	.000	.765	.000	.000	.000	.000	.000	.928

Analysis ID: 1473014
Analysis: #13 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	GF west (Eastbound)		GF east (Westbound)		RJM (Northbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
7:45am	26	10	238	27	2	33	336	0.294
8:00am	30	20	203	30	4	63	350	0.3062
8:15am	23	9	143	21	5	62	263	0.2301
8:30am	27	2	92	17	6	50	194	0.1697
Hourly Tot	106	41	676	95	17	208	1143	1
Hourly Tot	0.7211	0.2789	0.8768	0.1232	0.0756	0.9244		
PHF	0.88	0.51	0.71	0.79	0.71	0.83		

All Days, Peak PM

	GF west (Eastbound)		GF east (Westbound)		RJM (Northbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
2:30pm	32	6	146	26	4	42	256	0.1902
2:45pm	34	7	209	40	17	99	406	0.3016
3:00pm	41	11	132	37	32	128	381	0.2831
3:15pm	41	13	85	36	22	106	303	0.2251
Hourly Tot	148	37	572	139	75	375	1346	1
Hourly Tot	0.8	0.2	0.8045	0.1955	0.1667	0.8333		
PHF	0.9	0.71	0.68	0.87	0.59	0.73		

Tues-Thurs, Peak AM

	GF west (Eastbound)		GF east (Westbound)		RJM (Northbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
7:45am	32	15	320	39	4	45	455	0.306
8:00am	32	31	257	42	6	82	450	0.3026
8:15am	28	11	177	29	8	77	330	0.2219
8:30am	34	0	129	22	7	60	252	0.1695
Hourly Tot	126	57	883	132	25	264	1487	1
Hourly Tot	0.6885	0.3115	0.87	0.13	0.0865	0.9135		
PHF	0.93	0.46	0.69	0.79	0.78	0.8		

Tues-Thurs, Peak PM

	GF west (Eastbound)		GF east (Westbound)		RJM (Northbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
2:30pm	32	8	188	37	5	51	321	0.1929
2:45pm	40	10	216	54	23	126	469	0.2819
3:00pm	48	15	164	50	46	157	480	0.2885
3:15pm	48	15	124	44	27	136	394	0.2368
Hourly Tot	168	48	692	185	101	470	1664	1
Hourly Tot	0.7778	0.2222	0.7891	0.2109	0.1769	0.8231		
PHF	0.88	0.8	0.8	0.86	0.55	0.75		

#13

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-007
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Robert J Matthews Pkwy Southbound					Golden Foothill Pkwy Westbound					Robert J Matthews Pkwy Northbound					Golden Foothill Pkwy Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	0	0	0	0	38	13	0	0	51	8	0	20	0	28	0	2	2	0	4	83	0
6:15	0	0	0	0	0	38	8	0	0	46	1	0	6	0	7	0	0	5	0	5	58	0
6:30	0	0	0	0	0	41	13	0	0	54	2	0	9	0	11	0	4	4	0	8	73	0
6:45	0	0	0	0	0	62	32	0	0	94	1	0	4	0	5	0	3	9	0	12	111	0
Total	0	0	0	0	0	179	66	0	0	245	12	0	39	0	51	0	9	20	0	29	325	0
7:00	0	0	0	0	0	59	20	0	0	79	2	0	14	0	16	0	6	3	0	9	104	0
7:15	0	0	0	0	0	78	18	0	0	96	1	0	5	0	6	0	6	15	0	21	123	0
7:30	0	0	0	0	0	87	21	0	0	108	3	0	9	0	12	0	8	8	0	16	136	0
7:45	0	0	0	0	0	92	33	0	0	125	4	0	8	0	12	0	11	17	0	28	165	0
Total	0	0	0	0	0	316	92	0	0	408	10	0	36	0	46	0	31	43	0	74	528	0
8:00	0	0	0	0	0	91	31	0	0	122	2	0	21	0	23	0	7	6	0	13	158	0
8:15	0	0	0	0	0	102	18	0	0	120	4	0	31	0	35	0	6	14	0	20	175	0
8:30	0	0	0	0	0	69	25	0	0	94	3	0	20	0	23	0	6	8	0	14	131	0
8:45	0	0	0	0	0	68	23	0	0	91	2	0	16	0	18	0	15	14	0	29	138	0
Total	0	0	0	0	0	330	97	0	0	427	11	0	88	0	99	0	34	42	0	76	602	0
16:00	0	0	0	0	0	26	15	0	0	41	18	0	108	0	126	0	12	7	0	19	186	0
16:15	0	0	0	0	0	50	14	0	0	64	13	0	75	0	88	0	10	5	0	15	167	0
16:30	0	0	0	0	0	27	11	0	0	38	19	0	108	0	127	0	38	7	0	45	210	0
16:45	0	0	0	0	0	35	17	0	0	52	17	0	69	0	86	0	15	5	0	20	158	0
Total	0	0	0	0	0	138	57	0	0	195	67	0	360	0	427	0	75	24	0	99	721	0
17:00	0	0	0	0	0	19	16	0	1	36	17	0	111	0	128	0	27	10	0	37	201	1
17:15	0	0	0	0	0	21	17	0	0	38	14	0	56	0	70	0	16	3	0	19	127	0
17:30	0	0	0	0	0	31	13	0	0	44	11	0	71	0	82	0	22	12	0	34	160	0
17:45	0	0	0	0	0	41	10	0	0	51	9	0	49	0	58	0	25	7	0	32	141	0
Total	0	0	0	0	0	112	56	0	1	169	51	0	287	0	338	0	90	32	0	122	629	1
18:00	0	0	0	0	0	25	10	0	0	35	17	0	78	0	95	0	12	4	0	16	146	0
18:15	0	0	0	0	0	18	10	0	0	28	6	0	27	0	33	0	10	3	0	13	74	0
18:30	0	0	0	0	0	14	5	0	0	19	2	0	40	0	42	0	14	1	0	15	76	0
18:45	0	0	0	0	0	20	8	0	0	28	2	0	31	0	33	0	8	6	0	14	75	0
Total	0	0	0	0	0	77	33	0	0	110	27	0	176	0	203	0	44	14	0	58	371	0
Grand Total	0	0	0	0	0	1152	401	0	1	1554	178	0	986	0	1164	0	283	175	0	458	3176	1
Apprch %	0.0%	0.0%	0.0%	0.0%		74.1%	25.8%	0.0%	0.1%		15.3%	0.0%	84.7%	0.0%		0.0%	61.8%	38.2%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	36.3%	12.6%	0.0%	0.0%	48.9%	5.6%	0.0%	31.0%	0.0%	36.6%	0.0%	8.9%	5.5%	0.0%	14.4%	100.0%	

AM PEAK HOUR	Robert J Matthews Pkwy Southbound					Golden Foothill Pkwy Westbound					Robert J Matthews Pkwy Northbound					Golden Foothill Pkwy Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	0	0	0	0	87	21	0	0	108	3	0	9	0	12	0	8	8	0	16	136
7:45	0	0	0	0	0	92	33	0	0	125	4	0	8	0	12	0	11	17	0	28	165
8:00	0	0	0	0	0	91	31	0	0	122	2	0	21	0	23	0	7	6	0	13	158
8:15	0	0	0	0	0	102	18	0	0	120	4	0	31	0	35	0	6	14	0	20	175
Total Volume	0	0	0	0	0	372	103	0	0	475	13	0	69	0	82	0	32	45	0	77	634
% App Total	0.0%	0.0%	0.0%	0.0%		78.3%	21.7%	0.0%	0.0%		15.9%	0.0%	84.1%	0.0%		0.0%	41.6%	58.4%	0.0%		
PHF	.000	.000	.000	.000	.000	.912	.780	.000	.000	.950	.813	.000	.556	.000	.586	.000	.727	.662	.000	.688	.906

PM PEAK HOUR	Robert J Matthews Pkwy Southbound					Golden Foothill Pkwy Westbound					Robert J Matthews Pkwy Northbound					Golden Foothill Pkwy Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	0	0	0	0	50	14	0	0	64	13	0	75	0	88	0	10	5	0	15	167
16:30	0	0	0	0	0	27	11	0	0	38	19	0	108	0	127	0	38	7	0	45	210
16:45	0	0	0	0	0	35	17	0	0	52	17	0	69	0	86	0	15	5	0	20	158
17:00	0	0	0	0	0	19	16	0	1	36	17	0	111	0	128	0	27	10	0	37	201
Total Volume	0	0	0	0	0	131	58	0	1	190	66	0	363	0	429	0	90	27	0	117	736
% App Total	0.0%	0.0%	0.0%	0.0%		68.9%	30.5%	0.0%	0.5%		15.4%	0.0%	84.6%	0.0%		0.0%	76.9%	23.1%	0.0%		
PHF	.000	.000	.000	.000	.000	.655	.853	.000	.250	.742	.868	.000	.818	.000	.838	.000	.592	.675	.000	.650	.876

25-1836 D.3 Page 1952 of 4853

Analysis ID: 1473016
Analysis: Creekside #14 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-14
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	RJM north (Southbound)			Investment east (Westbound)			RJM south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	15	43	1	11	1	1	0	2	10
7:45am	8	107	1	51	5	11	1	6	21
8:00am	4	108	0	67	2	15	0	14	18
8:15am	4	61	1	33	0	8	0	18	5
Hourly Tot	31	319	3	162	8	35	1	40	54
Hourly Tot	0.0878	0.9037	0.0085	0.7902	0.039	0.1707	0.0105	0.4211	0.5684
PHF	0.52	0.74	0.75	0.6	0.4	0.58	0.25	0.56	0.64

All Days, Peak PM

	RJM north (Southbound)			Investment east (Westbound)			RJM south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	6	46	2	32	0	2	0	0	2
2:45pm	7	86	3	43	0	7	3	25	9
3:00pm	5	73	5	36	0	12	4	65	17
3:15pm	8	40	2	24	0	9	3	40	12
Hourly Tot	26	245	12	135	0	30	10	130	40
Hourly Tot	0.0919	0.8657	0.0424	0.8182	0	0.1818	0.0556	0.7222	0.2222
PHF	0.81	0.71	0.6	0.78	0	0.62	0.62	0.5	0.59

Tues-Thurs, Peak AM

	RJM north (Southbound)			Investment east (Westbound)			RJM south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	16	64	0	20	2	3	0	0	12
7:45am	6	143	0	71	7	13	0	3	28
8:00am	2	154	0	90	2	22	0	14	19
8:15am	6	82	0	44	0	8	0	22	4
Hourly Tot	30	443	0	225	11	46	0	39	63
Hourly Tot	0.0634	0.9366	0	0.7979	0.039	0.1631	0	0.3824	0.6176
PHF	0.47	0.72	0	0.62	0.39	0.52	0	0.44	0.56

Tues-Thurs, Peak PM

	RJM north (Southbound)			Investment east (Westbound)			RJM south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	8	57	4	53	0	3	0	0	3
2:45pm	4	116	6	67	0	11	2	39	14
3:00pm	3	93	8	55	0	18	5	99	25
3:15pm	10	53	4	36	0	13	2	57	17
Hourly Tot	25	319	22	211	0	45	9	195	59
Hourly Tot	0.0683	0.8716	0.0601	0.8242	0	0.1758	0.0342	0.7414	0.2243
PHF	0.62	0.69	0.69	0.79	0	0.62	0.45	0.49	0.59

Investment west (Eastbound)

Left	Thru	Right	Total	Total %
0	1	0	85	0.129
0	3	0	214	0.3247
0	2	0	230	0.349
0	0	0	130	0.1973
0	6	0	659	1
0	1	0		
0	0.5	0		

Investment west (Eastbound)

Left	Thru	Right	Total	Total %
0	4	3	97	0.1499
0	3	6	192	0.2968
0	1	2	220	0.34
0	0	0	138	0.2133
0	8	11	647	1
0	0.4211	0.5789		
0	0.5	0.46		

Investment west (Eastbound)

Left	Thru	Right	Total	Total %
0	2	0	119	0.1374
0	5	0	276	0.3187
0	2	0	305	0.3522
0	0	0	166	0.1917
0	9	0	866	1
0	1	0		
0	0.45	0		

Investment west (Eastbound)

Left	Thru	Right	Total	Total %
0	2	5	135	0.1479
0	5	10	274	0.3001
0	2	4	312	0.3417
0	0	0	192	0.2103
0	9	19	913	1
0	0.3214	0.6786		
0	0.45	0.47		

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-006
Date : 11/16/2017

#14

Unshifted Count = All Vehicles & Uturns

	Robert J Matthews Pkwy Southbound					Investment Blvd Westbound					Robert J Matthews Pkwy Northbound					Investment Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	1	2	0	0	3	7	3	1	0	11	0	10	7	0	17	8	7	0	0	15	46	0
6:15	1	3	1	0	5	8	3	1	0	12	0	1	3	0	4	0	3	0	0	3	24	0
6:30	2	3	3	1	9	8	3	5	0	16	0	1	0	0	1	1	0	0	0	1	27	1
6:45	2	1	3	0	6	11	6	4	0	21	0	1	0	0	1	0	0	0	0	0	28	0
Total	6	9	7	1	23	34	15	11	0	60	0	13	10	0	23	9	10	0	0	19	125	1
7:00	0	0	0	0	0	9	3	2	0	14	0	0	1	0	1	0	0	0	0	0	15	0
7:15	1	3	1	1	6	4	7	4	0	15	0	0	0	0	0	0	2	0	0	2	23	1
7:30	2	2	4	0	8	19	4	3	0	26	0	1	0	0	1	1	2	0	0	3	38	0
7:45	4	3	2	0	9	14	9	4	0	27	0	0	2	0	2	1	1	0	0	2	40	0
Total	7	8	7	1	23	46	23	13	0	82	0	1	3	0	4	2	5	0	0	7	116	1
8:00	3	2	5	0	10	20	6	6	0	32	0	1	3	0	4	1	1	0	0	2	48	0
8:15	2	6	1	0	9	12	5	3	0	20	1	1	0	0	2	0	0	0	0	0	31	0
8:30	4	2	5	2	13	15	6	3	0	24	1	0	1	0	2	0	1	0	0	1	40	2
8:45	0	4	1	0	5	11	4	6	0	21	0	0	1	0	1	0	2	0	0	2	29	0
Total	9	14	12	2	37	58	21	18	0	97	2	2	5	0	9	1	4	0	0	5	148	2
16:00	4	0	0	0	4	0	1	3	0	4	0	7	28	0	35	2	8	0	0	10	53	0
16:15	6	1	2	1	10	0	0	1	0	1	0	7	16	0	23	0	5	0	0	5	39	1
16:30	13	1	1	0	15	3	0	4	0	7	0	5	19	0	24	4	8	0	0	12	58	0
16:45	3	2	1	0	6	2	0	4	0	6	0	6	11	0	17	2	5	0	0	7	36	0
Total	26	4	4	1	35	5	1	12	0	18	0	25	74	0	99	8	26	0	0	34	186	1
17:00	14	3	3	0	20	1	1	2	0	4	0	2	14	0	16	3	8	0	0	11	51	0
17:15	1	1	2	0	4	4	4	0	0	8	0	3	13	0	16	3	5	0	0	8	36	0
17:30	0	6	6	0	12	12	5	0	0	17	0	6	16	0	22	1	4	0	0	5	56	0
17:45	1	12	3	0	16	19	7	0	0	26	0	6	15	0	21	2	3	0	0	5	68	0
Total	16	22	14	0	52	36	17	2	0	55	0	17	58	0	75	9	20	0	0	29	211	0
18:00	3	4	1	0	8	2	0	0	0	2	0	15	28	0	43	10	11	0	0	21	74	0
18:15	2	0	0	0	2	2	0	0	0	2	0	3	4	0	7	0	0	0	0	0	11	0
18:30	0	1	0	0	1	1	0	0	0	1	0	3	2	0	5	0	5	0	0	5	12	0
18:45	2	0	0	0	2	2	2	2	0	6	0	1	1	0	2	1	0	0	0	1	11	0
Total	7	5	1	0	13	7	2	2	0	11	0	22	35	0	57	11	16	0	0	27	108	0
Grand Total	71	62	45	5	183	186	79	58	0	323	2	80	185	0	267	40	81	0	0	121	894	5
Apprch %	38.8%	33.9%	24.6%	2.7%		57.6%	24.5%	18.0%	0.0%		0.7%	30.0%	69.3%	0.0%		33.1%	66.9%	0.0%	0.0%			
Total %	7.9%	6.9%	5.0%	0.6%	20.5%	20.8%	8.8%	6.5%	0.0%	36.1%	0.2%	8.9%	20.7%	0.0%	29.9%	4.5%	9.1%	0.0%	0.0%	13.5%	100.0%	

AM PEAK HOUR	Robert J Matthews Pkwy Southbound					Investment Blvd Westbound					Robert J Matthews Pkwy Northbound					Investment Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	4	3	2	0	9	14	9	4	0	27	0	0	2	0	2	1	1	0	0	2	40
8:00	3	2	5	0	10	20	6	6	0	32	0	1	3	0	4	1	1	0	0	2	48
8:15	2	6	1	0	9	12	5	3	0	20	1	1	0	0	2	0	0	0	0	0	31
8:30	4	2	5	2	13	15	6	3	0	24	1	0	1	0	2	0	1	0	0	1	40
Total Volume	13	13	13	2	41	61	26	16	0	103	2	2	6	0	10	2	3	0	0	5	159
% App Total	31.7%	31.7%	31.7%	4.9%		59.2%	25.2%	15.5%	0.0%		20.0%	20.0%	60.0%	0.0%		40.0%	60.0%	0.0%	0.0%		
PHF	.813	.542	.650	.250	.788	.763	.722	.667	.000	.805	.500	.500	.500	.000	.625	.500	.750	.000	.000	.625	.828

PM PEAK HOUR	Robert J Matthews Pkwy Southbound					Investment Blvd Westbound					Robert J Matthews Pkwy Northbound					Investment Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:15 to 18:15																					
Peak Hour For Entire Intersection Begins at 17:15																					
17:15	1	1	2	0	4	4	4	0	0	8	0	3	13	0	16	3	5	0	0	8	36
17:30	0	6	6	0	12	12	5	0	0	17	0	6	16	0	22	1	4	0	0	5	56
17:45	1	12	3	0	16	19	7	0	0	26	0	6	15	0	21	2	3	0	0	5	68
18:00	3	4	1	0	8	2	0	0	0	2	0	15	28	0	43	10	11	0	0	21	74
Total Volume	5	23	12	0	40	37	16	0	0	53	0	30	72	0	102	16	23	0	0	39	234
% App Total	12.5%	57.5%	30.0%	0.0%		69.8%	30.2%	0.0%	0.0%		0.0%	29.4%	70.6%	0.0%		41.0%	59.0%	0.0%	0.0%		
PHF	.417	.479	.500	.000	.625	.487	.571	.000	.000	.510	.000	.500	.643	.000	.593	.400	.523	.000	.000	.464	.791

25-1836 D.3 Page 1957 of 4853

Analysis ID: 1473017
Analysis: Creekside #15 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-14
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	driveway (Southbound)			GF east (Westbound)			Carson Crossing (Northbound)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00am	0	0	0	20	17	0	2	0	17	
11:15am	0	0	0	25	12	0	0	0	21	
11:30am	0	0	0	22	8	0	1	0	26	
11:45am	0	0	0	19	13	0	1	0	27	
Hourly Tot	0	0	0	86	50	0	4	0	91	
Hourly Tot	0	0	0	0.6324	0.3676	0	0.0421	0	0.9579	
PHF	0	0	0	0.86	0.74	0	0.5	0	0.84	

All Days, Peak PM

	driveway (Southbound)			GF east (Westbound)			Carson Crossing (Northbound)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3:00pm	0	0	0	20	47	0	2	0	17	
3:15pm	0	0	0	20	36	0	2	0	21	
3:30pm	0	0	0	24	24	0	2	0	19	
3:45pm	0	0	0	31	25	0	2	0	26	
Hourly Tot	0	0	0	95	132	0	8	0	83	
Hourly Tot	0	0	0	0.4185	0.5815	0	0.0879	0	0.9121	
PHF	0	0	0	0.77	0.7	0	1	0	0.8	

Tues-Thurs, Peak AM

	driveway (Southbound)			GF east (Westbound)			Carson Crossing (Northbound)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:45am	0	0	0	15	19	0	3	0	30	
8:00am	0	0	0	12	31	0	9	0	40	
8:15am	0	0	0	11	26	0	10	0	18	
8:30am	0	0	0	11	15	0	9	0	20	
Hourly Tot	0	0	0	49	91	0	31	0	108	
Hourly Tot	0	0	0	0.35	0.65	0	0.223	0	0.777	
PHF	0	0	0	0.82	0.73	0	0.78	0	0.68	

Tues-Thurs, Peak PM

	driveway (Southbound)			GF east (Westbound)			Carson Crossing (Northbound)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3:00pm	0	0	0	22	69	0	0	0	17	
3:15pm	0	0	0	21	51	0	2	0	16	
3:30pm	0	0	0	29	36	0	3	0	15	
3:45pm	0	0	0	37	34	0	1	0	32	
Hourly Tot	0	0	0	109	190	0	6	0	80	
Hourly Tot	0	0	0	0.3645	0.6355	0	0.0698	0	0.9302	
PHF	0	0	0	0.74	0.69	0	0.5	0	0.62	

GF west (Eastbound)

Left	Thru	Right	Total	Total %
0	16	0	72	0.2416
0	17	3	78	0.2617
0	10	5	72	0.2416
0	10	6	76	0.255
0	53	14	298	1
0	0.791	0.209		
0	0.78	0.58		

GF west (Eastbound)

Left	Thru	Right	Total	Total %
0	26	5	117	0.274
0	29	4	112	0.2623
0	22	0	91	0.2131
0	22	1	107	0.2506
0	99	10	427	1
0	0.9083	0.0917		
0	0.85	0.5		

GF west (Eastbound)

Left	Thru	Right	Total	Total %
0	14	0	81	0.2269
0	21	3	116	0.3249
0	18	6	89	0.2493
0	12	4	71	0.1989
0	65	13	357	1
0	0.8333	0.1667		
0	0.77	0.54		

GF west (Eastbound)

Left	Thru	Right	Total	Total %
0	39	7	154	0.2836
0	45	6	141	0.2597
0	31	1	115	0.2118
0	28	1	133	0.2449
0	143	15	543	1
0	0.9051	0.0949		
0	0.79	0.54		

Prepared by National Data & Surveying Services

Carson Crossing Rd & Golden Foothill Pkwy

#15

Peak Hour Turning Movement Count

ID: 18-07183-016
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	06:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 07:00 PM

Carson Crossing Rd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Golden Foothill Pkwy

AM	NOON	PM	
81	0	78	
1	0	0	0
0	0	0	0
62	0	65	2
3	0	16	0

WESTBOUND — Golden Foothill Pkwy

	PM	NOON	AM
0	0	0	0
1	75	0	72
1	102	0	44
0	2	0	1
	118	0	135

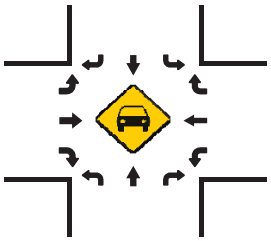
CONTROL: 1-Way Stop(NB)

	AM	NOON	PM
TEV	263	0	314
PHF	0.95		0.84

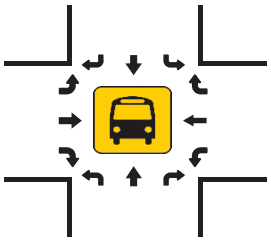
NORTHBOUND — Carson Crossing Rd

PM	118	0	3	0	51	PM
NOON	0	0	0	0	0	NOON
AM	47	0	8	0	72	AM

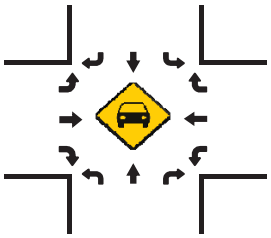
Total Vehicles (AM)



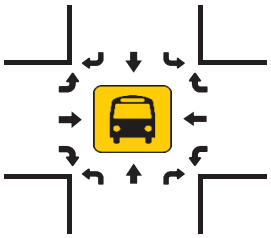
Total Vehicles (AM)



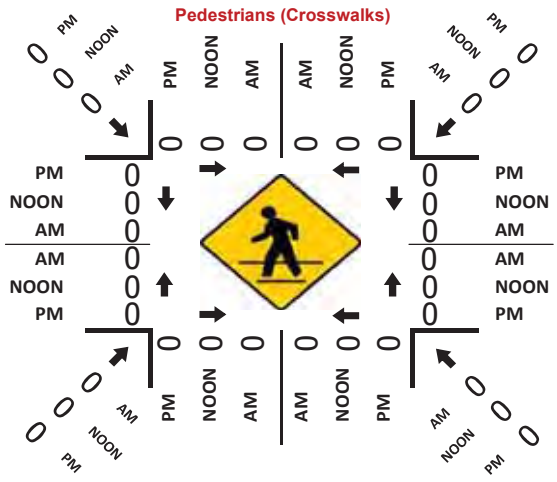
Total Vehicles (NOON)



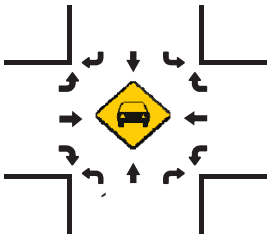
Total Vehicles (NOON)



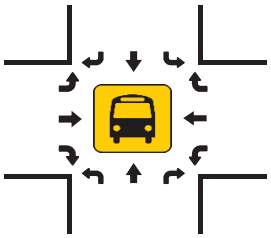
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Analysis ID: 1477557
Analysis: revised Creekside #16 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-24
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	CC east (Westbound)		Palmdale (Northboun		CC west (Eastbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	13	5	10	8	7	7	50	0.1969
11:15am	15	9	13	11	8	10	66	0.2598
11:30am	15	11	13	14	12	6	71	0.2795
11:45am	14	10	7	15	13	8	67	0.2638
Hourly Tot	57	35	43	48	40	31	254	1
Hourly Tot	0.6196	0.3804	0.4725	0.5275	0.5634	0.4366		
PHF	0.95	0.8	0.83	0.8	0.77	0.78		

All Days, Peak PM

	CC east (Westbound)		Palmdale (Northboun		CC west (Eastbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:00pm	9	33	1	11	17	10	81	0.2555
4:15pm	13	34	4	9	17	5	82	0.2587
4:30pm	11	30	6	8	15	4	74	0.2334
4:45pm	14	25	5	11	16	9	80	0.2524
Hourly Tot	47	122	16	39	65	28	317	1
Hourly Tot	0.2781	0.7219	0.2909	0.7091	0.6989	0.3011		
PHF	0.84	0.9	0.67	0.89	0.96	0.7		

Tues-Thurs, Peak AM

	CC east (Westbound)		Palmdale (Northboun		CC west (Eastbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	13	7	9	6	9	7	51	0.1889
11:15am	17	11	16	8	11	11	74	0.2741
11:30am	17	11	15	12	12	6	73	0.2704
11:45am	18	13	5	17	12	7	72	0.2667
Hourly Tot	65	42	45	43	44	31	270	1
Hourly Tot	0.6075	0.3925	0.5114	0.4886	0.5867	0.4133		
PHF	0.9	0.81	0.7	0.63	0.92	0.7		

Tues-Thurs, Peak PM

	CC east (Westbound)		Palmdale (Northboun		CC west (Eastbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:00pm	9	44	1	16	24	11	105	0.2699
4:15pm	7	49	2	11	21	8	98	0.2519
4:30pm	9	46	5	8	20	5	93	0.2391
4:45pm	12	35	4	8	22	12	93	0.2391
Hourly Tot	37	174	12	43	87	36	389	1
Hourly Tot	0.1754	0.8246	0.2182	0.7818	0.7073	0.2927		
PHF	0.77	0.89	0.6	0.67	0.91	0.75		

Analysis ID: 1473487
Analysis: Creekside #17 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	CC north (Southbounc		Four Seasons (Westbc		CC south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
8:00am	0	28	0	1	14	0	43	0.2671
8:15am	0	23	0	2	15	0	40	0.2484
8:30am	0	19	0	1	17	0	37	0.2298
8:45am	1	17	0	2	21	0	41	0.2547
Hourly Tot	1	87	0	6	67	0	161	1
Hourly Tot	0.0114	0.9886	0	1	1	0		
PHF	0.25	0.78	0	0.75	0.8	0		

All Days, Peak PM

	CC north (Southbounc		Four Seasons (Westbc		CC south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:00pm	0	25	0	0	36	0	61	0.2618
4:15pm	0	24	0	0	39	0	63	0.2704
4:30pm	3	21	0	0	32	0	56	0.2403
4:45pm	4	27	0	1	21	0	53	0.2275
Hourly Tot	7	97	0	1	128	0	233	1
Hourly Tot	0.0673	0.9327	0	1	1	0		
PHF	0.44	0.9	0	0.25	0.82	0		

Tues-Thurs, Peak AM

	CC north (Southbounc		Four Seasons (Westbc		CC south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
7:45am	0	25	0	1	11	0	37	0.2151
8:00am	0	35	0	2	14	0	51	0.2965
8:15am	0	27	0	1	14	0	42	0.2442
8:30am	1	27	0	0	14	0	42	0.2442
Hourly Tot	1	114	0	4	53	0	172	1
Hourly Tot	0.0087	0.9913	0	1	1	0		
PHF	0.25	0.81	0	0.5	0.95	0		

Tues-Thurs, Peak PM

	CC north (Southbounc		Four Seasons (Westbc		CC south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:00pm	0	31	0	0	48	0	79	0.2508
4:15pm	1	28	0	0	51	0	80	0.254
4:30pm	5	29	0	1	48	0	83	0.2635
4:45pm	7	37	0	2	27	0	73	0.2317
Hourly Tot	13	125	0	3	174	0	315	1
Hourly Tot	0.0942	0.9058	0	1	1	0		
PHF	0.46	0.84	0	0.38	0.85	0		

Analysis ID: 1475500
Analysis: Creekside #18 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	WR north (Southbound)			CC (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	11	53	0	12	0	3	0	29	7
8:00am	14	60	3	11	0	4	0	33	10
8:15am	7	50	7	11	0	7	0	34	14
8:30am	3	56	4	14	0	5	0	36	15
Hourly Tot	35	219	14	48	0	19	0	132	46
Hourly Tot	0.1306	0.8172	0.0522	0.7164	0	0.2836	0	0.7416	0.2584
PHF	0.62	0.91	0.5	0.86	0	0.68	0	0.92	0.77

All Days, Peak PM

	WR north (Southbound)			CC (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	4	50	4	21	0	6	3	70	15
4:00pm	10	42	4	23	0	9	0	69	15
4:15pm	9	57	2	30	1	7	0	59	14
4:30pm	14	71	2	26	0	6	0	41	12
Hourly Tot	37	220	12	100	1	28	3	239	56
Hourly Tot	0.1375	0.8178	0.0446	0.7752	0.0078	0.2171	0.0101	0.802	0.1879
PHF	0.66	0.77	0.75	0.83	0.25	0.78	0.25	0.85	0.93

Tues-Thurs, Peak AM

	WR north (Southbound)			CC (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	13	69	0	12	0	2	0	29	8
8:00am	16	67	3	11	0	6	0	32	14
8:15am	6	63	8	10	0	7	0	42	18
8:30am	2	60	4	9	0	3	1	44	22
Hourly Tot	37	259	15	42	0	18	1	147	62
Hourly Tot	0.119	0.8328	0.0482	0.7	0	0.3	0.0048	0.7	0.2952
PHF	0.58	0.94	0.47	0.88	0	0.64	0.25	0.84	0.7

Tues-Thurs, Peak PM

	WR north (Southbound)			CC (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:00pm	8	46	4	34	1	9	1	87	21
4:15pm	10	60	4	40	3	9	1	69	18
4:30pm	21	90	1	42	1	5	1	46	15
4:45pm	27	70	2	22	1	2	2	63	15
Hourly Tot	66	266	11	138	6	25	5	265	69
Hourly Tot	0.1924	0.7755	0.0321	0.8166	0.0355	0.1479	0.0147	0.7817	0.2035
PHF	0.61	0.74	0.69	0.82	0.5	0.69	0.62	0.76	0.82

Terra Alta (Eastbound)

Left	Thru	Right	Total	Total %
10	0	3	128	0.2218
18	0	2	155	0.2686
18	0	1	149	0.2582
12	0	0	145	0.2513
58	0	6	577	1
0.9062	0	0.0938		
0.81	0	0.5		

Terra Alta (Eastbound)

Left	Thru	Right	Total	Total %
5	1	0	179	0.2479
8	0	3	183	0.2535
2	0	4	185	0.2562
0	0	3	175	0.2424
15	1	10	722	1
0.5769	0.0385	0.3846		
0.47	0.25	0.62		

Terra Alta (Eastbound)

Left	Thru	Right	Total	Total %
12	0	1	146	0.2236
23	0	2	174	0.2665
18	0	2	174	0.2665
13	0	1	159	0.2435
66	0	6	653	1
0.9167	0	0.0833		
0.72	0	0.75		

Terra Alta (Eastbound)

Left	Thru	Right	Total	Total %
4	1	5	221	0.2511
2	0	5	221	0.2511
0	0	6	228	0.2591
1	0	5	210	0.2386
7	1	21	880	1
0.2414	0.0345	0.7241		
0.44	0.25	0.88		

Prepared by National Data & Surveying Services

White Rock Rd & Carson Crossing Rd

#18

Peak Hour Turning Movement Count

ID: 18-07183-018
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 06:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 07:00 PM

SOUTHBOUND (White Rock Rd)

AM	1	439	16	0	246	AM
NOON	0	0	0	0	0	NOON
PM	0	397	22	0	423	PM
	0	1	1	0		

EASTBOUND (Carson Crossing Rd)

AM	NOON	PM	
5	0	7	
0	0	0	0
7	0	4	0
1	0	1	1
8	0	1	0

WESTBOUND (Carson Crossing Rd)

PM	NOON	AM	
11	0	12	1
2	0	0	0
108	0	65	1
0	0	0	0
108	0	88	

CONTROL

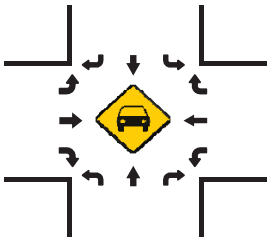
2-Way Stop(EB/WB)

TEV	851	0	1044
	AM	NOON	PM
PHF	0.97		0.93

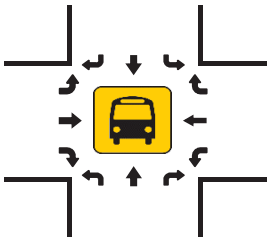
NORTHBOUND (White Rock Rd)

PM	506	0	5	408	85	PM
NOON	0	0	0	0	0	NOON
AM	512	0	4	227	71	AM
		0	1	1	0	

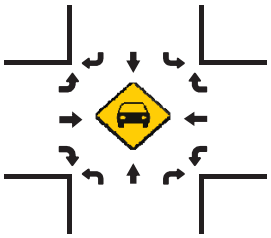
Total Vehicles (AM)



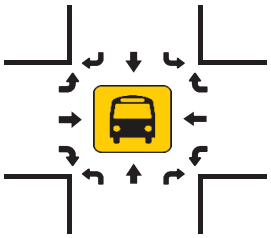
Total Vehicles (AM)



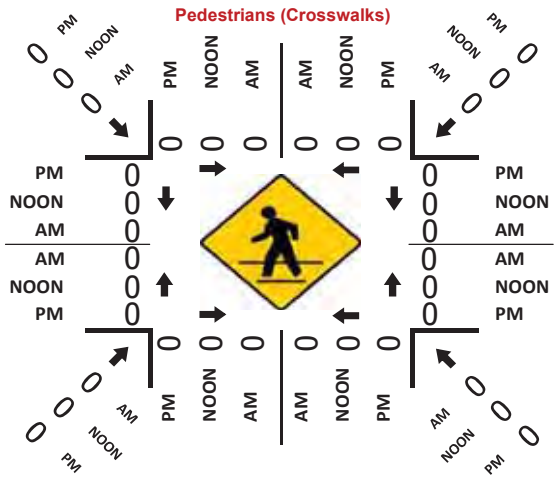
Total Vehicles (NOON)



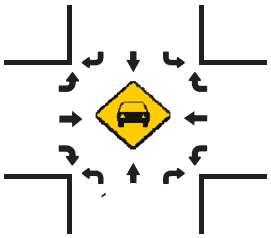
Total Vehicles (NOON)



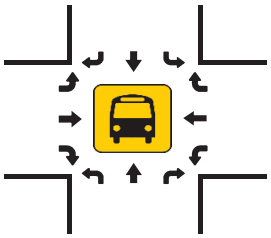
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Analysis ID: 1473494
Analysis: Creekside #19 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Town Center (Southbound)			WR east (Westbound)			Windfield (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	0	0	0	66	54	0	17	0	20
8:15am	0	0	0	60	59	0	15	0	32
8:30am	0	0	0	53	77	0	4	0	27
8:45am	0	0	0	52	79	0	2	0	18
Hourly Tot	0	0	0	231	269	0	38	0	97
Hourly Tot	0	0	0	0.462	0.538	0	0.2815	0	0.7185
PHF	0	0	0	0.88	0.85	0	0.56	0	0.76

All Days, Peak PM

	Town Center (Southbound)			WR east (Westbound)			Windfield (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	0	0	0	34	91	0	9	0	30
4:00pm	0	0	0	32	76	0	12	0	51
4:15pm	0	0	0	28	73	0	18	0	49
4:30pm	0	0	0	19	86	0	24	0	42
Hourly Tot	0	0	0	113	326	0	63	0	172
Hourly Tot	0	0	0	0.2574	0.7426	0	0.2681	0	0.7319
PHF	0	0	0	0.83	0.9	0	0.66	0	0.84

Tues-Thurs, Peak AM

	Town Center (Southbound)			WR east (Westbound)			Windfield (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	0	0	0	85	54	0	23	0	26
8:15am	0	0	0	78	66	0	20	0	42
8:30am	0	0	0	63	79	0	6	0	32
8:45am	0	0	0	58	88	0	2	0	17
Hourly Tot	0	0	0	284	287	0	51	0	117
Hourly Tot	0	0	0	0.4974	0.5026	0	0.3036	0	0.6964
PHF	0	0	0	0.84	0.82	0	0.55	0	0.7

Tues-Thurs, Peak PM

	Town Center (Southbound)			WR east (Westbound)			Windfield (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	0	0	0	41	100	0	12	0	40
4:00pm	0	0	0	38	75	0	13	0	66
4:15pm	0	0	0	37	74	0	24	0	58
4:30pm	0	0	0	28	99	0	36	0	53
Hourly Tot	0	0	0	144	348	0	85	0	217
Hourly Tot	0	0	0	0.2927	0.7073	0	0.2815	0	0.7185
PHF	0	0	0	0.88	0.87	0	0.59	0	0.82

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	69	34	260	0.2544
0	82	18	266	0.2603
0	93	10	264	0.2583
0	76	5	232	0.227
0	320	67	1022	1
0	0.8269	0.1731		
0	0.86	0.49		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	93	11	268	0.2543
0	94	11	276	0.2619
0	81	14	263	0.2495
0	68	8	247	0.2343
0	336	44	1054	1
0	0.8842	0.1158		
0	0.89	0.79		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	70	47	305	0.2554
0	93	28	327	0.2739
0	107	13	300	0.2513
0	89	8	262	0.2194
0	359	96	1194	1
0	0.789	0.211		
0	0.84	0.51		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	99	13	305	0.2496
0	101	19	312	0.2553
0	87	23	303	0.248
0	76	10	302	0.2471
0	363	65	1222	1
0	0.8481	0.1519		
0	0.9	0.71		

#19

National Data and Surveying Services

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7192-006 White Rock Rd & Windfield Way/Town Center Blvd
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	White Rock Rd Southbound					Windfield Way/Town Center Blvd Westbound					White Rock Rd Northbound					Windfield Way/Town Center Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	0	0	0	0	16	19	0	0	35	4	0	5	0	9	0	13	3	0	16	60	0
6:15	0	0	0	0	0	7	35	0	0	42	1	0	2	0	3	0	21	8	0	29	74	0
6:30	0	0	0	0	0	15	54	0	0	69	1	0	6	0	7	0	31	11	0	42	118	0
6:45	0	0	0	0	0	21	54	0	0	75	2	0	7	0	9	0	43	26	0	69	153	0
Total	0	0	0	0	0	59	162	0	0	221	8	0	20	0	28	0	108	48	0	156	405	0
7:00	0	0	0	0	0	35	78	0	0	113	6	0	10	0	16	0	57	16	0	73	202	0
7:15	0	0	0	0	0	42	80	0	1	123	11	0	11	0	22	0	62	20	0	82	227	1
7:30	0	0	0	0	0	32	105	0	4	141	11	0	10	0	21	0	76	24	0	100	262	4
7:45	0	0	0	0	0	73	96	0	3	172	10	0	9	0	19	0	87	33	0	120	311	3
Total	0	0	0	0	0	182	359	0	8	549	38	0	40	0	78	0	282	93	0	375	1002	8
8:00	0	0	0	0	0	76	91	0	0	167	20	0	22	0	42	0	68	28	0	96	305	0
8:15	0	0	0	0	0	77	73	0	2	152	12	0	25	0	37	0	68	27	0	95	284	2
8:30	0	0	0	0	0	74	90	0	3	167	11	0	23	0	34	0	80	27	0	107	308	3
8:45	0	0	0	0	0	55	69	0	1	125	9	0	11	0	20	0	84	30	0	114	259	1
Total	0	0	0	0	0	282	323	0	6	611	52	0	81	0	133	0	300	112	0	412	1156	6
16:00	0	0	0	0	0	27	84	0	5	116	49	0	45	0	94	0	95	8	0	103	313	5
16:15	0	0	0	0	0	24	96	0	4	124	38	0	41	0	79	0	128	18	0	146	349	4
16:30	0	0	0	0	0	22	78	0	3	103	80	0	54	0	134	0	127	14	0	141	378	3
16:45	0	0	0	0	0	27	73	0	7	107	40	0	45	0	85	0	136	22	0	158	350	7
Total	0	0	0	0	0	100	331	0	19	450	207	0	185	0	392	0	486	62	0	548	1390	19
17:00	0	0	0	0	0	21	89	0	1	111	70	0	86	0	156	0	123	17	0	140	407	1
17:15	0	0	0	0	0	29	109	0	3	141	48	0	54	0	102	0	134	18	0	152	395	3
17:30	0	0	0	0	0	24	81	0	3	108	38	0	38	0	76	0	134	21	0	155	339	3
17:45	0	0	0	0	0	38	77	0	0	115	31	0	44	0	75	0	117	21	0	138	328	0
Total	0	0	0	0	0	112	356	0	7	475	187	0	222	0	409	0	508	77	0	585	1469	7
18:00	0	0	0	0	0	10	69	0	2	81	43	0	56	0	99	0	86	11	0	97	277	2
18:15	0	0	0	0	0	12	84	0	3	99	16	0	27	0	43	0	60	3	0	63	205	3
18:30	0	0	0	0	0	9	55	0	0	64	15	0	17	0	32	0	76	8	0	84	180	0
18:45	0	0	0	0	0	14	37	0	0	51	19	0	16	0	35	0	47	5	0	52	138	0
Total	0	0	0	0	0	45	245	0	5	295	93	0	116	0	209	0	269	27	0	296	800	5
Grand Total	0	0	0	0	0	780	1776	0	45	2601	585	0	664	0	1249	0	1953	419	0	2372	6222	45
Apprch %	0.0%	0.0%	0.0%	0.0%		30.0%	68.3%	0.0%	1.7%		46.8%	0.0%	53.2%	0.0%		0.0%	82.3%	17.7%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	28.5%	0.0%	0.7%	41.8%	9.4%	0.0%	10.7%	0.0%	20.1%	0.0%	31.4%	6.7%	0.0%	38.1%	100.0%	

AM PEAK HOUR	White Rock Rd Southbound					Windfield Way/Town Center Blvd Westbound					White Rock Rd Northbound					Windfield Way/Town Center Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	0	0	0	0	0	73	96	0	3	172	10	0	9	0	19	0	87	33	0	120	311
8:00	0	0	0	0	0	76	91	0	0	167	20	0	22	0	42	0	68	28	0	96	305
8:15	0	0	0	0	0	77	73	0	2	152	12	0	25	0	37	0	68	27	0	95	284
8:30	0	0	0	0	0	74	90	0	3	167	11	0	23	0	34	0	80	27	0	107	308
Total Volume	0	0	0	0	0	300	350	0	8	658	53	0	79	0	132	0	303	115	0	418	1208
% App Total	0.0%	0.0%	0.0%	0.0%		45.6%	53.2%	0.0%	1.2%		40.2%	0.0%	59.8%	0.0%		0.0%	72.5%	27.5%	0.0%		
PHF	.000	.000	.000	.000	.000	.974	.911	.000	.667	.956	.663	.000	.790	.000	.786	.000	.871	.871	.000	.871	.971

PM PEAK HOUR	White Rock Rd Southbound					Windfield Way/Town Center Blvd Westbound					White Rock Rd Northbound					Windfield Way/Town Center Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	22	78	0	3	103	80	0	54	0	134	0	127	14	0	141	378
16:45	0	0	0	0	0	27	73	0	7	107	40	0	45	0	85	0	136	22	0	158	350
17:00	0	0	0	0	0	21	89	0	1	111	70	0	86	0	156	0	123	17	0	140	407
17:15	0	0	0	0	0	29	109	0	3	141	48	0	54	0	102	0	134	18	0	152	395
Total Volume	0	0	0	0	0	99	349	0	14	462	238	0	239	0	477	0	520	71	0	591	1530
% App Total	0.0%	0.0%	0.0%	0.0%		21.4%	75.5%	0.0%	3.0%		49.9%	0.0%	50.1%	0.0%		0.0%	88.0%	12.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.853	.800	.000	.500	.819	.744	.000	.695	.000	.764	.000	.956	.807	.000	.935	.940

25-1836 D.3 Page 1978 of 4853

Analysis ID: 1473497
Analysis: Creekside #20 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Post (Southbound)			WR east (Westbound)			Drwy (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
11:00am	35	1	37	10	98	41	18	3	8
11:15am	27	2	29	13	168	44	11	3	3
11:30am	26	2	33	11	106	50	14	2	3
11:45am	29	1	40	8	118	45	12	0	3
Hourly Tot	117	6	139	42	490	180	55	8	17
Hourly Tot	0.4466	0.0229	0.5305	0.059	0.6882	0.2528	0.6875	0.1	0.2125
PHF	0.84	0.75	0.87	0.81	0.73	0.9	0.76	0.67	0.53

All Days, Peak PM

	Post (Southbound)			WR east (Westbound)			Drwy (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	21	2	35	4	96	30	10	1	1
3:30pm	33	0	35	7	94	31	11	3	5
3:45pm	36	0	43	4	99	43	9	3	8
4:00pm	38	0	38	5	92	47	7	3	7
Hourly Tot	128	2	151	20	381	151	37	10	21
Hourly Tot	0.4555	0.0071	0.5374	0.0362	0.6902	0.2736	0.5441	0.1471	0.3088
PHF	0.84	0.25	0.88	0.71	0.96	0.8	0.84	0.83	0.66

Tues-Thurs, Peak AM

	Post (Southbound)			WR east (Westbound)			Drwy (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
11:00am	26	1	40	11	87	31	22	2	9
11:15am	27	2	31	15	106	37	13	2	5
11:30am	28	1	31	16	102	45	12	2	4
11:45am	33	0	45	11	119	49	10	1	2
Hourly Tot	114	4	147	53	414	162	57	7	20
Hourly Tot	0.4302	0.0151	0.5547	0.0843	0.6582	0.2576	0.6786	0.0833	0.2381
PHF	0.86	0.5	0.82	0.83	0.87	0.83	0.65	0.88	0.56

Tues-Thurs, Peak PM

	Post (Southbound)			WR east (Westbound)			Drwy (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:30pm	36	0	44	19	143	39	11	0	7
4:45pm	46	1	53	28	121	45	13	0	5
5:00pm	36	2	52	24	93	49	9	0	6
5:15pm	28	1	28	15	99	37	6	1	8
Hourly Tot	146	4	177	86	456	170	39	1	26
Hourly Tot	0.4465	0.0122	0.5413	0.1208	0.6404	0.2388	0.5909	0.0152	0.3939
PHF	0.79	0.5	0.83	0.77	0.8	0.87	0.75	0.25	0.81

WR west (Eastbound)

Left	Thru	Right	Total	Total %
27	80	4	362	0.224
35	109	2	446	0.276
36	118	4	405	0.2506
38	105	4	403	0.2494
136	412	14	1616	1
0.242	0.7331	0.0249		
0.89	0.87	0.88		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
27	176	0	403	0.2492
35	146	1	401	0.248
36	128	5	414	0.256
51	105	6	399	0.2468
149	555	12	1617	1
0.2081	0.7751	0.0168		
0.73	0.79	0.5		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
28	89	2	348	0.2222
31	116	1	386	0.2465
41	121	4	407	0.2599
45	105	5	425	0.2714
145	431	12	1566	1
0.2466	0.733	0.0204		
0.81	0.89	0.6		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
32	122	1	454	0.2397
42	148	2	504	0.2661
44	179	1	495	0.2614
38	180	0	441	0.2328
156	629	4	1894	1
0.1977	0.7972	0.0051		
0.89	0.87	0.5		

#20

National Data and Surveying Services

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7192-007 White Rock Rd & Post St
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	White Rock Rd Southbound					Post St Westbound					White Rock Rd Northbound					Post St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	2	1	7	0	10	2	22	29	0	53	6	1	0	0	7	6	14	0	0	20	90	0
6:15	10	0	11	0	21	1	47	23	0	71	2	1	1	0	4	5	7	0	0	12	108	0
6:30	14	0	16	0	30	5	58	41	0	104	1	2	2	0	5	7	17	1	0	25	164	0
6:45	7	1	30	0	38	4	82	34	0	120	4	1	1	0	6	7	27	1	0	35	199	0
Total	33	2	64	0	99	12	209	127	0	348	13	5	4	0	22	25	65	2	0	92	561	0
7:00	9	0	17	0	26	5	95	35	0	135	6	1	1	0	8	11	26	2	1	40	209	1
7:15	21	1	24	0	46	4	97	47	0	148	12	3	0	0	15	14	31	1	0	46	255	0
7:30	10	1	26	0	37	6	92	32	0	130	7	1	2	0	10	12	38	1	1	52	229	1
7:45	11	4	26	0	41	11	150	60	0	221	5	2	6	0	13	16	51	4	0	71	346	0
Total	51	6	93	0	150	26	434	174	0	634	30	7	9	0	46	53	146	8	2	209	1039	2
8:00	11	4	21	0	36	9	134	60	0	203	10	0	7	0	17	24	49	0	0	73	329	0
8:15	10	3	28	0	41	8	107	36	0	151	10	1	2	0	13	18	61	1	0	80	285	0
8:30	8	0	29	0	37	14	117	48	0	179	7	1	5	0	13	17	51	4	0	72	301	0
8:45	20	8	34	0	62	4	101	54	0	159	14	3	3	0	20	12	44	2	1	59	300	1
Total	49	15	112	0	176	35	459	198	0	692	41	5	17	0	63	71	205	7	1	284	1215	1
16:00	43	2	38	0	83	10	75	58	0	143	9	7	5	0	21	50	148	5	1	204	451	1
16:15	31	4	33	0	68	15	91	35	0	141	15	3	5	0	23	37	137	4	1	179	411	1
16:30	38	4	30	0	72	9	71	34	0	114	13	6	5	0	24	53	177	5	0	235	445	0
16:45	31	3	33	0	67	10	91	51	0	152	10	5	8	0	23	50	151	7	0	208	450	0
Total	143	13	134	0	290	44	328	178	0	550	47	21	23	0	91	190	613	21	2	826	1757	2
17:00	75	6	62	0	143	13	66	56	0	135	15	3	10	0	28	61	191	5	2	259	565	2
17:15	42	2	50	0	94	11	105	37	0	153	12	2	6	0	20	41	165	4	1	211	478	1
17:30	47	6	40	0	93	12	68	40	0	120	11	0	2	0	13	43	167	1	1	212	438	1
17:45	39	4	30	0	73	5	80	43	0	128	14	5	5	0	24	34	128	0	0	162	387	0
Total	203	18	182	0	403	41	319	176	0	536	52	10	23	0	85	179	651	10	4	844	1868	4
18:00	48	2	31	0	81	6	64	30	0	100	15	1	13	0	29	26	127	1	2	156	366	2
18:15	29	3	29	0	61	8	75	22	0	105	7	0	4	0	11	16	105	1	0	122	299	0
18:30	37	0	19	0	56	5	63	40	0	108	16	3	5	0	24	17	101	4	2	124	312	2
18:45	35	4	20	0	59	6	49	28	0	83	9	5	4	0	18	16	58	2	0	76	236	0
Total	149	9	99	0	257	25	251	120	0	396	47	9	26	0	82	75	391	8	4	478	1213	4
Grand Total	628	63	684	0	1375	183	2000	973	0	3156	230	57	102	0	389	593	2071	56	13	2733	7653	13
Apprch %	45.7%	4.6%	49.7%	0.0%		5.8%	63.4%	30.8%	0.0%		59.1%	14.7%	26.2%	0.0%		21.7%	75.8%	2.0%	0.5%			
Total %	8.2%	0.8%	8.9%	0.0%	18.0%	2.4%	26.1%	12.7%	0.0%	41.2%	3.0%	0.7%	1.3%	0.0%	5.1%	7.7%	27.1%	0.7%	0.2%	35.7%	100.0%	

AM PEAK HOUR	White Rock Rd Southbound					Post St Westbound					White Rock Rd Northbound					Post St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	11	4	26	0	41	11	150	60	0	221	5	2	6	0	13	16	51	4	0	71	346
8:00	11	4	21	0	36	9	134	60	0	203	10	0	7	0	17	24	49	0	0	73	329
8:15	10	3	28	0	41	8	107	36	0	151	10	1	2	0	13	18	61	1	0	80	285
8:30	8	0	29	0	37	14	117	48	0	179	7	1	5	0	13	17	51	4	0	72	301
Total Volume	40	11	104	0	155	42	508	204	0	754	32	4	20	0	56	75	212	9	0	296	1261
% App Total	25.8%	7.1%	67.1%	0.0%		5.6%	67.4%	27.1%	0.0%		57.1%	7.1%	35.7%	0.0%		25.3%	71.6%	3.0%	0.0%		
PHF	.909	.688	.897	.000	.945	.750	.847	.850	.000	.853	.800	.500	.714	.000	.824	.781	.869	.563	.000	.925	.911

PM PEAK HOUR	White Rock Rd Southbound					Post St Westbound					White Rock Rd Northbound					Post St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	38	4	30	0	72	9	71	34	0	114	13	6	5	0	24	53	177	5	0	235	445
16:45	31	3	33	0	67	10	91	51	0	152	10	5	8	0	23	50	151	7	0	208	450
17:00	75	6	62	0	143	13	66	56	0	135	15	3	10	0	28	61	191	5	2	259	565
17:15	42	2	50	0	94	11	105	37	0	153	12	2	6	0	20	41	165	4	1	211	478
Total Volume	186	15	175	0	376	43	333	178	0	554	50	16	29	0	95	205	684	21	3	913	1938
% App Total	49.5%	4.0%	46.5%	0.0%		7.8%	60.1%	32.1%	0.0%		52.6%	16.8%	30.5%	0.0%		22.5%	74.9%	2.3%	0.3%		
PHF	.620	.625	.706	.000	.657	.827	.793	.795	.000	.905	.833	.667	.725	.000	.848	.840	.895	.750	.375	.881	.858

25-1836 D.3 Page 1983 of 4853

Analysis ID: 1473504
Analysis: Creekside #21 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Vine (Southbound)			WR east (Westbound)			Valley View (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
11:00am	29	11	8	16	109	49	22	12	39
11:15am	36	15	15	13	111	53	30	12	31
11:30am	38	15	12	18	109	68	22	20	21
11:45am	35	10	9	28	100	69	17	17	16
Hourly Tot	138	51	44	75	429	239	91	61	107
Hourly Tot	0.5923	0.2189	0.1888	0.1009	0.5774	0.3217	0.3514	0.2355	0.4131
PHF	0.91	0.85	0.73	0.67	0.97	0.87	0.76	0.76	0.69

All Days, Peak PM

	Vine (Southbound)			WR east (Westbound)			Valley View (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:15pm	46	22	6	50	98	47	14	13	56
4:30pm	51	21	8	36	108	42	8	16	60
4:45pm	51	24	8	37	118	60	7	18	48
5:00pm	53	24	10	42	100	60	9	19	41
Hourly Tot	201	91	32	165	424	209	38	66	205
Hourly Tot	0.6204	0.2809	0.0988	0.2068	0.5313	0.2619	0.123	0.2136	0.6634
PHF	0.95	0.95	0.8	0.82	0.9	0.87	0.68	0.87	0.85

Tues-Thurs, Peak AM

	Vine (Southbound)			WR east (Westbound)			Valley View (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	8	1	1	38	178	65	23	14	61
8:15am	20	8	4	18	137	63	29	13	30
8:30am	54	11	19	12	130	60	25	11	16
8:45am	73	16	22	12	136	50	18	12	26
Hourly Tot	155	36	46	80	581	238	95	50	133
Hourly Tot	0.654	0.1519	0.1941	0.089	0.6463	0.2647	0.3417	0.1799	0.4784
PHF	0.53	0.56	0.52	0.53	0.82	0.92	0.82	0.89	0.55

Tues-Thurs, Peak PM

	Vine (Southbound)			WR east (Westbound)			Valley View (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:00pm	60	23	4	80	109	44	12	13	63
4:15pm	58	26	6	70	119	37	10	13	71
4:30pm	58	24	9	43	130	32	9	16	78
4:45pm	54	27	9	41	129	44	8	19	56
Hourly Tot	230	100	28	234	487	157	39	61	268
Hourly Tot	0.6425	0.2793	0.0782	0.2665	0.5547	0.1788	0.106	0.1658	0.7283
PHF	0.96	0.93	0.78	0.73	0.94	0.89	0.81	0.8	0.86

WR west (Eastbound)

Left	Thru	Right	Total	Total %
11	77	16	399	0.2409
18	74	10	418	0.2524
13	76	14	426	0.2572
7	82	23	413	0.2494
49	309	63	1656	1
0.1164	0.734	0.1496		
0.68	0.94	0.68		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
6	96	22	476	0.242
5	97	17	469	0.2384
13	112	21	517	0.2628
13	113	21	505	0.2567
37	418	81	1967	1
0.069	0.7799	0.1511		
0.71	0.92	0.92		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
11	27	7	434	0.258
12	36	11	381	0.2265
21	52	9	420	0.2497
24	55	3	447	0.2658
68	170	30	1682	1
0.2537	0.6343	0.1119		
0.71	0.77	0.68		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
6	134	28	576	0.2619
4	108	25	547	0.2487
7	108	18	532	0.2419
16	124	17	544	0.2474
33	474	88	2199	1
0.0555	0.7966	0.1479		
0.52	0.88	0.79		

Prepared by National Data & Surveying Services

Valley View Pkwy & White Rock Rd

Peak Hour Turning Movement Count

#21

ID: 18-07183-021
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	06:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 07:00 PM

Valley View Pkwy — SOUTHBOUND

AM	27	19	50	0	229	AM
NOON	0	0	0	0	0	NOON
PM	36	66	222	0	231	PM

White Rock Rd — EASTBOUND

AM	NOON	PM	
691	0	411	⇦
0	0	0	↶ 0
19	0	31	↱ 1
194	0	514	→ 1
25	0	121	↳ 0
AM	NOON	PM	

White Rock Rd — WESTBOUND

PM	NOON	AM	
158	0	172	0 ↰
318	0	578	1 ←
130	0	162	1 ↲
0	0	0	0 ↶
880	0	500	⇨
PM	NOON	AM	

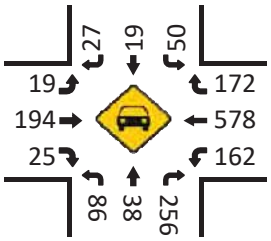
CONTROL			
Signalized			
TEV	1626	0	1839
	AM	NOON	PM
PHF	0.87		0.97

Valley View Pkwy — NORTHBOUND

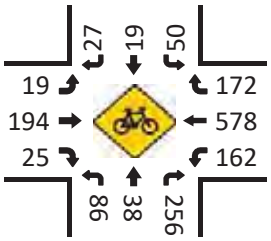
PM	317	0	57	42	144	PM
NOON	0	0	0	0	0	NOON
AM	206	0	86	38	256	AM

0 1 1 0 (SB) | 0 1 1 0 (NB)

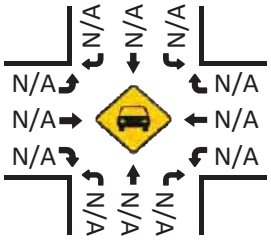
Total Vehicles (AM)



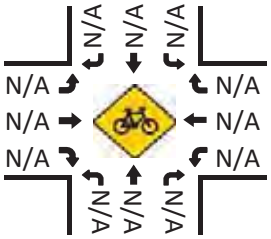
(AM)



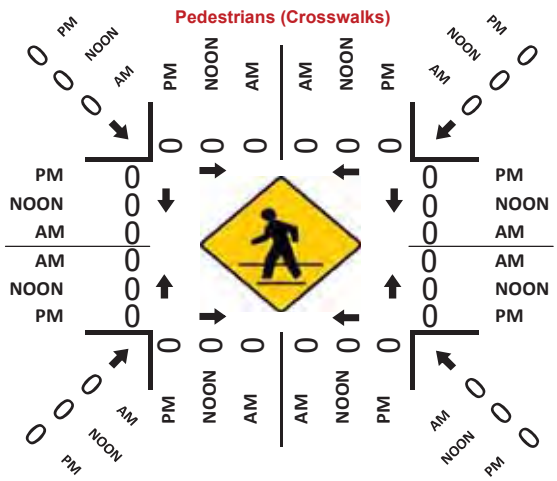
Total Vehicles (Noon)



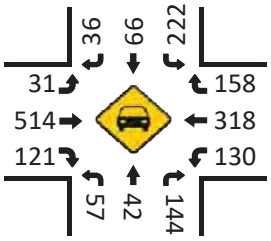
(NOON)



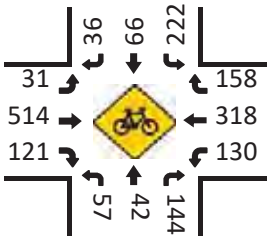
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1473513
Analysis: Creekside #22 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Clarksville north (Southbound)			WR east (Westbound)			Clarksville south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	0	0	92	0	190	0	0	0	0
8:15am	0	0	87	0	148	0	0	0	0
8:30am	0	0	74	0	141	0	0	0	0
8:45am	0	0	60	0	182	0	0	0	0
Hourly Tot	0	0	313	0	661	0	0	0	0
Hourly Tot	0	0	1	0	1	0	0	0	0
PHF	0	0	0.85	0	0.87	0	0	0	0

All Days, Peak PM

	Clarksville north (Southbound)			WR east (Westbound)			Clarksville south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:00pm	0	0	83	0	137	0	0	0	0
4:15pm	0	0	71	0	140	0	0	0	0
4:30pm	0	0	59	0	147	0	0	0	0
4:45pm	0	0	73	0	207	0	0	0	0
Hourly Tot	0	0	286	0	631	0	0	0	0
Hourly Tot	0	0	1	0	1	0	0	0	0
PHF	0	0	0.86	0	0.76	0	0	0	0

Tues-Thurs, Peak AM

	Clarksville north (Southbound)			WR east (Westbound)			Clarksville south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	0	0	103	0	214	0	0	0	0
8:15am	0	0	100	0	161	0	0	0	0
8:30am	0	0	87	0	157	0	0	0	0
8:45am	0	0	64	0	167	0	0	0	0
Hourly Tot	0	0	354	0	699	0	0	0	0
Hourly Tot	0	0	1	0	1	0	0	0	0
PHF	0	0	0.86	0	0.82	0	0	0	0

Tues-Thurs, Peak PM

	Clarksville north (Southbound)			WR east (Westbound)			Clarksville south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	1	0	76	0	159	0	0	0	0
4:00pm	0	0	100	0	150	0	0	0	0
4:15pm	0	0	88	0	159	0	0	0	0
4:30pm	0	0	70	0	152	0	0	0	0
Hourly Tot	1	0	334	0	620	0	0	0	0
Hourly Tot	0.003	0	0.997	0	1	0	0	0	0
PHF	0.25	0	0.83	0	0.97	0	0	0	0

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	97	0	379	0.2647
0	94	0	329	0.2297
0	123	0	338	0.236
0	144	0	386	0.2696
0	458	0	1432	1
0	1	0		
0	0.8	0		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	242	0	462	0.2577
0	195	0	406	0.2264
0	223	0	429	0.2393
0	216	0	496	0.2766
0	876	0	1793	1
0	1	0		
0	0.9	0		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	98	0	415	0.2693
0	92	0	353	0.2291
0	133	0	377	0.2446
0	165	0	396	0.257
0	488	0	1541	1
0	1	0		
0	0.74	0		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	250	0	486	0.2406
1	315	0	566	0.2802
0	250	0	497	0.246
0	249	0	471	0.2332
1	1064	0	2020	1
0.0009	0.9991	0		
0.25	0.84	0		

Prepared by National Data & Surveying Services

White Rock Rd & Clarksville Crossing

#22

Peak Hour Turning Movement Count

ID: 18-07183-022
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	06:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 07:00 PM

White Rock Rd — SOUTHBOUND

AM	3	599	0	0	493
NOON	0	0	0	0	0
PM	2	404	0	0	889

EASTBOUND — Clarksville Crossing

AM	NOON	PM	
6	0	10	
0	0	0	0
1	0	2	0.5
0	0	0	0.5
310	0	181	1

WESTBOUND — Clarksville Crossing

PM	NOON	AM	
1	0	0	1
0	0	0	0.5
0	0	0	0.5
0	0	0	0
0	0	0	

CONTROL

Signalized

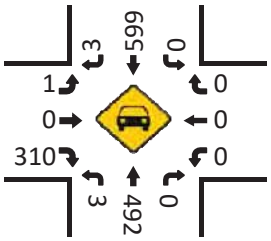
TEV	1408	0	1484
	AM	NOON	PM
PHF	0.78		0.96

NORTHBOUND — White Rock Rd

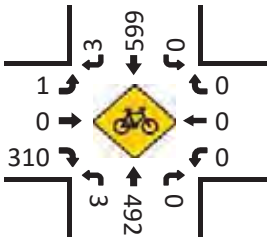
PM	585	0	8	886	0
NOON	0	0	0	0	0
AM	909	0	3	492	0

Turning factors: 1 | 2 | 1 | 0 (SB) — 0 | 1 | 1.5 | 0.5 (NB)

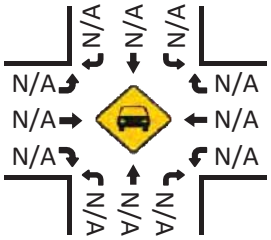
Total Vehicles (AM)



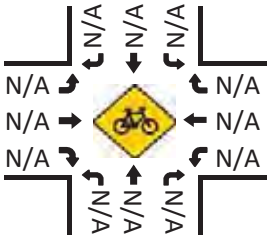
(AM)



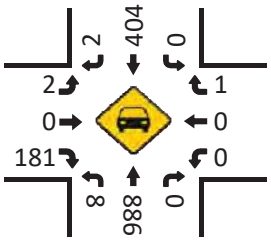
Total Vehicles (Noon)



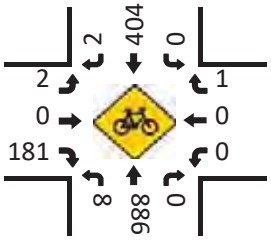
(NOON)



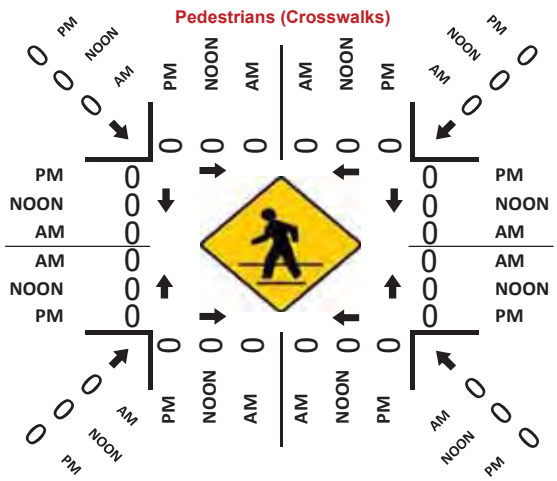
Total Vehicles (PM)



(PM)



Pedestrians (Crosswalks)



Analysis ID: 1475501
Analysis: Creekside #23 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	WR north (Southboun		WR south (Northboun		WB ramps (Westbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
11:00am	106	33	85	89	59	23	395	0.2552
11:15am	119	23	93	82	45	12	374	0.2416
11:30am	115	21	95	78	52	27	388	0.2506
11:45am	125	15	89	69	64	29	391	0.2526
Hourly Tot	465	92	362	318	220	91	1548	1
Hourly Tot	0.8348	0.1652	0.5324	0.4676	0.7074	0.2926		
PHF	0.93	0.7	0.95	0.89	0.86	0.78		

All Days, Peak PM

	WR north (Southboun		WR south (Northboun		WB ramps (Westbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
4:15pm	125	35	119	123	122	23	547	0.24
4:30pm	135	39	130	119	112	21	556	0.244
4:45pm	206	45	129	113	107	16	616	0.2703
5:00pm	142	46	138	107	112	15	560	0.2457
Hourly Tot	608	165	516	462	453	75	2279	1
Hourly Tot	0.7865	0.2135	0.5276	0.4724	0.858	0.142		
PHF	0.74	0.9	0.93	0.94	0.93	0.82		

Tues-Thurs, Peak AM

	WR north (Southboun		WR south (Northboun		WB ramps (Westbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
8:00am	207	39	73	41	53	10	423	0.2622
8:15am	153	29	55	57	42	13	349	0.2164
8:30am	161	39	77	95	28	6	406	0.2517
8:45am	176	28	90	108	33	0	435	0.2697
Hourly Tot	697	135	295	301	156	29	1613	1
Hourly Tot	0.8377	0.1623	0.495	0.505	0.8432	0.1568		
PHF	0.84	0.87	0.82	0.7	0.74	0.56		

Tues-Thurs, Peak PM

	WR north (Southboun		WR south (Northboun		WB ramps (Westbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
4:15pm	141	42	145	144	138	26	636	0.2534
4:30pm	140	47	152	140	125	23	627	0.2498
4:45pm	158	56	156	125	121	12	628	0.2502
5:00pm	148	55	170	114	120	12	619	0.2466
Hourly Tot	587	200	623	523	504	73	2510	1
Hourly Tot	0.7459	0.2541	0.5436	0.4564	0.8735	0.1265		
PHF	0.93	0.89	0.92	0.91	0.91	0.7		

Prepared by National Data & Surveying Services

White Rock Rd & U.S. 50 EB

#23

Peak Hour Turning Movement Count

ID: 18-07183-023
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

SOUTHBOUND (White Rock Rd)

PEAK HOURS		COUNT PERIODS
AM	07:30 AM - 08:30 AM	AM
NOON	NONE	NOON
PM	04:45 PM - 05:45 PM	PM

AM	118	562	0	0	426	AM
NOON	0	0	0	0	0	NOON
PM	111	342	0	0	925	PM
	1	2	0	0		

AM	NOON	PM				
292	0	518	⇦			
0	0	0	↶	0		
111	0	429	↱	1.5		
0	0	0	→	0		
33	0	56	↳	1.5		
AM	NOON	PM				

EASTBOUND (U.S. 50 EB)

WESTBOUND (U.S. 50 EB)

PM	NOON	AM				
0	0	0	↰	0		
0	0	0	←	0		
0	0	0	↰	0		
0	0	0	↰	0		
0	0	0	⇨			
PM	NOON	AM				

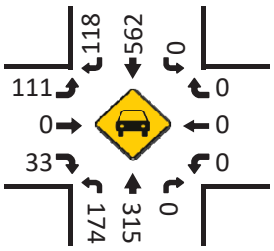
CONTROL: Signalized

TEV	1313 AM	0 NOON	1841 PM
PHF	0.83		0.91

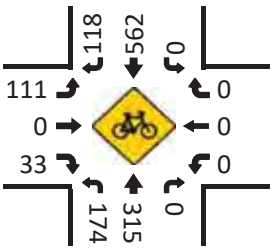
	0	2	2	0		
PM	398	0	407	496	0	PM
NOON	0	0	0	0	0	NOON
AM	595	0	174	315	0	AM

NORTHBOUND (White Rock Rd)

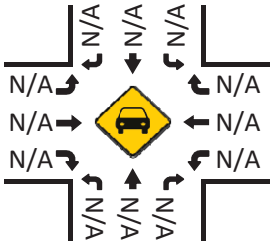
Total Vehicles (AM)



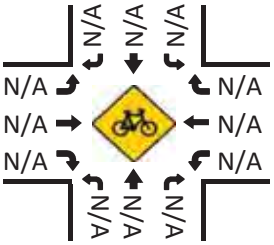
(AM)



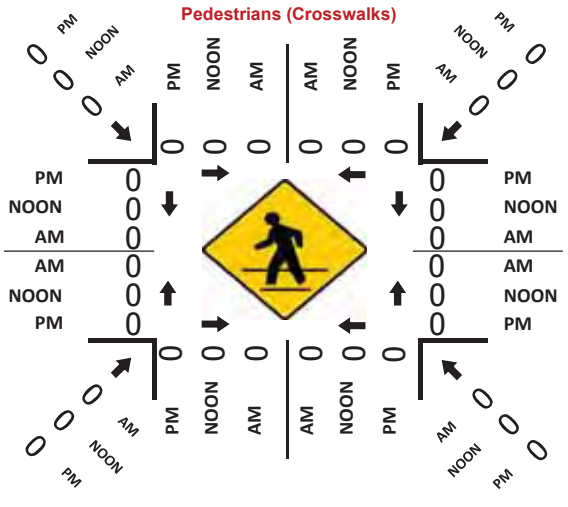
Total Vehicles (Noon)



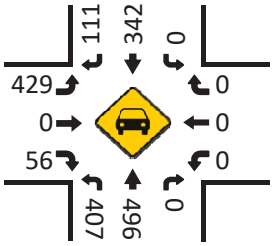
(NOON)



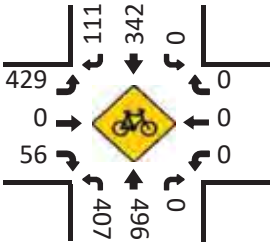
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1473534
Analysis: Creekside #24 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	WR north (Southbound)			offramp (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	0	30	129	149	0	41	9	93	0
7:45am	0	51	184	203	0	36	14	81	0
8:00am	0	74	124	139	0	24	23	69	0
8:15am	0	66	107	102	0	17	24	70	0
Hourly Tot	0	221	544	593	0	118	70	313	0
Hourly Tot	0	0.2889	0.7111	0.834	0	0.166	0.1828	0.8172	0
PHF	0	0.75	0.74	0.73	0	0.72	0.73	0.84	0

All Days, Peak PM

	WR north (Southbound)			offramp (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	0	66	68	100	0	40	27	216	0
4:00pm	0	62	53	89	0	44	37	192	0
4:15pm	0	77	51	83	0	49	37	188	0
4:30pm	0	81	52	92	0	46	22	224	0
Hourly Tot	0	286	224	364	0	179	123	820	0
Hourly Tot	0	0.5608	0.4392	0.6703	0	0.3297	0.1304	0.8696	0
PHF	0	0.88	0.82	0.91	0	0.91	0.83	0.92	0

Tues-Thurs, Peak AM

	WR north (Southbound)			offramp (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:15am	0	15	106	147	0	44	6	110	0
7:30am	0	29	151	187	0	52	7	114	0
7:45am	0	55	186	201	0	43	17	87	0
8:00am	0	83	147	159	0	30	22	67	0
Hourly Tot	0	182	590	694	0	169	52	378	0
Hourly Tot	0	0.2358	0.7642	0.8042	0	0.1958	0.1209	0.8791	0
PHF	0	0.55	0.79	0.86	0	0.81	0.59	0.83	0

Tues-Thurs, Peak PM

	WR north (Southbound)			offramp (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	0	68	64	113	1	41	35	213	0
4:00pm	0	62	51	101	0	42	48	215	0
4:15pm	0	83	42	97	0	61	43	229	0
4:30pm	0	89	50	94	0	54	26	224	0
Hourly Tot	0	302	207	405	1	198	152	881	0
Hourly Tot	0	0.5933	0.4067	0.6705	0.0017	0.3278	0.1471	0.8529	0
PHF	0	0.85	0.81	0.9	0.25	0.81	0.79	0.96	0

onramp (Eastbound)

Left	Thru	Right	Total	Total %
0	0	0	451	0.2426
0	0	0	569	0.3061
0	0	0	453	0.2437
0	0	0	386	0.2076
0	0	0	1859	1
0	0	0		
0	0	0		

onramp (Eastbound)

Left	Thru	Right	Total	Total %
0	0	0	517	0.259
0	0	0	477	0.239
0	0	0	485	0.243
0	0	0	517	0.259
0	0	0	1996	1
0	0	0		
0	0	0		

onramp (Eastbound)

Left	Thru	Right	Total	Total %
0	0	0	428	0.2073
0	0	0	540	0.2615
0	0	0	589	0.2852
0	0	0	508	0.246
0	0	0	2065	1
0	0	0		
0	0	0		

onramp (Eastbound)

Left	Thru	Right	Total	Total %
0	0	0	535	0.2493
0	0	0	519	0.2418
0	0	0	555	0.2586
0	0	0	537	0.2502
0	0	0	2146	1
0	0	0		
0	0	0		

Prepared by National Data & Surveying Services

#24

Silva Valley Pkwy & U.S. 50 WB

Peak Hour Turning Movement Count

ID: 18-07183-024
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

Silva Valley Pkwy

SOUTHBOUND

PEAK HOURS								COUNT PERIODS
07:15 AM - 08:15 AM	AM	483	223	0	0	494	AM	06:00 AM - 09:00 AM
NONE	NOON	0	0	0	0	0	NOON	NONE
05:00 PM - 06:00 PM	PM	207	200	0	0	1019	PM	04:00 PM - 07:00 PM

U.S. 50 WB

EASTBOUND

AM	NOON	PM		
561	0	279	⇦	
0	0	0	↶	0
0	0	0	↱	0
0	0	0	→	0
0	0	0	↷	0
AM	NOON	PM		

CONTROL

Signalized

TEV	1721 AM	0 NOON	1755 PM
PHF	0.79		0.90

WESTBOUND

PM	NOON	AM		
154	0	138	↶	1
0	0	0	←	0.5
256	0	443	↰	1.5
0	0	0	↰	0
0	0	0	⇨	
PM	NOON	AM		

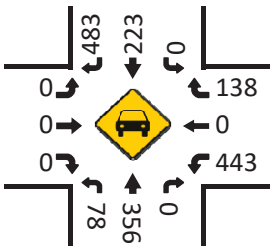
U.S. 50 WB

	1	2	0	0	
PM	457	1	72	865	0 PM
NOON	0	0	0	0	0 NOON
AM	666	0	78	356	0 AM
	0	1	2	0	

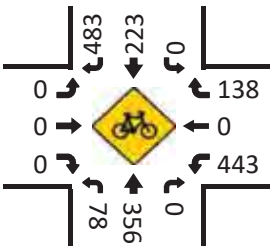
NORTHBOUND

Silva Valley Pkwy

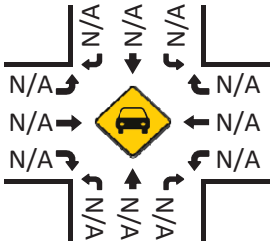
Total Vehicles (AM)



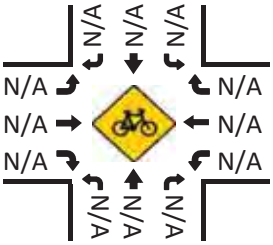
(AM)



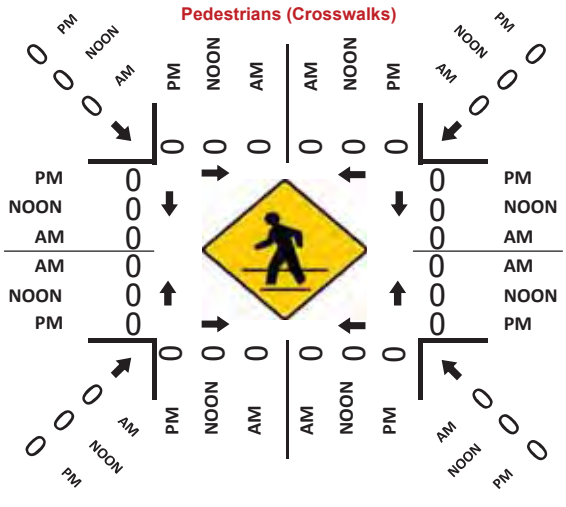
Total Vehicles (Noon)



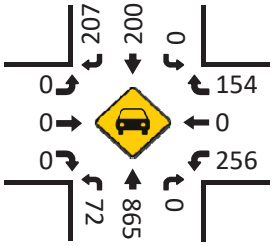
(NOON)



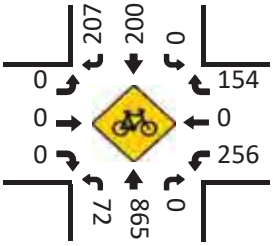
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1473537
Analysis: Creekside #26 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Latrobe south (Northb		Wetsel-Oviatt (Eastbound)			
	Thru	Right	Left	Right	Left	Right	Total	Total %
8:00am	60	1	0	89	0	0	150	0.2613
8:15am	66	0	0	61	0	0	127	0.2213
8:30am	56	3	0	82	2	0	143	0.2491
8:45am	58	3	0	91	2	0	154	0.2683
Hourly Tot	240	7	0	323	4	0	574	1
Hourly Tot	0.9717	0.0283	0	1	1	0		
PHF	0.91	0.58	0	0.89	0.5	0		

All Days, Peak PM

	Latrobe north (Southb		Latrobe south (Northb		Wetsel-Oviatt (Eastbound)			
	Thru	Right	Left	Right	Left	Right	Total	Total %
2:00pm	69	0	0	70	4	0	143	0.2072
2:15pm	87	0	0	79	1	0	167	0.242
2:30pm	112	0	0	81	3	0	196	0.2841
2:45pm	112	2	0	64	6	0	184	0.2667
Hourly Tot	380	2	0	294	14	0	690	1
Hourly Tot	0.9948	0.0052	0	1	1	0		
PHF	0.85	0.25	0	0.91	0.58	0		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Latrobe south (Northb		Wetsel-Oviatt (Eastbound)			
	Thru	Right	Left	Right	Left	Right	Total	Total %
7:45am	33	3	0	149	0	0	185	0.2859
8:00am	63	1	0	111	0	0	175	0.2705
8:15am	68	0	0	68	1	0	137	0.2117
8:30am	62	1	0	84	3	0	150	0.2318
Hourly Tot	226	5	0	412	4	0	647	1
Hourly Tot	0.9784	0.0216	0	1	1	0		
PHF	0.83	0.42	0	0.69	0.33	0		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Latrobe south (Northb		Wetsel-Oviatt (Eastbound)			
	Thru	Right	Left	Right	Left	Right	Total	Total %
2:15pm	88	0	0	81	1	0	170	0.2196
2:30pm	130	0	0	93	3	0	226	0.292
2:45pm	128	3	0	73	11	0	215	0.2778
3:00pm	95	3	0	53	12	0	163	0.2106
Hourly Tot	441	6	0	300	27	0	774	1
Hourly Tot	0.9866	0.0134	0	1	1	0		
PHF	0.85	0.5	0	0.81	0.56	0		

Analysis ID: 1473546
Analysis: Creekside #27 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			SS east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	4	30	2	4	8	5	1	39	0
8:00am	10	40	1	1	1	9	0	35	1
8:15am	21	38	0	7	0	7	0	47	1
8:30am	17	39	0	7	0	5	0	54	0
Hourly Tot	52	147	3	19	9	26	1	175	2
Hourly Tot	0.2574	0.7277	0.0149	0.3519	0.1667	0.4815	0.0056	0.9831	0.0112
PHF	0.62	0.92	0.38	0.68	0.28	0.72	0.25	0.81	0.5

All Days, Peak PM

	Latrobe north (Southbound)			SS east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:00pm	6	43	12	3	2	3	0	45	10
2:15pm	5	52	5	3	1	13	0	40	14
2:30pm	9	67	7	3	2	29	0	34	15
2:45pm	15	74	3	4	8	16	1	28	10
Hourly Tot	35	236	27	13	13	61	1	147	49
Hourly Tot	0.1174	0.7919	0.0906	0.1494	0.1494	0.7011	0.0051	0.7462	0.2487
PHF	0.58	0.8	0.56	0.81	0.41	0.53	0.25	0.82	0.82

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			SS east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	0	29	2	6	21	3	4	60	0
7:45am	5	27	5	5	10	8	2	47	0
8:00am	16	34	2	3	0	15	0	37	0
8:15am	31	35	0	4	0	12	0	53	0
Hourly Tot	52	125	9	18	31	38	6	197	0
Hourly Tot	0.2796	0.672	0.0484	0.2069	0.3563	0.4368	0.0296	0.9704	0
PHF	0.42	0.89	0.45	0.75	0.37	0.63	0.38	0.82	0

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			SS east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:00pm	8	45	11	1	0	4	0	38	11
2:15pm	3	50	6	0	0	18	0	40	21
2:30pm	13	75	8	1	2	37	0	33	22
2:45pm	19	71	6	3	11	20	0	30	12
Hourly Tot	43	241	31	5	13	79	0	141	66
Hourly Tot	0.1365	0.7651	0.0984	0.0515	0.134	0.8144	0	0.6812	0.3188
PHF	0.57	0.8	0.7	0.42	0.3	0.53	0	0.88	0.75

SS west (Eastbound)

Left	Thru	Right	Total	Total %
19	20	0	132	0.2645
7	10	0	115	0.2305
2	1	0	124	0.2485
6	0	0	128	0.2565
34	31	0	499	1
0.5231	0.4769	0		
0.45	0.39	0		

SS west (Eastbound)

Left	Thru	Right	Total	Total %
6	20	2	152	0.2424
1	9	0	143	0.2281
2	2	0	170	0.2711
2	0	1	162	0.2584
11	31	3	627	1
0.2444	0.6889	0.0667		
0.46	0.39	0.38		

SS west (Eastbound)

Left	Thru	Right	Total	Total %
14	22	0	161	0.272
22	33	0	164	0.277
7	16	0	130	0.2196
1	1	0	137	0.2314
44	72	0	592	1
0.3793	0.6207	0		
0.5	0.55	0		

SS west (Eastbound)

Left	Thru	Right	Total	Total %
6	23	0	147	0.2217
2	9	0	149	0.2247
0	0	0	191	0.2881
2	0	2	176	0.2655
10	32	2	663	1
0.2273	0.7273	0.0455		
0.42	0.35	0.25		

PHASE TIMING

LOCATION: El Dorado Hills Boulevard at Serrano Parkway/Lassen Lane

PROGRAM: C7 DATE: 3/24/92

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK		7						7	CLK RST
1	DON'T WALK		12						19	CHK SUM
2	MIN GREEN	3	6			3	3	3	3	
3	TYPE 3 DET		10				10		5	
4	ADD/VEH	0.0	2.5			0.0	2.5	0.0	1.0	
5	PASSAGE	2.0	2.0			2.0	2.0	2.0	4.0	
6	MAX GAP									
7	MIN GAP									
8	MAX EXT	25	40			25	40	35	35	
9	MAX 2									YEAR
A	MAX 3									MONTH
B										DAY
C	REDUCE BY									DAY OF WEEK
D	REDUCE EVERY									HOUR
E	YELLOW	3.0	4.7			3.0	4.7	3.0	3.0	MINUTE
F	RED	~~0~~	~~0.5~~			0	0.5	~~0.0~~	~~0.0~~	SECOND

	PRE-EMPTION	E
	EV SELECT	
	RR1 CLEAR	
	EVA DELAY	0
	EVA CLEAR	5
	EVB DELAY	0
	EVB CLEAR	5
	EVC DELAY	10
	EVC CLEAR	5
	EVD DELAY	5
	EVD CLEAR	5
	MAX EV	30
	RR2 CLEAR	

	FLAGS	F 1	2	3	4	5	6	7	8
0	PERMIT	X	X			X	X	X	X
1	RED LOCK								
2	YEL LOCK								
3	V RECALL		X				X		
4	P RECALL								
5	PED PHASES		X						X
6	ARROW A								
7	ARROW B								
8	DBL ENTRY								
9	MAX 2 PH								
A	LAG PHASES	FOR OBSERVATION ONLY							
B	RED REST								
C	REST IN WALK								
D	MAX 3 PH								
E	YEL STARTUP								X
F	FIRST PHASE		X				X		

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

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LOCATION: El Dorado Hills Boulevard at Serrano Parkway/Lassen Lane

PROGRAM: C7 DATE: 3/24/92

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1	1.2	D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1	1.2	D-A-1
2I2L	D-1-2		D-7-2	D-3-2	1.2	D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2	1.2	D-A-2
2I3U	D-1-3		D-7-3	D-3-3	1.2	D-9-3	3	6J3U	D-2-3		D-8-3	D-4-3	1.2	D-A-3
2I3L	D-1-4		D-7-4	D-3-4	1.2	D-9-4	4	6J3L	D-2-4		D-8-4	D-4-4	1.2	D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6	2.0	D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7	2.0	D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8	2.0	D-8-8	D-4-8		D-A-8
4I7U	D-1-9		D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9	2.0	D-8-9	D-4-9		D-A-9
4I7L	D-1-A		D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A	8.0	D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B		D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D		D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D	8.0	D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext../Cnt. i.e. TYPE)
5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

25-1836 D.3 Page 2011 of 4853
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PHASE TIMING

LOCATION: El Dorado Hills Bl @ Park Dr BY: _____

PROGRAM: C8 DATE: 6/28/2005

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK		7				7	6	6	CLK RST
1	DON'T WALK		18				16	24	24	CHK SUM
2	MIN GREEN	4	5			4	4	5	5	
3	TYPE 3 DET		15				15			
4	ADD/VEH	0	0			0	0	0	0	
5	PASSAGE	2.0	3.5			2.0	3.5	2.0	2.0	
6	MAX GAP		4.2				4.2			
7	MIN GAP		1.2				1.2			
8	MAX EXT	20	50			20	50	20	20	
9	MAX 2									YEAR
A	MAX 3									MONTH
B										DAY
C	REDUCE BY		0.1				0.1			DAY OF WK
D	REDUCE EVERY		1.0				1.0			HOUR
E	YELLOW	3.0	4.7			3.0	4.7	3.0	3.0	MINUTE
F	RED	1.0	1.0			1.0	1.0	1.0	1.0	SECOND
	PED XING - FT									

PRE-EMPTION	E
EV SELECT	
RR1 CLR	
EVA DLY	
EVA CLR	5
EVB DLY	
EVB CLR	5
EVC DLY	
EVC CLR	5
EVD DLY	
EVD CLR	5
MAX EV	40
RR2 CLR	

	FLAGS	F 1	2	3	4	5	6	7	8	
0	PERMIT	X	X			X	X	X	X	0
1	RED LOCK									1
2	YEL LOCK		X				X			2
3	V RECALL		X				X			3
4	P RECALL									4
5	PED PHASES		X				X	X	X	5
6	ARROW A									6
7	ARROW B									7
8	DBL ENTRY									8
9	MAX 2 PH									9
A	LAG PHASES	FOR OBSERVATION ONLY								A
B	RED REST									B
C	REST IN WALK									C
D	MAX 3 PH									D
E	YEL STARTUP							X		E
F	FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	2.0
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

LOCATION: El Dorado Hills Bl @ Park Dr

PROGRAM: C8 **DATE:** 6/28/2005

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1		D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1		D-A-1
2I2L	D-1-2		D-7-2	D-3-2		D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2		D-A-2
2I3U	D-1-3		D-7-3	D-3-3		D-9-3	3	6J3U	D-2-3		D-8-3	D-4-3		D-A-3
2I3L	D-1-4		D-7-4	D-3-4		D-9-4	4	6J3L	D-2-4		D-8-4	D-4-4		D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6	5.0	D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7		D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8		D-8-8	D-4-8		D-A-8
4I7U	D-1-9		D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9	15.0	D-8-9	D-4-9		D-A-9
4I7L	D-1-A		D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A	10.0	D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B	5.0	D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D		D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D	10.0	D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext../Cnt. i.e. TYPE)
*5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

LOCATION: El Dorado Hills Bl @ Park Dr

PROGRAM: C8

DATE: 6/28/2005

D PAGE

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																											
B																											
C																											
D																											
E										VER.																	
F										BAT.																	

NOTE: IF THIS IS THE MASTER FOR SYSTEM, ENTER NO. OF SLAVES IN RAM LOCATION D-0-0

CONTROL CODE "D" SYSTEM DETECTOR	
	0
0	
1	
2	
3	
4	
5	
6	
7	
8	

E PAGE

	E	FLAGS								F	FLAGS							
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8
0										CODE 4								
1										CODE 5								
2										"Y" RCL C								
3										"Y" RCL D								
4	Bike - A									Bike - B								
5	OLA OUT									2 PED		X						
6	OLB OUT									6 PED						X		
7	OLC OUT									4 PED							X	
8	OLD OUT									8 PED								X
9																		
A	OLA NOT									OLA ON								
B	OLB NOT									OLB ON								
C	OLC NOT									OLC ON								
D	OLD NOT									OLD ON								
E																		
F																		

C8 VERSION NUMBER = D-E-E

CONTROL CODE "D"				
		A	B	C
LAST PWR FAIL	E	H	M	D
LAST FLASH	F	H	M	D

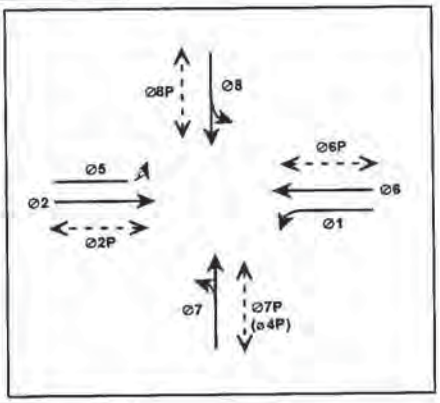
LOCATION: El Dorado Hills Bl @ Park Dr BY: SLK

DATE: 6/28/2005

TYPE 170 CONTROLLER MODEL 210
CONFLICT MONITOR PROGRAMMING INSTRUCTIONS

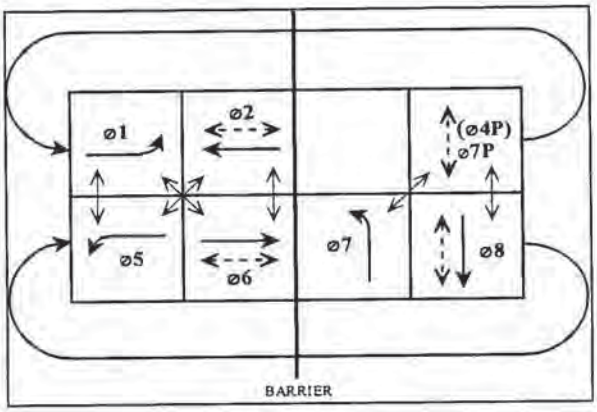
CHANNELS AND PHASES

CHANNEL 16 = Ø8 PED	CHANNEL 15 = Ø6 PED	CHANNEL 14 = Ø4 PED	CHANNEL 13 = Ø2 PED	CHANNEL 12 = SPECIAL	CHANNEL 11 = SPECIAL	CHANNEL 10 = OVERLAP "B"	CHANNEL 9 = OVERLAP "A"
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	
10	10	10	10	10	10		
11	11	11	11	11			
12	12	12	12				
13	13	13					
14	14						
15							



CHANNELS AND PHASES

CHANNEL 8 = Ø8	CHANNEL 7 = Ø7	CHANNEL 6 = Ø6	CHANNEL 5 = Ø5	CHANNEL 4 = Ø4	CH. 3 = Ø3	CH2= Ø2
1	1	1	1	1	1	1
2	2	2	2	2	2	
3	3	3	3	3		
4	4	4	4			
5	5	5				
6	6					
7						



The conflict monitor program card is supplied with all 120 diodes installed. Diodes for phases **NOT** in conflict must be removed.

1. Mark channels (phases) that are not conflicting.
2. Remove corresponding diodes from diode board.
3. Mark diode board with name of intersection.

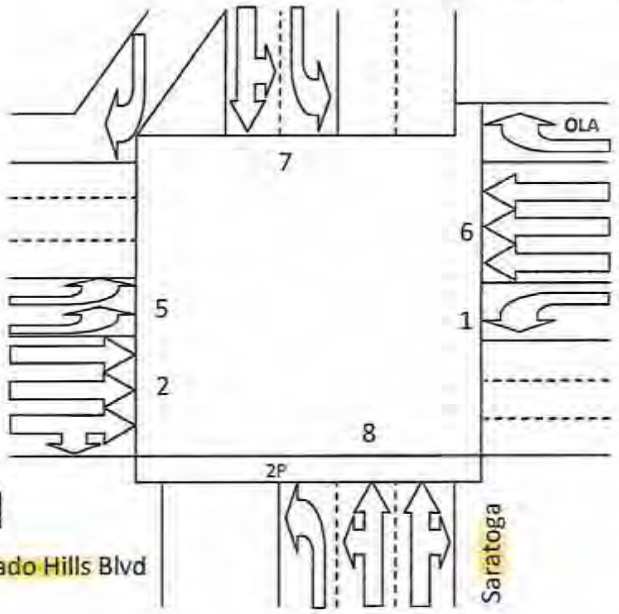
Location: ED 50 @ El Dorado Hills WB Ramp
System: **District:**
Master At: This Location **I/C:**

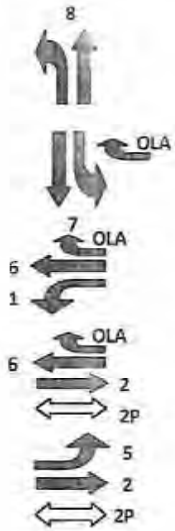
Designed By: El Dorado Co, Y&C Trans.
Installed By: EA 03-2E5104
Service Info: 03250500000860b

Timing Change: **Date Start:** **Date End:** **Designed:** **Installed:**

		FLASH
PHASE	1) SB El Dorado Hills LT to Saratoga	[ ]
	2) NB El Dorado Hills	[ ]
	3)	[ ]
	4)	[ ]
	5) NB LT to WB on	[ ]
	6) SB El Dorado Hills	[ ]
	7) WB Off	[ ]
	8) WB On from Saratoga Shopping Cente	[ ]
OVERLAP	A) 6+7 ***load resistor on 4 Ped Green***	[ ]
	B)	[ ]
	C)	[ ]
	D)	[ ]
	E)	[ ]
	F)	[ ]

Intersection Layout





Comments and Notes:
2000-01-04 MODIFIED SIGNAL: CHANGED TO 6 PHASE OPERATION BY: P.A.DIAZ, A. HEBERT, B. MURPHY, J. ELAM AND S. KOCH (ED CO) AND M. VAN DORMICK (ED CO)
2000-04-19 APPLIED QUICNET
2003-08-27 CHANGED FROM C8V3 TO C8V4 BY P.A.DIAZ
2005-11-11 REMOVED PHASE 5 & 7 BY: P.A.DIAZ & S. KOCH
2009-03-20 installed 2070 by PAD
2013-07-28 Upgrade to TSCP 2.17, prohibit 1 & 5 due to new on-ramp.
2014-08-22 New 332 w/new 2070E TSCP v2.20 Build 118 at SE corner, new location: dh

RAM Checksum

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Page 5: 191A	Page 11: FDAC
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Page 7: 554E	Page 13: 86F7

Post Mile: ED 50 @ (EDH) El Dorado Hills WB Ramp ***Printed: 4/2/2018***

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Appendix A

CONFIGURATION PHASE FLAGS

Cabinet
332
Configuration
CALTRANS

Phases (2-1-1-1)	
Permitted	1 2 . . 5 6 7 8
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	. . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. . . . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	1 2 . . 5 6 7 8
Pedestrian Calls	. 2 . . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. 2 . . . . .
P3	. . . . .
P4	. . . 4 . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)				
Overlap	Parent	Omit	No Start	Not
A	. . . . . 6 7 .	. . . . . 6 . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	7	0	0	0	0	0	0
Flash Don't Walk	0	19	0	0	0	0	0	0
Minimum Green	8	10	0	0	10	10	10	10
Det Limit	10	10	0	0	10	10	10	10
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	15	60	0	0	60	40	40	20
Max Green 2	50	50	0	0	40	50	50	50
Max Green 3	50	50	0	0	50	50	50	50
Extension	2.0	3.0	0.0	0.0	2.0	2.0	2.5	2.0
Maximum Gap	2.0	3.5	0.0	0.0	5.0	2.5	2.5	2.0
Minimum Gap	2.0	1.0	0.0	0.0	2.0	1.0	2.5	2.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0
Reduce Every	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0
Yellow	3.6	4.8	3.0	3.0	3.6	4.8	4.1	3.6
All-Red	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	20	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	4.3	5.0	5.0	5.0	5.0	5.0
Red	1.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	OFF

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90		.....				10	26			15	18	20	14
Plan 2	Green Factor	120		.....				10	51			26	33	21	16
Plan 3	Green Factor	136		.....				14	62			35	39	22	16
Plan 4	Green Factor	136		.....				14	62			45	29	22	16
Plan 5	Green Factor			.....											
Plan 6	Green Factor			.....											
Plan 7	Green Factor			.....											
Plan 8	Green Factor			.....											
Plan 9	Green Factor			.....											

Master Timer Sync (7-A)	
Enable in Plans	
1-9	.....
11-19	.....
21-29	.....

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
.2.45.7.	.....
Veh Min	Veh Max
.....	.....
Ped	Bike
.....	.....
Cond	Cond Grn
.....	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	.2.45.7.	.2...6..	.....	.....	.....	.....	.....	.....
Plan 2	.2.45.7.	.2...6..	.....	.....	.....	.....	.....	.....
Plan 3	.2.45.7.	.2...6..	.....	.....	.....	.....	.....	.....
Plan 4	.2.45.7.	.2...6..	.....	.....	.....	.....	.....	....5...
Plan 5	.....	.....	.....	.....	.....	.....	.....	.....
Plan 6	.....	.....	.....	.....	.....	.....	.....	.....
Plan 7	.....	.....	.....	.....	.....	.....	.....	.....
Plan 8	.....	.....	.....	.....	.....	.....	.....	.....
Plan 9	.....	.....	.....	.....	.....	.....	.....	.....

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

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DETECTORS

Detector Attributes (5-1)				Slot	Detector Configuration (5-2)				
Det	Type	Phases	Lock		Det	Delay	Extend	Recall	Port
1	COUNT+CALL+EXTEND	1.....	NO	I1U	1			10	3.2
2	COUNT+CALL+EXTEND	1.....	NO	I1L	2			10	7.2
3	COUNT+CALL+EXTEND	.2.....	NO	I2U	3		2.0	10	1.1
4	COUNT+CALL+EXTEND	.2.....	NO	I2L	4		2.0	10	1.5
5	COUNT+CALL+EXTEND	.2.....	NO	I3U	5		2.0	10	4.5
6	CALL+EXTEND	.2.....	NO	I3L	6		2.0	10	6.2
7	LIMITED	.2.....	NO	I4U	7			10	2.1
8	LIMITED	.2.....	NO	I4L	8			10	7.4
9	LIMITED	.2.....	NO	I5U	9			10	3.4
10	LIMITED	.2.....	NO	I5L	10			10	7.6
11	LIMITED	.....6..	NO	I6U	11			10	1.3
12	LIMITED	.....6..	NO	I6L	12			10	1.7
13	COUNT+CALL+EXTEND	.....7.	NO	I7U	13		2.0	10	4.7
14	COUNT+CALL+EXTEND	.....7.	NO	I7L	14		2.0	10	6.4
15	LIMITED	.....7.	NO	I8U	15			10	2.3
16	LIMITED	.....7.	NO	I8L	16			10	7.8
17	COUNT+CALL+EXTEND	1.....	NO	I9U	17		2.0	10	3.6
18	COUNT+CALL+EXTEND	..3....	NO	I9L	18			10	3.8
19	COUNT+CALL+EXTEND	.2.....	NO	I10U	19			10	4.1
20	COUNT+CALL+EXTEND	...4....	NO	I10L	20			10	4.2
21	COUNT+CALL+EXTEND	....5...	NO	J1U	21			10	3.1
22	COUNT+CALL+EXTEND	....5...	NO	J1L	22			10	7.1
23	COUNT+CALL+EXTEND	.....6..	NO	J2U	23		2.0	10	1.2
24	COUNT+CALL+EXTEND	.....6..	NO	J2L	24		2.0	10	1.6
25	COUNT+CALL+EXTEND	.....6..	NO	J3U	25		2.0	10	4.6
26	COUNT+CALL+EXTEND	.....6..	NO	J3L	26		2.0	10	6.3
27	LIMITED	.....6..	NO	J4U	27			10	2.2
28	LIMITED	.....6..	NO	J4L	28			10	7.3
29	COUNT+CALL+EXTEND	.....7.	NO	J5U	29			10	3.3
30	COUNT+CALL+EXTEND	.....7.	NO	J5L	30			10	7.5
31	COUNT+CALL+EXTEND	8	NO	J6U	31			10	1.4
32	COUNT+CALL+EXTEND	8	NO	J6L	32			10	1.8
33	COUNT+CALL+EXTEND	....5...	NO	J7U	33		3.0	10	4.8
34	CALL+EXTEND	8	NO	J7L	34			10	6.5
35	COUNT+CALL+EXTEND	8	NO	J8U	35			10	2.4
36	COUNT+CALL+EXTEND	8	NO	J8L	36			10	7.7
37	COUNT+CALL+EXTEND	.2.....	NO	J9U	37			10	3.5
38	COUNT+CALL+EXTEND	.2.....	NO	J9L	38			10	3.7
39	COUNT+CALL+EXTEND	.....6..	NO	J10U	39			10	4.3
40	COUNT+CALL+EXTEND	8	NO	J10L	40			10	4.4
41	PEDESTRIAN	.2.....	NO	I12U	41			10	5.1
42	PEDESTRIAN	...4....	NO	I12L	42			10	5.3
43	PEDESTRIAN	.....6..	NO	I13U	43			10	5.2
44	PEDESTRIAN	8	NO	I13L	44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)	
Detectors 1-8	.....
Detectors 9-16	.....
Detectors17-24	.....
Detectors 25-32	.....
Detectors 33-40	.....
Detectors 41-44	.....

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu	2	3	23	24				
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)	
Enable in Plans	.....

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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Appendix A

TOD SCHEDULE

Table 1 (8-2-1)		
Time	Plan	OS
0001	255	A
0600	2	A
0700	3	A
1500	4	A
1900	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 2 (8-2-2)		
Time	Plan	OS
0001	255	A
0600	2	A
1900	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 3 (8-2-3)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 4 (8-2-4)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 5 (8-2-5)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 6 (8-2-6)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

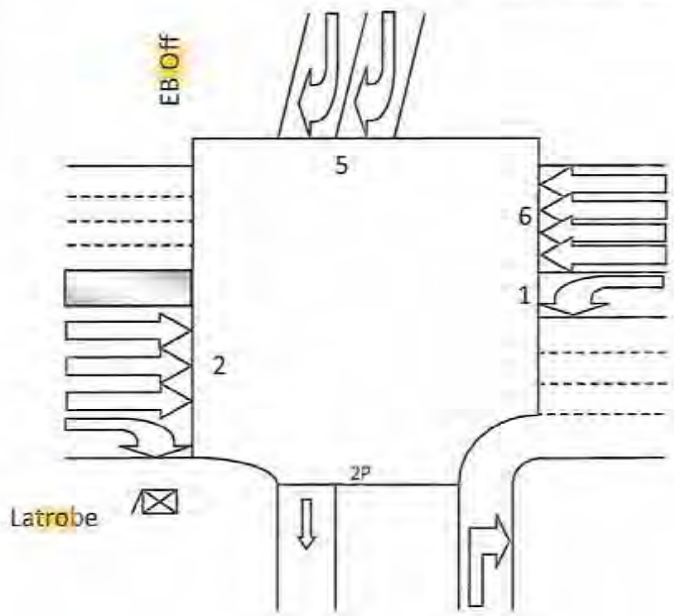
Location: ED 50 @ Latrobe Rd & EB Ramps
System: District:
Master At: WB off to El Dorado I/C:

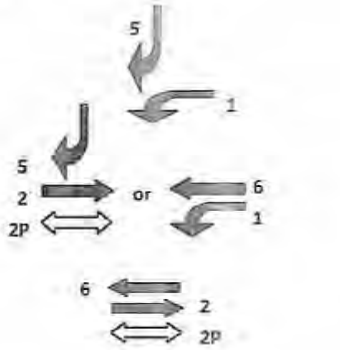
Designed By:
Installed By:
Service Info:

Timing Change: Date Start: Date End: Designed: Installed:

		FLASH
PHASE	1) SB El Dorado LT to EB on	[ ]
	2) NB thru to El Dorado Hills Blvd	[ ]
	3)	[ ]
	4)	[ ]
	5) EB off to Latrobe	[ ]
	6) SB thru to Latrobe	[ ]
	7)	[ ]
	8)	[ ]
OVERLAP	A)	[ ]
	B)	[ ]
	C)	[ ]
	D)	[ ]
	E)	[ ]
	F)	[ ]

Intersection Layout





Comments and Notes:
2000-01-05 O.T.O. @ 12:40 BY P.A. DIAZ, A. HEBERT, J. ELEM (CT), S. KOCH, M. VAN DORMICK (ED CO)
2000-04-19 APPLIED QUICNET BY P.A.DIAZ
2002-05-09 @ Appproximate 11:05 Removed phase 8 & Permitted Phase 5. Modified Traffic Signal Interseciton - New EB Off-Ramp. By P.A.Diaz, State Maintenance: Gary B. & Robert R.
2003-08-29 Changed from C8V3 to C8V4 and Applied CTNet by P.A.Diaz
????-??-?? Upgrade to 2070 w/TSCP Vers. 2.16 - add bicycle detection.
2013-07-28 Upgraded to TSCP 2.17
2014-08-29 Upgraded to TSCP 2.20 Build 118 dh

RAM Checksum

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Page 6: 191A	Page 12: EF20
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Post Mile: ED 50 @ (EDH) Latrobe Rd & EB Ramps

Printed: 4/2/2018

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Appendix A

CONFIGURATION PHASE FLAGS

Cabinet
332
Configuration
CALTRANS

Phases (2-1-1-1)	
Permitted	1 2 . . 5 6 . .
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	1 . . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. 2 . . . 6 . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	1 2 . . 5 6 . .
Pedestrian Calls	. 2 . . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. 2 . . . . .
P3	. . . . .
P4	. . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)				
Overlap	Parent	Omit	No Start	Not
A	. . . . .	. . . . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	7	0	0	0	0	0	0
Flash Don't Walk	0	22	0	0	0	0	0	0
Minimum Green	10	15	0	0	10	15	0	0
Det Limit	10	10	0	0	10	10	0	0
Max Initial	6	9	0	0	5	9	0	0
Max Green 1	39	50	0	0	45	50	0	0
Max Green 2	20	50	0	0	50	15	0	0
Max Green 3	10	50	0	0	50	50	0	0
Extension	2.5	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Maximum Gap	2.5	3.2	0.0	0.0	2.5	3.2	0.0	0.0
Minimum Gap	2.5	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0
Reduce Every	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Yellow	3.6	5.2	3.0	3.0	3.6	5.2	3.0	3.0
All-Red	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	0	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	OFF

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90		.....	74			39	39			30	48		
Plan 2	Green Factor	60		.....	59			18	30			20	28		
Plan 3	Green Factor	68		.....	26			26	30			22	34		
Plan 4	Green Factor	68		.....	26			26	30			22	34		
Plan 5	Green Factor			.....											
Plan 6	Green Factor			.....											
Plan 7	Green Factor			.....											
Plan 8	Green Factor			.....											
Plan 9	Green Factor			.....											

Master Timer Sync (7-A)	
Enable in Plans	
1-9	.....
11-19	.....
21-29	.....

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
.2.4.6.8	.....
Veh Min	Veh Max
.....	.....
Ped	Bike
.....	.....
Cond	Cond Grn
.....	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 2	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 3	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 4	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 5	.....	.....	.....	.....	.....	.....	.....	.....
Plan 6	.....	.....	.....	.....	.....	.....	.....	.....
Plan 7	.....	.....	.....	.....	.....	.....	.....	.....
Plan 8	.....	.....	.....	.....	.....	.....	.....	.....
Plan 9	.....	.....	.....	.....	.....	.....	.....	.....

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

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Appendix A

DETECTORS

Detector Attributes (5-1)				Slot	Detector Configuration (5-2)				
Det	Type	Phases	Lock		Det	Delay	Extend	Recall	Port
1	COUNT+CALL+EXTEND	1.....	NO	I1U	1	2		10	3.2
2	COUNT+CALL+EXTEND	1.....	NO	I1L	2	2		10	7.2
3	COUNT+CALL+EXTEND	.2.....	YEL	I2U	3		1.2	10	1.1
4	COUNT+CALL+EXTEND	.2.....	NO	I2L	4		1.0	10	1.5
5	LIMITED	.2.....	NO	I3U	5			10	4.5
6	CALL+EXTEND	.2.....	NO	I3L	6			10	6.2
7	LIMITED	.2.....	NO	I4U	7			10	2.1
8	COUNT+CALL+EXTEND	.2.....	NO	I4L	8			10	7.4
9	LIMITED	.2.....	NO	I5U	9			10	3.4
10	LIMITED	.2.....	NO	I5L	10			10	7.6
11	LIMITED	.2.....	NO	I6U	11			10	1.3
12	COUNT+CALL+EXTEND	...4....	NO	I6L	12			10	1.7
13	COUNT+CALL+EXTEND	...4....	NO	I7U	13			10	4.7
14	CALL+EXTEND	...4....	NO	I7L	14			10	6.4
15	LIMITED	.....6..	NO	I8U	15			10	2.3
16	LIMITED	.....6..	NO	I8L	16			10	7.8
17	COUNT+CALL+EXTEND	1.....	NO	I9U	17			10	3.6
18	COUNT+CALL+EXTEND	..3....	NO	I9L	18		2.2	10	3.8
19	COUNT+CALL+EXTEND	.2.....	NO	I10U	19			10	4.1
20	COUNT+CALL+EXTEND	...4....	NO	I10L	20			10	4.2
21	COUNT+CALL+EXTEND	....5...	NO	J1U	21	2	2.0	10	3.1
22	COUNT+CALL+EXTEND	....5...	NO	J1L	22	2	2.0	10	7.1
23	COUNT+CALL+EXTEND	.....6..	YEL	J2U	23		1.2	10	1.2
24	COUNT+CALL+EXTEND	.....6..	YEL	J2L	24		1.2	10	1.6
25	COUNT+CALL+EXTEND	.....6..	YEL	J3U	25		1.2	10	4.6
26	CALL+EXTEND	.....6..	NO	J3L	26		1.0	10	6.3
27	LIMITED	.....6..	NO	J4U	27			10	2.2
28	LIMITED	.....6..	NO	J4L	28			10	7.3
29	LIMITED	.....6..	NO	J5U	29			10	3.3
30	LIMITED	.....6..	NO	J5L	30			10	7.5
31	COUNT+CALL+EXTEND	.....6..	NO	J6U	31		1.0	10	1.4
32	COUNT+CALL+EXTEND	.2.....	NO	J6L	32			10	1.8
33	LIMITED	.....6..	NO	J7U	33			10	4.8
34	LIMITED	.....6..	NO	J7L	34			10	6.5
35	CALL+EXTEND	....5...	NO	J8U	35		0.5	10	2.4
36	CALL+EXTEND	....5...	NO	J8L	36		2.0	10	7.7
37	COUNT+CALL+EXTEND	....5...	NO	J9U	37		0.5	10	3.5
38	COUNT+CALL+EXTEND	....5...	NO	J9L	38		0.5	10	3.7
39	COUNT+CALL+EXTEND	.....6..	NO	J10U	39			10	4.3
40	COUNT+CALL+EXTEND	8	NO	J10L	40			10	4.4
41	PEDESTRIAN	.2.....	NO	I12U	41			10	5.1
42	PEDESTRIAN	...4....	NO	I12L	42			10	5.3
43	PEDESTRIAN	.....6..	NO	I13U	43			10	5.2
44	PEDESTRIAN	8	NO	I13L	44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)	
Detectors 1-8	.....
Detectors 9-16	.....
Detectors17-24	.....
Detectors 25-32	.....
Detectors 33-40	.....
Detectors 41-44	.....

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu	3	4	23	24				
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)

Enable in Plans	.....

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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Appendix A

TOD SCHEDULE

Table 1 (8-2-1)		
Time	Plan	OS
0001	255	A
0600	2	A
0700	3	A
1500	4	A
1900	~~2~~ 255	A
~~2100~~	~~255~~	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 2 (8-2-2)		
Time	Plan	OS
0001	255	A
0600	2	A
2100	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 3 (8-2-3)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 4 (8-2-4)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 5 (8-2-5)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 6 (8-2-6)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

PHASE TIMING

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C8 - V3 DATE: 5/15/2004

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK		7		10		7			CLK RST
1	DON'T WALK		15		20		15			CHK SUM
2	MIN GREEN	4	5	6	6	4	5			
3	TYPE 3 DET									
4	ADD/VEH		1.2				1.2			
5	PASSAGE	2.0	2.0	2.5	2.5	2.0	2.0			
6	MAX GAP									
7	MIN GAP									
8	MAX EXT	20	50	15	20	15	50			
9	MAX 2	20	40	15	20	12	60			YEAR
A	MAX 3	20	65	15	20	12	40			MONTH
B										DAY
C	REDUCE BY									DAY OF WEEK
D	REDUCE EVERY									HOUR
E	YELLOW	3.0	4.5	3.0	3.0	3.0	4.5			MINUTE
F	RED	0.5	1.0	0.5	0.5	0.5	1.0			SECOND

PRE-EMPTION	E
EV SELECT	
RR1 CLEAR	
EVA DELAY	0
EVA CLEAR	5
EVB DELAY	0
EVB CLEAR	5
EVC DELAY	0
EVC CLEAR	5
EVD DELAY	0
EVD CLEAR	5
MAX EV	30
RR2 CLEAR	

F FLAGS	1	2	3	4	5	6	7	8	
PERMIT	X	X	X	X	X	X			0
RED LOCK									1
YEL LOCK									2
V RECALL		X				X			3
P RECALL									4
PED PHASES		X		X		X			5
ARROW A									6
ARROW B									7
DBL ENTRY									8
MAX 2 PH	X	X	X	X	X	X			9
LAG PHASES	FOR OBSERVATION ONLY								A
RED REST									B
REST IN WALK									C
MAX 3 PH	X	X	X	X	X	X			D
YEL STARTUP				X					E
FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

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PHASE TIMING

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C7 DATE: 9/17/2001

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9	
0	WALK		7		10		7			CLK RST	
1	DON'T WALK		12		20		12			CHK SUM	
2	MIN GREEN	4	5	6	6	4	5				
3	TYPE 3 DET										
4	ADD/VEH		1.2				1.2				
5	PASSAGE	2.0	2.0	2.5	2.5	2.0	2.0				
6	MAX GAP										
7	MIN GAP										
8	MAX EXT	~~25~~ 15	50	~~20~~	20	15	50				
9	MAX 2	~~20~~ 12	40	~~20~~	15	12	60			YEAR	
A	MAX 3	~~20~~ 12	65	~~20~~	12	12	40			MONTH	
B										DAY	
C	REDUCE BY									DAY OF WEEK	
D	REDUCE EVERY									HOUR	
E	YELLOW	3.0	4.5	3.0	3.0	3.0	4.5			MINUTE	
F	RED	0.5	1.0	0.5	0.5	0.5	1.0			SECOND	

PRE-EMPTION	E
EV SELECT	
RR1 CLEAR	
EVA DELAY	0
EVA CLEAR	5
EVB DELAY	0
EVB CLEAR	5
EVC DELAY	0
EVC CLEAR	5
EVD DELAY	0
EVD CLEAR	5
MAX EV	30
RR2 CLEAR	

F FLAGS	1	2	3	4	5	6	7	8	
PERMIT	X	X	X	X	X	X			0
RED LOCK									1
YEL LOCK									2
V RECALL		X				X			3
P RECALL									4
PED PHASES		X		X		X			5
ARROW A									6
ARROW B									7
DBL ENTRY									8
MAX 2 PH	X	X	X	X	X	X			9
LAG PHASES	FOR OBSERVATION ONLY								A
RED REST									B
REST IN WALK									C
MAX 3 PH	X	X	X	X	X	X			D
YEL STARTUP				X					E
FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C7

DATE: 9/17/2001

7-KEY

TIME OF DAY ACTIVITY TABLE

7 + EVENT + HR + MIN + ACT + "E" + on/off + DOW LTS

	HR	MIN	ACT	on/off	M	T	W	T	F	S	S
				0	1	2	3	4	5	6	7
0	07	30	2	on		X	X	X	X		
1	09	00	2		off	X	X	X	X		
2	16	30	3	on		X	X	X	X		
3	18	00	3		off	X	X	X	X		
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODES

1	TYPE OF SIMULTANEOUS PHASE TERMINATION
2	MAX 2
3	MAX 3
4	CONDITIONAL SERVICE (1st SELECT)
5	CONDITIONAL SERVICE (2nd SELECT)
6	ENERGIZE AUXILLARY OUTPUT - RED
7	ENERGIZE AUXILLARY OUTPUT - GREEN
8	ENERGIZE AUXILLARY OUTPUT - YELLOW
9	
A	TRAFFIC ACTUATED MAX 2 OPERATION
B	
C	YELLOW YIELD COORDINATION "C"
D	YELLOW YIELD COORDINATION "D"
E	
F	FLASHING OPERATION

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C7

DATE: 9/17/2001

C PAGE

(DOF = 123)

(DOF = 000 = Default Condition)

D	FLAGS								E	FLAGS								F	FLAGS							
RST	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	MAX	1	2	3	4	5	6	7	8
0 WLK									RCL									RCL								
1 CP 1									CP 1									CP 1								
2 CP 2									CP 2									CP 2								
3 CP 3									CP 3									CP 3								
4 CP 4									CP 4									CP 4								
5 CP 5									CP 5									CP 5								
6 CP 6									CP 6									CP 6								
7 CP 7									CP 7									CP 7								
8 CP 8									CP 8									CP 8								
9 CP 9									CP 9									CP 9								
A																										
B																										
C																										
D																										
E									VER.																	
F									BAT.																	

E PAGE

	E	FLAGS								F	FLAGS							
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8
0										CODE 4								
1										CODE 5								
2										"Y" RCL C								
3										"Y" RCL D								
4	Bike - A									Bike - B								
5	OLA OUT									2 PED	X							
6	OLB OUT									6 PED						X		
7	OLC OUT									4 PED				X				
8	OLD OUT									8 PED								
9																		
A	OLA NOT									OLA ON								
B	OLB NOT									OLB ON								
C	OLC NOT									OLC ON								
D	OLD NOT									OLD ON								
E																		
F																		

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C7 DATE: 9/17/2001

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1		D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1		D-A-1
2I2L	D-1-2		D-7-2	D-3-2		D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2		D-A-2
2I3U	D-1-3		D-7-3	D-3-3		D-9-3	3	6J3U	D-2-3		D-8-3	D-4-3		D-A-3
2I3L	D-1-4		D-7-4	D-3-4		D-9-4	4	6J3L	D-2-4	8.0	D-8-4	D-4-4		D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6		D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7		D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8		D-8-8	D-4-8		D-A-8
4I7U	D-1-9		D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9		D-8-9	D-4-9		D-A-9
4I7L	D-1-A		D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A		D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B		D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D	10.0	D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D		D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext./Cnt. i.e. TYPE)
*5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

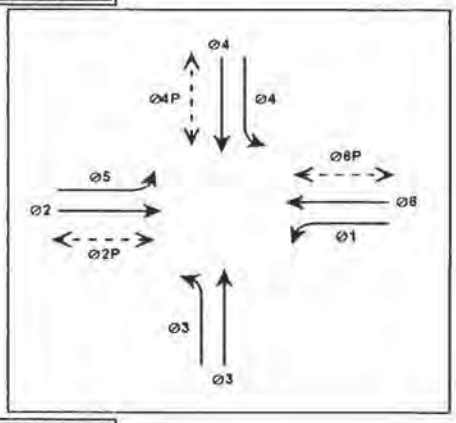
NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

LOCATION: Latrobe Rd @ Town Center Dr BY: S.L. Koch
DATE: 9/17/2001

TYPE 170 CONTROLLER MODEL 210
CONFLICT MONITOR PROGRAMMING INSTRUCTIONS

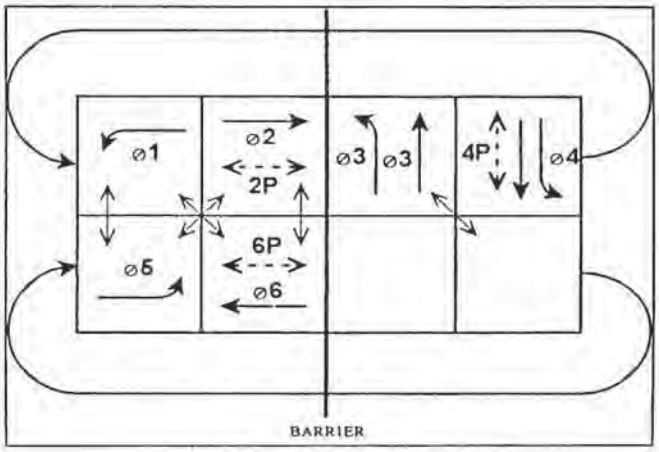
CHANNELS AND PHASES

CHANNEL 16 = ∅8 PED	CHANNEL 15 = ∅6 PED	CHANNEL 14 = ∅4 PED	CHANNEL 13 = ∅2 PED	CHANNEL 12 = SPECIAL	CHANNEL 11 = SPECIAL	CHANNEL 10 = OVERLAP "B"	CHANNEL 9 = OVERLAP "A"
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	
10	10	10	10	10	10		
11	11	11	11	11			
12	12	12	12				
13	13	13					
14	14						
15							



CHANNELS AND PHASES

CHANNEL 8 = ∅8	CHANNEL 7 = ∅7	CHANNEL 6 = ∅6	CHANNEL 5 = ∅5	CHANNEL 4 = ∅4	CH. 3 = ∅3	CH2= ∅2
1	1	1	1	1	1	1
2	2	2	2	2	2	
3	3	3	3	3		
4	4	4	4			
5	5	5				
6	6					
7						



The conflict monitor program card is supplied with all 120 diodes installed. Diodes for phases NOT in conflict must be removed.

1. Mark channels (phases) that are not conflicting.
2. Remove corresponding diodes from diode board.
3. Mark diode board with name of intersection.

STD8

Movement	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB
Times [1.1.1]	1	2	3	4	5	6	7	8
Min Green	30	30	30	10	30	30	30	30
Gap, Ext	1.5	3	1.5	2	1.5	3	1.5	2
Max 1	25	45	20	25	15	45	30	35
Max 2	35	50	15	15	25	50	25	25
Yel Clearance	4	4.7	4.5	4.7	4	4.7	4.5	4.7
Red Clearance	1	1	1.5	1	1	1	1.5	1
Walk		7		7		7		7
Ped Clearance		39		48		37		50
Red Revert	2	2	2	2	2	2	2	2
Add Initial		1		1		1		1
Max Initial		12		12		12		12
Time B4 Reduct		6		6		6		6
Cars B4 Reduct								
Time To Reduce		10		10		10		10
Reduce By								
Min Gap	2	2	2	2	2	2	2	2
DyMaxLim								
Max Step								
Options [1.1.2]	1	2	3	4	5	6	7	8
Enable	X	X	X	X	X	X	X	X
Min Recall	-	-	-	-	-	-	-	-
Max Recall	-	-	-	-	-	-	-	-
Ped Recall	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	X	-	-
Lock Calls	X	-	X	-	X	-	X	-
Auto Flash Entry	-	-	-	-	-	-	-	-
Auto Flash Exit	-	-	-	-	-	-	-	-
Dual Entry	-	X	-	-	-	X	-	-
Enable Simul Gap	-	-	-	-	-	-	-	-
Gaurantee Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Conditon Service	-	-	-	-	-	-	-	-
Non-Actuated 1	-	-	-	-	-	-	-	-
Non-Actuated 2	-	-	-	-	-	-	-	-
Add Init Calc								

Pattern Tables [2.4]

Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq
1	0	0	1	1	13					25					37				
2	0	0	2	1	14					26					38				
3	0	0	0	1	15					27					39				
4	0	0	0	1	16					28					40				
5	0	0	0	1	17					29					41				
6	0	0	0	1	18					30					42				
7					19					31					43				
8					20					32					44				
9					21					33					45				
10					22					34					46				
11					23					35					47				
12					24					36					48				

Split	[2.7]	1	2	3	4	5	6	7	8	Split	[2.7]	1	2	3	4	5	6	7	8
1	Coord	0	0	0	0	0	0	0	0	13	Coord								
2	Coord	0	0	0	0	0	0	0	0	14	Coord								
3	Coord	0	0	0	0	0	0	0	0	15	Coord								
4	Coord	0	0	0	0	0	0	0	0	16	Coord								
5	Coord	0	0	0	0	0	0	0	0	17	Coord								
6	Coord									18	Coord								
7	Coord									19	Coord								
8	Coord									20	Coord								
9	Coord									21	Coord								
10	Coord									22	Coord								
11	Coord									23	Coord								
12	Coord									24	Coord								

Ring/Startup [1.1.4]			[1.1.2]
Phs	Ring	Start	Enable
1	1	RED	X
2	1	RED	X
3	1	RED	X
4	1	RED	X
5	2	RED	X
6	2	RED	X
7	2	RED	X
8	2	YELLOW	X

Coord Modes [2.1]	
Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX INH
Force-Off	FIXED
Closed Loop	OFF
Stop-in-Walk	OFF
Auto Reset	OFF
Expand Split	OFF
Ped Recycle	NO_RECYCLE
Before	TIMED
After	TIMED
Auto Flash [1.4.1]	
Auto Flash	CHANNEL
Flash Yel	3.5
Flash Red	1.5
Unit Params [1.2.1]	
Phase Mode	STD8
IO Mode	AUTO
Loc Flsh Start	OFF
Start Flash(s)	0
Start AllRed(s)	0
Yellow < 3*	OFF
Display Time	10
Red Revert	2
MCE Timeout	
Feature Profile	0
Free Ring Seq	1
SDLC Retry	0
TS2 Det Faults	ON
Auto Ped Clear	OFF
Date Printed:	10/20/08
	Page 1

Latrobe @ White Rock (ID 7014) (Standard File)

IP Address:

Mask:

Gateway:

Port:

Date Installed:

Date Superceded:

Phase Options+ [1.1.3]

Options+ [1.1.3]	1	2	3	4	5	6	7	8
Reservice	-	-	-	-	-	-	-	-
PedClr Thru Yel	-	-	-	-	-	-	-	-
SkipRed-NoCall	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max II	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Grn/Ped Delay								
Conflicting Phase								
Omit Yel, Yel P								
Ped Out/Olp Ped								
StartYel, Next P				2				6

Phase Concurrency [1.1.4]

Phase	Ring	StartUp	Concurrent Phases				
1	1	RED	5	6	0	0	0
2	1	RED	5	6	0	0	0
3	1	RED	7	8	0	0	0
4	1	RED	7	8	0	0	0
5	2	RED	1	2	0	0	0
6	2	RED	1	2	0	0	0
7	2	RED	3	4	0	0	0
8	2	YELLOW	3	4	0	0	0
9	0	RED	0	0	0	0	0
10	0	RED	0	0	0	0	0
11	0	RED	0	0	0	0	0
12	0	RED	0	0	0	0	0

User Defined Sequences (MM>1>2>4)

Sequence No.	Ring	Phase						
1	1	1	2	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
2	1	1	2	3	4	0	0	0
	2	6	5	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
3	1	2	1	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0

Overlap 1-8 Program Parms & Parm+ [1.5.2.1] [1.5.2.2]

	Included Ø									NORMAL	
1	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
A	Conflict Olap									Red	1.5
	Conflict Ped									LG	
	Included Ø									NORMAL	
2	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
B	Conflict Olap									Red	1.5
	Conflict Ped									LG	
	Included Ø									NORMAL	
3	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
C	Conflict Olap									Red	1.5
	Conflict Ped									LG	
	Included Ø									NORMAL	
4	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
D	Conflict Olap									Red	1.5
	Conflict Ped									LG	
	Included Ø									NORMAL	
5	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
E	Conflict Olap									Red	1.5
	Conflict Ped									LG	
	Included Ø									NORMAL	
6	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
F	Conflict Olap									Red	1.5
	Conflict Ped									LG	
	Included Ø									NORMAL	
7	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
G	Conflict Olap									Red	1.5
	Conflict Ped									LG	
	Included Ø									NORMAL	
8	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
H	Conflict Olap									Red	1.5
	Conflict Ped									LG	

Coord Transition, CoorPhs - [2.5]

Pat#	Short	Long	Dwell	No Shortway Ø				E-Yld	Offset	Min Perms Veh	Min Perms Ped
1	10	17							BegGRN		
2	10	17						10	BegGRN		
3		17							BegGRN		
4		17							BegGRN		
5		17							BegGRN		
6		17							BegGRN		
7		17							BegGRN		
8		17							BegGRN		
9		17							BegGRN		
10		17							BegGRN		
11		17							BegGRN		
12		17							BegGRN		
13		17							BegGRN		
14		17							BegGRN		

Default Phase Sequence Chart [1.2.4]

Seq #	Ring	Phases				
1	1	1	2	3	4	
	2	5	6	7	8	
2	1	1	2	3	4	
	2	6	5	7	8	
3	1	2	1	3	4	
	2	5	6	7	8	
4	1	2	1	3	4	
	2	6	5	7	8	
5	1	1	2	3	4	
	2	5	6	8	7	
6	1	1	2	3	4	
	2	6	5	8	7	
7	1	2	1	3	4	
	2	5	6	8	7	
8	1	2	1	3	4	
	2	6	5	8	7	
9	1	1	2	4	3	
	2	5	6	7	8	
10	1	1	2	4	3	
	2	6	5	7	8	
11	1	2	1	4	3	
	2	5	6	7	8	
12	1	2	1	4	3	
	2	6	5	7	6	
13	1	1	2	4	3	
	2	5	6	8	7	
14	1	1	2	4	3	
	2	6	5	8	7	
15	1	2	1	4	3	
	2	5	6	8	7	
16	1	2	1	4	3	
	2	6	5	8	7	

Coord Trans [2.5] cont.

Patt #	Ret Hold	Flt	Max2
1	-		X
2	-		-
3	-		-
4	-		-
5	-		-
6	-		-
7	-		-
8	-		-
9	-		-
10	-		-
11	-		-
12	-		-
13	-		-
14	-		-

Latrobe @ White Rock (ID 7014) (Standard File) 10/20/08

PHASE TIMING

LOCATION: Latrobe Road at Golden Foothill Pw (N) BY: _____

PROGRAM: C8 DATE: 5/24/2005

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK			4	4		4			CLK RST
1	DON'T WALK			20	12		20			CHK SUM
2	MIN GREEN	3	5	5	5	5	5			
3	TYPE 3 DET									
4	ADD/VEH									
5	PASSAGE	2.0	4.0	2.0	3.0	2.0	4.0			
6	MAX GAP									
7	MIN GAP									
8	MAX EXT	15	40	20	20	12	40			
9	MAX 2									YEAR
A	MAX 3									MONTH
B										DAY
C	REDUCE BY									DAY OF WK
D	REDUCE EVERY									HOUR
E	YELLOW	3.0	5.0	3.0	3.0	3.0	5.0			MINUTE
F	RED	1.0	1.0	1.0	1.0	1.0	1.0			SECOND
	PED XING - FT									

PRE-EMPTION	E
EV SELECT	
RR1 CLR	
EVA DLY	
EVA CLR	
EVB DLY	
EVB CLR	
EVC DLY	
EVC CLR	
EVD DLY	
EVD CLR	
MAX EV	
RR2 CLR	

F FLAGS	1	2	3	4	5	6	7	8	
PERMIT	X	X	X	X	X	X			0
RED LOCK				X					1
YEL LOCK									2
V RECALL		X				X			3
P RECALL									4
PED PHASES		X	X			X			5
ARROW A									6
ARROW B									7
DBL ENTRY									8
MAX 2 PH									9
LAG PHASES	FOR OBSERVATION ONLY								A
RED REST									B
REST IN WALK									C
MAX 3 PH									D
YEL STARTUP				X					E
FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

LOCATION: Latrobe Road at Golden Foothill (N)

PROGRAM: C7

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1	1.5	D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1	1.5	D-A-1
2I2L	D-1-2		D-7-2	D-3-2	1.0	D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2	1.0	D-A-2
2I3U	D-1-3		D-7-3	D-3-3		D-9-3	3	6J3U	D-2-3	8.0	D-8-3	D-4-3		D-A-3
2I3L	D-1-4		D-7-4	D-3-4		D-9-4	4	6J3L	D-2-4		D-8-4	D-4-4		D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6		D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7		D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8		D-8-8	D-4-8		D-A-8
4I7U	D-1-9	8.0	D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9		D-8-9	D-4-9		D-A-9
4I7L	D-1-A		D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A		D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B		D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D		D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D		D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext../Cnt. i.e. TYPE)
*5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

LOCATION: Latrobe Road at Golden Foothill (N)

PROGRAM: C7 DATE: 4/26/2000

7-KEY

TIME OF DAY ACTIVITY TABLE

7 + EVENT + HR + MIN + ACT + "E" + on/off + DOW LTS

	HR	MIN	ACT	on/off	M	T	W	T	F	S	S
				0	1	2	3	4	5	6	7
0	16	30	2	on	X	X	X	X	X		
1	18	00	2	off	X	X	X	X	X		
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODES

1	TYPE OF SIMULTANEOUS PHASE TERMINATION
2	MAX 2
3	MAX 3
4	CONDITIONAL SERVICE (1st SELECT)
5	CONDITIONAL SERVICE (2nd SELECT)
6	ENERGIZE AUXILLARY OUTPUT - RED
7	ENERGIZE AUXILLARY OUTPUT - GREEN
8	ENERGIZE AUXILLARY OUTPUT - YELLOW
9	
A	TRAFFIC ACTUATED MAX 2 OPERATION
B	
C	YELLOW YIELD COORDINATION "C"
D	YELLOW YIELD COORDINATION "D"
E	
F	FLASHING OPERATION

LOCATION: Latrobe Road @ Golden Foothill Pkwy (N)

PROGRAM: C7

DATE: 4/19/1999

D PAGE

D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																											
B																											
C																											
D																											
E										VER.																	
F										BAT.																	

E PAGE

E	FLAGS								F	FLAGS							
FUNCTIO	1	2	3	4	5	6	7	8	UNCTIO	1	2	3	4	5	6	7	8
0									CODE 4								
1									CODE 5								
2									"Y" RCL C								
3									"Y" RCL D								
4																	
5									2 PED								
6									6 PED						X		
7									4 PED					X			
8									8 PED				X				
9																	
A	OLA NOT								OLA ON								
B	OLB NOT								OLB ON								
C	OLC NOT								OLC ON								
D	OLD NOT								OLD ON								
E																	
F																	

PHASE TIMING

LOCATION: Latrobe Road at Suncast Lane

PROGRAM: C8 ver 4 DATE: 6/18/2004

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK			4			4			CLK RST
1	DON'T WALK			12			20			CHK SUM
2	MIN GREEN		5	5		5	5			
3	TYPE 3 DET		10	10		10	10			
4	ADD/VEH		1.0	1.0		1.0	1.0			
5	PASSAGE		4.0	3.0		2.0	4.0			
6	MAX GAP		5.0	5.0		5.0	5.0			
7	MIN GAP		5.0	5.0		5.0	5.0			
8	MAX EXT		40	20		12	40			
9	MAX 2		50	50		50	50			YEAR
A	MAX 3		50	50		50	50			MONTH
B										DAY
C	REDUCE BY									DAY OF WEEK
D	REDUCE EVERY		1.0	1.0		1.0	1.0			HOUR
E	YELLOW		5.0	3.0		3.0	5.0			MINUTE
F	RED		1.0	1.0		1.0	1.0			SECOND

PRE-EMPTION	E
EV SELECT	
RR1 CLEAR	10
EVA DELAY	0
EVA CLEAR	5
EVB DELAY	0
EVB CLEAR	5
EVC DELAY	0
EVC CLEAR	5
EVD DELAY	
EVD CLEAR	
MAX EV	30
RR2 CLEAR	10

	F FLAGS	1	2	3	4	5	6	7	8	
0	PERMIT		X	X		X	X			0
1	RED LOCK			X						1
2	YEL LOCK									2
3	V RECALL		X				X			3
4	P RECALL									4
5	PED PHASES			X			X			5
6	ARROW A									6
7	ARROW B									7
8	DBL ENTRY									8
9	MAX 2 PH									9
A	LAG PHASES	FOR OBSERVATION ONLY								A
B	RED REST									B
C	REST IN WALK									C
D	MAX 3 PH									D
E	YEL STARTUP			X						E
F	FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	2.0
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

LOCATION: Latrobe Road @ Suncast Lane

PROGRAM: C8 ver 4

DATE: 6/18/2004

D PAGE

D	FLAGS								E	FLAGS								F	FLAGS							
MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL								RCL									RCL								
1	CP 1								CP 1									CP 1								
2	CP 2								CP 2									CP 2								
3	CP 3								CP 3									CP 3								
4	CP 4								CP 4									CP 4								
5	CP 5								CP 5									CP 5								
6	CP 6								CP 6									CP 6								
7	CP 7								CP 7									CP 7								
8	CP 8								CP 8									CP 8								
9	CP 9								CP 9									CP 9								
A																										
B																										
C																										
D																										
E									VER																	
F									BAT																	

E PAGE

E	FLAGS								F	FLAGS							
FUNCTIO	1	2	3	4	5	6	7	8	UNCTIO	1	2	3	4	5	6	7	8
0									CODE 4								
1									CODE 5								
2									"Y" RCL C								
3									"Y" RCL D								
4																	
5									2 PED								
6									6 PED							X	
7									4 PED								
8									8 PED		X						
9																	
A	OLA NOT								OLA ON								
B	OLB NOT								OLB ON								
C	OLC NOT								OLC ON								
D	OLD NOT								OLD ON								
E																	
F																	

Movement	SBLT	NB		WB	NBLT	SB		EB
Times [1.1.1]	1	2	3	4	5	6	7	8
Min Green	5	5		5	5	5		5
Gap, Ext	1	1	1	1	1	1	1	1
Max 1	12	25		15	12	25		15
Max 2								
Yel Clearance	3	4.3	3.5	3.5	3	4.3	3.5	3
Red Clearance	1	1	1.5	1.5	1	1	1.5	1.5
Walk		7		X		7		7
Ped Clearance		30.2		16		22		20
Red Revert	2	2		2	2	2		2
Add Initial							30	
Max Initial					22			
Time B4 Reduct								
Cars B4 Reduct								
Time To Reduce								
Reduce By								
Min Gap								
DyMaxLim								
Max Step								
Options [1.1.2]	1	2	3	4	5	6	7	8
Enable	X	X	-	X	X	X	-	X
Min Recall	-	-	-	-	-	-	-	-
Max Recall	-	-	-	-	-	-	-	-
Ped Recall	-	-	-	-	-	-	-	-
Soft Recall	-	X	-	-	-	X	-	-
Lock Calls	X	-	-	-	X	-	-	-
Auto Flash Entry	-	-	-	-	-	-	-	-
Auto Flash Exit	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enable Simul Gap	-	X	-	-	-	X	-	-
Gaurantee Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Conditon Service	-	-	-	-	-	-	-	-
Non-Actuated 1	-	-	-	-	-	-	-	-
Non-Actuated 2	-	-	-	-	-	-	-	-
Add Init Calc								

Pattern Tables [2.4]

Pat#	Cyc	Off	Split	Seq
1	0	0	0	1
2	0	0	0	1
3	0	0	0	1
4	0	0	0	1
5	0	0	0	1
6	0	0	0	1
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				

Split	[2.7]	1	2	3	4	5	6	7	8
1	Coord	0	0	0	0	0	0	0	0
2	Coord	0	0	0	0	0	0	0	0
3	Coord	0	0	0	0	0	0	0	0
4	Coord	0	0	0	0	0	0	0	0
5	Coord	0	0	0	0	0	0	0	0
6	Coord								
7	Coord								
8	Coord								
9	Coord								
10	Coord								
11	Coord								
12	Coord								
13	Coord								
14	Coord								
15	Coord								
16	Coord								
17	Coord								
18	Coord								
19	Coord								
20	Coord								
21	Coord								
22	Coord								
23	Coord								
24	Coord								

QSeq

Ring/Startup [1.1.4]			[1.1.2]
Phs	Ring	Start	Enable
1	1	RED	X
2	1	RED	X
3	1	RED	-
4	1	RED	X
5	2	RED	X
6	2	RED	X
7	1	RED	-
8	1	RED	X

Coord Modes [2.1]	
Test OpMode	0
Correction	LONG
Maximum	MAX 1
Force-Off	FIXED
Closed Loop	OFF
Stop-in-Walk	OFF
Auto Reset	OFF
Expand Splt	OFF
Ped Recycle	NO_RECYCLE
Before	TIMED
After	TIMED
Auto Flash [1.4.1]	
Auto Flash	CHANNEL
Flash Yel	3.5
Flash Red	1.5
Unit Params [1.2.1]	
Phase Mode	QSeq
IO Mode	AUTO
Loc Flsh Start	OFF
Start Flash(s)	0
Start AllRed(s)	0
Yellow < 3"	OFF
Display Time	10
Red Revert	2
MCE Timeout	
Feature Profile	0
Free Ring Seq	1
SDLC Retry	0
TS2 Det Faults	ON
Auto Ped Clear	OFF
Date Printed:	01/12/09
	Page 1

Latrobe Rd @ GFH Pw (S) (ID 7047) (Standard File)

IP Address:

Mask:

Gateway:

Port:

Date Installed:

Date Superceded:

Phase Options+ [1.1.3]

Options+ [1.1.3]	1	2	3	4	5	6	7	8
Reservice	-	-	-	-	-	-	-	-
PedClr Thru Yel	-	-	-	-	-	-	-	-
SkipRed-NoCall	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max II	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Grn/Ped Delay								
Conflicting Phase								
Omit Yel, Yel P								
Ped Out/Olp Ped								
StartYel, Next P								

Phase Concurrency [1.1.4]

Phase	Ring	StartUp	Concurrent Phases				
1	1	RED	5	6	0	0	0
2	1	RED	5	6	0	0	0
3	1	RED	0	0	0	0	0
4	1	RED	0	0	0	0	0
5	2	RED	1	2	0	0	0
6	2	RED	1	2	0	0	0
7	1	RED	0	0	0	0	0
8	1	RED	0	0	0	0	0
9	0	RED	0	0	0	0	0
10	0	RED	0	0	0	0	0
11	0	RED	0	0	0	0	0
12	0	RED	0	0	0	0	0

User Defined Sequences (MM>1>2>4)

Sequence No.	Ring	Phase							
1	1	1	2	0	3	4	7	8
	2	5	6	0	0	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
2	1	1	2	3	4	0	0	0
	2	6	5	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
3	1	2	1	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0

Overlap 1-8 Program Parms & Parm+ [1.5.2.1] [1.5.2.2]

1	Included Ø		NORMAL
	Modifier Ø		Grn
	Conflict Ø		Yel 3.5
A	Conflict Olap		Red 1.5
	Conflict Ped		LG
2	Included Ø		NORMAL
	Modifier Ø		Grn
	Conflict Ø		Yel 3.5
B	Conflict Olap		Red 1.5
	Conflict Ped		LG
3	Included Ø		NORMAL
	Modifier Ø		Grn
	Conflict Ø		Yel 3.5
C	Conflict Olap		Red 1.5
	Conflict Ped		LG
4	Included Ø		NORMAL
	Modifier Ø		Grn
	Conflict Ø		Yel 3.5
D	Conflict Olap		Red 1.5
	Conflict Ped		LG
5	Included Ø		NORMAL
	Modifier Ø		Grn
	Conflict Ø		Yel 3.5
E	Conflict Olap		Red 1.5
	Conflict Ped		LG
6	Included Ø		NORMAL
	Modifier Ø		Grn
	Conflict Ø		Yel 3.5
F	Conflict Olap		Red 1.5
	Conflict Ped		LG
7	Included Ø		NORMAL
	Modifier Ø		Grn
	Conflict Ø		Yel 3.5
G	Conflict Olap		Red 1.5
	Conflict Ped		LG
8	Included Ø		NORMAL
	Modifier Ø		Grn
	Conflict Ø		Yel 3.5
H	Conflict Olap		Red 1.5
	Conflict Ped		LG

Coord Transition, CoorPhs - [2.5]

Pat#	Short	Long	Dwell	No Shortway Ø			E-Yld	Offset
1		17						BegGRN
2		17						BegGRN
3		17						BegGRN
4		17						BegGRN
5		17						BegGRN
6		17						BegGRN
7		17						BegGRN
8		17						BegGRN
9		17						BegGRN
10		17						BegGRN
11		17						BegGRN
12		17						BegGRN
13		17						BegGRN
14		17						BegGRN

Min Perms

Veh	Ped

Default Phase Sequence Chart [1.2.4]

Seq #	Ring	Phases				
1	1	1	2	3	4	
	2	5	6	7	8	
2	1	1	2	3	4	
	2	6	5	7	8	
3	1	2	1	3	4	
	2	5	6	7	8	
4	1	2	1	3	4	
	2	6	5	7	8	
5	1	1	2	3	4	
	2	5	6	8	7	
6	1	1	2	3	4	
	2	6	5	8	7	
7	1	2	1	3	4	
	2	5	6	8	7	
8	1	2	1	3	4	
	2	6	5	8	7	
9	1	1	2	4	3	
	2	5	6	7	8	
10	1	1	2	4	3	
	2	6	5	7	8	
11	1	2	1	4	3	
	2	5	6	7	8	
12	1	2	1	4	3	
	2	6	5	7	6	
13	1	1	2	4	3	
	2	5	6	8	7	
14	1	1	2	4	3	
	2	6	5	8	7	
15	1	2	1	4	3	
	2	5	6	8	7	
16	1	2	1	4	3	
	2	6	5	8	7	

Coord Trans [2.5] cont.

Patt #	Ret Hold	Flt	Max2
1	-		-
2	-		-
3	-		-
4	-		-
5	-		-
6	-		-
7	-		-
8	-		-
9	-		-
10	-		-
11	-		-
12	-		-
13	-		-
14	-		-

Latrobe Rd @ GFH Pw (S) (ID 7047) (Standard File)

01/12/09

PHASE TIMING

LOCATION: Latrobe Road at Investment Boulevard

PROGRAM: ~~8~~ C8 DATE: 4/19/99

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9	PRE-EMPTION	E
0	WALK				4		4			CLK RST	EV SELECT	
1	DON'T WALK				12		20			CHK SUM	RR1 CLEAR	10
2	MIN GREEN		5		5	5	5				EVA DELAY	0
3	TYPE 3 DET		10		16	10	10				EVA CLEAR	5
4	ADD/VEH		1.0		1.0	1.0	1.0				EVB DELAY	0
5	PASSAGE		4.0		3.0	2.0	4.0				EVB CLEAR	5
6	MAX GAP		5.0		5.0	5.0	5.0				EVC DELAY	0
7	MIN GAP		5.0		5.0	5.0	5.0				EVC CLEAR	5
8	MAX EXT		40		20	12	40				EVD DELAY	
9	MAX 2		50		50	50	50			YEAR	EVD CLEAR	
A	MAX 3		50		50	50	50			MONTH	MAX EV	30
B										DAY	RR2 CLEAR	10
C	REDUCE BY									DAY OF WEEK		
D	REDUCE EVERY		1.0		1.0	1.0	1.0			HOUR		
E	YELLOW		5.0		3.0	3.0	5.0			MINUTE		
F	RED		1.0		1.0	1.0	1.0			SECOND		

	F FLAGS	1	2	3	4	5	6	7	8	
0	PERMIT		X		X	X	X			0
1	RED LOCK				X					1
2	YEL LOCK									2
3	V RECALL		X				X			3
4	P RECALL									4
5	PED PHASES				X		X			5
6	ARROW A									6
7	ARROW B									7
8	DBL ENTRY									8
9	MAX 2 PH									9
A	LAG PHASES	FOR OBSERVATION ONLY								A
B	RED REST									B
C	REST IN WALK									C
D	MAX 3 PH									D
E	YEL STARTUP				X					E
F	FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices, Pt 3

LOCATION: Latrobe Road at Investment Boulevard

PROGRAM: C7

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1	1.5	D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1	1.5	D-A-1
2I2L	D-1-2		D-7-2	D-3-2	1.0	D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2	1.0	D-A-2
2I3U	D-1-3		D-7-3	D-3-3		D-9-3	3	6J3U	D-2-3	8.0	D-8-3	D-4-3		D-A-3
2I3L	D-1-4		D-7-4	D-3-4		D-9-4	4	6J3L	D-2-4		D-8-4	D-4-4		D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6		D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7		D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8		D-8-8	D-4-8		D-A-8
4I7U	D-1-9	8.0	D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9		D-8-9	D-4-9		D-A-9
4I7L	D-1-A	5.0	D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A		D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B		D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D		D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D		D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext../Cnt. i.e. TYPE)
5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

STD8

Movement	SBLT	NB	WBLT	EB		SB	EBLT	WB
Times [1.1.1]	1	2	3	4	5	6	7	8
Min Green	3	7	3	3		7	3	3
Gap, Ext	1	3.6	1	1		3.6	1	1
Max 1	45	41	17	34		92	17	36
Max 2	45	41	17	34		92	17	36
Yel Clearance	3.6	5	3.6	3.6		5	3.6	3.6
Red Clearance	2	1	1	1		1	1	1
Walk		7				7		7
Ped Clearance		13				20		26
Red Revert	2	2	2	2		2	2	2
Add Initial								
Max Initial								
Time B4 Reduct								
Cars B4 Reduct								
Time To Reduce								
Reduce By								
Min Gap								
DyMaxLim								
Max Step								
Options [1.1.2]	1	2	3	4	5	6	7	8
Enable	X	X	X	X	-	X	X	X
Min Recall	-	X	-	-	-	X	-	-
Max Recall	-	-	-	-	-	-	-	-
Ped Recall	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Lock Calls	-	-	-	-	-	-	-	-
Auto Flash Entry	-	-	-	-	-	-	-	-
Auto Flash Exit	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enable Simul Gap	-	-	-	-	-	-	-	-
Gaurantee Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Conditon Service	-	-	-	-	-	-	-	-
Non-Actuated 1	-	-	-	-	-	-	-	-
Non-Actuated 2	-	-	-	-	-	-	-	-
Add Init Calc								

Pattern Tables [2.4]

Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq
1	135	31	1	14	13					25					37				
2	135	73	2	14	14					26					38				
3					15					27					39				
4					16					28					40				
5					17					29					41				
6					18					30					42				
7					19					31					43				
8					20					32					44				
9					21					33					45				
10					22					34					46				
11					23					35					47				
12					24					36					48				

Split	[2.7]	1	2	3	4	5	6	7	8	Split	[2.7]	1	2	3	4	5	6	7	8
1	Coord	51	46	0	38	0	97	0	38	13	Coord								
	2		MAX				MAX												
2	Coord	26	49	0	60	0	75	0	60	14	Coord								
	2		MIN				MIN												
3	Coord									15	Coord								
	2																		
4	Coord									16	Coord								
5	Coord									17	Coord								
6	Coord									18	Coord								
7	Coord									19	Coord								
8	Coord									20	Coord								
9	Coord									21	Coord								
10	Coord									22	Coord								
11	Coord									23	Coord								
12	Coord									24	Coord								

White Rock & Windfield (ID 95) (Standard File)

IP Address:

Mask:

Gateway:

Port:

Date Installed:

Date Superceded:

Ring/Startup [1.1.4]			[1.1.2]
Phs	Ring	Start	Enable
1	1	RED	X
2	1	GREEN	X
3	1	RED	X
4	1	RED	X
5	2	RED	-
6	2	GREEN	X
7	2	RED	X
8	2	RED	X

Coord Modes [2.1]	
Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX 1
Force-Off	FLOAT
Closed Loop	OFF
Stop-in-Walk	ON
Auto Reset	ON
Expand Split	OFF
Ped Recycle	P3478_INH
Before	TIMED
After	TIMED
Auto Flash [1.4.1]	
Auto Flash	CHANNEL
Flash Yel	0
Flash Red	0
Unit Params [1.2.1]	
Phase Mode	STD8
IO Mode	AUTO
Loc Flsh Start	OFF
Start Flash(s)	8
Start AllRed(s)	2
Yellow < 3"	OFF
Display Time	30
Red Revert	2
MCE Timeout	
Feature Profile	1
Free Ring Seq	14
SDLC Retry	0
TS2 Det Faults	OFF
Auto Ped Clear	OFF
Date Printed:	02/23/12
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Veh Par 1-32 [5.1]										Vehicle Options 1-32 [5.2]									Parameters+ 1-32 [5.3]								Info Only			
Det #	Call Ø	Swi Ø	Dlay	Ext	Que	No Act	Max Pres	Err Cnt	Fail Time	Det #	Call	Ext	Que	Add Init	Red Lock	Yell Lock	occ	vol	Det #	Occupancy G	Y	R	Delay 1	2	Type	Src	Type of Detection Prnc	Near	Adv	Det #
1	1					0	0	0	0	1	X	X	-	-	-	-	X	X	1	X	X				NORM					1
2						0	0	0	0	2			-	-	-	-	X	X	2	X	X				NORM					2
3	2					0	0	0	0	3	X	X	-	-	-	-	X	X	3	X	X				NORM					3
4	2					0	0	0	0	4	X	X	-	-	-	-	X	X	4	X	X				NORM					4
5	2					0	0	0	0	5	X	X	-	-	-	-	X	X	5	X	X				NORM					5
6	2					0	0	0	0	6	X	X	-	-	-	-	X	X	6	X	X				NORM					6
7	2					0	0	0	0	7	X	X	-	-	-	-	X	X	7	X	X				NORM					7
8	2					0	0	0	0	8	X	X	-	-	-	-	X	X	8	X	X				NORM					8
9	3					0	0	0	0	9	X	X	-	-	-	-	-	-	9	-	-				NORM					9
10						0	0	0	0	10	-	-	-	-	-	-	-	-	10	-	-				NORM					10
11						0	0	0	0	11	-	-	-	-	-	-	-	-	11	-	-				NORM					11
12						0	0	0	0	12	-	-	-	-	-	-	-	-	12	-	-				NORM					12
13	4					0	0	0	0	13	X	X	-	-	-	-	-	-	13	-	-				NORM					13
14						0	0	0	0	14	-	-	-	-	-	-	-	-	14	-	-				NORM					14
15	4					0	0	0	0	15	X	X	-	-	-	-	-	-	15	-	-				NORM					15
16						0	0	0	0	16	-	-	-	-	-	-	-	-	16	-	-				NORM					16
17	5					0	0	0	0	17	X	X	-	-	-	-	-	-	17	-	-				NORM					17
18						0	0	0	0	18	-	-	-	-	-	-	-	-	18	-	-				NORM					18
19	6					0	0	0	0	19	X	X	-	-	-	-	-	-	19	-	-				NORM					19
20	6					0	0	0	0	20	X	X	-	-	-	-	-	-	20	-	-				NORM					20
21	6					0	0	0	0	21	X	X	-	-	-	-	-	-	21	-	-				NORM					21
22						0	0	0	0	22	-	-	-	-	-	-	-	-	22	-	-				NORM					22
23	6					0	0	0	0	23	X	X	-	-	-	-	-	-	23	-	-				NORM					23
24	7					0	0	0	0	24	X	X	-	-	-	-	-	-	24	-	-				NORM					24
25						0	0	0	0	25	-	-	-	-	-	-	-	-	25	-	-				NORM					25
26						0	0	0	0	26	-	-	-	-	-	-	-	-	26	-	-				NORM					26
27						0	0	0	0	27	-	-	-	-	-	-	-	-	27	-	-				NORM					27
28						0	0	0	0	28	-	-	-	-	-	-	-	-	28	-	-				NORM					28
29	8					0	0	0	0	29	X	X	-	-	-	-	-	-	29	-	-				NORM					29
30						0	0	0	0	30	-	-	-	-	-	-	-	-	30	-	-				NORM					30
31	8					0	0	0	0	31	X	X	-	-	-	-	-	-	31	-	-				NORM					31
32						0	0	0	0	32	-	-	-	-	-	-	-	-	32	-	-				NORM					32
33						0	0	0	0	33	-	-	-	-	-	-	-	-	33	-	-				NORM					33
34						0	0	0	0	34	-	-	-	-	-	-	-	-	34	-	-				NORM					34
35						0	0	0	0	35	-	-	-	-	-	-	-	-	35	-	-				NORM					35
36						0	0	0	0	36	-	-	-	-	-	-	-	-	36	-	-				NORM					36
37						0	0	0	0	37	-	-	-	-	-	-	-	-	37	-	-				NORM					37
38						0	0	0	0	38	-	-	-	-	-	-	-	-	38	-	-				NORM					38
39						0	0	0	0	39	-	-	-	-	-	-	-	-	39	-	-				NORM					39
40						0	0	0	0	40	-	-	-	-	-	-	-	-	40	-	-				NORM					40
41						0	0	0	0	41	-	-	-	-	-	-	-	-	41	-	-				NORM					41
42						0	0	0	0	42	-	-	-	-	-	-	-	-	42	-	-				NORM					42
43						0	0	0	0	43	-	-	-	-	-	-	-	-	43	-	-				NORM					43
44						0	0	0	0	44	-	-	-	-	-	-	-	-	44	-	-				NORM					44

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Annual Schedule [4.3] — White Rock & Windfield (ID 95) (Standard File)

Month of Year: J F M A M J J A S O N D
Day of Week: S M T W T F S
Date: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

	Month of Year	Day of Week	Date	Day Plan	Link To
1	X X X X X X X X X X X X	X X X X X X X	X X X X X X X X X X X X X X X X X X X X X X X X X X X X X	1	
2	- - - - - - - - - - - -	- - - - - - -	- -	1	
3	- - - - - - - - - - - -	- - - - - - -	- -	1	
4	- - - - - - - - - - - -	- - - - - - -	- -	1	
5	- - - - - - - - - - - -	- - - - - - -	- -	1	
6	- - - - - - - - - - - -	- - - - - - -	- -	1	
7	- - - - - - - - - - - -	- - - - - - -	- -	1	
8	- - - - - - - - - - - -	- - - - - - -	- -	1	
9	- - - - - - - - - - - -	- - - - - - -	- -	1	
10	- - - - - - - - - - - -	- - - - - - -	- -	1	
11	- - - - - - - - - - - -	- - - - - - -	- -	1	
12	- - - - - - - - - - - -	- - - - - - -	- -	1	

DAY PLANS [4.4]

Day Plan 1

Evt	Hour	Min	Act	Evt	Hour	Min	Act
1		1	54	9			
2	7		1	10			
3	9		54	11			
4	16		2	12			
5	18		54	13			
6				14			
7				15			
8				16			

Day Plan 2

Evt	Hour	Min	Act	Evt	Hour	Min	Act
1				9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Day Plan 3

Evt	Hour	Min	Act	Evt	Hour	Min	Act
1				9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

Day Plan 4

Evt	Hour	Min	Act	Evt	Hour	Min	Act
1				9			
2				10			
3				11			
4				12			
5				13			
6				14			
7				15			
8				16			

ACTION TABLE

Action Table [4.5]

Act#	Pat#	A1	A2	A3	S1	S2	S3	S4	S5	S6	S7	S8
1	1											
2	2											
3	0											
4	0											
5	0											
6	0											
7	0											
8	0											
9	0											
10	0											
11	0											
12	0											
13	0											
14	0											
15	0											
16	0											
54	254											
55	255											

ALTERNATE PROGRAMS

Alt Progs+ [2.6]

Pat#	ØOpt	ØTime	DetG	CIR	CIC	Max2
1						-
2						-
3						-
4						-
5						-
6						-
7						-
8						-
9						-
10						-
11						-
12						-
13						-
14						-
15						-
16						-
17						-
18						-

STD8

Movement	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB
Times [1.1.1]	1	2	3	4	5	6	7	8
Min Green	3	7	3	3	3	7	3	3
Gap, Ext	1	3.6	1	1	1	3.6	1	1
Max 1	8	62	16	31	21	48	14	34
Max 2	8	62	16	31	21	48	14	34
Yel Clearance	3.5	5	3.5	3.5	3.5	5	3.5	3.5
Red Clearance	1	1	1.5	1	1.7	1	2	1
Walk		7				7		7
Ped Clearance		9				11		22
Red Revert	2	2	2	2	2	2	2	2
Add Initial								
Max Initial								
Time B4 Reduct								
Cars B4 Reduct								
Time To Reduce								
Reduce By								
Min Gap								
DyMaxLim								
Max Step								
Options [1.1.2]	1	2	3	4	5	6	7	8
Enable	X	X	X	X	X	X	X	X
Min Recall	-	X	-	-	-	X	-	-
Max Recall	-	-	-	-	-	-	-	-
Ped Recall	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Lock Calls	-	-	-	-	-	-	-	-
Auto Flash Entry	-	-	-	-	-	-	-	-
Auto Flash Exit	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enable Simul Gap	-	-	-	-	-	-	-	-
Gaurantee Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Condition Service	-	-	-	-	-	-	-	-
Non-Actuated 1	-	-	-	-	-	-	-	-
Non-Actuated 2	-	-	-	-	-	-	-	-
Add Init Calc	-	-	-	-	-	-	-	-

Pattern Tables [2.4]

	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq
1	1	135	71	1	14	13					25					37				
2	2	135	55	2	14	14					26					38				
3	3					15					27					39				
4	4					16					28					40				
5	5					17					29					41				
6	6					18					30					42				
7	7					19					31					43				
8	8					20					32					44				
9	9					21					33					45				
10	10					22					34					46				
11	11					23					35					47				
12	12					24					36					48				

Split [2.7]	1	2	3	4	5	6	7	8
1	Coord 12	67	21	35	26	53	19	37
2	Coord 10	71	27	27	40	41	19	35
3	Coord							
4	Coord							
5	Coord							
6	Coord							
7	Coord							
8	Coord							
9	Coord							
10	Coord							
11	Coord							
12	Coord							

MIN = 2 (Split 1), MIN = 2 (Split 2)

Split [2.7]	1	2	3	4	5	6	7	8
13	Coord							
14	Coord							
15	Coord							
16	Coord							
17	Coord							
18	Coord							
19	Coord							
20	Coord							
21	Coord							
22	Coord							
23	Coord							
24	Coord							

Ring/Startup [1.1.4] [1.1.2]

Phs	Ring	Start	Enable
1	1	RED	X
2	1	GREEN	X
3	1	RED	X
4	1	RED	X
5	2	RED	X
6	2	GREEN	X
7	2	RED	X
8	2	RED	X

Coord Modes [2.1]	
Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX 1
Force-Off	FLOAT
Closed Loop	OFF
Stop-in-Walk	ON
Auto Reset	ON
Expand Split	OFF
Ped Recycle	P3478_INH
Before	TIMED
After	TIMED
Auto Flash [1.4.1]	
Auto Flash	CHANNEL
Flash Yel	0
Flash Red	0
Unit Params [1.2.1]	
Phase Mode	STD8
IO Mode	AUTO
Loc Flsh Start	OFF
Start Flash(s)	8
Start AllRed(s)	2
Yellow < 3"	OFF
Display Time	30
Red Revert	2
MCE Timeout	
Feature Profile	1
Free Ring Seq	14
SDLC Retry	0
TS2 Det Faults	OFF
Auto Ped Clear	OFF
Date Printed:	02/23/12
	Page 1

White Rock & Post (ID 99) (Standard File)

IP Address:

Mask:

Gateway:

Port:

Date Installed:

Date Superceded:

Phase Options+ [1.1.3]

Options+ [1.1.3]	1	2	3	4	5	6	7	8
Reservice	-	-	-	-	-	-	-	-
PedClr Thru Yel	-	-	-	-	-	-	-	-
SkipRed-NoCall	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max II	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Grn/Ped Delay								
Conflicting Phase								
Omit Yel, Yel P								
Ped Out/Olp Ped								
StartYel, Next P								

Phase Concurrency [1.1.4]

Phase	Ring	StartUp	Concurrent Phases				
1	1	RED	5	6	0	0	0
2	1	GREEN	5	6	0	0	0
3	1	RED	7	8	0	0	0
4	1	RED	7	8	0	0	0
5	2	RED	1	2	0	0	0
6	2	GREEN	1	2	0	0	0
7	2	RED	3	4	0	0	0
8	2	RED	3	4	0	0	0
9	0	NONE	0	0	0	0	0
10	0	NONE	0	0	0	0	0
11	0	NONE	0	0	0	0	0
12	0	NONE	0	0	0	0	0

User Defined Sequences (MM>1>2>4)

Sequence No.	Ring	Phase						
1	1	1	2	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
2	1	1	2	3	4	0	0	0
	2	6	5	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
3	1	2	1	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0

Overlap 1-8 Program Parms & Parm+ [1.5.2.1] [1.5.2.2]

		NOTVAL
1	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
A	Conflict Olap	Red
	Conflict Ped	LG
2	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
B	Conflict Olap	Red
	Conflict Ped	LG
3	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
C	Conflict Olap	Red
	Conflict Ped	LG
4	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
D	Conflict Olap	Red
	Conflict Ped	LG
5	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
E	Conflict Olap	Red
	Conflict Ped	LG
6	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
F	Conflict Olap	Red
	Conflict Ped	LG
7	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
G	Conflict Olap	Red
	Conflict Ped	LG
8	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
H	Conflict Olap	Red
	Conflict Ped	LG

Coord Transition, CoorPhs - [2.5]

Pat#	Short	Long	Dwell	No Shortway Ø	E-Yld	Offset	Min Perms Veh	Min Perms Ped
1	10	17				BegGRN		
2	10	17				BegGRN		
3	10	17				BegGRN		
4	10	17				BegGRN		
5	10	17				BegGRN		
6	10	17				BegGRN		
7						BegGRN		
8						BegGRN		
9						BegGRN		
10						BegGRN		
11						BegGRN		
12						BegGRN		
13						BegGRN		
14						BegGRN		

Default Phase Sequence Chart [1.2.4]

Seq #	Ring	Phases				
1	1	1	2	3	4	
	2	5	6	7	8	
2	1	1	2	3	4	
	2	6	5	7	8	
3	1	2	1	3	4	
	2	5	6	7	8	
4	1	2	1	3	4	
	2	6	5	7	8	
5	1	1	2	3	4	
	2	5	6	8	7	
6	1	1	2	3	4	
	2	6	5	8	7	
7	1	2	1	3	4	
	2	5	6	8	7	
8	1	2	1	3	4	
	2	6	5	8	7	
9	1	1	2	4	3	
	2	5	6	7	8	
10	1	1	2	4	3	
	2	6	5	7	8	
11	1	2	1	4	3	
	2	5	6	7	8	
12	1	2	1	4	3	
	2	6	5	7	6	
13	1	1	2	4	3	
	2	5	6	8	7	
14	1	1	2	4	3	
	2	6	5	8	7	
15	1	2	1	4	3	
	2	5	6	8	7	
16	1	2	1	4	3	
	2	6	5	8	7	

Coord Trans [2.5] cont.

Patt #	Ret Hold	Flt	Max2
1	-		-
2	-		-
3	-		-
4	-		-
5	-		-
6	-		-
7	-		-
8	-		-
9	-		-
10	-		-
11	-		-
12	-		-
13	-		-
14	-		-

White Rock & Post (ID 99) (Standard File)

02/23/12

Intersection No. 038

Date: 6-2-07

Phase Times [1.1.1]

	1	2	3	4	5	6	7	8
Min Green	5	5		5	5	5		5
Gap, Ext	2	3		3.6	2	3.7		3.6
Max 1	25	45		35	25	45		40
Max 2	25	45		35	25	45		40
Yel Clearance	3	4.3		3.2	3	5		3.2
Red Clearance	0.5	1		1	0.5	1		1
Walk		7		7		7		
Ped Clearance		17		18		18		
Red Revert								
Add Initial								
Max Initial								
Time B4 Reduct								
Cars B4 Reduct								
Time To Reduce								
Reduce By								
Min Gap								
DyMaxLim								
Max Step								

Phase Options [1.1.2]

	1	2	3	4	5	6	7	8
Enable	X	X		X	X	X		X
Min Recall								
Max Recall								
Ped Recall								
Soft Recall								
Lock Calls								
Auto Flash Entry								
Auto Flash Exit								
Dual Entry								
Enable Simul Gap		X				X		
Gaurant Passage	X			X	X			X
Rest In Walk								
Conditon Service								
Non-Actuated 1								
Non-Actuated 2								
Add Init Calc								

Phase Options+ [1.1.3]

Reservice								
Walk Thru Yel								
Skip Red No Call								
Red Rest								
Max II								
Conflicting Phase								
Conflicting Phase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Omit Yellow								
Ped Out/Olap								
Start Yel, Next Ph								

Auto Flash Parms [1.4.1]

Flash Parameter		Clearance Time	
Mode	CHANNEL	Yellow	3.5
		Red	1.5

Auto Flash, Phases/Overlaps [1.4.2]

Yel (phases)								
Yel (overlaps)								

White Rock Rd at Valley View Pw
06/02/07

Inhibit Phases [1.1.5]

Phase	Inhibit Phases							
	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Call Phases, Call Redirection [1.1.5]

Phase	Call Phases				Redirection			
					From	To	From	To
1								
2								
3								
4								
5								
6								
7								
8								

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Appendix A

White Rock Rd at Valley View Pw

Intersection No. 038 Date: 6-2-07

Detector, Vehicle Parameters 1-16 [5.1]

Det#	Call Φ	Switch Φ	Delay	Extend	Queue	NoAct	Ma	ErrCnt	FailTime
1	1		1.5						15
2	2								35
3	2								35
4	2								35
5	2								35
6	2				10				35
7	3								
8	4								25
9	4								25
10	4								25
11	4								25
12	4		1.5		10				25
13	1								15
14	3								
15	5		1.5						15
16	6								35

Detector, Vehicle Parameters 17-32 [5.1]

Det#	Call Φ	Switch Φ	Delay	Extend	Queue	NoAct	Ma	ErrCnt
17	6							35
18	6							35
19	6							35
20	6				10			35
21	7							
22	8							25
23	8							25
24	8							25
25	8							25
26	8		1.5		10			25
27	5							
28	7							
29								
30								
31								
32								

Location: ED 50 @ Silva Valley Old White Rock (Cat3) | **Designed By:** 0300000258

System: | **District:** | **Installed By:**

Master At: EB Ramp | **I/C:** | **Service Info:**

Timing Change:	Date Start:	Date End:	Designed:	Installed:
				5/31/2016

Intersection Layout

		FLASH
	1) SB LT to Clarsville	[ ]
P	2) NB White Rock	[ ]
H	3) WB Clarksville	[ ]
A	4) EB Clarksville	[ ]
S	5) NB LT to Clarksville	[ ]
E	6) SB White Rock	[ ]
	7)	[ ]
	8)	[ ]
O	A)	[ ]
V	B)	[ ]
L	C)	[ ]
A	D)	[ ]
P	E)	[ ]
	F)	[ ]

Comments and Notes:
2016-05-31 OTO 0400 TSCP 2.20 B125 DH, Hassane Haffouda, Shane Cohen EDC

RAM Checksum

Page 2: 7337	Page 8: 85AF
Page 3: 945B	Page 9: D2FD
Page 4: D128	Page 10: DF8D
Page 5: 191A	Page 11: 8D08
Page 6: 191A	Page 12: 78E4
Page 7: A4DE	Page 13: 86F7

Post Mile: ED 50 @ (Silva Valley #3) Old White Rock Cat3

Printed: 1/11/2017

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Appendix A

CONFIGURATION PHASE FLAGS

Phases (2-1-1-1)	
Permitted	1 2 3 4 5 6 . .
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	. . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. . . . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	1 2 3 4 5 6 . .
Pedestrian Calls	. . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	5.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. . . . .
P3	. . . . .
P4	. . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)				
Overlap	Parent	Omit	No Start	Not
A	. . . . .	. . . . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	0	0	0	0	0	0	0
Flash Don't Walk	0	0	0	0	0	0	0	0
Minimum Green	8	9	8	9	8	9	0	0
Det Limit	10	10	10	10	10	10	0	0
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	20	50	20	20	20	50	0	0
Max Green 2	50	50	50	50	50	50	0	0
Max Green 3	50	50	50	50	50	50	0	0
Extension	2.0	1.0	2.0	2.0	2.0	1.0	0.0	0.0
Maximum Gap	2.0	3.0	2.0	2.0	2.0	3.0	0.0	0.0
Minimum Gap	2.0	1.5	2.0	2.0	2.0	1.5	0.0	0.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Reduce Every	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Yellow	3.7	4.8	3.7	3.7	3.7	4.8	3.0	3.0
All-Red	0.5	2.0	1.0	1.0	0.5	2.0	0.0	0.0
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	9	0	9	0	9	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	SEC

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90						16	21	16	16	16	21		
Plan 2	Green Factor	100						16	31	16	16	16	31		
Plan 3	Green Factor	90						16	21	16	16	16	21		
Plan 4	Green Factor	100						16	31	16	16	16	31		
Plan 5	Green Factor	110						16	41	16	16	16	41		
Plan 6	Green Factor														
Plan 7	Green Factor														
Plan 8	Green Factor														
Plan 9	Green Factor														

Master Timer Sync (7-A)	
Enable in Plans	
1-9	1 2 3 4 5 . . . .
11-19	. . . . .
21-29	. . . . .

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
. 2 . 4 . 6 . 8	. . . . .
Veh Min	Veh Max
. . . . .	. . . . .
Ped	Bike
. . . . .	. . . . .
Cond	Cond Grn
. . . . .	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 2	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 3	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 4	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 5	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 6	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 7	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 9	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

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Appendix A

Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor														
Plan 12	Green Factor														
Plan 13	Green Factor														
Plan 14	Green Factor														
Plan 15	Green Factor														
Plan 16	Green Factor														
Plan 17	Green Factor														
Plan 18	Green Factor														
Plan 19	Green Factor														

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	.....	.....	.....	.....	.....	.....	.....	.....
Plan 12	.....	.....	.....	.....	.....	.....	.....	.....
Plan 13	.....	.....	.....	.....	.....	.....	.....	.....
Plan 14	.....	.....	.....	.....	.....	.....	.....	.....
Plan 15	.....	.....	.....	.....	.....	.....	.....	.....
Plan 16	.....	.....	.....	.....	.....	.....	.....	.....
Plan 17	.....	.....	.....	.....	.....	.....	.....	.....
Plan 18	.....	.....	.....	.....	.....	.....	.....	.....
Plan 19	.....	.....	.....	.....	.....	.....	.....	.....

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Appendix A

Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor														
Plan 22	Green Factor														
Plan 23	Green Factor														
Plan 24	Green Factor														
Plan 25	Green Factor														
Plan 26	Green Factor														
Plan 27	Green Factor														
Plan 28	Green Factor														
Plan 29	Green Factor														

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	.....	.....	.....	.....	.....	.....	.....	.....
Plan 22	.....	.....	.....	.....	.....	.....	.....	.....
Plan 23	.....	.....	.....	.....	.....	.....	.....	.....
Plan 24	.....	.....	.....	.....	.....	.....	.....	.....
Plan 25	.....	.....	.....	.....	.....	.....	.....	.....
Plan 26	.....	.....	.....	.....	.....	.....	.....	.....
Plan 27	.....	.....	.....	.....	.....	.....	.....	.....
Plan 28	.....	.....	.....	.....	.....	.....	.....	.....
Plan 29	.....	.....	.....	.....	.....	.....	.....	.....

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DETECTORS

Detector Attributes (5-1)

Det	Type	Phases	Lock	Slot
1	COUNT+CALL+EXTEND	1.....	NO	I1U
2	COUNT+CALL+EXTEND	1.....	NO	I1L
3	COUNT+CALL+EXTEND	.2.....	NO	I2U
4	COUNT+CALL+EXTEND	.2.....	NO	I2L
5	COUNT+CALL+EXTEND	.2.....	NO	I3U
6	BICYCLE	.2.....	NO	I3L
7	LIMITED	.2.....	NO	I4U
8	COUNT+CALL+EXTEND	.2.....	NO	I4L
9	COUNT+CALL+EXTEND	..3....	NO	I5U
10	COUNT+CALL+EXTEND	..3....	NO	I5L
11	COUNT+CALL+EXTEND	...4...	NO	I6U
12	COUNT+CALL+EXTEND	...4...	NO	I6L
13	COUNT+CALL+EXTEND	...4...	NO	I7U
14	CALL+EXTEND	...4...	NO	I7L
15	LIMITED	...4...	NO	I8U
16	BICYCLE	...4...	NO	I8L
17	COUNT+CALL+EXTEND	..3....	NO	I9U
18	COUNT+CALL+EXTEND	..3....	NO	I9L
19	COUNT+CALL+EXTEND	.2.....	NO	I10U
20	COUNT+CALL+EXTEND	...4...	NO	I10L
21	COUNT+CALL+EXTEND	....5...	NO	J1U
22	COUNT+CALL+EXTEND	....5...	NO	J1L
23	COUNT+CALL+EXTEND	.....6..	NO	J2U
24	COUNT+CALL+EXTEND	.....6..	NO	J2L
25	COUNT+CALL+EXTEND	.....6..	NO	J3U
26	CALL+EXTEND	.....6..	NO	J3L
27	LIMITED	.....6..	NO	J4U
28	COUNT+CALL+EXTEND	.....6..	NO	J4L
29	COUNT+CALL+EXTEND	......7.	NO	J5U
30	COUNT+CALL+EXTEND	......7.	NO	J5L
31	BICYCLE	.....6..	NO	J6U
32	COUNT+CALL+EXTEND	8	NO	J6L
33	COUNT+CALL+EXTEND	8	NO	J7U
34	CALL+EXTEND	8	NO	J7L
35	LIMITED	8	NO	J8U
36	COUNT+CALL+EXTEND	8	NO	J8L
37	COUNT+CALL+EXTEND	....5...	NO	J9U
38	COUNT+CALL+EXTEND	......7.	NO	J9L
39	COUNT+CALL+EXTEND	.....6..	NO	J10U
40	COUNT+CALL+EXTEND	8	NO	J10L
41	PEDESTRIAN	.2.....	NO	I12U
42	PEDESTRIAN	...4...	NO	I12L
43	PEDESTRIAN	.....6..	NO	I13U
44	PEDESTRIAN	8	NO	I13L

Detector Configuration (5-2)

Det	Delay	Extend	Recall	Port
1			10	3.2
2			10	7.2
3			10	1.1
4			10	1.5
5			10	4.5
6			10	6.2
7			10	2.1
8			10	7.4
9			10	3.4
10			10	7.6
11			10	1.3
12			10	1.7
13			10	4.7
14	10		10	6.4
15			10	2.3
16			10	7.8
17			10	3.6
18	10		10	3.8
19			10	4.1
20			10	4.2
21			10	3.1
22			10	7.1
23			10	1.2
24			10	1.6
25			10	4.6
26			10	6.3
27			10	2.2
28			10	7.3
29			10	3.3
30			10	7.5
31			10	1.4
32			10	1.8
33			10	4.8
34			10	6.5
35			10	2.4
36			10	7.7
37			10	3.5
38			10	3.7
39			10	4.3
40			10	4.4
41			10	5.1
42			10	5.3
43			10	5.2
44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)

Detectors 1-8	.....
Detectors 9-16	.....
Detectors17-24	.....
Detectors 25-32	.....
Detectors 33-40	.....
Detectors 41-44	.....

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu								
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)

Enable in Plans	.....

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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TOD SCHEDULE

Table 1 (8-2-1)			Table 2 (8-2-2)			Table 3 (8-2-3)			Table 4 (8-2-4)			Table 5 (8-2-5)			Table 6 (8-2-6)		
Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	.....
Holiday	.....

Daylight Saving (8-6)

Enabled	YES

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1			.....		.....
2			.....		.....
3			.....		.....
4			.....		.....
5			.....		.....
6			.....		.....
7			.....		.....
8			.....		.....
9			.....		.....
10			.....		.....
11			.....		.....
12			.....		.....
13			.....		.....
14			.....		.....
15			.....		.....
16			.....		.....

Action Codes:

0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11. Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed

200+Action Code = Phases replaced

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COMMUNICATIONS

C2 (6-1-1)	
Address	3
Protocol	AB3418
Limit Access	0
Baud	9600
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C20 (6-1-2)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C21 (6-1-3)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

Limit Access:
0-None
1-Status Only
2-Status, Set Pattern, Time
3-Status, Set Pattern, Time, Manual Plan

SOFT LOGIC

Soft Logic (6-2)

#	Data	OP	Data	OP	Data	OP	Data
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

*Refer to User's Manual for Data and OP Codes

CALLBACK NUMBERS

Callback Numbers (6-3...3)	
Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

NETWORK

Network (6-4)	
Address	
Protocol	AB3418
Port	27000
IP Mode	STATIC

IP Address	0	.	0	.	0	.	0
Netmask	255	.	255	.	255	.	0
Broadcast	0	.	0	.	0	.	254
Gateway	0	.	0	.	0	.	1

RAILROAD PREEMPTION

RR 1

(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. 2 . . 5 . . .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		. . . . .	. . . . .	1 2 3 4 5 6 7 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	A B C D E F
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)			
Port	Gate Port	Latching	Power-Up
2.5	0.0	YES	FLASHING

RR 2

(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. . . 4 . . 7 .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		1 2 3 . . 6 . .	. . . . .	. . . . .	. 2 . . . 6 . .	. . . . .	. . . 4 . . . 8	. . . . .	. . . . .	. . . . .
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-2-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	. . . 4 . . 7 .	. . . . .

Configuration (3-2-6)			
Port	Gate Port	Latching	Power-up
2.6	0.0	YES	DARK

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. 2 . . 5 . . .	. . . . .

Port	Latching	Phase Termination
5.5	NO	ADVANCE

EVB (3-B)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. . . 4	. . . . .

Port	Latching	Phase Termination
5.6	NO	ADVANCE

EVC (3-C)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	1 . . . . 6 . .	. . . . .

Port	Latching	Phase Termination
5.7	NO	ADVANCE

EVD (3-D)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. . 3	. . . . .

Port	Latching	Phase Termination
5.8	NO	ADVANCE

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INPUTS

7 Wire I/C (2-1-5-1)					
		Input	Port	Input	Port
Enable	NO	R1	3.8	Free	3.6
Max ON		R2	3.5	D2	2.8
Max OFF		R3	3.7	D3	6.1

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Cabinet Status (2-1-5-3)	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Y-Coordination (2-1-5-6)	
Port C	Port D
0.0	0.0

OUTPUTS

Loadswitch Assignments (2-1-6)							+
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:

0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7
51-57 Special Functions
71-72 Seven Wire I/C

+ middle output of loadswitches 3 and 6 Channel 9 and 10

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TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Transit Priority Configuration (3-E-A)				Indicator Output	
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	.....	0.0	OPT	0	0
Plan 11-19	.....	0.0	OPT	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
	.....
	.....

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	.....

Access Utilities (9-5)	
Password	***
Timeout	30

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													.2...6..	.2.4.6.8	.....	.....
Plan D													.2...6..	.2.4.6.8	.....	.....

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					.....	0.0	0.0	0.0	0	0.0	0

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Appendix A

Location: ED 50 @ Silva Valley #2 EB
Designed By: 0300000258
System: **District:** **Installed By:**
Master At: **I/C:** **Service Info:** 0325050R001827A

Timing Change:	Date Start:	Date End:	Designed:	Installed:
				5/31/2016

Intersection Layout

		FLASH
	1)	[ ]
P	2) NB Silva Valley	[ ]
H	3)	[ ]
A	4) EB Off rramp	[ ]
S	5) NB LT to EB On ramp	[ ]
E	6) SB Silva Valley	[ ]
	7)	[ ]
	8)	[ ]

O	A)	[ ]
V	B)	[ ]
L	C)	[ ]
A	D)	[ ]
P	E)	[ ]
	F)	[ ]

Comments and Notes:
2016-05-31 OTO 0400 TSCP 2.20 B125 DH, Hassane Haffouda, Shane Cohen EDC

RAM Checksum

Page 2: EA5F	Page 8: 85AF
Page 3: CEBB	Page 9: D2FD
Page 4: 33E4	Page 10: 8673
Page 5: 191A	Page 11: 1030
Page 6: 191A	Page 12: 78E4
Page 7: 985F	Page 13: 86F7

Post Mile: ED 50 @ (Silva Valley #2) EB
Printed: 1/11/2017

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CONFIGURATION PHASE FLAGS

Phases (2-1-1-1)	
Permitted	. 2 . 4 5 6 . .
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	. . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. . . . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	. 2 . 4 5 6 . .
Pedestrian Calls	. . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. . . . .
P3	. . . . .
P4	. . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)

Overlap	Parent	Omit	No Start	Not
A	. . . . .	. . . . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	0	0	0	0	0	0	0
Flash Don't Walk	0	0	0	0	0	0	0	0
Minimum Green	0	9	0	8	8	9	0	0
Det Limit	0	10	0	10	10	10	0	0
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	0	50	0	25	30	50	0	0
Max Green 2	0	50	0	50	50	50	0	0
Max Green 3	0	50	0	50	50	50	0	0
Extension	0.0	1.0	0.0	2.0	2.0	1.0	0.0	0.0
Maximum Gap	0.0	3.0	0.0	2.0	2.0	3.0	0.0	0.0
Minimum Gap	0.0	1.5	0.0	2.0	2.0	1.5	0.0	0.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Reduce Every	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Yellow	3.0	4.8	3.0	4.8	3.7	4.8	3.0	3.0
All-Red	0.0	2.0	0.0	1.0	0.5	2.0	0.0	0.0
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	9	0	0	0	9	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	SEC

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90			16				61		16	21	32		
Plan 2	Green Factor	100			16				70		17	25	37		
Plan 3	Green Factor	90			18				61		16	22	31		
Plan 4	Green Factor	100			16				70		17	25	37		
Plan 5	Green Factor	110			79				79		18	27	47		
Plan 6	Green Factor														
Plan 7	Green Factor														
Plan 8	Green Factor														
Plan 9	Green Factor														

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	.2.45..8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 2	.2.45..8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 3	.2.45..8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 4	.2.45..8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 5	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 6	.....	.....	.....	.....	.....	.....	.....	.....
Plan 7	.....	.....	.....	.....	.....	.....	.....	.....
Plan 8	.....	.....	.....	.....	.....	.....	.....	.....
Plan 9	.....	.....	.....	.....	.....	.....	.....	.....

Master Timer Sync (7-A)

Enable in Plans	
1-9	1 2 3 4 5 . . . .
11-19	. . . . .
21-29	. . . . .

Master Sub Master

Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free

Lag	Omit
.2.4.6.8	.....
Veh Min	**Veh Max**
.....	.....
Ped	**Bike**
.....	.....
Cond	**Cond Grn**
.....	10

MANUAL COMMANDS

Manual Plan (4-1)

Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)

#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

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Appendix A

Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor														
Plan 12	Green Factor														
Plan 13	Green Factor														
Plan 14	Green Factor														
Plan 15	Green Factor														
Plan 16	Green Factor														
Plan 17	Green Factor														
Plan 18	Green Factor														
Plan 19	Green Factor														

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	.....	.....	.....	.....	.....	.....	.....	.....
Plan 12	.....	.....	.....	.....	.....	.....	.....	.....
Plan 13	.....	.....	.....	.....	.....	.....	.....	.....
Plan 14	.....	.....	.....	.....	.....	.....	.....	.....
Plan 15	.....	.....	.....	.....	.....	.....	.....	.....
Plan 16	.....	.....	.....	.....	.....	.....	.....	.....
Plan 17	.....	.....	.....	.....	.....	.....	.....	.....
Plan 18	.....	.....	.....	.....	.....	.....	.....	.....
Plan 19	.....	.....	.....	.....	.....	.....	.....	.....

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Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor														
Plan 22	Green Factor														
Plan 23	Green Factor														
Plan 24	Green Factor														
Plan 25	Green Factor														
Plan 26	Green Factor														
Plan 27	Green Factor														
Plan 28	Green Factor														
Plan 29	Green Factor														

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	.....	.....	.....	.....	.....	.....	.....	.....
Plan 22	.....	.....	.....	.....	.....	.....	.....	.....
Plan 23	.....	.....	.....	.....	.....	.....	.....	.....
Plan 24	.....	.....	.....	.....	.....	.....	.....	.....
Plan 25	.....	.....	.....	.....	.....	.....	.....	.....
Plan 26	.....	.....	.....	.....	.....	.....	.....	.....
Plan 27	.....	.....	.....	.....	.....	.....	.....	.....
Plan 28	.....	.....	.....	.....	.....	.....	.....	.....
Plan 29	.....	.....	.....	.....	.....	.....	.....	.....

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Appendix A

DETECTORS

Detector Attributes (5-1)

Det	Type	Phases	Lock	Slot
1	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	I1U
2	COUNT+CALL+EXTEND	1	NO	I1L
3	COUNT+CALL+EXTEND	. 2	NO	I2U
4	COUNT+CALL+EXTEND	. 2	NO	I2L
5	COUNT+CALL+EXTEND	. 2	NO	I3U
6	BICYCLE	. 2	NO	I3L
7	LIMITED	. 2	NO	I4U
8	COUNT+CALL+EXTEND	. 2	NO	I4L
9	COUNT+CALL+EXTEND	. . 3	NO	I5U
10	COUNT+CALL+EXTEND	. . 3	NO	I5L
11	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6U
12	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6L
13	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I7U
14	CALL+EXTEND	. . . 4 . . .	NO	I7L
15	LIMITED	. . . 4 . . .	NO	I8U
16	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I8L
17	COUNT+CALL+EXTEND	1	NO	I9U
18	COUNT+CALL+EXTEND	. . 3	NO	I9L
19	COUNT+CALL+EXTEND	. 2	NO	I10U
20	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I10L
21	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J1U
22	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J1L
23	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2U
24	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2L
25	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J3U
26	LIMITED	. . . . . 6 . .	NO	J3L
27	LIMITED	. . . . . 6 . .	NO	J4U
28	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J4L
29	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5U
30	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5L
31	COUNT+CALL+EXTEND	 8	NO	J6U
32	COUNT+CALL+EXTEND	 8	NO	J6L
33	LIMITED	. . . . . 6 . .	NO	J7U
34	CALL+EXTEND	 8	NO	J7L
35	LIMITED	 8	NO	J8U
36	COUNT+CALL+EXTEND	 8	NO	J8L
37	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J9U
38	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J9L
39	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J10U
40	COUNT+CALL+EXTEND	 8	NO	J10L
41	PEDESTRIAN	. 2	NO	I12U
42	PEDESTRIAN	. . . 4 . . .	NO	I12L
43	PEDESTRIAN	. . . . . 6 . .	NO	I13U
44	PEDESTRIAN	 8	NO	I13L

Detector Configuration (5-2)

Det	Delay	Extend	Recall	Port
1			10	3.2
2			10	7.2
3			10	1.1
4			10	1.5
5			10	4.5
6			10	6.2
7			10	2.1
8			10	7.4
9			10	3.4
10			10	7.6
11			10	1.3
12			10	1.7
13			10	4.7
14	10		10	6.4
15			10	2.3
16			10	7.8
17			10	3.6
18			10	3.8
19			10	4.1
20			10	4.2
21			10	3.1
22			10	7.1
23			10	1.2
24			10	1.6
25			10	4.6
26			10	6.3
27			10	2.2
28			10	7.3
29			10	3.3
30			10	7.5
31			10	1.4
32			10	1.8
33			10	4.8
34			10	6.5
35			10	2.4
36			10	7.7
37			10	3.5
38			10	3.7
39			10	4.3
40			10	4.4
41			10	5.1
42			10	5.3
43			10	5.2
44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)

Detectors 1-8	. . . . .
Detectors 9-16	. . . . .
Detectors17-24	. . . . .
Detectors 25-32	. . . . .
Detectors 33-40	. . . . .
Detectors 41-44	. . . . .

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu								
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)

Enable in Plans	. . . . .

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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Appendix A

TOD SCHEDULE

Table 1 (8-2-1)			Table 2 (8-2-2)			Table 3 (8-2-3)			Table 4 (8-2-4)			Table 5 (8-2-5)			Table 6 (8-2-6)		
Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	.....
Holiday	.....

Daylight Saving (8-6)

Enabled	YES

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1			.....		.....
2			.....		.....
3			.....		.....
4			.....		.....
5			.....		.....
6			.....		.....
7			.....		.....
8			.....		.....
9			.....		.....
10			.....		.....
11			.....		.....
12			.....		.....
13			.....		.....
14			.....		.....
15			.....		.....
16			.....		.....

Action Codes:

0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11. Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed

200+Action Code = Phases replaced

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Appendix A

COMMUNICATIONS

C2 (6-1-1)	
Address	2
Protocol	AB3418
Limit Access	0
Baud	9600
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C20 (6-1-2)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C21 (6-1-3)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

Limit Access:
0-None
1-Status Only
2-Status, Set Pattern, Time
3-Status, Set Pattern, Time, Manual Plan

SOFT LOGIC

Soft Logic (6-2)

#	Data	OP	Data	OP	Data	OP	Data
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

*Refer to User's Manual for Data and OP Codes

CALLBACK NUMBERS

Callback Numbers (6-3...3)	
Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

NETWORK

Network (6-4)	
Address	
Protocol	AB3418
Port	27000
IP Mode	STATIC

IP Address	0	.	0	.	0	.	0
Netmask	255	.	255	.	255	.	0
Broadcast	0	.	0	.	0	.	254
Gateway	0	.	0	.	0	.	1

RAILROAD PREEMPTION

RR 1

(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. 2 . . 5 . . .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		. . . . .	. . . . .	1 2 3 4 5 6 7 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	A B C D E F
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)			
Port	Gate Port	Latching	Power-Up
2.5	0.0	YES	FLASHING

RR 2

(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. . . 4 . . 7 .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		1 2 3 . . 6 . .	. . . . .	. . . . .	. 2 . . . 6 . .	. . . . .	. . . 4 . . . 8	. . . . .	. . . . .	. . . . .
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-2-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	. . . 4 . . 7 .	. . . . .

Configuration (3-2-6)			
Port	Gate Port	Latching	Power-up
2.6	0.0	YES	DARK

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. 2 . . 5 . . .	. . . . .

Port	Latching	Phase Termination
5.5	NO	ADVANCE

EVB (3-B)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. . . 4	. . . . .

Port	Latching	Phase Termination
5.6	NO	ADVANCE

EVC (3-C)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. . . . . 6 . .	. . . . .

Port	Latching	Phase Termination
5.7	NO	ADVANCE

EVD (3-D)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. . 3 8	. . . . .

Port	Latching	Phase Termination
5.8	NO	ADVANCE

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Appendix A

INPUTS

		7 Wire I/C (2-1-5-1)			
		Input	Port	Input	Port
Enable	NO	R1	3.8	Free	3.6
Max ON		R2	3.5	D2	2.8
Max OFF		R3	3.7	D3	6.1

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Cabinet Status (2-1-5-3)	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Y-Coordination (2-1-5-6)	
Port C	Port D
0.0	0.0

OUTPUTS

Loadswitch Assignments (2-1-6)							+
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:

0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7
51-57 Special Functions
71-72 Seven Wire I/C

+ middle output of loadswitches 3 and 6
Channel 9 and 10

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TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Transit Priority Configuration (3-E-A)				Indicator Output	
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	.....	0.0	OPT	0	0
Plan 11-19	.....	0.0	OPT	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
	.....
	.....

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	.....

Access Utilities (9-5)	
Password	***
Timeout	30

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													.2...6..	.2.4.6.8	.....	.....
Plan D													.2...6..	.2.4.6.8	.....	.....

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					.....	0.0	0.0	0.0	0	0.0	0

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Appendix A

Location: ED 50 @ Silva Valley #1 WB
System: 2070
Master At:
District:
I/C:
Designed By: 0300000258
Installed By:
Service Info: 0325050R001826B

Timing Change:	Date Start:	Date End:	Designed:	Installed:
				5/31/2016

		FLASH
	1)	[ ]
P	2) NB Silva Valley Pkwy	[ ]
H	3)	[ ]
A	4)	[ ]
S	5) NBLT to WB On	[ ]
E	6) SB Silva Valley Pkwy	[ ]
	7)	[ ]
	8) WB ff ramp	[ ]
O	A)	[ ]
V	B)	[ ]
L	C)	[ ]
A	D)	[ ]
P	E)	[ ]
	F)	[ ]

Intersection Layout

Comments and Notes:
2016-05-31 OTO 0400 TSCP 2.20 B125 DH, Hassane Haffouda, Shane Cohen EDC

RAM Checksum

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Page 4: FAF5	Page 10: 6C71
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Page 6: 191A	Page 12: 78E4
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CONFIGURATION PHASE FLAGS

Phases (2-1-1-1)	
Permitted	. 2 . . 5 6 . 8
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	. . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. . . . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	. 2 . . 5 6 . 8
Pedestrian Calls	. . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. . . . .
P3	. . . . .
P4	. . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)

Overlap	Parent	Omit	No Start	Not
A	. . . . .	. . . . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	0	0	0	0	0	0	0
Flash Don't Walk	0	0	0	0	0	0	0	0
Minimum Green	0	8	0	0	8	8	0	8
Det Limit	0	10	0	0	10	10	0	10
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	0	50	0	0	25	50	0	30
Max Green 2	0	50	0	0	50	50	0	50
Max Green 3	0	50	0	0	50	50	0	50
Extension	0.0	1.0	0.0	0.0	2.0	1.0	0.0	1.0
Maximum Gap	0.0	3.0	0.0	0.0	2.0	3.0	0.0	2.0
Minimum Gap	0.0	1.5	0.0	0.0	2.0	1.5	0.0	2.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Reduce Every	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Yellow	3.0	4.8	3.0	3.0	3.7	4.8	3.0	4.8
All-Red	0.0	2.0	0.0	0.0	0.5	2.0	0.0	1.0

Ped/Bike (2-3)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	8	0	0	0	8	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	SEC

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90							54			20	26		23
Plan 2	Green Factor	100							62			23	31		25
Plan 3	Green Factor	90							49			18	23		28
Plan 4	Green Factor	100							54			20	26		33
Plan 5	Green Factor	110							60			23	29		37
Plan 6	Green Factor														
Plan 7	Green Factor														
Plan 8	Green Factor														
Plan 9	Green Factor														

Master Timer Sync (7-A)	
Enable in Plans	
1-9	1 2 3 4 5 . . . .
11-19	. . . . .
21-29	. . . . .

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
. 2 . 4 . 6 . 8	. . . . .
Veh Min	Veh Max
. . . . .	. . . . .
Ped	Bike
. . . . .	. . . . .
Cond	Cond Grn
. . . . .	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 2	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 3	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 4	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 5	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 6	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 7	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 9	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor														
Plan 12	Green Factor														
Plan 13	Green Factor														
Plan 14	Green Factor														
Plan 15	Green Factor														
Plan 16	Green Factor														
Plan 17	Green Factor														
Plan 18	Green Factor														
Plan 19	Green Factor														

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	.....	.....	.....	.....	.....	.....	.....	.....
Plan 12	.....	.....	.....	.....	.....	.....	.....	.....
Plan 13	.....	.....	.....	.....	.....	.....	.....	.....
Plan 14	.....	.....	.....	.....	.....	.....	.....	.....
Plan 15	.....	.....	.....	.....	.....	.....	.....	.....
Plan 16	.....	.....	.....	.....	.....	.....	.....	.....
Plan 17	.....	.....	.....	.....	.....	.....	.....	.....
Plan 18	.....	.....	.....	.....	.....	.....	.....	.....
Plan 19	.....	.....	.....	.....	.....	.....	.....	.....

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Appendix A

Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor														
Plan 22	Green Factor														
Plan 23	Green Factor														
Plan 24	Green Factor														
Plan 25	Green Factor														
Plan 26	Green Factor														
Plan 27	Green Factor														
Plan 28	Green Factor														
Plan 29	Green Factor														

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	.....	.....	.....	.....	.....	.....	.....	.....
Plan 22	.....	.....	.....	.....	.....	.....	.....	.....
Plan 23	.....	.....	.....	.....	.....	.....	.....	.....
Plan 24	.....	.....	.....	.....	.....	.....	.....	.....
Plan 25	.....	.....	.....	.....	.....	.....	.....	.....
Plan 26	.....	.....	.....	.....	.....	.....	.....	.....
Plan 27	.....	.....	.....	.....	.....	.....	.....	.....
Plan 28	.....	.....	.....	.....	.....	.....	.....	.....
Plan 29	.....	.....	.....	.....	.....	.....	.....	.....

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

DETECTORS

Detector Attributes (5-1)

Det	Type	Phases	Lock	Slot
1	BICYCLE	. . . . . 6 . .	YEL	I1U
2	COUNT+CALL+EXTEND	1	NO	I1L
3	COUNT+CALL+EXTEND	. 2	NO	I2U
4	COUNT+CALL+EXTEND	. 2	NO	I2L
5	COUNT+CALL+EXTEND	. 2	NO	I3U
6	BICYCLE	. 2	YEL	I3L
7	LIMITED	. 2	NO	I4U
8	COUNT+CALL+EXTEND	. 2	NO	I4L
9	COUNT+CALL+EXTEND	. . 3	NO	I5U
10	COUNT+CALL+EXTEND	. . 3	NO	I5L
11	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6U
12	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6L
13	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I7U
14	CALL+EXTEND	. . . 4 . . .	NO	I7L
15	LIMITED	. . . 4 . . .	NO	I8U
16	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I8L
17	COUNT+CALL+EXTEND	1	NO	I9U
18	COUNT+CALL+EXTEND	. . 3	NO	I9L
19	COUNT+CALL+EXTEND	. 2	NO	I10U
20	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I10L
21	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J1U
22	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J1L
23	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2U
24	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2L
25	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J3U
26	LIMITED	. . . . . 6 . .	NO	J3L
27	LIMITED	. . . . . 6 . .	NO	J4U
28	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J4L
29	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5U
30	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5L
31	COUNT+CALL+EXTEND	 8	YEL	J6U
32	COUNT+CALL+EXTEND	 8	YEL	J6L
33	COUNT+CALL+EXTEND	 8	YEL	J7U
34	LIMITED	 8	NO	J7L
35	COUNT+CALL+EXTEND	 8	NO	J8U
36	COUNT+CALL+EXTEND	 8	NO	J8L
37	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J9U
38	LIMITED	 8	NO	J9L
39	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J10U
40	COUNT+CALL+EXTEND	 8	NO	J10L
41	PEDESTRIAN	. 2	NO	I12U
42	PEDESTRIAN	. . . 4 . . .	NO	I12L
43	PEDESTRIAN	. . . . . 6 . .	NO	I13U
44	PEDESTRIAN	 8	NO	I13L

Detector Configuration (5-2)

Det	Delay	Extend	Recall	Port
1			10	3.2
2			10	7.2
3		1.0	10	1.1
4		1.0	10	1.5
5		1.5	10	4.5
6			10	6.2
7			10	2.1
8			10	7.4
9			10	3.4
10			10	7.6
11			10	1.3
12			10	1.7
13			10	4.7
14			10	6.4
15			10	2.3
16			10	7.8
17			10	3.6
18			10	3.8
19			10	4.1
20			10	4.2
21			10	3.1
22			10	7.1
23		1.0	10	1.2
24		1.0	10	1.6
25		1.5	10	4.6
26			10	6.3
27			10	2.2
28			10	7.3
29			10	3.3
30			10	7.5
31		2.0	10	1.4
32		2.0	10	1.8
33	2	2.0	10	4.8
34	10		10	6.5
35			10	2.4
36			10	7.7
37			10	3.5
38			10	3.7
39			10	4.3
40			10	4.4
41			10	5.1
42			10	5.3
43			10	5.2
44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)	
Detectors 1-8	. . . . .
Detectors 9-16	. . . . .
Detectors17-24	. . . . .
Detectors 25-32	. . . . .
Detectors 33-40	. . . . .
Detectors 41-44	. . . . .

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu								
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)	
Enable in Plans	. . . . .

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

TOD SCHEDULE

Table 1 (8-2-1)			Table 2 (8-2-2)			Table 3 (8-2-3)			Table 4 (8-2-4)			Table 5 (8-2-5)			Table 6 (8-2-6)		
Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	.....
Holiday	.....

Daylight Saving (8-6)

Enabled	YES

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1			.....		.....
2			.....		.....
3			.....		.....
4			.....		.....
5			.....		.....
6			.....		.....
7			.....		.....
8			.....		.....
9			.....		.....
10			.....		.....
11			.....		.....
12			.....		.....
13			.....		.....
14			.....		.....
15			.....		.....
16			.....		.....

Action Codes:

0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11. Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed

200+Action Code = Phases replaced

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

COMMUNICATIONS

C2 (6-1-1)	
Address	1
Protocol	AB3418
Limit Access	0
Baud	9600
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C20 (6-1-2)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C21 (6-1-3)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

Limit Access:
0-None
1-Status Only
2-Status, Set Pattern, Time
3-Status, Set Pattern, Time, Manual Plan

SOFT LOGIC

Soft Logic (6-2)

#	Data	OP	Data	OP	Data	OP	Data
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

*Refer to User's Manual for Data and OP Codes

CALLBACK NUMBERS

Callback Numbers (6-3...3)	
Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

NETWORK

Network (6-4)	
Address	
Protocol	AB3418
Port	27000
IP Mode	STATIC

IP Address	0	.	0	.	0	.	0
Netmask	255	.	255	.	255	.	0
Broadcast	0	.	0	.	0	.	254
Gateway	0	.	0	.	0	.	1

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Appendix A

RAILROAD PREEMPTION

RR 1

(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Delay										
Clear 1	10	. 2 . . 5 . . .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		. . . . .	. . . . .	1 2 3 4 5 6 7 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	A B C D E F
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)			
Port	Gate Port	Latching	Power-Up
2.5	0.0	YES	FLASHING

RR 2

(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Delay										
Clear 1	10	. . . 4 . . 7 .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		1 2 3 . . 6 . .	. . . . .	. . . . .	. 2 . . . 6 . .	. . . . .	. . . 4 . . . 8	. . . . .	. . . . .	. . . . .
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-2-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	. . . 4 . . 7 .	. . . . .

Configuration (3-2-6)			
Port	Gate Port	Latching	Power-up
2.6	0.0	YES	DARK

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. 2 . . 5 . . .	. . . . .

Port	Latching	Phase Termination
5.5	NO	ADVANCE

EVB (3-B)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. . . 4 . . 7 .	. . . . .

Port	Latching	Phase Termination
5.6	NO	ADVANCE

EVC (3-C)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. . . . . 6 . .	. . . . .

Port	Latching	Phase Termination
5.7	NO	ADVANCE

EVD (3-D)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	 8	. . . . .

Port	Latching	Phase Termination
5.8	NO	ADVANCE

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Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
Appendix A

INPUTS

		7 Wire I/C (2-1-5-1)			
		Input	Port	Input	Port
Enable	NO	R1	3.8	Free	3.6
Max ON		R2	3.5	D2	2.8
Max OFF		R3	3.7	D3	6.1

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Cabinet Status (2-1-5-3)	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Y-Coordination (2-1-5-6)	
Port C	Port D
0.0	0.0

OUTPUTS

Loadswitch Assignments (2-1-6)							+
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:

0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7
51-57 Special Functions
71-72 Seven Wire I/C

+ middle output of loadswitches 3 and 6
Channel 9 and 10

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TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Transit Priority Configuration (3-E-A)				Indicator Output	
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	.....	0.0	OPT	0	0
Plan 11-19	.....	0.0	OPT	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
	.....
	.....

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	.....

Access Utilities (9-5)	
Password	***
Timeout	30

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													.2...6..	.2.4.6.8	.....	.....
Plan D													.2...6..	.2.4.6.8	.....	.....

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					.....	0.0	0.0	0.0	0	0.0	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Appendix A

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Appendix B: Level-of-Service and Signal Warrant Calculations

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Existing AM no Project

Vistro File: C:\...\AM 918 DU 20240213.vistro Scenario 1 2023 AM, No Project
Report File: C:\...\1 2023 AM no Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.047	112.9	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.337	147.8	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.153	94.1	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	NB Thru	1.055	23.0	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	WB Right	0.804	21.1	C
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.629	33.0	C
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.849	20.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	EB Left	0.732	9.3	A
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	0.785	26.0	C
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.615	10.8	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Right	0.077	12.7	B
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.037	20.1	C
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	0.212	66.2	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.869	25.0	C
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.048	10.5	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.073	11.0	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.081	7.9	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	SB Left	0.243	22.1	C
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.398	25.8	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.453	39.2	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	0.983	75.0	E
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	NB Right	0.733	23.4	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.452	16.9	B
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.847	34.2	C
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.005	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.009	13.5	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.131	19.6	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	112.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.047

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	194	705	301	68	1419	40	18	11	260	467	57	108
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	12	0	0	78	0	0	32
Total Hourly Volume [veh/h]	5	194	705	301	68	1419	28	18	11	182	467	57	76
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	56	203	86	20	408	8	5	3	52	134	16	22
Total Analysis Volume [veh/h]	5	223	810	346	78	1631	32	21	13	209	537	66	87
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	122	122	122	122	122	122	122	122	122	122
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	51	51	7	40	40	19	19	28	28
g / C, Green / Cycle	0.14	0.42	0.42	0.06	0.33	0.33	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.23	0.22	0.04	0.45	0.45	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1857	1781	1604	1781	1744
c, Capacity [veh/h]	257	1481	661	100	613	609	277	250	404	396
d1, Uniform Delay [s]	51.21	26.93	26.59	56.79	40.98	40.98	43.99	50.45	45.30	45.34
k, delay calibration	0.11	0.04	0.14	0.04	0.50	0.50	0.04	0.04	0.25	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.29	0.12	0.83	4.79	171.34	173.88	0.04	4.28	11.80	12.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.55	0.52	0.78	1.36	1.36	0.08	0.89	0.86	0.86
d, Delay for Lane Group [s/veh]	61.50	27.05	27.42	61.58	212.32	214.86	44.03	54.73	57.10	57.65
Lane Group LOS	E	C	C	E	F	F	D	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.37	8.51	7.31	2.45	46.67	46.78	0.55	6.91	11.39	11.25
50th-Percentile Queue Length [ft/ln]	184.31	212.64	182.67	61.18	1166.65	1169.53	13.73	172.86	284.81	281.33
95th-Percentile Queue Length [veh/ln]	11.83	13.29	11.74	4.40	69.02	69.30	0.99	11.23	16.93	16.75
95th-Percentile Queue Length [ft/ln]	295.64	332.21	293.50	110.12	1725.58	1732.54	24.71	280.67	423.20	418.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.50	61.50	27.05	27.42	61.58	213.56	214.86	44.03	54.73	54.73	57.29	57.65	57.65
Movement LOS	E	E	C	C	E	F	F	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	32.82				206.78			53.81			57.37		
Approach LOS	C				F			D			E		
d_I, Intersection Delay [s/veh]	112.88												
Intersection LOS	F												
Intersection V/C	1.047												

Emissions

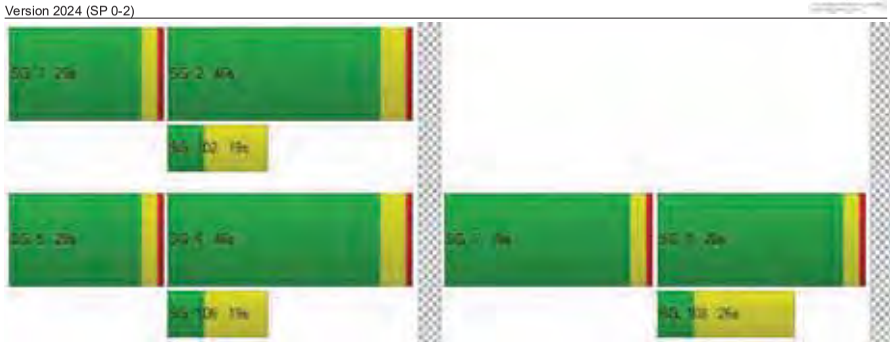
Vehicle Miles Traveled [mph]	54.45	193.45	82.64	11.47	122.41	122.09	0.90	9.48	18.21	17.89
Stops [stops/h]	217.96	502.91	216.02	72.34	1379.61	1383.01	16.23	204.42	336.80	332.68
Fuel consumption [US gal/h]	7.43	17.34	7.45	2.27	57.31	57.68	0.31	3.99	6.65	6.59
CO [g/h]	519.32	1212.25	520.70	158.67	4006.30	4032.11	22.00	279.04	465.12	460.34
NOx [g/h]	101.04	235.86	101.31	30.87	779.48	784.50	4.28	54.29	90.49	89.56
VOC [g/h]	120.36	280.95	120.68	36.77	928.50	934.48	5.10	64.67	107.80	106.69

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	50.38	50.38	50.38
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.122	2.278	2.377
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	662	662	575	575
d_b, Bicycle Delay [s]	27.25	27.25	30.92	30.92
l_b,int, Bicycle LOS Score for Intersection	2.697	3.006	2.089	2.751
Bicycle LOS	B	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	147.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.337

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	348	988	150	1	148	1611	391	132	61	682	11	13	84
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	117	0	0	205	0	0	25
Total Hourly Volume [veh/h]	1	348	988	105	1	148	1611	274	132	61	477	11	13	59
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	94	266	28	0	40	433	74	35	16	128	3	3	16
Total Analysis Volume [veh/h]	1	374	1062	113	1	159	1732	295	142	66	513	12	14	63
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	58	58	12	50	50	20	20	20	7	7
g / C, Green / Cycle	0.17	0.50	0.50	0.11	0.44	0.44	0.17	0.17	0.17	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.21	0.22	0.22	0.09	0.54	0.57	0.06	0.06	0.32	0.01	0.05
s, saturation flow rate [veh/h]	1781	3560	1779	1781	1870	1779	1781	1836	1589	1781	1634
c, Capacity [veh/h]	310	1792	896	190	815	775	310	320	277	110	101
d1, Uniform Delay [s]	47.39	18.15	18.15	50.33	32.39	32.39	41.53	41.51	47.39	50.87	53.03
k, delay calibration	0.50	0.13	0.13	0.04	0.50	0.50	0.04	0.04	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	120.05	0.20	0.41	3.87	120.16	147.87	0.23	0.22	397.12	0.16	4.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.44	0.44	0.84	1.24	1.31	0.33	0.33	1.85	0.11	0.76
d, Delay for Lane Group [s/veh]	167.43	18.36	18.56	54.19	152.54	180.25	41.76	41.73	444.51	51.03	57.49
Lane Group LOS	F	B	B	D	F	F	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	18.90	6.20	6.25	4.58	47.99	51.61	2.58	2.63	38.41	0.33	2.31
50th-Percentile Queue Length [ft/ln]	472.42	155.00	156.23	114.60	1199.84	1290.32	64.38	65.86	960.27	8.29	57.73
95th-Percentile Queue Length [veh/ln]	28.47	10.28	10.35	8.10	68.88	75.59	4.64	4.74	60.51	0.60	4.16
95th-Percentile Queue Length [ft/ln]	711.78	257.09	258.72	202.38	1721.98	1889.73	115.88	118.55	1512.63	14.92	103.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	167.4	167.4	18.41	18.56	54.19	54.19	164.0	180.2	41.76	41.73	444.51	51.03	57.49	57.49
Movement LOS	F	F	B	B	D	D	F	F	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	54.48				158.19				328.31			56.62		
Approach LOS	D				F				F			E		
d_I, Intersection Delay [s/veh]	147.82													
Intersection LOS	F													
Intersection V/C	1.337													

Emissions

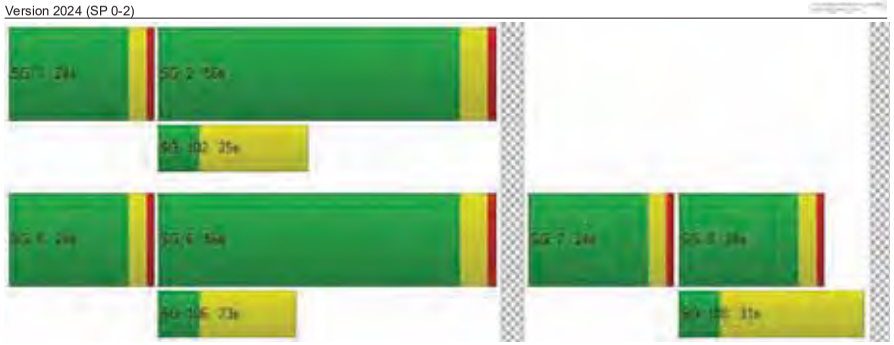
Vehicle Miles Traveled [mph]	70.57	147.43	73.70	38.21	242.06	242.06	6.41	6.56	31.99	0.59	3.75
Stops [stops/h]	592.99	389.11	196.10	143.84	1506.06	1619.63	80.81	82.67	1205.35	10.40	72.47
Fuel consumption [US gal/h]	22.57	12.82	6.44	4.86	58.48	65.60	1.58	1.62	54.37	0.21	1.46
CO [g/h]	1577.43	895.99	450.39	339.90	4087.67	4585.76	110.70	113.26	3800.47	14.41	101.75
NOx [g/h]	306.91	174.33	87.63	66.13	795.31	892.22	21.54	22.04	739.43	2.80	19.80
VOC [g/h]	365.58	207.66	104.38	78.78	947.36	1062.79	25.66	26.25	880.80	3.34	23.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	46.89	46.89	46.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.507	2.855	2.149
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	877	877	349	349
d_b, Bicycle Delay [s]	18.09	18.09	39.10	39.10
l_b,int, Bicycle LOS Score for Intersection	2.436	3.329	3.088	1.748
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	94.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.153

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1181	1173	138	3	49	1285	968	256	92	816	146	92	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	41	0	0	0	290	0	0	245	0	0	17
Total Hourly Volume [veh/h]	1	1181	1173	97	3	49	1285	678	256	92	571	146	92	38
Peak Hour Factor	1.000	0.840	0.840	0.840	1.000	0.840	0.840	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	351	349	29	1	15	382	202	76	27	170	43	27	11
Total Analysis Volume [veh/h]	1	1406	1396	115	3	58	1530	807	305	110	680	174	110	45
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	69	69	7	39	73	29	29	11	11	11
g / C, Green / Cycle	0.28	0.51	0.51	0.05	0.29	0.54	0.21	0.21	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.41	0.28	0.29	0.03	0.30	0.51	0.12	0.12	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1800	1781	5094	1589	1781	1826	1781	1817	1742
c, Capacity [veh/h]	951	1819	920	95	1473	853	375	384	139	141	136
d1, Uniform Delay [s]	36.83	5.71	5.77	63.12	48.34	29.62	47.92	47.92	61.63	61.59	61.67
k, delay calibration	0.22	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	218.20	1.18	2.52	2.72	34.21	20.13	0.93	0.90	3.81	3.60	4.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.48	0.54	0.57	0.64	1.04	0.95	0.55	0.55	0.79	0.78	0.80
d, Delay for Lane Group [s/veh]	255.03	6.89	8.29	65.84	82.55	49.75	48.85	48.82	65.44	65.19	65.72
Lane Group LOS	F	A	A	E	F	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	42.57	2.87	3.35	2.11	20.76	27.60	6.33	6.49	3.88	3.92	3.84
50th-Percentile Queue Length [ft/ln]	1064.21	71.66	83.79	52.65	518.97	690.05	158.34	162.23	97.06	97.96	96.10
95th-Percentile Queue Length [veh/ln]	64.85	5.16	6.03	3.79	28.93	36.22	10.46	10.67	6.99	7.05	6.92
95th-Percentile Queue Length [ft/ln]	1621.26	128.99	150.82	94.76	723.19	905.45	261.52	266.67	174.71	176.32	172.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	255.0	255.0	7.30	8.29	65.84	65.84	82.55	49.75	48.84	48.82	0.00	65.34	65.50	65.72
Movement LOS	F	F	A	A	E	E	F	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	126.79				71.09				20.55			65.45		
Approach LOS	F				E				C			E		
d_I, Intersection Delay [s/veh]	94.14													
Intersection LOS	F													
Intersection V/C	1.153													

Emissions

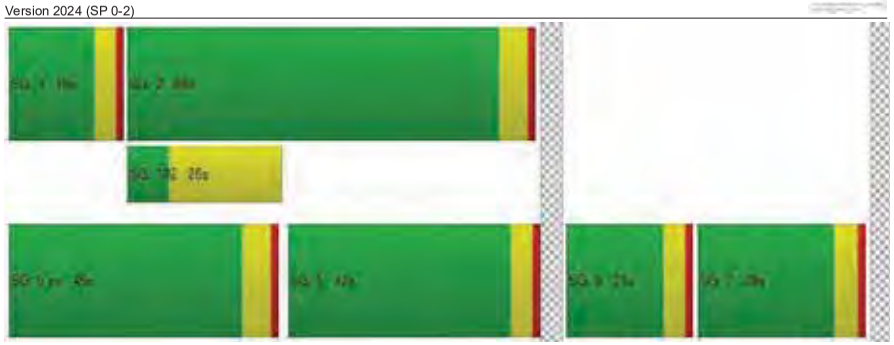
Vehicle Miles Traveled [mph]	240.80	169.55	89.05	11.48	287.94	151.87	9.48	9.72	3.49	3.53	3.44
Stops [stops/h]	2253.62	151.76	88.72	55.74	1648.48	730.64	167.65	171.77	102.77	103.72	101.75
Fuel consumption [US gal/h]	95.37	9.21	5.03	1.90	56.06	22.46	3.35	3.44	2.17	2.19	2.15
CO [g/h]	6666.28	643.57	351.84	133.08	3918.92	1569.91	234.41	240.16	151.82	153.10	150.46
NOx [g/h]	1297.02	125.22	68.46	25.89	762.48	305.45	45.61	46.73	29.54	29.79	29.27
VOC [g/h]	1544.98	149.15	81.54	30.84	908.25	363.84	54.33	55.66	35.19	35.48	34.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
l_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.338	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
l_b,int, Bicycle LOS Score for Intersection	3.187		3.006		2.244		1.845	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.055

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	1965	463	0	520	1728	0	0	0	1058	0	0	528
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	139	0	0	0	0	0	0	317	0	0	158
Total Hourly Volume [veh/h]	0	1965	324	0	520	1728	0	0	0	741	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	585	96	0	155	514	0	0	0	221	0	0	110
Total Analysis Volume [veh/h]	0	2339	386	0	619	2057	0	0	0	882	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	25	35	22	
g / C, Green / Cycle	0.47	0.47	0.37	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.46	0.24	0.35	0.30	0.31	
s, saturation flow rate [veh/h]	5094	1589	1781	6792	2813	
c, Capacity [veh/h]	2395	747	661	3476	927	
d1, Uniform Delay [s]	17.65	12.61	20.61	11.63	22.27	
k, delay calibration	0.50	0.50	0.14	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	13.69	2.54	8.51	0.75	2.72	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.98	0.52	0.94	0.59	0.95	
d, Delay for Lane Group [s/veh]	31.35	15.15	29.13	12.37	24.99	
Lane Group LOS	C	B	C	B	C	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	12.30	3.80	9.47	4.35	6.63	
50th-Percentile Queue Length [ft/ln]	307.47	95.09	236.75	108.84	165.86	
95th-Percentile Queue Length [veh/ln]	18.05	6.85	14.52	7.78	10.86	
95th-Percentile Queue Length [ft/ln]	451.26	171.17	362.92	194.39	271.47	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	31.35	15.15	29.13	29.13	12.37	0.00	0.00	0.00	24.99	0.00	0.00	0.00
Movement LOS		C	B	C	C	B				C			
d_A, Approach Delay [s/veh]	29.05			16.25			24.99				0.00		
Approach LOS	C			B			C				A		
d_I, Intersection Delay [s/veh]	23.03												
Intersection LOS	C												
Intersection V/C	1.055												

Emissions

Vehicle Miles Traveled [mph]	338.73	55.90	105.94	352.05	62.99	
Stops [stops/h]	1953.36	201.37	501.35	921.93	702.47	
Fuel consumption [US gal/h]	50.82	5.61	13.53	28.71	10.96	
CO [g/h]	3552.31	392.17	946.02	2006.85	766.11	
NOx [g/h]	691.15	76.30	184.06	390.46	149.06	
VOC [g/h]	823.28	90.89	219.25	465.11	177.55	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.257
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	3.135	2.408	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	61	1808	235	4	440	1970	372	140	8	20	1	70	30	476
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	71	0	0	0	112	0	0	6	0	0	0	143
Total Hourly Volume [veh/h]	1	61	1808	164	4	440	1970	260	140	8	14	1	70	30	333
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	16	461	42	1	112	503	66	36	2	4	0	18	8	85
Total Analysis Volume [veh/h]	1	62	1845	167	4	449	2010	265	143	8	14	1	71	31	340
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	83	83	83	83	83	83	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	3	37	37	13	47	47	6	6	6	12	12	12
g / C, Green / Cycle	0.04	0.44	0.44	0.15	0.56	0.56	0.07	0.07	0.07	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.36	0.11	0.13	0.39	0.17	0.04	0.00	0.01	0.04	0.12	0.12
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1630	1589
c, Capacity [veh/h]	128	2250	702	536	2851	890	243	132	112	252	230	225
d1, Uniform Delay [s]	39.44	20.40	14.54	34.30	13.36	9.71	37.64	36.24	36.40	32.08	34.79	34.79
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	0.29	0.06	1.44	0.12	0.07	1.68	0.14	0.37	0.46	9.30	9.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.82	0.24	0.85	0.70	0.30	0.59	0.06	0.13	0.29	0.82	0.82
d, Delay for Lane Group [s/veh]	40.54	20.69	14.60	35.74	13.48	9.78	39.31	36.38	36.77	32.54	44.09	44.31
Lane Group LOS	D	C	B	D	B	A	D	D	D	C	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.64	9.75	1.89	4.46	8.13	2.34	1.45	0.16	0.27	1.31	4.21	4.12
50th-Percentile Queue Length [ft/ln]	16.07	243.81	47.20	111.45	203.27	58.61	36.19	3.88	6.87	32.71	105.13	102.90
95th-Percentile Queue Length [veh/ln]	1.16	14.87	3.40	7.92	12.81	4.22	2.61	0.28	0.49	2.35	7.57	7.41
95th-Percentile Queue Length [ft/ln]	28.92	371.85	84.96	198.02	320.18	105.49	65.14	6.98	12.37	58.87	189.21	185.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.54	40.54	20.69	14.60	35.74	35.74	13.48	9.78	39.31	36.38	36.77	32.54	32.54	44.09	44.21
Movement LOS	D	D	C	B	D	D	B	A	D	D	D	C	C	D	D
d_A, Approach Delay [s/veh]	20.81				16.82				38.96			42.30			
Approach LOS	C				B				D			D			
d_I, Intersection Delay [s/veh]	21.11														
Intersection LOS	C														
Intersection V/C	0.804														

Emissions

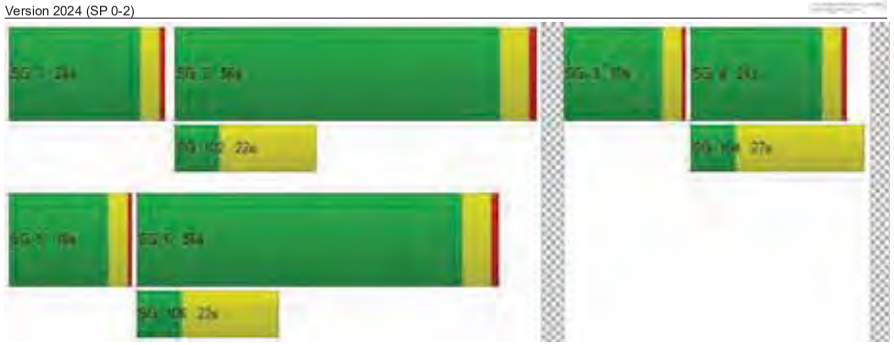
Vehicle Miles Traveled [mph]	14.06	411.76	37.27	65.60	291.09	38.38	18.24	1.02	1.79	25.27	65.92	64.29
Stops [stops/h]	55.49	1263.04	81.51	384.90	1053.01	101.20	124.98	6.69	11.87	56.48	181.54	177.68
Fuel consumption [US gal/h]	1.41	31.70	2.48	8.12	23.32	2.67	2.59	0.14	0.24	1.83	5.40	5.28
CO [g/h]	98.22	2215.78	173.42	567.74	1629.88	186.38	180.72	9.66	17.04	127.85	377.55	369.09
NOx [g/h]	19.11	431.11	33.74	110.46	317.11	36.26	35.16	1.88	3.32	24.87	73.46	71.81
VOC [g/h]	22.76	513.53	40.19	131.58	377.74	43.20	41.88	2.24	3.95	29.63	87.50	85.54

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.42	0.00	31.42	31.42
l_p,int, Pedestrian LOS Score for Intersectio	3.406	0.000	2.561	2.749
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1211	1211	492	372
d_b, Bicycle Delay [s]	6.49	6.49	23.72	27.64
l_b,int, Bicycle LOS Score for Intersection	2.739	2.875	1.701	2.409
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.629

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	84	1607	388	1	92	1561	407	2	310	108	60	298	227	187
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	116	0	0	0	122	0	0	0	18	0	0	56
Total Hourly Volume [veh/h]	2	84	1607	272	1	92	1561	285	2	310	108	42	298	227	131
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	22	427	72	0	24	415	76	1	82	29	11	79	60	35
Total Analysis Volume [veh/h]	2	89	1710	289	1	98	1661	303	2	330	115	45	317	241	139
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	91	91	10	91	91	17	17	17	16	16	16
g / C, Green / Cycle	0.06	0.58	0.58	0.06	0.58	0.58	0.11	0.11	0.11	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.18	0.03	0.33	0.19	0.10	0.04	0.05	0.09	0.07	0.09
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1682	3431	3532	1577
c, Capacity [veh/h]	111	3915	916	217	2939	917	379	201	182	360	362	162
d1, Uniform Delay [s]	72.72	18.46	16.87	70.94	20.46	17.01	68.78	65.37	65.44	69.30	67.85	69.33
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.36	0.90	0.56	0.79	0.97	2.58	0.51	0.58	2.81	0.79	5.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.44	0.32	0.46	0.57	0.33	0.88	0.41	0.42	0.88	0.67	0.86
d, Delay for Lane Group [s/veh]	78.35	18.82	17.77	71.50	21.26	17.97	71.35	65.87	66.02	72.11	68.63	74.37
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.82	8.90	5.67	1.92	12.31	5.75	6.74	3.16	2.94	6.45	4.73	5.75
50th-Percentile Queue Length [ft/ln]	95.46	222.54	141.70	47.95	307.86	143.69	168.40	78.95	73.40	161.36	118.21	143.84
95th-Percentile Queue Length [veh/ln]	6.87	13.79	9.57	3.45	18.07	9.68	10.99	5.68	5.28	10.62	8.29	9.69
95th-Percentile Queue Length [ft/ln]	171.83	344.86	239.31	86.30	451.73	241.99	274.81	142.10	132.11	265.52	207.37	242.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.35	78.35	18.82	17.77	71.50	71.50	21.26	17.97	71.35	71.35	65.91	66.02	72.11	68.63	74.37
Movement LOS	E	E	B	B	E	E	C	B	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	21.26				23.19				69.59				71.36		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	32.99														
Intersection LOS	C														
Intersection V/C	0.629														

Emissions

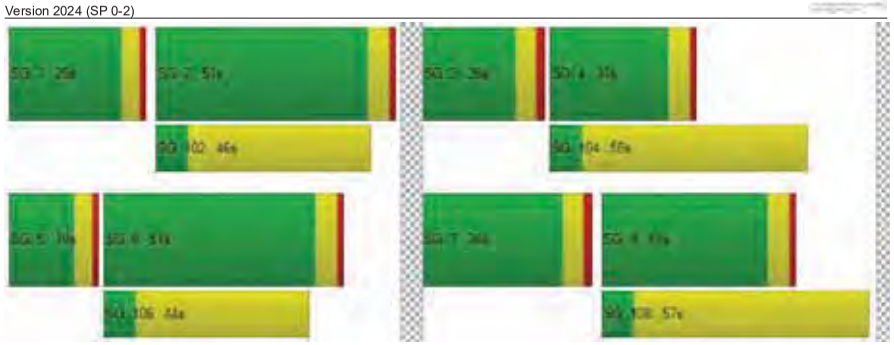
Vehicle Miles Traveled [mph]	36.23	680.80	115.06	22.09	370.70	67.62	82.74	20.68	19.19	33.36	25.36	14.63
Stops [stops/h]	87.56	816.45	129.97	87.95	847.10	131.80	308.91	72.41	67.32	295.99	216.85	131.93
Fuel consumption [US gal/h]	3.43	39.08	6.50	3.29	30.42	5.06	9.93	2.36	2.20	7.66	5.61	3.43
CO [g/h]	239.46	2732.01	454.32	230.05	2126.64	354.02	694.30	165.24	153.51	535.43	391.98	240.07
NOx [g/h]	46.59	531.55	88.39	44.76	413.77	68.88	135.09	32.15	29.87	104.17	76.26	46.71
VOC [g/h]	55.50	633.17	105.29	53.32	492.87	82.05	160.91	38.30	35.58	124.09	90.84	55.64

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.501	3.813	2.710	2.891
Crosswalk LOS	D	D	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.469	2.707	1.708	2.181
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	38	1287	2	2	8	1439	388	167	4	10	3	7	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	116	0	0	3	0	0	4
Total Hourly Volume [veh/h]	1	38	1287	1	2	8	1439	272	167	4	7	3	7	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	370	0	1	2	414	78	48	1	2	1	2	3
Total Analysis Volume [veh/h]	1	44	1479	1	2	9	1654	313	192	5	8	3	8	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	42	42	1	40	40	6	6	2
g / C, Green / Cycle	0.04	0.61	0.61	0.01	0.58	0.58	0.09	0.09	0.03
(v / s)_i Volume / Saturation Flow Rate	0.03	0.40	0.40	0.01	0.53	0.56	0.06	0.06	0.01
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1870	1771	1781	1768	1708
c, Capacity [veh/h]	77	1145	1145	16	1082	1024	162	161	45
d1, Uniform Delay [s]	32.40	8.58	8.58	34.06	12.92	13.78	30.24	30.24	33.11
k, delay calibration	0.04	0.24	0.24	0.04	0.38	0.41	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	1.35	1.35	15.90	10.09	17.55	4.05	4.10	3.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.65	0.65	0.67	0.91	0.96	0.63	0.64	0.49
d, Delay for Lane Group [s/veh]	35.06	9.93	9.93	49.96	23.01	31.33	34.29	34.35	36.12
Lane Group LOS	D	A	A	D	C	C	C	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.77	5.94	5.94	0.24	11.35	13.87	1.76	1.76	0.39
50th-Percentile Queue Length [ft/ln]	19.19	148.60	148.59	5.95	283.86	346.68	44.05	43.90	9.70
95th-Percentile Queue Length [veh/ln]	1.38	9.94	9.94	0.43	16.88	19.97	3.17	3.16	0.70
95th-Percentile Queue Length [ft/ln]	34.54	248.56	248.54	10.70	422.01	499.36	79.30	79.02	17.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.06	35.06	9.93	9.93	49.96	49.96	26.38	31.33	34.32	34.35	34.35	36.12	36.12	36.12
Movement LOS	D	D	A	A	D	D	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	10.67				27.30				34.32			36.12		
Approach LOS	B				C				C			D		
d_I, Intersection Delay [s/veh]	20.94													
Intersection LOS	C													
Intersection V/C	0.849													

Emissions

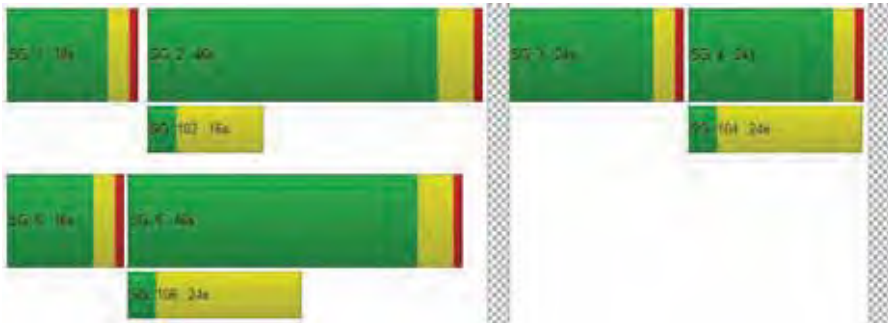
Vehicle Miles Traveled [mph]	15.92	261.88	261.84	4.38	391.56	391.56	24.74	24.63	0.42
Stops [stops/h]	40.18	311.22	311.20	12.45	594.50	726.07	92.27	91.94	20.32
Fuel consumption [US gal/h]	1.20	14.00	13.99	0.49	28.75	32.85	2.25	2.24	0.29
CO [g/h]	83.78	978.31	978.17	34.22	2009.41	2296.52	156.95	156.32	20.35
NOx [g/h]	16.30	190.34	190.32	6.66	390.96	446.82	30.54	30.42	3.96
VOC [g/h]	19.42	226.73	226.70	7.93	465.70	532.24	36.37	36.23	4.72

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.84	0.00	26.84	26.84
l_p,int, Pedestrian LOS Score for Intersectio	2.913	0.000	2.158	1.730
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1164	1164	582	582
d_b, Bicycle Delay [s]	6.01	6.01	17.29	17.29
l_b,int, Bicycle LOS Score for Intersection	2.818	3.280	1.903	1.603
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	60	1194	1152	301	134	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	90	0	2
Total Hourly Volume [veh/h]	1	60	1194	1152	211	134	3
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	343	331	61	39	1
Total Analysis Volume [veh/h]	1	69	1372	1324	243	154	3
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	3	37	30	30	6	6
g / C, Green / Cycle	0.06	0.70	0.56	0.56	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.39	0.42	0.44	0.09	0.00
s, saturation flow rate [veh/h]	1781	3560	1870	1773	1781	1589
c, Capacity [veh/h]	108	2483	1051	996	206	184
d1, Uniform Delay [s]	24.55	3.98	8.83	9.20	22.90	20.96
k, delay calibration	0.04	0.15	0.16	0.18	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.40	0.28	1.59	2.33	5.38	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.55	0.75	0.79	0.75	0.02
d, Delay for Lane Group [s/veh]	26.95	4.26	10.42	11.53	28.28	20.99
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	1.88	5.34	5.72	2.03	0.03
50th-Percentile Queue Length [ft/ln]	21.92	47.06	133.41	142.98	50.82	0.81
95th-Percentile Queue Length [veh/ln]	1.58	3.39	9.13	9.64	3.66	0.06
95th-Percentile Queue Length [ft/ln]	39.45	84.70	228.13	241.03	91.47	1.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.95	26.95	4.26	10.87	11.53	28.28	20.99
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	5.36			10.98		28.14	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	9.27						
Intersection LOS	A						
Intersection V/C	0.732						

Emissions

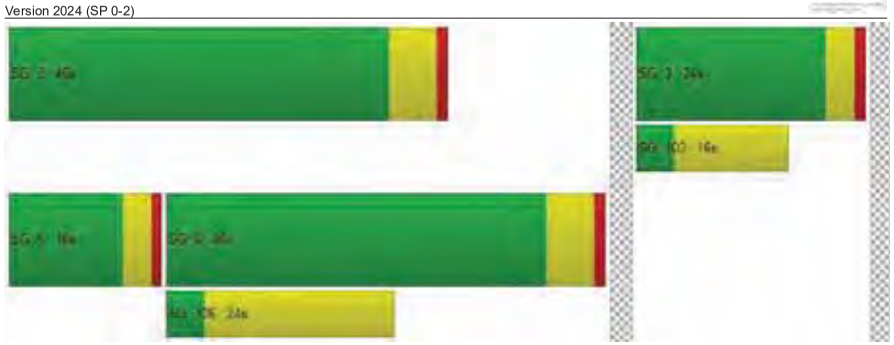
Vehicle Miles Traveled [mph]	48.84	957.26	277.25	277.25	51.96	1.01
Stops [stops/h]	59.13	253.91	359.93	385.74	137.10	2.20
Fuel consumption [US gal/h]	2.72	42.00	15.06	15.38	3.78	0.07
CO [g/h]	190.20	2935.65	1052.98	1075.30	264.41	4.66
NOx [g/h]	37.01	571.17	204.87	209.21	51.44	0.91
VOC [g/h]	44.08	680.37	244.04	249.21	61.28	1.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.29	0.00	19.29
l_p,int, Pedestrian LOS Score for Intersectio	2.816	0.000	2.101
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1499	1499	749
d_b, Bicycle Delay [s]	1.68	1.68	10.43
l_b,int, Bicycle LOS Score for Intersection	2.748	2.927	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	41	605	21	209	386	563	314	41	5	136	94	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	169	0	0	2	0	0	101
Total Hourly Volume [veh/h]	41	605	15	209	386	394	314	41	3	136	94	234
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	170	4	59	108	111	88	12	1	38	26	66
Total Analysis Volume [veh/h]	46	680	17	235	434	443	353	46	3	153	106	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	63	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	3	14	14	10	21	21	9	9	12	12
g / C, Green / Cycle	0.04	0.22	0.22	0.16	0.33	0.33	0.14	0.14	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.19	0.13	0.23	0.28	0.11	0.11	0.15	0.15
s, saturation flow rate [veh/h]	1781	1870	1854	1781	1870	1589	1781	1797	1800	1589
c, Capacity [veh/h]	79	405	402	282	619	526	254	256	332	293
d1, Uniform Delay [s]	29.63	23.85	23.85	25.77	18.41	19.60	26.16	26.16	24.84	24.84
k, delay calibration	0.04	0.04	0.04	0.13	0.06	0.15	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	2.17	2.20	7.37	0.77	5.17	2.05	2.03	2.13	2.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.86	0.86	0.83	0.70	0.84	0.79	0.79	0.83	0.83
d, Delay for Lane Group [s/veh]	32.18	26.02	26.05	33.14	19.18	24.77	28.22	28.19	26.96	27.25
Lane Group LOS	C	C	C	C	B	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.71	4.91	4.87	3.48	4.48	5.48	2.88	2.90	3.93	3.49
50th-Percentile Queue Length [ft/ln]	17.74	122.67	121.76	86.96	112.04	137.07	71.97	72.57	98.21	87.37
95th-Percentile Queue Length [veh/ln]	1.28	8.54	8.49	6.26	7.95	9.32	5.18	5.22	7.07	6.29
95th-Percentile Queue Length [ft/ln]	31.93	213.50	212.24	156.53	198.84	233.07	129.54	130.62	176.77	157.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.18	26.03	26.05	33.14	19.18	24.77	28.21	28.19	28.19	26.96	26.96	27.24
Movement LOS	C	C	C	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	26.41			24.36			28.21			27.09		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.98											
Intersection LOS	C											
Intersection V/C	0.785											

Emissions

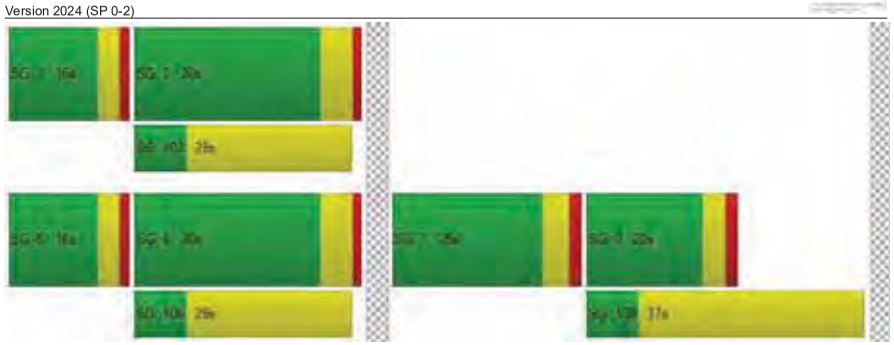
Vehicle Miles Traveled [mph]	26.57	202.08	200.45	163.96	302.81	309.09	15.05	15.19	30.65	27.09
Stops [stops/h]	40.54	280.31	278.23	198.71	256.02	313.20	164.45	165.82	224.40	199.65
Fuel consumption [US gal/h]	1.62	11.72	11.63	10.76	16.58	18.39	2.68	2.70	4.02	3.58
CO [g/h]	113.16	819.26	812.84	752.18	1158.84	1285.47	187.15	188.71	281.13	249.95
NOx [g/h]	22.02	159.40	158.15	146.35	225.47	250.11	36.41	36.72	54.70	48.63
VOC [g/h]	26.23	189.87	188.38	174.33	268.57	297.92	43.37	43.74	65.15	57.93

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.47	0.00	21.47	21.47
l_p,int, Pedestrian LOS Score for Intersectio	2.550	0.000	2.303	2.365
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	784	784	492	635
d_b, Bicycle Delay [s]	11.65	11.65	17.92	14.68
l_b,int, Bicycle LOS Score for Intersection	2.178	2.616	2.226	2.588
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	465	254	273	202	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	465	254	273	202	55
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	129	71	76	56	15
Total Analysis Volume [veh/h]	136	517	282	303	224	61
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	18	11	11	6	6
g / C, Green / Cycle	0.11	0.53	0.31	0.31	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.28	0.15	0.19	0.13	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	190	988	574	488	329	294
d1, Uniform Delay [s]	15.07	5.36	9.86	10.34	13.26	12.05
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.89	0.61	0.93	1.84	2.48	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.52	0.49	0.62	0.68	0.21
d, Delay for Lane Group [s/veh]	16.96	5.97	10.78	12.18	15.73	12.40
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.78	0.55	1.03	1.25	1.50	0.34
50th-Percentile Queue Length [ft/ln]	19.42	13.69	25.84	31.19	37.59	8.61
95th-Percentile Queue Length [veh/ln]	1.40	0.99	1.86	2.25	2.71	0.62
95th-Percentile Queue Length [ft/ln]	34.95	24.64	46.50	56.13	67.67	15.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.96	5.97	10.78	12.18	15.73	12.40
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	8.26		11.51		15.02	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	10.77					
Intersection LOS	B					
Intersection V/C	0.615					

Emissions

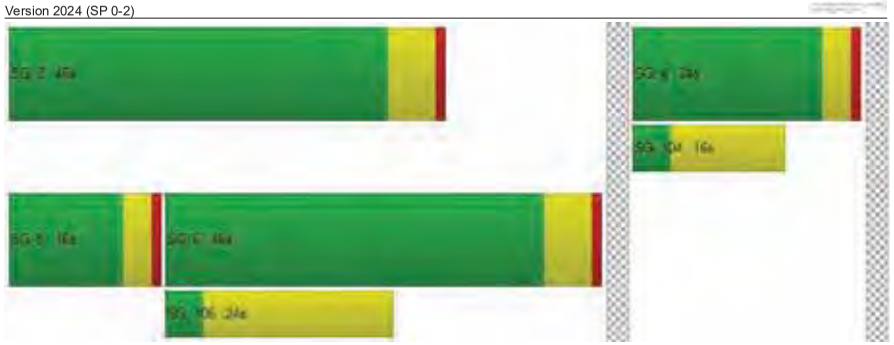
Vehicle Miles Traveled [mph]	16.78	63.79	162.86	174.99	52.61	14.33
Stops [stops/h]	80.55	56.78	107.16	129.36	155.94	35.73
Fuel consumption [US gal/h]	2.53	3.82	8.06	9.01	3.74	0.94
CO [g/h]	176.63	266.79	563.21	629.62	261.75	65.78
NOx [g/h]	34.37	51.91	109.58	122.50	50.93	12.80
VOC [g/h]	40.94	61.83	130.53	145.92	60.66	15.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	10.28	0.00	10.28
l_p,int, Pedestrian LOS Score for Intersectio	2.484	0.000	2.126
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2304	2304	1152
d_b, Bicycle Delay [s]	0.40	0.40	3.12
l_b,int, Bicycle LOS Score for Intersection	2.637	2.525	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.077

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	548	0	14	295	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	548	0	14	295	0	0	0	0	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	149	0	4	80	0	0	0	0	0	0	10
Total Analysis Volume [veh/h]	0	596	0	14	321	0	0	0	0	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	7.91	0.00	0.00	8.69	0.00	0.00	21.93	18.99	10.00	20.75	19.59	12.75
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.25	0.25	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.59	0.59	0.59	0.00	0.00	0.00	6.27	6.27	6.27
d_A, Approach Delay [s/veh]	0.00			0.36			16.97			12.75		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.64											
Intersection LOS	B											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	20.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.037

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	387	32	41	254	0	0	0	0	10	0	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	387	32	41	254	0	0	0	0	10	0	161
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	104	9	11	68	0	0	0	0	3	0	43
Total Analysis Volume [veh/h]	0	416	34	44	273	0	0	0	0	11	0	173
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.28
d_M, Delay for Movement [s/veh]	7.79	0.00	0.00	8.38	0.00	0.00	24.41	16.96	9.70	20.07	19.50	13.59
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	1.34	1.34	1.34
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	3.09	0.00	0.00	0.00	0.00	0.00	33.62	33.62	33.62
d_A, Approach Delay [s/veh]	0.00			1.16			17.02			13.98		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	3.09											
Intersection LOS	C											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	66.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.212

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	232	128	45	0	546	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	232	128	45	0	546	152
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	64	35	12	0	151	42
Total Analysis Volume [veh/h]	0	14	256	141	50	0	603	168
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.21	0.29	0.00	0.00	0.00	0.44	0.00
d_M, Delay for Movement [s/veh]	66.24	66.24	15.72	0.00	0.00	11.86	8.61	0.00
Movement LOS	F	F	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	2.81	2.81	2.81	0.00	0.00	1.50	1.50	1.50
95th-Percentile Queue Length [ft/ln]	70.23	70.23	70.23	0.00	0.00	37.41	37.41	37.41
d_A, Approach Delay [s/veh]	18.34			0.00		6.73		
Approach LOS	C			A		A		
d_I, Intersection Delay [s/veh]	8.23							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	25.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	2	39	63	2	30	443	13	2	9	0	225	26	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	39	63	2	30	443	13	2	9	0	225	26	46
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	12	19	1	9	133	4	1	3	0	68	8	14
Total Analysis Volume [veh/h]	2	47	76	2	36	534	16	2	11	0	271	31	55
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	631	676	532	604
Degree of Utilization, x	0.20	0.87	0.02	0.59

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.73	10.32	0.08	3.86
95th-Percentile Queue Length [ft]	18.30	257.99	1.88	96.60
Approach Delay [s/veh]	10.10	33.20	9.94	17.25
Approach LOS	B	D	A	C
Intersection Delay [s/veh]	25.00			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.048

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	31	108	1	65	13	0	49	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	108	1	65	13	0	49	91
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	28	0	17	3	0	13	24
Total Analysis Volume [veh/h]	33	114	1	68	14	0	52	96
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.12	0.00	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	10.48	9.13	8.60	0.00	0.00	9.07	7.46	0.00
Movement LOS	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.15	0.39	0.00	0.00	0.00	0.11	0.11	0.00
95th-Percentile Queue Length [ft/ln]	3.76	9.77	0.04	0.04	0.04	2.66	2.66	0.00
d_A, Approach Delay [s/veh]	9.43		0.10			2.62		
Approach LOS	A		A			A		
d_I, Intersection Delay [s/veh]	4.72							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.073

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	45	43	78	31	65	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	43	78	31	65	51
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	12	21	8	18	14
Total Analysis Volume [veh/h]	49	47	85	34	71	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.05	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	10.97	9.32	0.00	0.00	7.58	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.41	0.41	0.00	0.00	0.15	0.00
95th-Percentile Queue Length [ft/ln]	10.27	10.27	0.00	0.00	3.81	0.00
d_A, Approach Delay [s/veh]	10.16		0.00		4.27	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.44					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	7.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.081

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	1	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	10	114	18	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	10	10	114	18	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	3	3	31	5	5
Total Analysis Volume [veh/h]	73	11	11	124	20	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	734	763	692	765	765	749
Degree of Utilization, x	0.06	0.06	0.02	0.08	0.08	0.05

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.18	0.17	0.05	0.26	0.26	0.17
95th-Percentile Queue Length [ft]	4.54	4.36	1.21	6.59	6.59	4.22
Approach Delay [s/veh]	7.80		7.83			8.08
Approach LOS	A		A			A
Intersection Delay [s/veh]	7.86					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	22.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.243

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	227	71	37	439	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	0	18	66	1	8	4	227	71	37	439	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	5	17	0	2	1	59	18	10	113	4
Total Analysis Volume [veh/h]	67	0	19	68	1	8	4	234	73	38	453	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.00	0.02	0.24	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	22.00	17.32	9.81	22.11	21.78	15.15	8.30	0.00	0.00	7.91	0.00	0.00
Movement LOS	C	C	A	C	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.92	0.08	0.08	1.02	1.02	1.02	0.01	0.00	0.00	0.06	0.06	0.03
95th-Percentile Queue Length [ft/ln]	22.99	1.90	1.90	25.42	25.42	25.42	0.28	0.00	0.00	1.62	1.62	0.81
d_A, Approach Delay [s/veh]	19.30			21.38			0.11			0.59		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	3.71											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	Windfield Way				White Rock Rd				White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	53	5	117	5	5	5	5	359	115	0	300	415	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	35	0	0	2	0	0	35	0	0	0	2
Total Hourly Volume [veh/h]	53	5	82	5	5	3	5	359	80	0	300	415	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	1	21	1	1	1	1	93	21	0	77	107	1
Total Analysis Volume [veh/h]	55	5	85	5	5	3	5	370	82	0	309	428	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	5	8	1	4	1	66	66	23	88	88
g / C, Green / Cycle	0.04	0.07	0.01	0.04	0.01	0.55	0.55	0.19	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.00	0.00	0.00	0.12	0.13	0.17	0.12	0.12
s, saturation flow rate [veh/h]	1781	1603	1781	1754	1781	1870	1755	1781	1870	1865
c, Capacity [veh/h]	72	111	12	62	12	1034	970	335	1373	1370
d1, Uniform Delay [s]	57.02	55.09	59.37	56.07	59.37	13.69	13.73	47.86	4.79	4.79
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.19	5.30	21.73	0.34	21.99	0.50	0.55	4.53	0.24	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.81	0.42	0.13	0.42	0.22	0.23	0.92	0.16	0.16
d, Delay for Lane Group [s/veh]	63.21	60.38	81.09	56.41	81.36	14.19	14.27	52.39	5.04	5.04
Lane Group LOS	E	E	F	E	F	B	B	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.78	2.85	0.22	0.24	0.22	3.31	3.18	9.46	1.55	1.54
50th-Percentile Queue Length [ft/ln]	44.40	71.18	5.59	6.03	5.60	82.81	79.51	236.57	38.67	38.59
95th-Percentile Queue Length [veh/ln]	3.20	5.13	0.40	0.43	0.40	5.96	5.72	14.51	2.78	2.78
95th-Percentile Queue Length [ft/ln]	79.91	128.13	10.06	10.85	10.08	149.05	143.12	362.69	69.61	69.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.21	60.38	60.38	81.09	56.41	56.41	81.36	14.22	14.27	52.39	52.39	5.04	5.04
Movement LOS	E	E	E	F	E	E	F	B	B	D	D	A	A
d_A, Approach Delay [s/veh]	61.45			65.91			14.97			24.81			
Approach LOS	E			E			B			C			
d_I, Intersection Delay [s/veh]	25.81												
Intersection LOS	C												
Intersection V/C	0.398												

Emissions

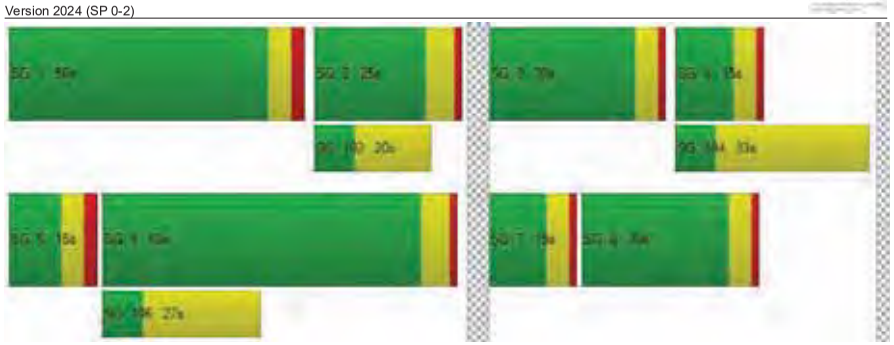
Vehicle Miles Traveled [mph]	21.19	34.68	0.17	0.28	4.21	194.56	185.81	77.01	53.77	53.64
Stops [stops/h]	53.28	85.42	6.71	7.23	6.72	99.37	95.42	283.88	46.41	46.31
Fuel consumption [US gal/h]	1.87	3.01	0.13	0.14	0.29	9.23	8.82	8.03	2.69	2.68
CO [g/h]	131.00	210.07	8.86	10.02	20.49	644.92	616.35	561.47	188.10	187.67
NOx [g/h]	25.49	40.87	1.72	1.95	3.99	125.48	119.92	109.24	36.60	36.51
VOC [g/h]	30.36	48.68	2.05	2.32	4.75	149.47	142.85	130.13	43.59	43.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
d_p, Pedestrian Delay [s]	49.50		49.50		49.50			0.00		
l_p,int, Pedestrian LOS Score for Intersectio	2.202		1.967		2.555			0.000		
Crosswalk LOS	B		A		B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417		167		317			900		
d_b, Bicycle Delay [s]	37.60		50.42		42.50			18.15		
l_b,int, Bicycle LOS Score for Intersection	1.857		1.584		1.966			1.917		
Bicycle LOS	A		A		A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.453

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	57	7	20	114	11	147	0	145	431	12	53	508	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	44	0	0	0	4	0	0	61
Total Hourly Volume [veh/h]	57	7	14	114	11	103	0	145	431	8	53	508	143
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	4	31	3	28	0	40	118	2	15	140	39
Total Analysis Volume [veh/h]	63	8	15	125	12	113	0	159	474	9	58	558	157
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	6	12	9	13	14	94	94	6	85	85
g / C, Green / Cycle	0.05	0.08	0.06	0.09	0.10	0.67	0.67	0.04	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.08	0.09	0.13	0.01	0.03	0.20	0.20
s, saturation flow rate [veh/h]	1781	1677	1781	1613	1781	3560	1589	1781	1870	1731
c, Capacity [veh/h]	81	140	108	152	182	2388	1066	75	1135	1050
d1, Uniform Delay [s]	66.12	59.59	65.75	62.29	61.92	8.76	7.63	66.41	13.51	13.52
k, delay calibration	0.04	0.13	0.40	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.91	0.68	125.62	12.93	4.94	0.19	0.01	6.26	0.77	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.16	1.16	0.82	0.87	0.20	0.01	0.78	0.33	0.33
d, Delay for Lane Group [s/veh]	72.03	60.26	191.37	75.22	66.86	8.94	7.65	72.66	14.27	14.35
Lane Group LOS	E	E	F	E	E	A	A	E	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.37	0.79	7.65	4.93	5.84	2.77	0.09	2.19	5.97	5.57
50th-Percentile Queue Length [ft/ln]	59.23	19.76	191.15	123.24	146.02	69.22	2.35	54.77	149.34	139.22
95th-Percentile Queue Length [veh/ln]	4.26	1.42	12.73	8.57	9.80	4.98	0.17	3.94	9.98	9.44
95th-Percentile Queue Length [ft/ln]	106.62	35.57	318.26	214.27	245.10	124.59	4.22	98.59	249.55	235.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.03	60.26	60.26	191.37	75.22	75.22	66.86	66.86	8.94	7.65	72.66	14.30	14.35
Movement LOS	E	E	E	F	E	E	E	E	A	A	E	B	B
d_A, Approach Delay [s/veh]	68.88			133.30			23.27				18.69		
Approach LOS	E			F			C				B		
d_I, Intersection Delay [s/veh]	39.20												
Intersection LOS	D												
Intersection V/C	0.453												

Emissions

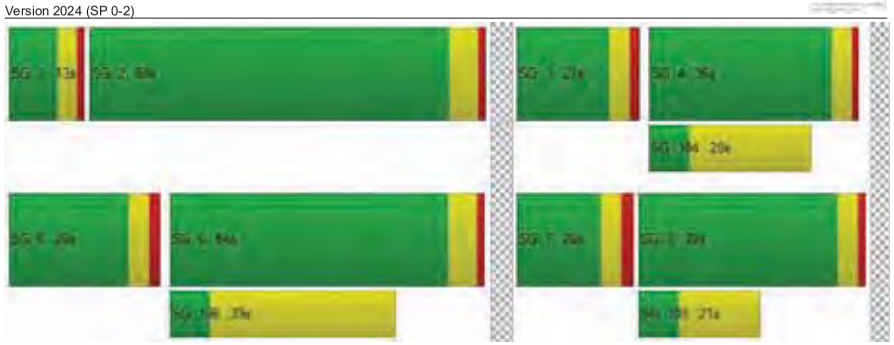
Vehicle Miles Traveled [mph]	3.15	1.15	5.81	5.81	16.73	49.88	0.95	20.29	129.67	120.39
Stops [stops/h]	60.92	20.33	196.61	126.76	150.19	142.39	2.41	56.34	153.61	143.20
Fuel consumption [US gal/h]	1.39	0.44	6.19	2.85	3.68	3.70	0.07	2.00	7.26	6.75
CO [g/h]	97.14	30.88	432.86	199.41	257.34	258.82	4.64	140.07	507.75	472.00
NOx [g/h]	18.90	6.01	84.22	38.80	50.07	50.36	0.90	27.25	98.79	91.83
VOC [g/h]	22.51	7.16	100.32	46.21	59.64	59.98	1.07	32.46	117.68	109.39

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.027	2.245	2.711	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
I_b,int, Bicycle LOS Score for Intersection	1.711	2.045	1.961	2.248
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	75.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.983

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	95	50	256	155	36	46	68	194	30	162	653	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	77	0	0	14	0	0	9	0	0	71
Total Hourly Volume [veh/h]	95	50	179	155	36	32	68	194	21	162	653	167
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	14	51	45	10	9	20	56	6	47	188	48
Total Analysis Volume [veh/h]	109	57	206	178	41	37	78	223	24	186	751	192
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	19	19	13	13	6	39	12	45
g / C, Green / Cycle	0.19	0.19	0.13	0.13	0.06	0.39	0.12	0.45
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.10	0.05	0.04	0.13	0.10	0.52
s, saturation flow rate [veh/h]	1781	1643	1781	1726	1781	1838	1781	1805
c, Capacity [veh/h]	338	312	227	220	102	712	221	808
d1, Uniform Delay [s]	35.16	39.30	42.53	40.09	46.73	21.80	43.05	27.79
k, delay calibration	0.13	0.13	0.13	0.13	0.04	0.11	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	7.58	7.22	1.21	4.39	0.29	3.27	88.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.84	0.78	0.35	0.76	0.35	0.84	1.17
d, Delay for Lane Group [s/veh]	35.85	46.88	49.76	41.30	51.12	22.09	46.32	116.39
Lane Group LOS	D	D	D	D	D	C	D	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.35	6.83	4.70	1.83	2.03	4.10	4.68	38.15
50th-Percentile Queue Length [ft/ln]	58.85	170.80	117.47	45.67	50.86	102.53	116.89	953.78
95th-Percentile Queue Length [veh/ln]	4.24	11.12	8.25	3.29	3.66	7.38	8.22	53.91
95th-Percentile Queue Length [ft/ln]	105.93	277.97	206.35	82.20	91.54	184.55	205.55	1347.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.85	46.88	46.88	49.76	41.30	41.30	51.12	22.09	22.09	46.32	116.39	116.39
Movement LOS	D	D	D	D	D	D	D	C	C	D	F	F
d_A, Approach Delay [s/veh]	43.65			47.18			29.06			104.85		
Approach LOS	D			D			C			F		
d_I, Intersection Delay [s/veh]	74.99											
Intersection LOS	E											
Intersection V/C	0.983											

Emissions

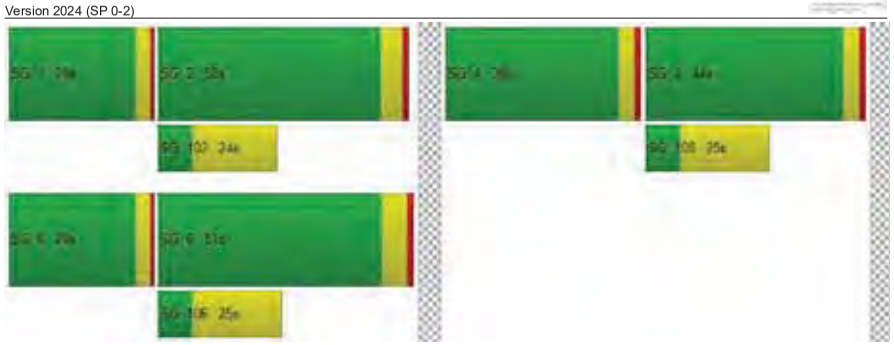
Vehicle Miles Traveled [mph]	187.55	452.53	36.09	15.81	27.28	86.39	83.93	425.50
Stops [stops/h]	84.42	245.01	168.51	65.51	72.95	147.07	167.68	1368.18
Fuel consumption [US gal/h]	8.98	22.49	4.22	1.67	2.34	5.48	6.13	47.41
CO [g/h]	627.86	1572.18	294.89	116.62	163.39	383.00	428.82	3313.76
NOx [g/h]	122.16	305.89	57.38	22.69	31.79	74.52	83.43	644.74
VOC [g/h]	145.51	364.37	68.34	27.03	37.87	88.76	99.38	768.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	39.80		39.80		39.80		0.00	
l_p,int, Pedestrian LOS Score for Intersectio	2.285		2.182		2.363		0.000	
Crosswalk LOS	B		B		B		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	693		793		891		897	
d_b, Bicycle Delay [s]	21.42		18.28		15.44		15.28	
l_b,int, Bicycle LOS Score for Intersection	2.300		2.005		2.111		3.540	
Bicycle LOS	B		B		B		D	

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	4	4	0	354	3	602	0	0	699	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	4	4	0	354	3	602	0	0	699	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	1	0	113	1	193	0	0	224	10
Total Analysis Volume [veh/h]	0	0	5	5	0	454	4	772	0	0	896	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	62	62	62	62	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	19	19	0	20	20	0	20	20
g / C, Green / Cycle	0.01	0.01	0.31	0.31	0.01	0.32	0.32	0.00	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.21	0.21	0.00	0.25	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	13	11	557	497	10	606	606	0	1135	507
d1, Uniform Delay [s]	0.00	30.58	14.64	20.43	30.64	17.79	17.79	0.00	19.17	14.72
k, delay calibration	0.11	0.11	0.11	0.32	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	26.65	0.01	16.85	23.88	1.12	1.12	0.00	1.27	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.46	0.01	0.91	0.40	0.64	0.64	0.00	0.79	0.08
d, Delay for Lane Group [s/veh]	0.00	57.24	14.64	37.28	54.52	18.91	18.91	0.00	20.44	14.78
Lane Group LOS	A	E	B	D	D	B	B	A	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.15	0.05	7.98	0.12	4.42	4.42	0.00	5.46	0.37
50th-Percentile Queue Length [ft/ln]	0.00	3.80	1.14	199.41	3.07	110.44	110.44	0.00	136.53	9.25
95th-Percentile Queue Length [veh/ln]	0.00	0.27	0.08	12.61	0.22	7.86	7.86	0.00	9.29	0.67
95th-Percentile Queue Length [ft/ln]	0.00	6.85	2.05	315.20	5.53	196.62	196.62	0.00	232.35	16.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	57.24	14.64	14.64	37.28	54.52	18.91	18.91	0.00	20.44	14.78
Movement LOS	A	A	E	B	B	D	D	B	B	A	C	B
d_A, Approach Delay [s/veh]	57.24			37.03			19.09			20.20		
Approach LOS	E			D			B			C		
d_I, Intersection Delay [s/veh]	23.44											
Intersection LOS	C											
Intersection V/C	0.733											

Emissions

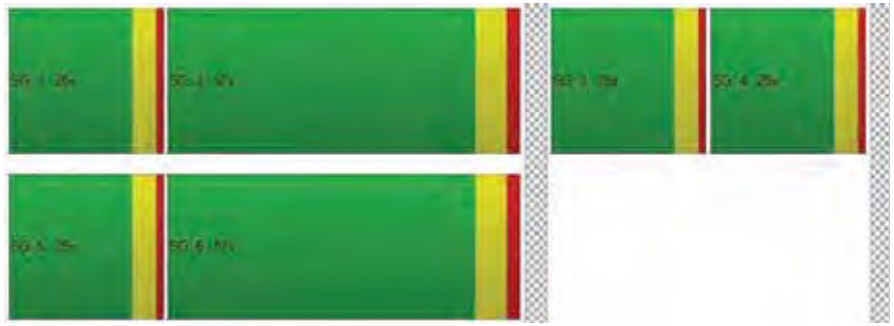
Vehicle Miles Traveled [mph]	0.00	0.25	2.37	215.36	1.80	174.17	174.17	0.00	156.30	6.98
Stops [stops/h]	0.00	8.89	2.66	465.84	7.18	258.01	258.01	0.00	637.91	21.60
Fuel consumption [US gal/h]	0.00	0.12	0.13	14.88	0.16	10.08	10.08	0.00	13.69	0.53
CO [g/h]	0.00	8.22	8.89	1040.37	11.07	704.66	704.66	0.00	956.67	36.83
NOx [g/h]	0.00	1.60	1.73	202.42	2.15	137.10	137.10	0.00	186.13	7.17
VOC [g/h]	0.00	1.91	2.06	241.12	2.57	163.31	163.31	0.00	221.72	8.54

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	649	649	1622	1622
d_b, Bicycle Delay [s]	14.07	14.07	1.10	1.10
l_b,int, Bicycle LOS Score for Intersection	1.568	2.317	2.200	2.332
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	295	315	697	220	156	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	295	315	697	220	156	21
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	95	210	66	47	6
Total Analysis Volume [veh/h]	355	380	840	265	188	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	11	69	54	54	8	8	8
g / C, Green / Cycle	0.13	0.77	0.60	0.60	0.09	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.24	0.17	0.05	0.05	0.02
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	442	2744	2123	948	159	159	142
d1, Uniform Delay [s]	38.14	2.65	9.60	8.80	39.41	39.41	37.93
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.31	0.11	0.55	0.74	1.31	1.31	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.14	0.40	0.28	0.59	0.59	0.18
d, Delay for Lane Group [s/veh]	39.46	2.75	10.15	9.54	40.72	40.72	38.15
Lane Group LOS	D	A	B	A	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.82	0.64	4.12	2.48	2.03	2.03	0.51
50th-Percentile Queue Length [ft/ln]	95.60	16.09	102.94	62.03	50.80	50.80	12.85
95th-Percentile Queue Length [veh/ln]	6.88	1.16	7.41	4.47	3.66	3.66	0.93
95th-Percentile Queue Length [ft/ln]	172.08	28.95	185.29	111.66	91.45	91.45	23.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.46	2.75	10.15	9.54	40.72	38.15
Movement LOS	D	A	B	A	D	D
d_A, Approach Delay [s/veh]	20.48		10.00		40.42	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	16.91					
Intersection LOS	B					
Intersection V/C	0.452					

Emissions

Vehicle Miles Traveled [mph]	61.93	66.29	148.85	46.96	5.69	5.69	1.51
Stops [stops/h]	305.92	51.47	329.40	99.25	81.29	81.29	20.56
Fuel consumption [US gal/h]	7.09	3.23	9.68	3.00	1.46	1.46	0.37
CO [g/h]	495.57	225.50	676.86	209.41	102.22	102.22	25.86
NOx [g/h]	96.42	43.87	131.69	40.74	19.89	19.89	5.03
VOC [g/h]	114.85	52.26	156.87	48.53	23.69	23.69	5.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.166	2.471	1.931
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	78	393	0	0	223	590	694	0	169	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	78	393	0	0	223	543	694	0	139	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	124	0	0	71	172	220	0	44	0	0	0
Total Analysis Volume [veh/h]	0	99	497	0	0	282	687	878	0	176	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0	
Auxiliary Signal Groups														
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0	
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Rest In Walk			No			No			No					
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0	
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	7	54	42	42	24	24	24	
g / C, Green / Cycle	0.08	0.59	0.47	0.47	0.27	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.08	0.43	0.25	0.25	0.11	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	147	2118	1658	740	472	472	422	
d1, Uniform Delay [s]	40.10	8.59	13.96	22.64	32.25	32.25	27.32	
k, delay calibration	0.04	0.50	0.50	0.50	0.26	0.26	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.00	0.26	0.22	19.60	17.03	17.03	0.24	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.23	0.17	0.93	0.93	0.93	0.42	
d, Delay for Lane Group [s/veh]	42.10	8.85	14.18	42.24	49.28	49.28	27.57	
Lane Group LOS	D	A	B	D	D	D	C	
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	2.18	2.17	1.65	16.69	11.26	11.26	3.09	
50th-Percentile Queue Length [ft/ln]	54.62	54.23	41.33	417.19	281.43	281.43	77.34	
95th-Percentile Queue Length [veh/ln]	3.93	3.90	2.98	23.39	16.76	16.76	5.57	
95th-Percentile Queue Length [ft/ln]	98.32	97.61	74.40	584.68	418.99	418.99	139.21	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	42.10	8.85	0.00	0.00	14.18	42.24	49.28	49.28	27.57	0.00	0.00	0.00
Movement LOS	D	D	A			B	D	D	D	C			
d_A, Approach Delay [s/veh]	14.37				34.07			45.65			0.00		
Approach LOS	B				C			D			A		
d_I, Intersection Delay [s/veh]	34.25												
Intersection LOS	C												
Intersection V/C	0.847												

Emissions

Vehicle Miles Traveled [mph]	17.54	88.07	38.56	93.94	15.21	15.21	6.10	
Stops [stops/h]	87.40	173.54	132.26	667.50	450.28	450.28	123.74	
Fuel consumption [US gal/h]	2.05	5.48	3.13	13.46	7.52	7.52	1.92	
CO [g/h]	143.52	383.00	218.92	940.83	525.37	525.37	134.35	
NOx [g/h]	27.92	74.52	42.59	183.05	102.22	102.22	26.14	
VOC [g/h]	33.26	88.76	50.74	218.05	121.76	121.76	31.14	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.051	2.398	3.348	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	548	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	548	295	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	137	74	0	0	0
Total Analysis Volume [veh/h]	0	548	295	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	9.84
Movement LOS		A	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		9.84	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	415	226	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	415	226	38	4	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	104	57	10	1	0
Total Analysis Volume [veh/h]	0	415	226	38	4	0
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.77	0.00	0.00	0.00	13.49	9.61
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.71	0.71
d_A, Approach Delay [s/veh]	0.00		0.00		13.49	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

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Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.131

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	238	41	52	127	9	44	72	0	37	72	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	238	41	52	127	9	44	72	0	37	72	38
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	60	10	13	32	2	11	18	0	9	18	10
Total Analysis Volume [veh/h]	6	238	41	52	127	9	44	72	0	37	72	38
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.13	0.17	0.00	0.10	0.16	0.05
d_M, Delay for Movement [s/veh]	7.49	0.00	0.00	7.87	0.00	0.00	19.60	17.14	12.77	18.44	16.58	13.08
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.09	0.09	0.09	1.22	1.22	1.22	1.33	1.33	1.33
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.26	2.26	2.26	30.61	30.61	30.61	33.16	33.16	33.16
d_A, Approach Delay [s/veh]	0.16			2.18			18.07			16.14		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	6.69											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	548	309	39	0
2	532	300	38	0
3	521	294	37	0
4	488	275	35	0
5	433	244	31	0
6	427	241	30	0
7	422	238	30	0
8	384	216	27	0
9	378	213	27	0
10	373	210	27	0
11	323	182	23	0
12	301	170	21	0
13	296	167	21	0
14	219	124	16	0
15	219	124	16	0
16	153	87	11	0
17	88	49	6	0
18	88	49	6	0
19	49	28	4	0
20	27	15	2	0
21	16	9	1	0
22	5	3	0	0
23	5	3	0	0
24	5	3	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	857	1	39	No	No	No	No	No	No	No	No	No	No
2	1	832	1	38	No	No	No	No	No	No	No	No	No	No
3	1	815	1	37	No	No	No	No	No	No	No	No	No	No
4	1	763	1	35	No	No	No	No	No	No	No	No	No	No
5	1	677	1	31	No	No	No	No	No	No	No	No	No	No
6	1	668	1	30	No	No	No	No	No	No	No	No	No	No
7	1	660	1	30	No	No	No	No	No	No	No	No	No	No
8	1	600	1	27	No	No	No	No	No	No	No	No	No	No
9	1	591	1	27	No	No	No	No	No	No	No	No	No	No
10	1	583	1	27	No	No	No	No	No	No	No	No	No	No
11	1	505	1	23	No	No	No	No	No	No	No	No	No	No
12	1	471	1	21	No	No	No	No	No	No	No	No	No	No
13	1	463	1	21	No	No	No	No	No	No	No	No	No	No
14	1	343	1	16	No	No	No	No	No	No	No	No	No	No
15	1	343	1	16	No	No	No	No	No	No	No	No	No	No
16	1	240	1	11	No	No	No	No	No	No	No	No	No	No
17	1	137	1	6	No	No	No	No	No	No	No	No	No	No
18	1	137	1	6	No	No	No	No	No	No	No	No	No	No
19	1	77	1	4	No	No	No	No	No	No	No	No	No	No
20	1	42	1	2	No	No	No	No	No	No	No	No	No	No
21	1	25	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.7	17
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:08	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	896	896
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	419	295	171	0
2	406	286	166	0
3	398	280	162	0
4	373	263	152	0
5	331	233	135	0
6	327	230	133	0
7	323	227	132	0
8	293	207	120	0
9	289	204	118	0
10	285	201	116	0
11	247	174	101	0
12	230	162	94	0
13	226	159	92	0
14	168	118	68	0
15	168	118	68	0
16	117	83	48	0
17	67	47	27	0
18	67	47	27	0
19	38	27	15	0
20	21	15	9	0
21	13	9	5	0
22	4	3	2	0
23	4	3	2	0
24	4	3	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	714	1	171	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	2	692	1	166	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	2	678	1	162	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	2	636	1	152	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	2	564	1	135	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	557	1	133	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	550	1	132	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	500	1	120	No	Yes	Yes	Yes	No	No	No	No	No	No
9	2	493	1	118	No	No	Yes	Yes	No	No	No	No	No	No
10	2	486	1	116	No	No	Yes	Yes	No	No	No	No	No	No
11	2	421	1	101	No	No	No	Yes	No	No	No	No	No	No
12	2	392	1	94	No	No	No	Yes	No	No	No	No	No	No
13	2	385	1	92	No	No	No	Yes	No	No	No	No	No	No
14	2	286	1	68	No	No	No	No	No	No	No	No	No	No
15	2	286	1	68	No	No	No	No	No	No	No	No	No	No
16	2	200	1	48	No	No	No	No	No	No	No	No	No	No
17	2	114	1	27	No	No	No	No	No	No	No	No	No	No
18	2	114	1	27	No	No	No	No	No	No	No	No	No	No
19	2	65	1	15	No	No	No	No	No	No	No	No	No	No
20	2	36	1	9	No	No	No	No	No	No	No	No	No	No
21	2	22	1	5	No	No	No	No	No	No	No	No	No	No
22	2	7	1	2	No	No	No	No	No	No	No	No	No	No
23	2	7	1	2	No	No	No	No	No	No	No	No	No	No
24	2	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	8	10	13	0	0	4	7	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14	17
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:39	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	171	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	885	885
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	698	173	245
2	677	168	238
3	663	164	233
4	621	154	218
5	551	137	194
6	544	135	191
7	537	133	189
8	489	121	172
9	482	119	169
10	475	118	167
11	412	102	145
12	384	95	135
13	377	93	132
14	279	69	98
15	279	69	98
16	195	48	69
17	112	28	39
18	112	28	39
19	63	16	22
20	35	9	12
21	21	5	7
22	7	2	2
23	7	2	2
24	7	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	871	1	245	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	845	1	238	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	827	1	233	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	775	1	218	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	688	1	194	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	1	679	1	191	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	1	670	1	189	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	610	1	172	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
9	1	601	1	169	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
10	1	593	1	167	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	514	1	145	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	479	1	135	No	Yes	Yes	Yes	No	No	No	Yes	No	No
13	1	470	1	132	No	Yes	Yes	Yes	No	No	No	Yes	No	No
14	1	348	1	98	No	No	No	Yes	No	No	No	No	No	No
15	1	348	1	98	No	No	No	Yes	No	No	No	No	No	No
16	1	243	1	69	No	No	No	No	No	No	No	No	No	No
17	1	140	1	39	No	No	No	No	No	No	No	No	No	No
18	1	140	1	39	No	No	No	No	No	No	No	No	No	No
19	1	79	1	22	No	No	No	No	No	No	No	No	No	No
20	1	44	1	12	No	No	No	No	No	No	No	No	No	No
21	1	26	1	7	No	No	No	No	No	No	No	No	No	No
22	1	9	1	2	No	No	No	No	No	No	No	No	No	No
23	1	9	1	2	No	No	No	No	No	No	No	No	No	No
24	1	9	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	4	9	10	13	6	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	245
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1116
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	104	488	297	11
2	101	473	288	11
3	99	464	282	10
4	93	434	264	10
5	82	386	235	9
6	81	381	232	9
7	80	376	229	8
8	73	342	208	8
9	72	337	205	8
10	71	332	202	7
11	61	288	175	6
12	57	268	163	6
13	56	264	160	6
14	42	195	119	4
15	42	195	119	4
16	29	137	83	3
17	17	78	48	2
18	17	78	48	2
19	9	44	27	1
20	5	24	15	1
21	3	15	9	0
22	1	5	3	0
23	1	5	3	0
24	1	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	592	1	297	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	1	574	1	288	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	1	563	1	282	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	527	1	264	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	468	1	235	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	462	1	232	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	456	1	229	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	415	1	208	No	Yes	Yes	Yes	No	No	No	No	No	No
9	1	409	1	205	No	Yes	Yes	Yes	No	No	No	No	No	No
10	1	403	1	202	No	Yes	Yes	Yes	No	No	No	No	No	No
11	1	349	1	175	No	No	No	Yes	No	No	No	No	No	No
12	1	325	1	163	No	No	No	Yes	No	No	No	No	No	No
13	1	320	1	160	No	No	No	Yes	No	No	No	No	No	No
14	1	237	1	119	No	No	No	No	No	No	No	No	No	No
15	1	237	1	119	No	No	No	No	No	No	No	No	No	No
16	1	166	1	83	No	No	No	No	No	No	No	No	No	No
17	1	95	1	48	No	No	No	No	No	No	No	No	No	No
18	1	95	1	48	No	No	No	No	No	No	No	No	No	No
19	1	53	1	27	No	No	No	No	No	No	No	No	No	No
20	1	29	1	15	No	No	No	No	No	No	No	No	No	No
21	1	18	1	9	No	No	No	No	No	No	No	No	No	No
22	1	6	1	3	No	No	No	No	No	No	No	No	No	No
23	1	6	1	3	No	No	No	No	No	No	No	No	No	No
24	1	6	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	10	13	0	0	4	7	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.2	9.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:25	0:01
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	297	11
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	900	900
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	140	79	139
2	136	77	135
3	133	75	132
4	125	70	124
5	111	62	110
6	109	62	108
7	108	61	107
8	98	55	97
9	97	55	96
10	95	54	95
11	83	47	82
12	77	43	76
13	76	43	75
14	56	32	56
15	56	32	56
16	39	22	39
17	22	13	22
18	22	13	22
19	13	7	13
20	7	4	7
21	4	2	4
22	1	1	1
23	1	1	1
24	1	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	219	2	139	No	No	No	No	No	No	No	No	No	No
2	2	213	2	135	No	No	No	No	No	No	No	No	No	No
3	2	208	2	132	No	No	No	No	No	No	No	No	No	No
4	2	195	2	124	No	No	No	No	No	No	No	No	No	No
5	2	173	2	110	No	No	No	No	No	No	No	No	No	No
6	2	171	2	108	No	No	No	No	No	No	No	No	No	No
7	2	169	2	107	No	No	No	No	No	No	No	No	No	No
8	2	153	2	97	No	No	No	No	No	No	No	No	No	No
9	2	152	2	96	No	No	No	No	No	No	No	No	No	No
10	2	149	2	95	No	No	No	No	No	No	No	No	No	No
11	2	130	2	82	No	No	No	No	No	No	No	No	No	No
12	2	120	2	76	No	No	No	No	No	No	No	No	No	No
13	2	119	2	75	No	No	No	No	No	No	No	No	No	No
14	2	88	2	56	No	No	No	No	No	No	No	No	No	No
15	2	88	2	56	No	No	No	No	No	No	No	No	No	No
16	2	61	2	39	No	No	No	No	No	No	No	No	No	No
17	2	35	2	22	No	No	No	No	No	No	No	No	No	No
18	2	35	2	22	No	No	No	No	No	No	No	No	No	No
19	2	20	2	13	No	No	No	No	No	No	No	No	No	No
20	2	11	2	7	No	No	No	No	No	No	No	No	No	No
21	2	6	2	4	No	No	No	No	No	No	No	No	No	No
22	2	2	2	1	No	No	No	No	No	No	No	No	No	No
23	2	2	2	1	No	No	No	No	No	No	No	No	No	No
24	2	2	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.4
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:21
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	139
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	358
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	116	109	88
2	113	106	85
3	110	104	84
4	103	97	78
5	92	86	70
6	90	85	69
7	89	84	68
8	81	76	62
9	80	75	61
10	79	74	60
11	68	64	52
12	64	60	48
13	63	59	48
14	46	44	35
15	46	44	35
16	32	31	25
17	19	17	14
18	19	17	14
19	10	10	8
20	6	5	4
21	3	3	3
22	1	1	1
23	1	1	1
24	1	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	225	1	88	No	No	No	No	No	No	No	No	No	No
2	2	219	1	85	No	No	No	No	No	No	No	No	No	No
3	2	214	1	84	No	No	No	No	No	No	No	No	No	No
4	2	200	1	78	No	No	No	No	No	No	No	No	No	No
5	2	178	1	70	No	No	No	No	No	No	No	No	No	No
6	2	175	1	69	No	No	No	No	No	No	No	No	No	No
7	2	173	1	68	No	No	No	No	No	No	No	No	No	No
8	2	157	1	62	No	No	No	No	No	No	No	No	No	No
9	2	155	1	61	No	No	No	No	No	No	No	No	No	No
10	2	153	1	60	No	No	No	No	No	No	No	No	No	No
11	2	132	1	52	No	No	No	No	No	No	No	No	No	No
12	2	124	1	48	No	No	No	No	No	No	No	No	No	No
13	2	122	1	48	No	No	No	No	No	No	No	No	No	No
14	2	90	1	35	No	No	No	No	No	No	No	No	No	No
15	2	90	1	35	No	No	No	No	No	No	No	No	No	No
16	2	63	1	25	No	No	No	No	No	No	No	No	No	No
17	2	36	1	14	No	No	No	No	No	No	No	No	No	No
18	2	36	1	14	No	No	No	No	No	No	No	No	No	No
19	2	20	1	8	No	No	No	No	No	No	No	No	No	No
20	2	11	1	4	No	No	No	No	No	No	No	No	No	No
21	2	6	1	3	No	No	No	No	No	No	No	No	No	No
22	2	2	1	1	No	No	No	No	No	No	No	No	No	No
23	2	2	1	1	No	No	No	No	No	No	No	No	No	No
24	2	2	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	88
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	313
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	77	124	36
2	75	120	35
3	73	118	34
4	69	110	32
5	61	98	28
6	60	97	28
7	59	95	28
8	54	87	25
9	53	86	25
10	52	84	24
11	45	73	21
12	42	68	20
13	42	67	19
14	31	50	14
15	31	50	14
16	22	35	10
17	12	20	6
18	12	20	6
19	7	11	3
20	4	6	2
21	2	4	1
22	1	1	0
23	1	1	0
24	1	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	201	1	36	No	No	No	No	No	No	No	No	No	No
2	3	195	1	35	No	No	No	No	No	No	No	No	No	No
3	3	191	1	34	No	No	No	No	No	No	No	No	No	No
4	3	179	1	32	No	No	No	No	No	No	No	No	No	No
5	3	159	1	28	No	No	No	No	No	No	No	No	No	No
6	3	157	1	28	No	No	No	No	No	No	No	No	No	No
7	3	154	1	28	No	No	No	No	No	No	No	No	No	No
8	3	141	1	25	No	No	No	No	No	No	No	No	No	No
9	3	139	1	25	No	No	No	No	No	No	No	No	No	No
10	3	136	1	24	No	No	No	No	No	No	No	No	No	No
11	3	118	1	21	No	No	No	No	No	No	No	No	No	No
12	3	110	1	20	No	No	No	No	No	No	No	No	No	No
13	3	109	1	19	No	No	No	No	No	No	No	No	No	No
14	3	81	1	14	No	No	No	No	No	No	No	No	No	No
15	3	81	1	14	No	No	No	No	No	No	No	No	No	No
16	3	57	1	10	No	No	No	No	No	No	No	No	No	No
17	3	32	1	6	No	No	No	No	No	No	No	No	No	No
18	3	32	1	6	No	No	No	No	No	No	No	No	No	No
19	3	18	1	3	No	No	No	No	No	No	No	No	No	No
20	3	10	1	2	No	No	No	No	No	No	No	No	No	No
21	3	6	1	1	No	No	No	No	No	No	No	No	No	No
22	3	2	1	0	No	No	No	No	No	No	No	No	No	No
23	3	2	1	0	No	No	No	No	No	No	No	No	No	No
24	3	2	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	36
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	237
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	491	302	83	75
2	476	293	81	73
3	466	287	79	71
4	437	269	74	67
5	388	239	66	59
6	383	236	65	59
7	378	233	64	58
8	344	211	58	53
9	339	208	57	52
10	334	205	56	51
11	290	178	49	44
12	270	166	46	41
13	265	163	45	41
14	196	121	33	30
15	196	121	33	30
16	137	85	23	21
17	79	48	13	12
18	79	48	13	12
19	44	27	7	7
20	25	15	4	4
21	15	9	2	2
22	5	3	1	1
23	5	3	1	1
24	5	3	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	793	1	83	No	No	No	No	No	Yes	Yes	Yes	No	No
2	2	769	1	81	No	No	No	No	No	Yes	Yes	Yes	No	No
3	2	753	1	79	No	No	No	No	No	Yes	Yes	Yes	No	No
4	2	706	1	74	No	No	No	No	No	No	Yes	Yes	No	No
5	2	627	1	66	No	No	No	No	No	No	No	Yes	No	No
6	2	619	1	65	No	No	No	No	No	No	No	Yes	No	No
7	2	611	1	64	No	No	No	No	No	No	No	Yes	No	No
8	2	555	1	58	No	No	No	No	No	No	No	Yes	No	No
9	2	547	1	57	No	No	No	No	No	No	No	Yes	No	No
10	2	539	1	56	No	No	No	No	No	No	No	Yes	No	No
11	2	468	1	49	No	No	No	No	No	No	No	No	No	No
12	2	436	1	46	No	No	No	No	No	No	No	No	No	No
13	2	428	1	45	No	No	No	No	No	No	No	No	No	No
14	2	317	1	33	No	No	No	No	No	No	No	No	No	No
15	2	317	1	33	No	No	No	No	No	No	No	No	No	No
16	2	222	1	23	No	No	No	No	No	No	No	No	No	No
17	2	127	1	13	No	No	No	No	No	No	No	No	No	No
18	2	127	1	13	No	No	No	No	No	No	No	No	No	No
19	2	71	1	7	No	No	No	No	No	No	No	No	No	No
20	2	40	1	4	No	No	No	No	No	No	No	No	No	No
21	2	24	1	2	No	No	No	No	No	No	No	No	No	No
22	2	8	1	1	No	No	No	No	No	No	No	No	No	No
23	2	8	1	1	No	No	No	No	No	No	No	No	No	No
24	2	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	3	4	10	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.3	21.4
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:26	0:26
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	83	75
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	951	951
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	548	295	0
2	532	286	0
3	521	280	0
4	488	263	0
5	433	233	0
6	427	230	0
7	422	227	0
8	384	207	0
9	378	204	0
10	373	201	0
11	323	174	0
12	301	162	0
13	296	159	0
14	219	118	0
15	219	118	0
16	153	83	0
17	88	47	0
18	88	47	0
19	49	27	0
20	27	15	0
21	16	9	0
22	5	3	0
23	5	3	0
24	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	843	1	0	No	No	No	No	No	No	No	No	No	No
2	1	818	1	0	No	No	No	No	No	No	No	No	No	No
3	1	801	1	0	No	No	No	No	No	No	No	No	No	No
4	1	751	1	0	No	No	No	No	No	No	No	No	No	No
5	1	666	1	0	No	No	No	No	No	No	No	No	No	No
6	1	657	1	0	No	No	No	No	No	No	No	No	No	No
7	1	649	1	0	No	No	No	No	No	No	No	No	No	No
8	1	591	1	0	No	No	No	No	No	No	No	No	No	No
9	1	582	1	0	No	No	No	No	No	No	No	No	No	No
10	1	574	1	0	No	No	No	No	No	No	No	No	No	No
11	1	497	1	0	No	No	No	No	No	No	No	No	No	No
12	1	463	1	0	No	No	No	No	No	No	No	No	No	No
13	1	455	1	0	No	No	No	No	No	No	No	No	No	No
14	1	337	1	0	No	No	No	No	No	No	No	No	No	No
15	1	337	1	0	No	No	No	No	No	No	No	No	No	No
16	1	236	1	0	No	No	No	No	No	No	No	No	No	No
17	1	135	1	0	No	No	No	No	No	No	No	No	No	No
18	1	135	1	0	No	No	No	No	No	No	No	No	No	No
19	1	76	1	0	No	No	No	No	No	No	No	No	No	No
20	1	42	1	0	No	No	No	No	No	No	No	No	No	No
21	1	25	1	0	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	843
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	415	264	4
2	403	256	4
3	394	251	4
4	369	235	4
5	328	209	3
6	324	206	3
7	320	203	3
8	291	185	3
9	286	182	3
10	282	180	3
11	245	156	2
12	228	145	2
13	224	143	2
14	166	106	2
15	166	106	2
16	116	74	1
17	66	42	1
18	66	42	1
19	37	24	0
20	21	13	0
21	12	8	0
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	679	1	4	No	No	No	No	No	No	No	No	No	No
2	1	659	1	4	No	No	No	No	No	No	No	No	No	No
3	1	645	1	4	No	No	No	No	No	No	No	No	No	No
4	1	604	1	4	No	No	No	No	No	No	No	No	No	No
5	1	537	1	3	No	No	No	No	No	No	No	No	No	No
6	1	530	1	3	No	No	No	No	No	No	No	No	No	No
7	1	523	1	3	No	No	No	No	No	No	No	No	No	No
8	1	476	1	3	No	No	No	No	No	No	No	No	No	No
9	1	468	1	3	No	No	No	No	No	No	No	No	No	No
10	1	462	1	3	No	No	No	No	No	No	No	No	No	No
11	1	401	1	2	No	No	No	No	No	No	No	No	No	No
12	1	373	1	2	No	No	No	No	No	No	No	No	No	No
13	1	367	1	2	No	No	No	No	No	No	No	No	No	No
14	1	272	1	2	No	No	No	No	No	No	No	No	No	No
15	1	272	1	2	No	No	No	No	No	No	No	No	No	No
16	1	190	1	1	No	No	No	No	No	No	No	No	No	No
17	1	108	1	1	No	No	No	No	No	No	No	No	No	No
18	1	108	1	1	No	No	No	No	No	No	No	No	No	No
19	1	61	1	0	No	No	No	No	No	No	No	No	No	No
20	1	34	1	0	No	No	No	No	No	No	No	No	No	No
21	1	20	1	0	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	4
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	683
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

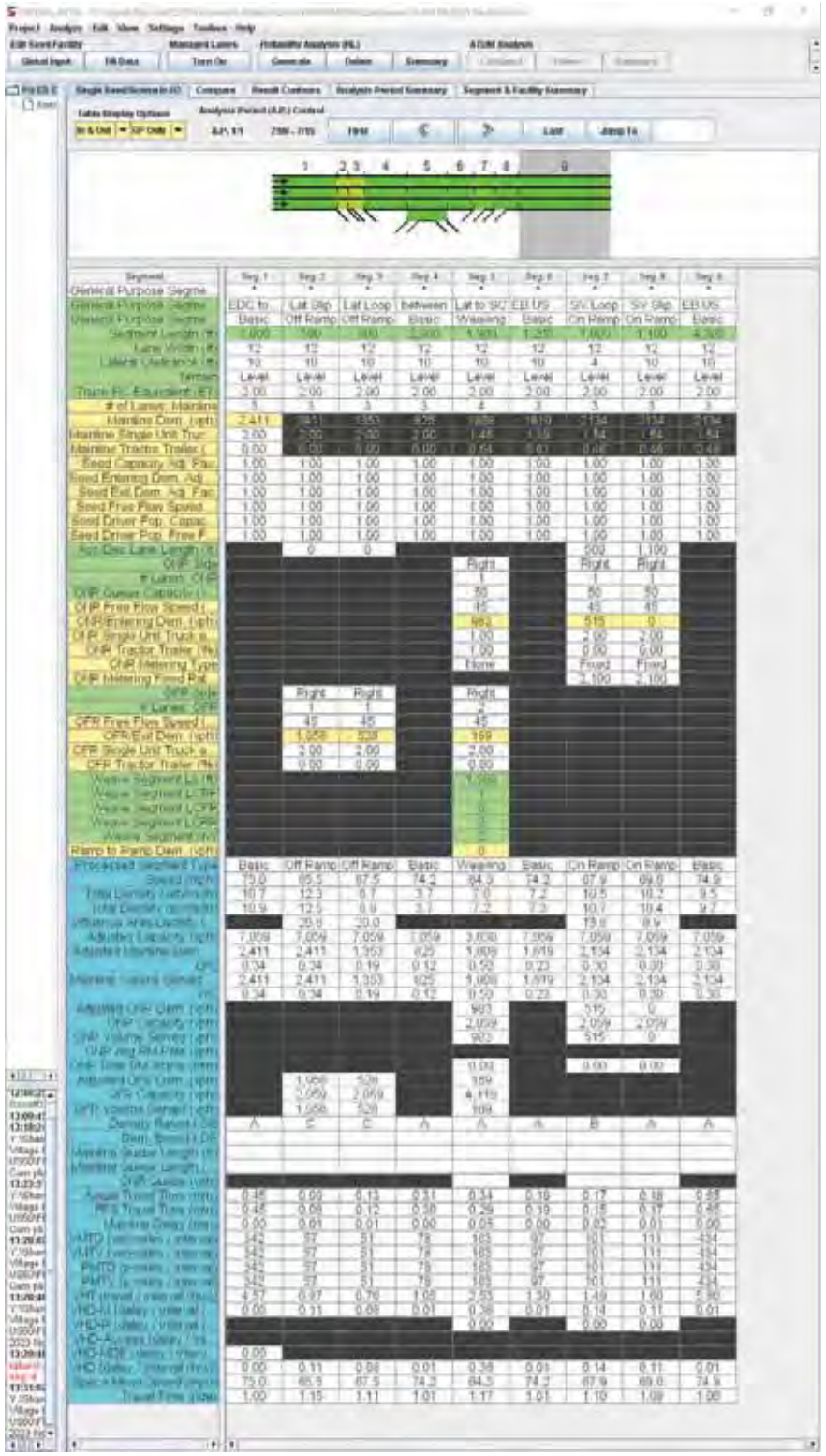
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	285	188	147	116
2	276	182	143	113
3	271	179	140	110
4	254	167	131	103
5	225	149	116	92
6	222	147	115	90
7	219	145	113	89
8	200	132	103	81
9	197	130	101	80
10	194	128	100	79
11	168	111	87	68
12	157	103	81	64
13	154	102	79	63
14	114	75	59	46
15	114	75	59	46
16	80	53	41	32
17	46	30	24	19
18	46	30	24	19
19	26	17	13	10
20	14	9	7	6
21	9	6	4	3
22	3	2	1	1
23	3	2	1	1
24	3	2	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	473	1	147	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	458	1	143	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	450	1	140	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	421	1	131	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	1	374	1	116	No	No	Yes	Yes	No	No	No	No	No	No
6	1	369	1	115	No	No	Yes	Yes	No	No	No	No	No	No
7	1	364	1	113	No	No	Yes	Yes	No	No	No	No	No	No
8	1	332	1	103	No	No	No	Yes	No	No	No	No	No	No
9	1	327	1	101	No	No	No	Yes	No	No	No	No	No	No
10	1	322	1	100	No	No	No	Yes	No	No	No	No	No	No
11	1	279	1	87	No	No	No	No	No	No	No	No	No	No
12	1	260	1	81	No	No	No	No	No	No	No	No	No	No
13	1	256	1	79	No	No	No	No	No	No	No	No	No	No
14	1	189	1	59	No	No	No	No	No	No	No	No	No	No
15	1	189	1	59	No	No	No	No	No	No	No	No	No	No
16	1	133	1	41	No	No	No	No	No	No	No	No	No	No
17	1	76	1	24	No	No	No	No	No	No	No	No	No	No
18	1	76	1	24	No	No	No	No	No	No	No	No	No	No
19	1	43	1	13	No	No	No	No	No	No	No	No	No	No
20	1	23	1	7	No	No	No	No	No	No	No	No	No	No
21	1	15	1	4	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	4	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.1	18.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:39	0:34
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	147	116
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	736	736
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

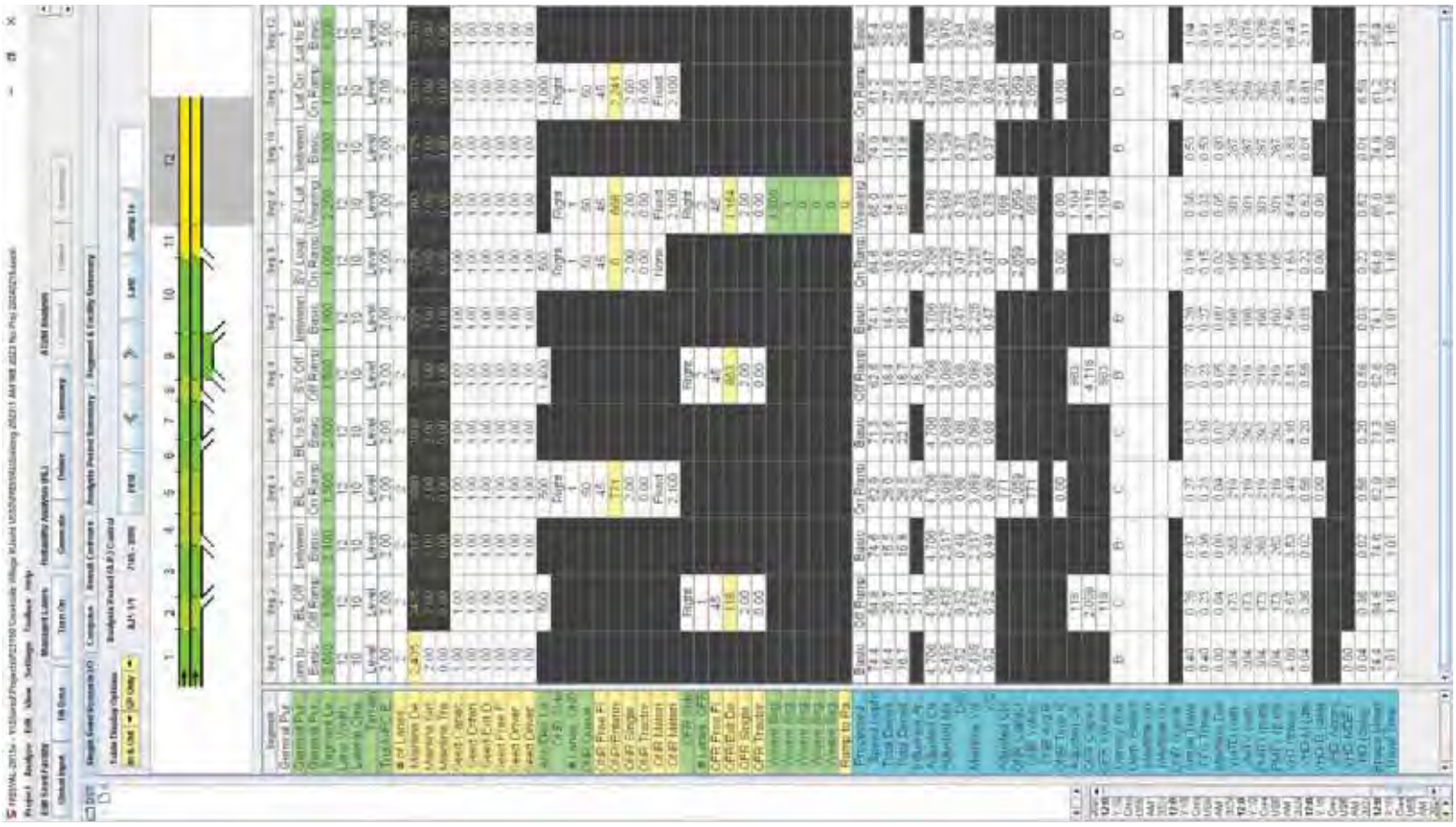


Creekside Village
Traffic Impact Analysis

El Dorado Hills, California

Existing PM no Project

T. KEAR www.tkearinc.com



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Report File: C:\...\2 2023 PM no Proj.pdf

Scenario 1 2023 PM, No Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.957	46.8	D
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	NB Left	1.222	107.8	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	WB Right	0.989	47.9	D
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.912	22.8	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.925	38.1	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	WB Left	0.630	51.0	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.825	20.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.728	10.8	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	0.845	37.5	D
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.779	18.0	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Right	0.077	11.1	B
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.278	28.6	D
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	5.387	2,479.7	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.735	19.6	C
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.019	14.8	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.021	11.1	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.127	8.1	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.767	69.3	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.452	29.1	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.522	70.4	E
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	0.917	54.2	D
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	NB Right	0.755	23.4	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.659	31.7	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	NB Left	0.528	19.3	B
25	New Intersection	Two-way stop	HCM 6th Edition	SB Thru	0.005	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.071	15.2	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	WB Left	0.133	18.2	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	46.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.957

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	91	1766	401	35	1038	55	36	17	54	339	52	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	17	0	0	16	0	0	7
Total Hourly Volume [veh/h]	3	91	1766	401	35	1038	38	36	17	38	339	52	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	26	507	115	10	298	11	10	5	11	97	15	4
Total Analysis Volume [veh/h]	3	105	2030	461	40	1193	44	41	20	44	390	60	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	40	40	2	36	36	5	5	14	14
g / C, Green / Cycle	0.08	0.51	0.51	0.03	0.46	0.46	0.06	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.57	0.29	0.02	0.33	0.33	0.02	0.04	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1847	1781	1668	1781	1787
c, Capacity [veh/h]	141	1810	808	51	856	846	105	99	318	320
d1, Uniform Delay [s]	35.52	19.35	13.40	37.98	17.33	17.34	35.66	36.23	30.54	30.54
k, delay calibration	0.04	0.05	0.06	0.04	0.13	0.13	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.22	55.62	0.36	9.10	1.45	1.48	0.87	2.66	4.58	4.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	1.12	0.57	0.78	0.73	0.73	0.39	0.65	0.73	0.73
d, Delay for Lane Group [s/veh]	38.75	74.97	13.76	47.08	18.78	18.82	36.53	38.89	35.13	35.11
Lane Group LOS	D	F	B	D	B	B	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	27.13	4.72	0.85	8.03	7.95	0.77	1.25	4.44	4.46
50th-Percentile Queue Length [ft/ln]	50.70	678.35	117.97	21.28	200.64	198.68	19.16	31.20	111.04	111.39
95th-Percentile Queue Length [veh/ln]	3.65	38.84	8.28	1.53	12.67	12.57	1.38	2.25	7.90	7.92
95th-Percentile Queue Length [ft/ln]	91.26	971.05	207.04	38.31	316.79	314.26	34.49	56.16	197.45	197.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.75	38.75	74.97	13.76	47.08	18.80	18.82	36.53	38.89	38.89	35.12	35.11	35.11
Movement LOS	D	D	F	B	D	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	62.61				19.69			37.97			35.12		
Approach LOS	E				B			D			D		
d_I, Intersection Delay [s/veh]	46.82												
Intersection LOS	D												
Intersection V/C	0.957												

Emissions

Vehicle Miles Traveled [mph]	25.79	484.83	110.10	5.88	91.45	90.42	1.75	2.73	12.20	12.24
Stops [stops/h]	92.93	2486.77	216.24	39.01	367.77	364.16	35.12	57.19	203.53	204.18
Fuel consumption [US gal/h]	2.89	78.51	7.75	1.07	10.08	9.98	0.57	0.93	3.29	3.30
CO [g/h]	202.09	5487.61	541.97	74.78	704.93	697.83	39.91	65.35	230.16	230.88
NOx [g/h]	39.32	1067.69	105.45	14.55	137.15	135.77	7.76	12.72	44.78	44.92
VOC [g/h]	46.84	1271.81	125.61	17.33	163.37	161.73	9.25	15.15	53.34	53.51

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
d_p, Pedestrian Delay [s]	0.00	29.05	29.05	29.05	
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.308	2.068	2.266	
Crosswalk LOS	F	C	B	B	
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1026	1026	891	891	
d_b, Bicycle Delay [s]	9.32	9.32	12.08	12.08	
l_b,int, Bicycle LOS Score for Intersection	3.701	2.627	1.759	2.342	
Bicycle LOS	D	B	A	B	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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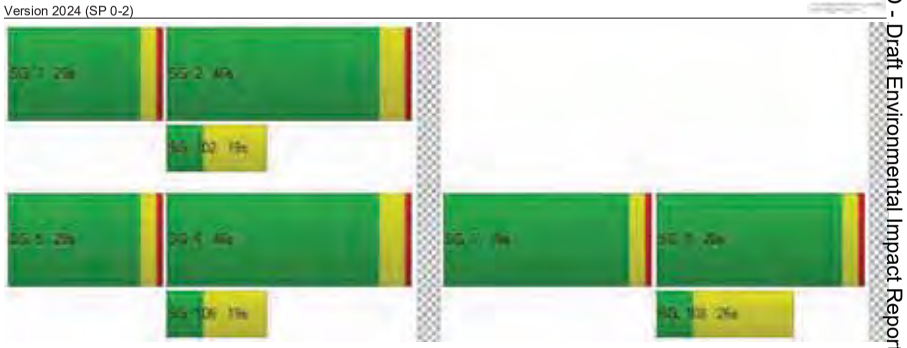

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	107.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.222

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	75	4	164	1068	198	365	41	525	59	107	276
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	23	0	0	0	59	0	0	158	0	0	83
Total Hourly Volume [veh/h]	5	442	1616	52	4	164	1068	139	365	41	367	59	107	193
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	119	434	14	1	44	287	37	98	11	99	16	29	52
Total Analysis Volume [veh/h]	5	475	1738	56	4	176	1148	149	392	44	395	63	115	208
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	125	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	53	53	15	48	48	20	20	20	20	20
g / C, Green / Cycle	0.16	0.42	0.42	0.12	0.38	0.38	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.27	0.33	0.33	0.10	0.35	0.36	0.12	0.12	0.25	0.04	0.19
s, saturation flow rate [veh/h]	1781	3560	1840	1781	1870	1796	1781	1798	1589	1781	1679
c, Capacity [veh/h]	284	1504	777	208	710	682	284	287	254	284	268
d1, Uniform Delay [s]	52.62	31.26	31.34	54.33	37.19	37.41	50.37	50.34	52.62	45.84	52.62
k, delay calibration	0.50	0.13	0.34	0.11	0.37	0.37	0.22	0.22	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	324.32	1.13	5.49	10.32	15.95	17.98	8.37	8.05	268.77	0.14	121.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.69	0.79	0.79	0.86	0.93	0.94	0.76	0.76	1.56	0.22	1.20
d, Delay for Lane Group [s/veh]	376.95	32.39	36.83	64.65	53.14	55.39	58.74	58.38	321.39	45.98	174.53
Lane Group LOS	F	C	D	E	D	E	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	34.31	14.82	16.37	6.04	21.44	21.27	7.19	7.19	26.91	1.73	17.48
50th-Percentile Queue Length [ft/ln]	857.63	370.47	409.33	150.92	536.09	531.83	179.64	179.85	672.64	43.29	437.12
95th-Percentile Queue Length [veh/ln]	53.37	21.13	23.01	10.07	29.04	28.84	11.58	11.59	42.07	3.12	26.51
95th-Percentile Queue Length [ft/ln]	1334.16	528.30	575.24	251.65	725.94	720.93	289.55	289.82	1051.84	77.92	662.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	376.9	376.9	33.81	36.83	64.65	64.65	54.10	55.39	58.58	58.38	321.39	45.98	174.53	174.53
Movement LOS	F	F	C	D	E	E	D	E	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	106.31				55.52				183.49			153.55		
Approach LOS	F				E				F			F		
d_I, Intersection Delay [s/veh]	107.79													
Intersection LOS	F													
Intersection V/C	1.222													

Emissions

Vehicle Miles Traveled [mph]	90.33	222.20	115.42	42.99	157.18	152.59	13.56	13.63	24.63	3.07	15.75
Stops [stops/h]	986.38	852.17	470.79	173.57	616.57	611.67	206.61	206.85	773.63	49.79	502.75
Fuel consumption [US gal/h]	52.17	25.99	14.41	6.00	20.17	20.04	4.30	4.30	31.12	0.99	14.90
CO [g/h]	3646.85	1816.93	1006.98	419.36	1409.93	1400.56	300.50	300.57	2175.04	69.27	1041.21
NOx [g/h]	709.54	353.51	195.92	81.59	274.32	272.50	58.47	58.48	423.18	13.48	202.58
VOC [g/h]	845.19	421.09	233.38	97.19	326.76	324.59	69.64	69.66	504.09	16.05	241.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	52.08	52.08	52.08
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.517	2.807	2.324
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	803	803	319	319
d_b, Bicycle Delay [s]	22.41	22.41	44.20	44.20
l_b,int, Bicycle LOS Score for Intersection	2.820	2.682	3.191	2.333
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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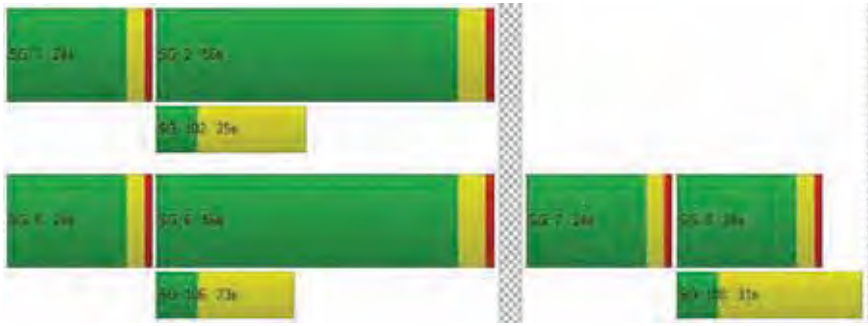

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	47.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.989

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	980	1679	319	0	37	1192	428	208	130	290	236	80	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	96	0	0	0	128	0	0	87	0	0	75
Total Hourly Volume [veh/h]	1	980	1679	223	0	37	1192	300	208	130	203	236	80	176
Peak Hour Factor	1.000	0.840	0.990	0.840	1.000	0.840	0.990	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	292	424	66	0	11	301	89	62	39	60	70	24	52
Total Analysis Volume [veh/h]	1	1167	1696	265	0	44	1204	357	248	155	242	281	95	210
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	73	73	7	34	57	18	18	18	18	18
g / C, Green / Cycle	0.33	0.54	0.54	0.05	0.25	0.42	0.13	0.13	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.34	0.36	0.39	0.02	0.24	0.22	0.11	0.11	0.10	0.10	0.13
s, saturation flow rate [veh/h]	3459	3532	1735	1781	5053	1589	1781	1847	1781	1824	1589
c, Capacity [veh/h]	1155	1901	934	86	1275	668	232	241	241	247	216
d1, Uniform Delay [s]	45.29	22.80	23.74	63.17	49.89	29.48	57.87	57.86	56.74	56.71	58.54
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.15	0.15	0.20	0.20	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.50	1.95	4.85	1.76	14.94	3.05	11.47	11.02	9.28	8.86	46.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.68	0.72	0.51	0.94	0.53	0.85	0.85	0.77	0.77	0.97
d, Delay for Lane Group [s/veh]	55.80	24.75	28.59	64.94	64.83	32.54	69.34	68.88	66.02	65.57	104.89
Lane Group LOS	F	C	C	E	E	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	21.00	15.22	17.34	1.50	14.76	9.01	7.41	7.65	6.81	6.92	9.98
50th-Percentile Queue Length [ft/ln]	525.05	380.44	433.45	37.60	369.01	225.17	185.34	191.29	170.24	173.01	249.49
95th-Percentile Queue Length [veh/ln]	28.74	21.62	24.17	2.71	21.06	13.93	11.88	12.19	11.09	11.23	15.16
95th-Percentile Queue Length [ft/ln]	718.46	540.38	604.17	67.67	526.53	348.21	296.97	304.71	277.23	280.87	379.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.80	55.80	25.68	28.59	64.94	64.94	64.83	32.54	69.25	68.88	0.00	65.87	65.57	104.89
Movement LOS	E	F	C	C	E	E	E	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	37.17				57.65				45.96			79.80		
Approach LOS	D				E				D			E		
d_I, Intersection Delay [s/veh]	47.90													
Intersection LOS	D													
Intersection V/C	0.989													

Emissions

Vehicle Miles Traveled [mph]	200.04	220.20	115.65	8.28	226.59	67.19	9.15	9.49	5.92	6.04	6.68
Stops [stops/h]	1111.86	805.64	458.95	39.81	1172.16	238.41	196.24	202.55	180.25	183.19	264.17
Fuel consumption [US gal/h]	27.64	19.99	11.23	1.36	38.22	7.63	4.25	4.38	3.74	3.79	6.22
CO [g/h]	1931.92	1397.45	784.63	95.08	2671.78	533.39	297.32	306.43	261.35	265.23	434.50
NOx [g/h]	375.88	271.89	152.66	18.50	519.83	103.78	57.85	59.62	50.85	51.60	84.54
VOC [g/h]	447.74	323.87	181.85	22.03	619.21	123.62	68.91	71.02	60.57	61.47	100.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.555
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.333	2.489	2.225	2.105
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2117	609	1	388	1330	0	0	0	1197	0	0	861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	183	0	0	0	0	0	0	359	0	0	258
Total Hourly Volume [veh/h]	0	2117	426	1	388	1330	0	0	0	838	0	0	603
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	557	127	0	115	350	0	0	0	249	0	0	179
Total Analysis Volume [veh/h]	0	2228	507	1	462	1400	0	0	0	998	0	0	718
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.44	0.32	0.26	0.21	0.35	
s, saturation flow rate [veh/h]	5094	1589	1781	6792	2813	
c, Capacity [veh/h]	2809	876	516	3476	927	
d1, Uniform Delay [s]	12.16	10.05	23.17	10.21	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.40	2.78	8.80	0.35	36.65	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.79	0.58	0.90	0.40	1.08	
d, Delay for Lane Group [s/veh]	14.56	12.83	31.97	10.56	59.45	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	7.08	4.32	7.43	2.58	11.48	
50th-Percentile Queue Length [ft/ln]	177.08	107.99	185.84	64.46	286.92	
95th-Percentile Queue Length [veh/ln]	11.45	7.73	11.90	4.64	17.80	
95th-Percentile Queue Length [ft/ln]	286.20	193.20	297.62	116.02	444.96	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	14.56	12.83	31.97	31.97	10.56	0.00	0.00	0.00	59.45	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]		14.24			15.88				59.45			0.00	
Approach LOS		B			B				E			A	
d_I, Intersection Delay [s/veh]	22.85												
Intersection LOS	C												
Intersection V/C	0.912												

Emissions

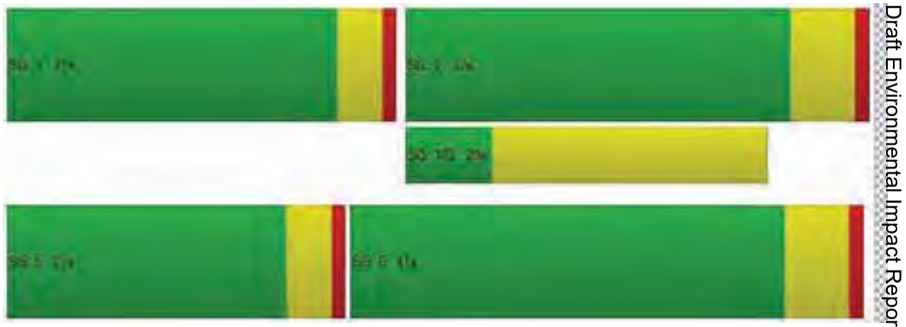
Vehicle Miles Traveled [mph]	322.38	73.36	79.30	239.78	71.42	
Stops [stops/h]	1125.01	228.68	393.53	545.99	1215.17	
Fuel consumption [US gal/h]	31.64	6.68	10.62	18.02	21.73	
CO [g/h]	2211.68	467.03	742.59	1259.31	1518.63	
NOx [g/h]	430.31	90.87	144.48	245.02	295.47	
VOC [g/h]	512.58	108.24	172.10	291.86	351.96	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.067
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	3.165	2.138	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.925

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1820	215	3	532	1803	189	299	33	67	1	91	6	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	65	0	0	0	57	0	0	20	0	0	0	181
Total Hourly Volume [veh/h]	1	24	1820	150	3	532	1803	132	299	33	47	1	91	6	423
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	474	39	1	139	470	34	78	9	12	0	24	2	110
Total Analysis Volume [veh/h]	1	25	1896	156	3	554	1878	138	311	34	49	1	95	6	441
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	4	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	20	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.5	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	7	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	20	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	1.5	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	24	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	Lag	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	6	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	2.5	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	92	92	92	92	92	92	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	38	38	12	48	48	11	11	11	15	15	15
g / C, Green / Cycle	0.02	0.42	0.42	0.13	0.53	0.53	0.12	0.12	0.12	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.37	0.10	0.16	0.37	0.09	0.09	0.02	0.03	0.05	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	75	2120	662	452	2676	835	408	221	187	286	257	256
d1, Uniform Delay [s]	44.25	24.91	17.34	39.89	16.38	11.33	39.23	36.36	36.84	34.16	37.59	37.59
k, delay calibration	0.04	0.04	0.04	0.08	0.04	0.04	0.08	0.08	0.08	0.08	0.32	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.01	0.57	0.07	107.68	0.13	0.03	2.23	0.24	0.54	0.51	21.97	22.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.89	0.24	1.23	0.70	0.17	0.76	0.15	0.26	0.34	0.87	0.87
d, Delay for Lane Group [s/veh]	45.26	25.48	17.41	147.56	16.51	11.36	41.45	36.60	37.38	34.67	59.57	59.64
Lane Group LOS	D	C	B	F	B	B	D	D	D	C	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.30	12.16	2.08	11.76	9.14	1.40	3.47	0.69	1.02	1.91	6.38	6.36
50th-Percentile Queue Length [ft/ln]	7.47	304.01	52.07	294.05	228.38	34.88	86.70	17.30	25.43	47.85	159.41	158.91
95th-Percentile Queue Length [veh/ln]	0.54	17.88	3.75	18.89	14.09	2.51	6.24	1.25	1.83	3.45	10.52	10.49
95th-Percentile Queue Length [ft/ln]	13.45	446.98	93.72	472.34	352.30	62.79	156.06	31.14	45.77	86.13	262.94	262.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.26	45.26	25.48	17.41	147.5	147.5	16.51	11.36	41.45	36.60	37.38	34.67	34.67	59.57	59.61
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	C	C	E	E
d_A, Approach Delay [s/veh]	25.12				44.60				40.53			55.20			
Approach LOS	C				D				D			E			
d_I, Intersection Delay [s/veh]	38.10														
Intersection LOS	D														
Intersection V/C	0.925														

Emissions

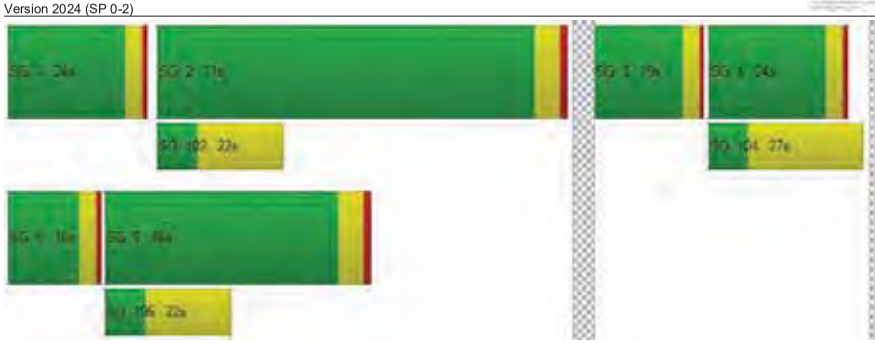
Vehicle Miles Traveled [mph]	5.80	423.26	34.82	80.60	271.74	19.97	39.67	4.34	6.25	33.69	78.60	78.29
Stops [stops/h]	23.50	1434.36	81.88	924.91	1077.50	54.86	272.70	27.20	39.99	75.26	250.70	249.92
Fuel consumption [US gal/h]	0.61	35.18	2.44	25.15	23.45	1.44	5.76	0.58	0.85	2.48	7.34	7.31
CO [g/h]	42.51	2459.09	170.46	1758.07	1639.11	100.95	402.84	40.69	59.48	173.35	512.72	511.01
NOx [g/h]	8.27	478.45	33.17	342.06	318.91	19.64	78.38	7.92	11.57	33.73	99.76	99.42
VOC [g/h]	9.85	569.92	39.51	407.45	379.88	23.40	93.36	9.43	13.79	40.18	118.83	118.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.44	0.00	35.44	35.44
l_p,int, Pedestrian LOS Score for Intersectio	3.395	0.000	2.586	2.857
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	885	1431	448	339
d_b, Bicycle Delay [s]	14.24	3.71	27.58	31.59
l_b,int, Bicycle LOS Score for Intersection	2.738	2.701	1.901	2.597
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	51.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	73	1515	362	2	243	1325	392	2	349	336	86	393	164	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	109	0	0	0	118	0	0	0	26	0	0	58
Total Hourly Volume [veh/h]	6	73	1515	253	2	243	1325	274	2	349	336	60	393	164	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	20	407	68	1	65	356	74	1	94	90	16	106	44	37
Total Analysis Volume [veh/h]	6	78	1629	272	2	261	1425	295	2	375	361	65	423	176	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	25	50	0	0	35	50	0	0	25	15	0	15	25	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	40	56	0	0	31	21	0	21	31	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	158	158	158	158	158	158	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	85	85	14	90	90	19	21	21	15	17	17
g / C, Green / Cycle	0.06	0.54	0.54	0.09	0.57	0.57	0.12	0.13	0.13	0.09	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.17	0.08	0.28	0.19	0.11	0.12	0.12	0.12	0.05	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1772	3459	3560	1589
c, Capacity [veh/h]	111	3672	859	309	2893	903	424	249	236	328	376	168
d1, Uniform Delay [s]	72.94	21.93	20.11	70.89	20.47	18.10	68.27	67.21	67.22	71.50	66.47	69.58
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.47	0.48	0.05	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.97	0.39	0.97	2.55	0.60	0.96	2.61	31.29	32.83	132.03	0.34	5.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.44	0.32	0.85	0.49	0.33	0.89	0.88	0.88	1.29	0.47	0.87
d, Delay for Lane Group [s/veh]	76.91	22.32	21.08	73.44	21.07	19.07	70.88	98.50	100.06	203.53	66.81	74.84
Lane Group LOS	E	C	C	E	C	B	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.50	9.35	5.90	5.29	10.31	5.81	7.69	10.87	10.41	12.70	3.38	6.09
50th-Percentile Queue Length [ft/ln]	87.44	233.75	147.42	132.27	257.66	145.35	192.28	271.68	260.34	317.58	84.62	152.31
95th-Percentile Queue Length [veh/ln]	6.30	14.36	9.88	9.06	15.57	9.77	12.24	16.27	15.71	20.28	6.09	10.14
95th-Percentile Queue Length [ft/ln]	157.38	359.12	246.98	226.58	389.29	244.22	305.99	406.84	392.65	506.94	152.31	253.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.91	76.91	22.32	21.08	73.44	73.44	21.07	19.07	70.88	70.88	99.12	100.0	203.53	66.81	74.84
Movement LOS	E	E	C	C	E	E	C	B	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	24.46				27.72				85.94				146.01		
Approach LOS	C				C				F				F		
d_I, Intersection Delay [s/veh]	51.00														
Intersection LOS	D														
Intersection V/C	0.630														

Emissions

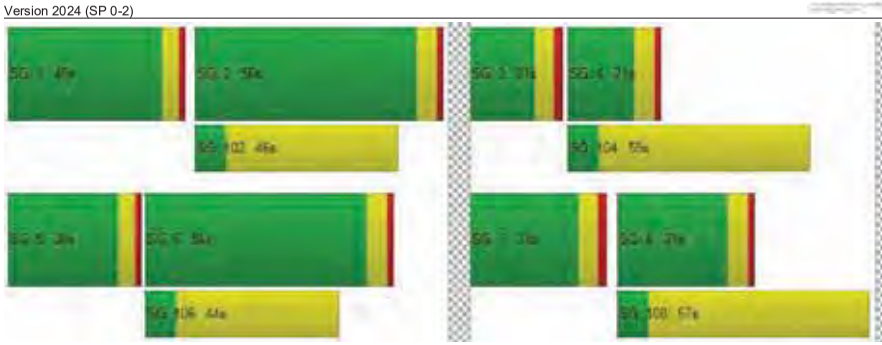
Vehicle Miles Traveled [mph]	33.44	648.48	108.28	58.71	318.11	65.85	94.09	54.55	51.77	44.20	18.39	15.25
Stops [stops/h]	79.69	852.15	134.36	241.10	704.50	132.47	350.49	247.61	237.28	578.88	154.24	138.81
Fuel consumption [US gal/h]	3.13	38.80	6.37	8.94	25.77	5.05	11.25	7.99	7.67	22.53	4.00	3.62
CO [g/h]	218.88	2712.27	445.01	624.92	1801.60	352.93	786.16	558.77	535.80	1575.10	279.72	252.90
NOx [g/h]	42.59	527.71	86.58	121.59	350.53	68.67	152.96	108.72	104.25	306.46	54.42	49.20
VOC [g/h]	50.73	628.60	103.14	144.83	417.54	81.80	182.20	129.50	124.18	365.04	64.83	58.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.38	68.38	68.38	68.38
l_p,int, Pedestrian LOS Score for Intersectio	3.468	3.791	2.760	2.955
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	637	637	194	320
d_b, Bicycle Delay [s]	36.71	36.71	64.44	55.73
l_b,int, Bicycle LOS Score for Intersection	2.421	2.572	1.934	2.222
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	6	1300	21	0	21	1371	285	408	7	15	1	4	9
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	6	0	0	0	86	0	0	5	0	0	3
Total Hourly Volume [veh/h]	1	6	1300	15	0	21	1371	199	408	7	10	1	4	6
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	365	4	0	6	385	56	115	2	3	0	1	2
Total Analysis Volume [veh/h]	1	7	1461	17	0	24	1540	224	458	8	11	1	5	7
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	38	38	1	38	38	12	12	1
g / C, Green / Cycle	0.01	0.54	0.54	0.02	0.54	0.54	0.17	0.17	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.40	0.40	0.01	0.47	0.49	0.13	0.13	0.01
s, saturation flow rate [veh/h]	1781	1870	1862	1781	1870	1789	1781	1774	1702
c, Capacity [veh/h]	19	1006	1002	29	1017	973	306	305	28
d1, Uniform Delay [s]	34.37	12.35	12.36	34.28	13.86	14.26	27.66	27.66	34.07
k, delay calibration	0.04	0.24	0.24	0.04	0.33	0.35	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.69	2.37	2.40	19.51	7.16	9.57	4.30	4.32	4.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.74	0.74	0.83	0.87	0.90	0.78	0.78	0.47
d, Delay for Lane Group [s/veh]	40.06	14.73	14.76	53.79	21.02	23.84	31.96	31.98	38.63
Lane Group LOS	D	B	B	D	C	C	C	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.16	8.10	8.09	0.52	10.18	10.87	4.00	3.98	0.25
50th-Percentile Queue Length [ft/ln]	4.01	202.46	202.15	13.06	254.39	271.64	99.98	99.62	6.17
95th-Percentile Queue Length [veh/ln]	0.29	12.77	12.75	0.94	15.41	16.27	7.20	7.17	0.44
95th-Percentile Queue Length [ft/ln]	7.22	319.14	318.74	23.51	385.17	406.78	179.96	179.31	11.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.06	40.06	14.74	14.76	53.79	53.79	22.21	23.84	31.97	31.98	31.98	38.63	38.63	38.63
Movement LOS	D	D	B	B	D	D	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	14.88				22.84				31.97			38.63		
Approach LOS	B				C				C			D		
d_I, Intersection Delay [s/veh]	20.91													
Intersection LOS	C													
Intersection V/C	0.825													

Emissions

Vehicle Miles Traveled [mph]	2.83	261.89	261.12	9.55	353.46	348.77	57.55	57.32	0.25
Stops [stops/h]	8.28	417.99	417.35	26.97	525.19	560.80	206.40	205.66	12.74
Fuel consumption [US gal/h]	0.23	15.31	15.27	1.08	25.38	26.33	5.06	5.05	0.18
CO [g/h]	15.90	1070.05	1067.49	75.72	1773.87	1840.68	353.97	352.65	12.78
NOx [g/h]	3.09	208.19	207.70	14.73	345.13	358.13	68.87	68.61	2.49
VOC [g/h]	3.69	247.99	247.40	17.55	411.11	426.60	82.04	81.73	2.96

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.33	0.00	27.33	27.33
l_p,int, Pedestrian LOS Score for Intersectio	2.893	0.000	2.199	1.744
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1147	1147	573	573
d_b, Bicycle Delay [s]	6.34	6.34	17.74	17.74
l_b,int, Bicycle LOS Score for Intersection	2.790	3.086	2.355	1.586
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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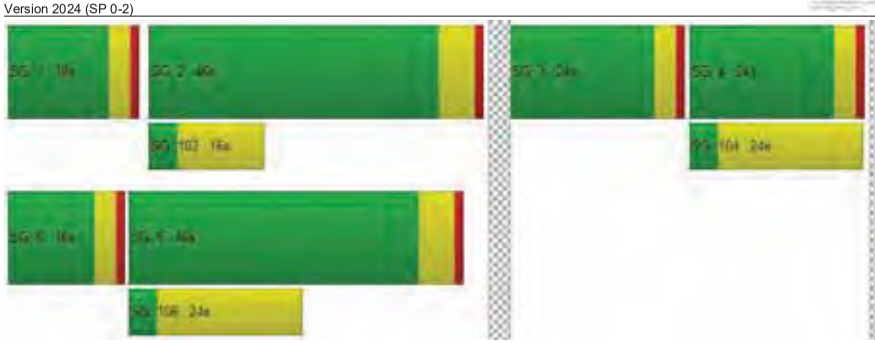


Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	48	1131	1259	129	197	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	39	0	18
Total Hourly Volume [veh/h]	0	48	1131	1259	90	197	43
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	318	354	25	55	12
Total Analysis Volume [veh/h]	0	54	1271	1415	101	221	48
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	3	36	29	29	9	9
g / C, Green / Cycle	0.05	0.66	0.53	0.53	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.03	0.36	0.41	0.41	0.12	0.03
s, saturation flow rate [veh/h]	1781	3560	1870	1827	1781	1589
c, Capacity [veh/h]	91	2334	994	971	291	260
d1, Uniform Delay [s]	25.62	5.10	10.18	10.35	22.06	19.92
k, delay calibration	0.04	0.15	0.16	0.17	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.25	0.28	1.83	2.17	4.06	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.54	0.76	0.78	0.76	0.18
d, Delay for Lane Group [s/veh]	27.87	5.38	12.01	12.52	26.12	20.26
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.71	2.46	5.97	6.14	2.83	0.52
50th-Percentile Queue Length [ft/ln]	17.63	61.39	149.26	153.49	70.83	12.89
95th-Percentile Queue Length [veh/ln]	1.27	4.42	9.98	10.20	5.10	0.93
95th-Percentile Queue Length [ft/ln]	31.74	110.49	249.43	255.07	127.49	23.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.87	27.87	5.38	12.25	12.52	26.12	20.26
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	6.30			12.26		25.08	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	10.83						
Intersection LOS	B						
Intersection V/C	0.728						

Emissions

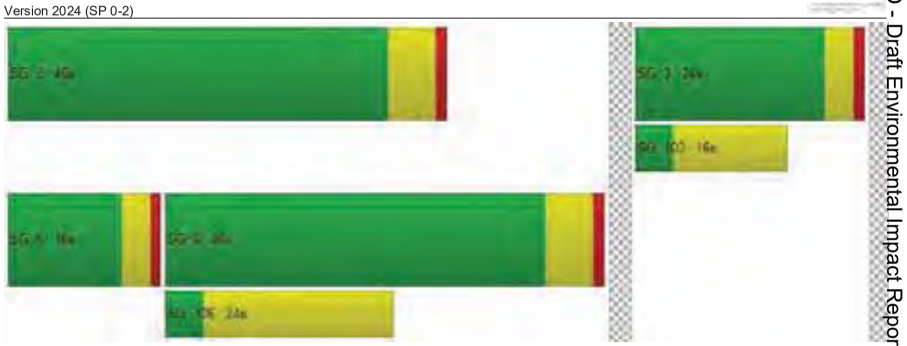
Vehicle Miles Traveled [mph]	37.56	884.05	268.23	268.23	74.56	16.20
Stops [stops/h]	46.07	320.78	389.98	401.03	185.07	33.69
Fuel consumption [US gal/h]	2.11	39.56	15.05	15.19	5.27	1.05
CO [g/h]	147.28	2765.04	1051.97	1061.69	368.16	73.45
NOx [g/h]	28.66	537.98	204.67	206.57	71.63	14.29
VOC [g/h]	34.13	640.82	243.80	246.06	85.32	17.02

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.14	0.00	20.14
l_p,int, Pedestrian LOS Score for Intersectio	2.825	0.000	2.100
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1452	1452	726
d_b, Bicycle Delay [s]	2.07	2.07	11.19
l_b,int, Bicycle LOS Score for Intersection	2.653	2.842	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	98	575	21	249	446	625	494	119	26	13	155	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	188	0	0	8	0	0	33
Total Hourly Volume [veh/h]	98	575	15	249	446	437	494	119	18	13	155	77
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	158	4	68	123	120	136	33	5	4	43	21
Total Analysis Volume [veh/h]	108	632	16	274	490	480	543	131	20	14	170	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	71	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	6	17	17	12	23	23	15	15	9	9
g / C, Green / Cycle	0.08	0.23	0.23	0.17	0.32	0.32	0.21	0.21	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.17	0.15	0.26	0.30	0.19	0.19	0.10	0.05
s, saturation flow rate [veh/h]	1781	1870	1854	1781	1870	1589	1781	1801	1863	1589
c, Capacity [veh/h]	139	439	435	299	606	515	373	378	233	199
d1, Uniform Delay [s]	32.36	25.37	25.37	29.28	22.13	23.40	27.71	27.70	30.37	28.92
k, delay calibration	0.04	0.04	0.04	0.30	0.19	0.28	0.31	0.31	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.48	0.94	0.95	24.42	4.50	17.19	22.18	21.67	2.26	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.74	0.74	0.92	0.81	0.93	0.92	0.92	0.79	0.43
d, Delay for Lane Group [s/veh]	35.84	26.30	26.32	53.70	26.63	40.58	49.89	49.37	32.63	29.46
Lane Group LOS	D	C	C	D	C	D	D	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.91	4.97	4.93	6.07	6.99	8.92	7.78	7.80	3.10	1.33
50th-Percentile Queue Length [ft/ln]	47.65	124.13	123.14	151.74	174.85	222.97	194.51	195.02	77.54	33.24
95th-Percentile Queue Length [veh/ln]	3.43	8.62	8.57	10.11	11.33	13.82	12.35	12.38	5.58	2.39
95th-Percentile Queue Length [ft/ln]	85.77	215.49	214.14	252.75	283.28	345.42	308.87	309.53	139.57	59.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.84	26.31	26.32	53.70	26.63	40.58	49.70	49.37	49.37	32.63	32.63	29.46
Movement LOS	D	C	C	D	C	D	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	27.67			37.98			49.63			31.63		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	37.50											
Intersection LOS	D											
Intersection V/C	0.845											

Emissions

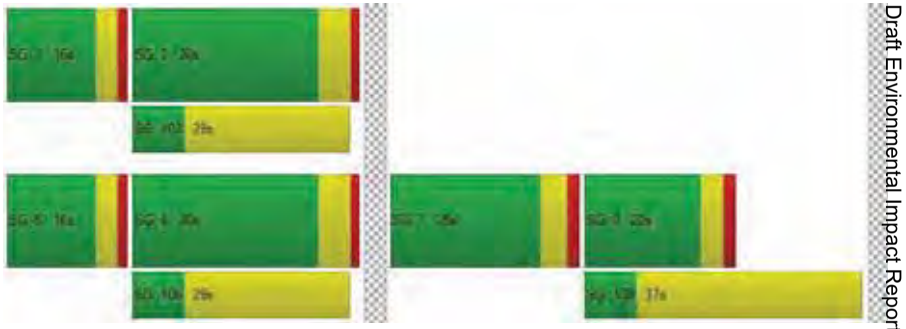
Vehicle Miles Traveled [mph]	62.37	187.89	186.34	190.58	340.82	333.86	25.99	26.22	20.35	9.40
Stops [stops/h]	96.08	250.28	248.30	305.95	352.56	449.58	392.19	393.22	156.34	67.03
Fuel consumption [US gal/h]	3.89	10.86	10.77	15.05	20.61	23.48	6.74	6.75	2.92	1.27
CO [g/h]	271.65	759.06	752.88	1052.15	1440.31	1641.49	471.36	472.12	204.34	88.55
NOx [g/h]	52.85	147.68	146.48	204.71	280.23	319.37	91.71	91.86	39.76	17.23
VOC [g/h]	62.96	175.92	174.49	243.85	333.81	380.43	109.24	109.42	47.36	20.52

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.56	0.00	25.56	25.56
l_p,int, Pedestrian LOS Score for Intersectio	2.548	0.000	2.474	2.211
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	692	692	434	560
d_b, Bicycle Delay [s]	15.28	15.28	21.89	18.51
l_b,int, Bicycle LOS Score for Intersection	2.188	2.741	2.718	2.058
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	115	314	447	38	380	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	24
Total Hourly Volume [veh/h]	115	314	447	27	380	55
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	87	124	9	120	15
Total Analysis Volume [veh/h]	128	349	497	34	481	61
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5	27	18	18	17	17
g / C, Green / Cycle	0.09	0.50	0.33	0.33	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.19	0.27	0.02	0.27	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	168	929	615	523	571	510
d1, Uniform Delay [s]	24.17	8.52	16.77	12.58	17.30	13.13
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.68	0.36	3.63	0.07	3.47	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.38	0.81	0.06	0.84	0.12
d, Delay for Lane Group [s/veh]	26.85	8.88	20.39	12.65	20.77	13.23
Lane Group LOS	C	A	C	B	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.46	1.64	4.78	0.22	5.44	0.49
50th-Percentile Queue Length [ft/ln]	36.60	41.06	119.60	5.61	135.99	12.13
95th-Percentile Queue Length [veh/ln]	2.64	2.96	8.37	0.40	9.26	0.87
95th-Percentile Queue Length [ft/ln]	65.88	73.92	209.27	10.10	231.61	21.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.85	8.88	20.39	12.65	20.77	13.23
Movement LOS	C	A	C	B	C	B
d_A, Approach Delay [s/veh]	13.70		19.90		19.92	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	18.00					
Intersection LOS	B					
Intersection V/C	0.779					

Emissions

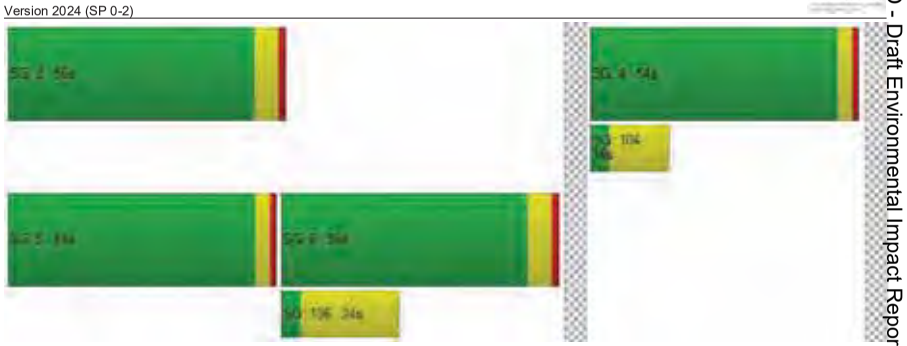
Vehicle Miles Traveled [mph]	15.79	43.06	287.03	19.64	112.97	14.33
Stops [stops/h]	96.59	108.36	315.60	14.81	358.86	32.01
Fuel consumption [US gal/h]	3.02	4.08	17.53	1.02	8.67	0.93
CO [g/h]	211.21	285.47	1225.09	71.26	605.81	65.07
NOx [g/h]	41.09	55.54	238.36	13.86	117.87	12.66
VOC [g/h]	48.95	66.16	283.93	16.51	140.40	15.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.87	0.00	19.87
l_p,int, Pedestrian LOS Score for Intersectio	2.548	0.000	2.192
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1833	1833	1833
d_b, Bicycle Delay [s]	0.19	0.19	0.19
l_b,int, Bicycle LOS Score for Intersection	2.347	2.454	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.077

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	380	0	25	501	0	0	0	0	0	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	380	0	25	501	0	0	0	0	0	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	103	0	6	136	0	0	0	0	0	0	12
Total Analysis Volume [veh/h]	0	413	0	25	545	0	0	0	0	0	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							Yes			Yes		
Storage Area [veh]	0			0			1			1		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	8.52	0.00	0.00	8.17	0.00	0.00	24.09	20.45	11.69	22.43	20.92	11.10
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.25	0.25	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.06	1.06	1.06	0.00	0.00	0.00	6.21	6.21	6.21
d_A, Approach Delay [s/veh]	0.00			0.36			18.74			11.10		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.72											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	28.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.278

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	311	16	94	407	0	0	0	0	54	0	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	311	16	94	407	0	0	0	0	54	0	69
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	84	4	25	109	0	0	0	0	15	0	19
Total Analysis Volume [veh/h]	0	334	17	101	438	0	0	0	0	58	0	74
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.11
d_M, Delay for Movement [s/veh]	8.21	0.00	0.00	8.25	0.00	0.00	25.41	20.96	10.82	28.58	27.13	16.49
Movement LOS	A	A	A	A	A	A	D	C	B	D	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	1.75	1.75	1.75
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.83	0.00	0.00	0.00	0.00	0.00	43.72	43.72	43.72
d_A, Approach Delay [s/veh]	0.00			1.55			19.07			21.80		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	3.63											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	2,479.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5.387

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	101	470	168	48	1	692	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	101	470	168	48	1	692	185
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	134	48	14	0	197	53
Total Analysis Volume [veh/h]	0	115	534	191	55	1	786	210
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	5.39	0.65	0.00	0.00	0.00	0.60	0.00
d_M, Delay for Movement [s/veh]	2479.69	2479.69	2315.45	0.00	0.00	19.45	9.30	0.00
Movement LOS	F	F	F	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	71.11	71.11	71.11	0.00	0.00	2.31	2.31	2.31
95th-Percentile Queue Length [ft/ln]	1777.74	1777.74	1777.74	0.00	0.00	57.79	57.79	57.79
d_A, Approach Delay [s/veh]	2344.55			0.00		7.35		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	808.11							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	30	195	59	0	25	319	22	16	23	19	211	16	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	195	59	0	25	319	22	16	23	19	211	16	45
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	59	18	0	8	96	7	5	7	6	64	5	14
Total Analysis Volume [veh/h]	36	235	71	0	32	384	27	19	28	23	254	19	57
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	592	603	506	555
Degree of Utilization, x	0.58	0.74	0.14	0.59

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.68	6.33	0.48	3.87
95th-Percentile Queue Length [ft]	91.97	158.21	11.94	96.71
Approach Delay [s/veh]	17.09	23.75	11.25	18.55
Approach LOS	C	C	B	C
Intersection Delay [s/veh]	19.64			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	6	80	0	143	48	2	109	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	80	0	143	48	2	109	190
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	24	0	43	14	1	32	57
Total Analysis Volume [veh/h]	7	95	0	170	57	2	130	226
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.00	0.00	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	14.84	9.81	9.37	0.00	0.00	10.24	7.98	0.00
Movement LOS	B	A	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.06	0.38	0.00	0.00	0.00	0.33	0.33	0.00
95th-Percentile Queue Length [ft/ln]	1.43	9.49	0.00	0.00	0.00	8.28	8.28	0.00
d_A, Approach Delay [s/veh]	10.16		0.00			2.96		
Approach LOS	B		A			A		
d_I, Intersection Delay [s/veh]	3.05							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	12	43	87	36	37	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	43	87	36	37	174
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	12	24	10	10	47
Total Analysis Volume [veh/h]	13	47	95	39	40	189
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.05	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	11.14	9.06	0.00	0.00	7.55	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.23	0.23	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	5.63	5.63	0.00	0.00	2.13	0.00
d_A, Approach Delay [s/veh]	9.51		0.00		1.32	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.06					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.127

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	174	0	19	125	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	174	0	19	125	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	0	5	34	0	1
Total Analysis Volume [veh/h]	189	0	21	136	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	746	746	695	770	770	771
Degree of Utilization, x	0.13	0.13	0.03	0.09	0.09	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.43	0.43	0.09	0.29	0.29	0.01
95th-Percentile Queue Length [ft]	10.82	10.82	2.33	7.25	7.25	0.29
Approach Delay [s/veh]	8.23		7.86			7.69
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.06					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	69.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	138	0	25	7	1	21	5	408	85	66	397	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	0	25	7	1	21	5	408	85	66	397	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	0	7	2	0	5	1	105	22	18	102	3
Total Analysis Volume [veh/h]	142	0	27	7	1	22	5	421	88	71	409	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.77	0.00	0.05	0.04	0.00	0.03	0.00	0.00	0.00	0.07	0.00	0.00
d_M, Delay for Movement [s/veh]	69.30	22.05	11.31	24.99	23.43	11.41	8.17	0.00	0.00	8.65	0.00	0.00
Movement LOS	F	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.08	0.14	0.14	0.25	0.25	0.25	0.01	0.00	0.00	0.22	0.00	0.00
95th-Percentile Queue Length [ft/ln]	127.10	3.54	3.54	6.20	6.20	6.20	0.33	0.00	0.00	5.40	0.00	0.00
d_A, Approach Delay [s/veh]	60.03			14.98			0.08			1.25		
Approach LOS	F			B			A			A		
d_I, Intersection Delay [s/veh]	9.34											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

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Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	238	5	239	5	5	5	5	520	71	14	144	468	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	72	0	0	0	0	0	21	0	0	0	0
Total Hourly Volume [veh/h]	238	5	167	5	5	5	5	520	50	14	144	468	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	63	1	44	1	1	1	1	138	13	4	38	124	1
Total Analysis Volume [veh/h]	253	5	178	5	5	5	5	553	53	14	153	498	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	19	19	1	1	1	65	65	13	78	78
g / C, Green / Cycle	0.16	0.16	0.01	0.01	0.01	0.54	0.54	0.11	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.11	0.00	0.01	0.00	0.16	0.16	0.09	0.13	0.13
s, saturation flow rate [veh/h]	1781	1596	1781	1718	1781	1870	1813	1781	1870	1863
c, Capacity [veh/h]	279	251	12	13	12	1016	985	195	1208	1203
d1, Uniform Delay [s]	49.73	48.11	59.37	59.46	59.37	14.98	14.99	52.52	8.70	8.70
k, delay calibration	0.14	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.27	1.52	21.73	31.68	21.99	0.77	0.79	4.19	0.39	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.73	0.42	0.79	0.42	0.30	0.30	0.86	0.21	0.21
d, Delay for Lane Group [s/veh]	62.99	49.62	81.09	91.14	81.36	15.75	15.79	56.71	9.09	9.09
Lane Group LOS	E	D	F	F	F	B	B	E	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.47	5.31	0.22	0.42	0.22	4.75	4.63	5.17	2.73	2.72
50th-Percentile Queue Length [ft/ln]	211.69	132.87	5.59	10.39	5.60	118.63	115.78	129.19	68.14	67.94
95th-Percentile Queue Length [veh/ln]	13.24	9.10	0.40	0.75	0.40	8.32	8.16	8.90	4.91	4.89
95th-Percentile Queue Length [ft/ln]	330.99	227.39	10.06	18.70	10.08	207.94	204.02	222.39	122.66	122.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.99	49.62	49.62	81.09	91.14	91.14	81.36	15.76	15.79	56.71	56.71	9.09	9.09
Movement LOS	E	D	D	F	F	F	F	B	B	E	E	A	A
d_A, Approach Delay [s/veh]	57.38			87.79			16.30			20.96			
Approach LOS	E			F			B			C			
d_I, Intersection Delay [s/veh]	29.06												
Intersection LOS	C												
Intersection V/C	0.452												

Emissions

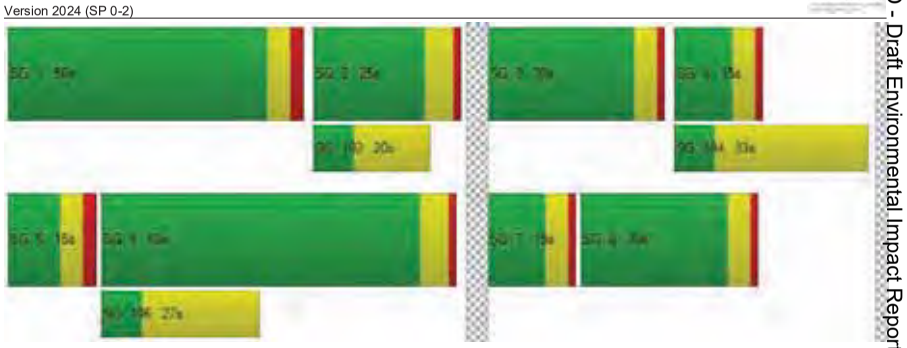
Vehicle Miles Traveled [mph]	97.48	70.51	0.23	0.46	4.21	258.37	251.59	41.68	62.87	62.67
Stops [stops/h]	254.03	159.45	6.71	12.47	6.72	142.36	138.94	155.02	81.77	81.53
Fuel consumption [US gal/h]	8.66	5.63	0.13	0.27	0.29	12.41	12.09	4.50	3.51	3.49
CO [g/h]	605.29	393.64	9.01	19.09	20.49	867.22	844.76	314.50	245.05	244.29
NOx [g/h]	117.77	76.59	1.75	3.71	3.99	168.73	164.36	61.19	47.68	47.53
VOC [g/h]	140.28	91.23	2.09	4.42	4.75	200.99	195.78	72.89	56.79	56.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.297	1.964	2.614	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.398	1.584	2.081	1.986
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	70.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	50	16	29	186	15	177	3	205	712	21	86	521	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	53	0	0	0	6	0	0	53
Total Hourly Volume [veh/h]	50	16	20	186	15	124	3	205	712	15	86	521	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	4	5	51	4	34	1	56	207	4	24	143	34
Total Analysis Volume [veh/h]	55	18	22	204	16	136	3	225	828	16	95	573	137
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	6	13	9	16	20	89	89	9	78	78
g / C, Green / Cycle	0.04	0.10	0.06	0.11	0.14	0.64	0.64	0.07	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.11	0.09	0.13	0.23	0.01	0.05	0.20	0.20
s, saturation flow rate [veh/h]	1781	1705	1781	1615	1781	3560	1589	1781	1870	1747
c, Capacity [veh/h]	71	163	108	180	250	2261	1010	117	1041	972
d1, Uniform Delay [s]	66.57	58.62	65.75	61.02	59.30	12.14	9.41	64.56	17.12	17.13
k, delay calibration	0.04	0.13	0.50	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	0.96	431.73	12.47	5.21	0.46	0.03	5.05	0.94	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.25	1.89	0.84	0.91	0.37	0.02	0.81	0.35	0.35
d, Delay for Lane Group [s/veh]	73.00	59.59	497.48	73.49	64.51	12.60	9.44	69.61	18.05	18.13
Lane Group LOS	E	E	F	E	E	B	A	E	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.08	1.37	16.84	5.94	8.35	6.23	0.19	3.52	6.82	6.40
50th-Percentile Queue Length [ft/ln]	52.07	34.17	421.00	148.48	208.63	155.83	4.76	88.04	170.45	160.07
95th-Percentile Queue Length [veh/ln]	3.75	2.46	27.32	9.94	13.08	10.33	0.34	6.34	11.10	10.55
95th-Percentile Queue Length [ft/ln]	93.73	61.50	682.94	248.40	327.07	258.19	8.57	158.46	277.51	263.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.00	59.59	59.59	497.48	73.49	73.49	64.51	64.51	12.60	9.44	69.61	18.08	18.13
Movement LOS	E	E	E	F	E	E	E	E	B	A	E	B	B
d_A, Approach Delay [s/veh]	67.35			316.45			23.59				24.17		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	70.36												
Intersection LOS	E												
Intersection V/C	0.522												

Emissions

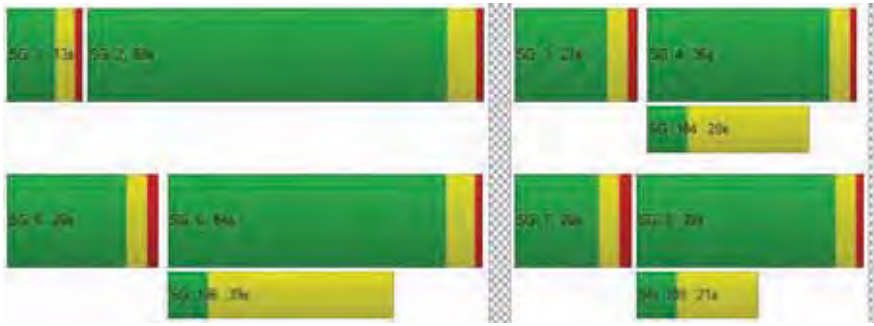
Vehicle Miles Traveled [mph]	2.75	2.00	9.48	7.07	23.82	86.51	1.67	33.26	128.41	120.20
Stops [stops/h]	53.56	35.14	433.03	152.72	214.59	320.57	4.90	90.55	175.32	164.65
Fuel consumption [US gal/h]	1.23	0.76	23.43	3.41	5.16	7.46	0.13	3.22	7.60	7.12
CO [g/h]	85.71	53.23	1637.77	238.19	360.60	521.17	8.85	224.75	531.40	498.00
NOx [g/h]	16.68	10.36	318.65	46.34	70.16	101.40	1.72	43.73	103.39	96.89
VOC [g/h]	19.86	12.34	379.57	55.20	83.57	120.79	2.05	52.09	123.16	115.42

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.051	2.310	2.790	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.731	2.234	2.263	2.267
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	54.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	57	61	268	230	100	36	33	574	121	234	562	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	80	0	0	11	0	0	36	0	0	47
Total Hourly Volume [veh/h]	57	61	188	230	100	25	33	574	85	234	562	111
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	16	48	59	26	6	9	148	22	60	145	29
Total Analysis Volume [veh/h]	59	63	194	237	103	26	34	592	88	241	579	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	121	121	121	121	121	121	121	121
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	22	22	19	19	3	45	18	59
g / C, Green / Cycle	0.18	0.18	0.16	0.16	0.03	0.37	0.15	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.13	0.07	0.02	0.37	0.14	0.38
s, saturation flow rate [veh/h]	1781	1650	1781	1806	1781	1828	1781	1817
c, Capacity [veh/h]	318	294	281	285	51	677	270	887
d1, Uniform Delay [s]	42.44	48.60	49.69	46.39	58.48	38.27	50.55	25.76
k, delay calibration	0.13	0.14	0.13	0.13	0.04	0.45	0.15	0.46
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	10.13	8.24	1.39	5.63	33.92	13.00	6.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.87	0.84	0.45	0.67	1.00	0.89	0.78
d, Delay for Lane Group [s/veh]	42.78	58.72	57.93	47.79	64.11	72.19	63.56	32.05
Lane Group LOS	D	E	E	D	E	F	E	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.55	8.38	7.61	3.65	1.11	26.06	8.14	17.63
50th-Percentile Queue Length [ft/ln]	38.63	209.54	190.36	91.32	27.85	651.58	203.54	440.73
95th-Percentile Queue Length [veh/ln]	2.78	13.13	12.14	6.58	2.01	34.55	12.82	24.52
95th-Percentile Queue Length [ft/ln]	69.53	328.24	303.50	164.38	50.13	863.77	320.53	612.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.78	58.72	58.72	57.93	47.79	47.79	64.11	72.19	72.19	63.56	32.05	32.05
Movement LOS	D	E	E	E	D	D	E	E	E	E	C	C
d_A, Approach Delay [s/veh]	55.75			54.35			71.81			40.18		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	54.21											
Intersection LOS	D											
Intersection V/C	0.917											

Emissions

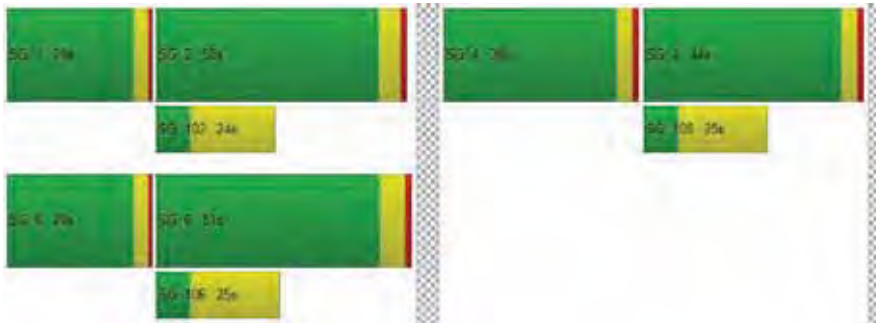
Vehicle Miles Traveled [mph]	101.52	442.21	48.05	26.15	11.91	238.11	108.74	312.70
Stops [stops/h]	45.85	248.74	225.97	108.40	33.06	773.46	241.61	523.17
Fuel consumption [US gal/h]	4.95	22.65	6.02	2.93	1.12	24.06	8.93	20.28
CO [g/h]	345.73	1583.18	420.79	204.80	78.03	1682.07	624.08	1417.74
NOx [g/h]	67.27	308.03	81.87	39.85	15.18	327.27	121.42	275.84
VOC [g/h]	80.13	366.92	97.52	47.46	18.08	389.84	144.64	328.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	50.15	50.15	50.15	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.349	2.177	2.469	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	574	656	737	742
d_b, Bicycle Delay [s]	30.85	27.38	24.19	24.00
l_b,int, Bicycle LOS Score for Intersection	2.213	2.182	2.797	3.178
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	1064	0	0	620	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1064	0	0	620	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	277	0	0	161	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	1108	0	0	646	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	64	64	64	64	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	19	19	1	23	23	0	22	22
g / C, Green / Cycle	0.00	0.00	0.30	0.30	0.01	0.36	0.36	0.00	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.30	0.30	0.00	0.18	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	8	7	528	471	23	669	669	0	1228	548
d1, Uniform Delay [s]	0.00	32.02	16.93	21.82	31.58	18.89	18.89	0.00	16.89	13.85
k, delay calibration	0.11	0.11	0.11	0.31	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	41.33	0.18	16.55	12.38	2.70	2.70	0.00	0.35	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.45	0.19	0.91	0.43	0.83	0.83	0.00	0.53	0.01
d, Delay for Lane Group [s/veh]	0.00	73.35	17.10	38.37	43.96	21.59	21.59	0.00	17.24	13.86
Lane Group LOS	A	E	B	D	D	C	C	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.12	1.09	7.84	0.23	7.27	7.27	0.00	3.54	0.03
50th-Percentile Queue Length [ft/ln]	0.00	3.03	27.13	196.03	5.69	181.71	181.71	0.00	88.54	0.68
95th-Percentile Queue Length [veh/ln]	0.00	0.22	1.95	12.43	0.41	11.69	11.69	0.00	6.38	0.05
95th-Percentile Queue Length [ft/ln]	0.00	5.45	48.84	310.84	10.24	292.24	292.24	0.00	159.38	1.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	73.35	17.10	17.10	38.37	43.96	21.59	21.59	0.00	17.24	13.86
Movement LOS	A	A	E	B	B	D	D	C	C	A	B	B
d_A, Approach Delay [s/veh]	73.35			34.24			21.79			17.23		
Approach LOS	E			C			C			B		
d_I, Intersection Delay [s/veh]	23.44											
Intersection LOS	C											
Intersection V/C	0.755											

Emissions

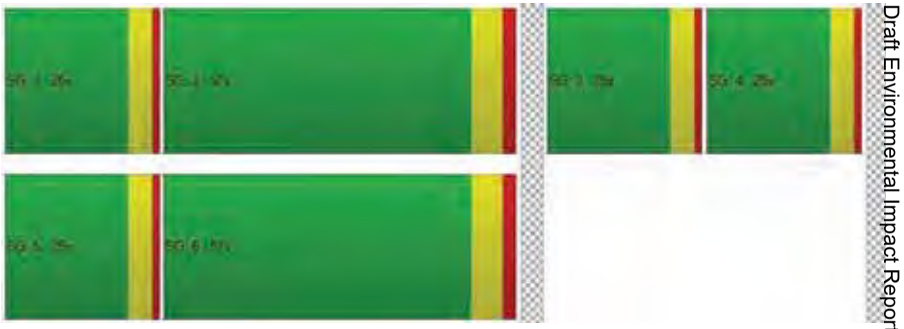
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	249.98	249.98	0.00	112.69	0.52
Stops [stops/h]	0.00	6.78	60.75	438.89	12.73	406.83	406.83	0.00	396.48	1.52
Fuel consumption [US gal/h]	0.00	0.09	2.71	14.12	0.35	14.97	14.97	0.00	9.10	0.04
CO [g/h]	0.00	6.18	189.12	987.31	24.15	1046.56	1046.56	0.00	635.85	2.68
NOx [g/h]	0.00	1.20	36.80	192.09	4.70	203.62	203.62	0.00	123.71	0.52
VOC [g/h]	0.00	1.43	43.83	228.82	5.60	242.55	242.55	0.00	147.36	0.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	622	622	1555	1555
d_b, Bicycle Delay [s]	15.27	15.27	1.59	1.59
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	2.482	2.095
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	623	523	587	200	511	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	623	523	587	200	511	44
Peak Hour Factor	0.8300	0.9100	0.9100	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	188	144	161	60	154	13
Total Analysis Volume [veh/h]	751	575	645	241	616	53
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	21	61	36	36	16	16	16
g / C, Green / Cycle	0.24	0.68	0.40	0.40	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.22	0.16	0.18	0.15	0.17	0.17	0.03
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	817	2421	1414	631	321	321	286
d1, Uniform Delay [s]	33.54	5.50	19.97	19.27	36.59	36.59	31.30
k, delay calibration	0.04	0.50	0.50	0.50	0.30	0.30	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.92	0.23	1.06	1.75	30.10	30.10	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.24	0.46	0.38	0.96	0.96	0.19
d, Delay for Lane Group [s/veh]	35.46	5.73	21.03	21.02	66.69	66.69	31.42
Lane Group LOS	D	A	C	C	E	E	C
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.99	1.83	5.01	3.77	9.24	9.24	0.97
50th-Percentile Queue Length [ft/ln]	199.87	45.80	125.19	94.20	231.02	231.02	24.37
95th-Percentile Queue Length [veh/ln]	12.63	3.30	8.68	6.78	14.23	14.23	1.75
95th-Percentile Queue Length [ft/ln]	315.80	82.43	216.94	169.56	355.66	355.66	43.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.46	5.73	21.03	21.02	66.69	31.42
Movement LOS	D	A	C	C	E	C
d_A, Approach Delay [s/veh]	22.57		21.03		63.90	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	31.69					
Intersection LOS	C					
Intersection V/C	0.659					

Emissions

Vehicle Miles Traveled [mph]	131.01	100.30	114.30	42.71	18.65	18.65	3.21
Stops [stops/h]	639.59	146.55	400.61	150.72	369.64	369.64	39.00
Fuel consumption [US gal/h]	14.35	5.61	9.68	3.62	6.99	6.99	0.69
CO [g/h]	1002.80	392.08	676.57	253.17	488.57	488.57	47.98
NOx [g/h]	195.11	76.28	131.64	49.26	95.06	95.06	9.34
VOC [g/h]	232.41	90.87	156.80	58.67	113.23	113.23	11.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.654	2.291	2.683
Bicycle LOS	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

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TKEAR

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	1	152	881	0	0	381	207	405	1	198	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	1	152	881	0	0	381	160	405	1	168	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	279	0	0	121	51	128	0	53	0	0	0
Total Analysis Volume [veh/h]	1	192	1115	0	0	482	203	513	1	213	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	12	62	47	47	15	15	15	
g / C, Green / Cycle	0.13	0.69	0.52	0.52	0.17	0.17	0.17	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.31	0.14	0.13	0.14	0.14	0.13	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	231	2470	1842	822	296	296	264	
d1, Uniform Delay [s]	38.24	6.15	12.12	12.01	36.55	36.55	36.12	
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.07	0.60	0.35	0.72	3.03	3.03	2.20	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.45	0.26	0.25	0.87	0.87	0.81	
d, Delay for Lane Group [s/veh]	41.30	6.75	12.47	12.73	39.59	39.58	38.32	
Lane Group LOS	D	A	B	B	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.28	4.07	2.64	2.30	5.64	5.65	4.58	
50th-Percentile Queue Length [ft/ln]	107.12	101.85	66.06	57.40	141.12	141.14	114.52	
95th-Percentile Queue Length [veh/ln]	7.68	7.33	4.76	4.13	9.54	9.54	8.09	
95th-Percentile Queue Length [ft/ln]	191.99	183.33	118.91	103.31	238.53	238.55	202.27	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.30	41.30	6.75	0.00	0.00	12.47	12.73	39.58	39.58	38.32	0.00	0.00	0.00
Movement LOS	D	D	A			B	B	D	D	D			
d_A, Approach Delay [s/veh]	11.84				12.54			39.21			0.00		
Approach LOS	B				B			D			A		
d_I, Intersection Delay [s/veh]	19.34												
Intersection LOS	B												
Intersection V/C	0.528												

Emissions

Vehicle Miles Traveled [mph]	34.20	197.59	65.91	27.76	8.90	8.90	7.38
Stops [stops/h]	171.39	325.93	211.39	91.83	225.79	225.82	183.22
Fuel consumption [US gal/h]	3.98	11.47	5.10	2.18	3.68	3.68	2.98
CO [g/h]	277.99	801.43	356.76	152.10	257.51	257.54	208.09
NOx [g/h]	54.09	155.93	69.41	29.59	50.10	50.11	40.49
VOC [g/h]	64.43	185.74	82.68	35.25	59.68	59.69	48.23

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.638	2.164	2.809	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	380	501	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	380	501	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	95	125	0	0	0
Total Analysis Volume [veh/h]	0	380	501	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.32
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		11.32	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.071

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	300	441	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	300	441	20	27	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	75	110	5	7	0
Total Analysis Volume [veh/h]	0	300	441	20	27	0
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	8.27	0.00	0.00	0.00	15.24	11.65
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.73	5.73
d_A, Approach Delay [s/veh]	0.00		0.00		15.24	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.52					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.133

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	66	43	288	31	10	32	2	44	13	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	185	66	43	288	31	10	32	2	44	13	79
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	17	11	74	8	3	8	1	11	3	20
Total Analysis Volume [veh/h]	0	191	68	44	297	32	10	33	2	45	13	81
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.09	0.00	0.13	0.03	0.10
d_M, Delay for Movement [s/veh]	7.93	0.00	0.00	7.81	0.00	0.00	18.12	16.23	11.38	18.19	17.08	11.93
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.08	0.08	0.08	0.42	0.42	0.42	1.07	1.07	1.07
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.92	1.92	1.92	10.61	10.61	10.61	26.78	26.78	26.78
d_A, Approach Delay [s/veh]	0.00			0.92			16.43			14.44		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	3.79											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	380	526	49	0
2	369	510	48	0
3	361	500	47	0
4	338	468	44	0
5	300	416	39	0
6	296	410	38	0
7	293	405	38	0
8	266	368	34	0
9	262	363	34	0
10	258	358	33	0
11	224	310	29	0
12	209	289	27	0
13	205	284	26	0
14	152	210	20	0
15	152	210	20	0
16	106	147	14	0
17	61	84	8	0
18	61	84	8	0
19	34	47	4	0
20	19	26	2	0
21	11	16	1	0
22	4	5	0	0
23	4	5	0	0
24	4	5	0	0

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	906	1	49	No	No	No	No	No	No	No	Yes	No	No
2	1	879	1	48	No	No	No	No	No	No	No	Yes	No	No
3	1	861	1	47	No	No	No	No	No	No	No	Yes	No	No
4	1	806	1	44	No	No	No	No	No	No	No	Yes	No	No
5	1	716	1	39	No	No	No	No	No	No	No	No	No	No
6	1	706	1	38	No	No	No	No	No	No	No	No	No	No
7	1	698	1	38	No	No	No	No	No	No	No	No	No	No
8	1	634	1	34	No	No	No	No	No	No	No	No	No	No
9	1	625	1	34	No	No	No	No	No	No	No	No	No	No
10	1	616	1	33	No	No	No	No	No	No	No	No	No	No
11	1	534	1	29	No	No	No	No	No	No	No	No	No	No
12	1	498	1	27	No	No	No	No	No	No	No	No	No	No
13	1	489	1	26	No	No	No	No	No	No	No	No	No	No
14	1	362	1	20	No	No	No	No	No	No	No	No	No	No
15	1	362	1	20	No	No	No	No	No	No	No	No	No	No
16	1	253	1	14	No	No	No	No	No	No	No	No	No	No
17	1	145	1	8	No	No	No	No	No	No	No	No	No	No
18	1	145	1	8	No	No	No	No	No	No	No	No	No	No
19	1	81	1	4	No	No	No	No	No	No	No	No	No	No
20	1	45	1	2	No	No	No	No	No	No	No	No	No	No
21	1	27	1	1	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.1	18.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	49	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	955	955
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	56%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	327	501	123	0
2	317	486	119	0
3	311	476	117	0
4	291	446	109	0
5	258	396	97	0
6	255	391	96	0
7	252	386	95	0
8	229	351	86	0
9	226	346	85	0
10	222	341	84	0
11	193	296	73	0
12	180	276	68	0
13	177	271	66	0
14	131	200	49	0
15	131	200	49	0
16	92	140	34	0
17	52	80	20	0
18	52	80	20	0
19	29	45	11	0
20	16	25	6	0
21	10	15	4	0
22	3	5	1	0
23	3	5	1	0
24	3	5	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	828	1	123	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	2	803	1	119	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	2	787	1	117	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	2	737	1	109	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	2	654	1	97	No	No	No	Yes	No	No	Yes	Yes	No	No
6	2	646	1	96	No	No	No	Yes	No	No	Yes	Yes	No	No
7	2	638	1	95	No	No	No	Yes	No	No	Yes	Yes	No	No
8	2	580	1	86	No	No	No	Yes	No	No	No	Yes	No	No
9	2	572	1	85	No	No	No	Yes	No	No	No	Yes	No	No
10	2	563	1	84	No	No	No	Yes	No	No	No	Yes	No	No
11	2	489	1	73	No	No	No	No	No	No	No	No	No	No
12	2	456	1	68	No	No	No	No	No	No	No	No	No	No
13	2	448	1	66	No	No	No	No	No	No	No	No	No	No
14	2	331	1	49	No	No	No	No	No	No	No	No	No	No
15	2	331	1	49	No	No	No	No	No	No	No	No	No	No
16	2	232	1	34	No	No	No	No	No	No	No	No	No	No
17	2	132	1	20	No	No	No	No	No	No	No	No	No	No
18	2	132	1	20	No	No	No	No	No	No	No	No	No	No
19	2	74	1	11	No	No	No	No	No	No	No	No	No	No
20	2	41	1	6	No	No	No	No	No	No	No	No	No	No
21	2	25	1	4	No	No	No	No	No	No	No	No	No	No
22	2	8	1	1	No	No	No	No	No	No	No	No	No	No
23	2	8	1	1	No	No	No	No	No	No	No	No	No	No
24	2	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	1	4	10	0	4	7	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	21.8	19.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:44	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	123	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	951	951
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	878	216	571
2	852	210	554
3	834	205	542
4	781	192	508
5	694	171	451
6	685	168	445
7	676	166	440
8	615	151	400
9	606	149	394
10	597	147	388
11	518	127	337
12	483	119	314
13	474	117	308
14	351	86	228
15	351	86	228
16	246	60	160
17	140	35	91
18	140	35	91
19	79	19	51
20	44	11	29
21	26	6	17
22	9	2	6
23	9	2	6
24	9	2	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1094	1	571	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1062	1	554	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1039	1	542	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	973	1	508	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	865	1	451	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	853	1	445	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	842	1	440	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	766	1	400	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	755	1	394	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	744	1	388	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
11	1	645	1	337	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	602	1	314	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	591	1	308	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
14	1	437	1	228	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	437	1	228	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	306	1	160	No	No	No	Yes	No	No	No	No	No	No
17	1	175	1	91	No	No	No	No	No	No	No	No	No	No
18	1	175	1	91	No	No	No	No	No	No	No	No	No	No
19	1	98	1	51	No	No	No	No	No	No	No	No	No	No
20	1	55	1	29	No	No	No	No	No	No	No	No	No	No
21	1	32	1	17	No	No	No	No	No	No	No	No	No	No
22	1	11	1	6	No	No	No	No	No	No	No	No	No	No
23	1	11	1	6	No	No	No	No	No	No	No	No	No	No
24	1	11	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	9	12	13	15	13	9

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	2344.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	371:52
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	571
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1665
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	284	366	272	58
2	275	355	264	56
3	270	348	258	55
4	253	326	242	52
5	224	289	215	46
6	222	285	212	45
7	219	282	209	45
8	199	256	190	41
9	196	253	188	40
10	193	249	185	39
11	168	216	160	34
12	156	201	150	32
13	153	198	147	31
14	114	146	109	23
15	114	146	109	23
16	80	102	76	16
17	45	59	44	9
18	45	59	44	9
19	26	33	24	5
20	14	18	14	3
21	9	11	8	2
22	3	4	3	1
23	3	4	3	1
24	3	4	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	650	1	272	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	630	1	264	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	618	1	258	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	579	1	242	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	513	1	215	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	507	1	212	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	501	1	209	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	455	1	190	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	449	1	188	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	442	1	185	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	384	1	160	No	No	Yes	Yes	No	No	No	No	No	No
12	1	357	1	150	No	No	Yes	Yes	No	No	No	No	No	No
13	1	351	1	147	No	No	Yes	Yes	No	No	No	No	No	No
14	1	260	1	109	No	No	No	No	No	No	No	No	No	No
15	1	260	1	109	No	No	No	No	No	No	No	No	No	No
16	1	182	1	76	No	No	No	No	No	No	No	No	No	No
17	1	104	1	44	No	No	No	No	No	No	No	No	No	No
18	1	104	1	44	No	No	No	No	No	No	No	No	No	No
19	1	59	1	24	No	No	No	No	No	No	No	No	No	No
20	1	32	1	14	No	No	No	No	No	No	No	No	No	No
21	1	20	1	8	No	No	No	No	No	No	No	No	No	No
22	1	7	1	3	No	No	No	No	No	No	No	No	No	No
23	1	7	1	3	No	No	No	No	No	No	No	No	No	No
24	1	7	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					7	10	13	13	0	3	4	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.6	11.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:24	0:10
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	272	58
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	980	980
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	301	191	86
2	292	185	83
3	286	181	82
4	268	170	77
5	238	151	68
6	235	149	67
7	232	147	66
8	211	134	60
9	208	132	59
10	205	130	58
11	178	113	51
12	166	105	47
13	163	103	46
14	120	76	34
15	120	76	34
16	84	53	24
17	48	31	14
18	48	31	14
19	27	17	8
20	15	10	4
21	9	6	3
22	3	2	1
23	3	2	1
24	3	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	492	2	86	No	No	No	No	No	No	No	No	No	No
2	2	477	2	83	No	No	No	No	No	No	No	No	No	No
3	2	467	2	82	No	No	No	No	No	No	No	No	No	No
4	2	438	2	77	No	No	No	No	No	No	No	No	No	No
5	2	389	2	68	No	No	No	No	No	No	No	No	No	No
6	2	384	2	67	No	No	No	No	No	No	No	No	No	No
7	2	379	2	66	No	No	No	No	No	No	No	No	No	No
8	2	345	2	60	No	No	No	No	No	No	No	No	No	No
9	2	340	2	59	No	No	No	No	No	No	No	No	No	No
10	2	335	2	58	No	No	No	No	No	No	No	No	No	No
11	2	291	2	51	No	No	No	No	No	No	No	No	No	No
12	2	271	2	47	No	No	No	No	No	No	No	No	No	No
13	2	266	2	46	No	No	No	No	No	No	No	No	No	No
14	2	196	2	34	No	No	No	No	No	No	No	No	No	No
15	2	196	2	34	No	No	No	No	No	No	No	No	No	No
16	2	137	2	24	No	No	No	No	No	No	No	No	No	No
17	2	79	2	14	No	No	No	No	No	No	No	No	No	No
18	2	79	2	14	No	No	No	No	No	No	No	No	No	No
19	2	44	2	8	No	No	No	No	No	No	No	No	No	No
20	2	25	2	4	No	No	No	No	No	No	No	No	No	No
21	2	15	2	3	No	No	No	No	No	No	No	No	No	No
22	2	5	2	1	No	No	No	No	No	No	No	No	No	No
23	2	5	2	1	No	No	No	No	No	No	No	No	No	No
24	2	5	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.2
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	86
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	578
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	211	123	55
2	205	119	53
3	200	117	52
4	188	109	49
5	167	97	43
6	165	96	43
7	162	95	42
8	148	86	39
9	146	85	38
10	143	84	37
11	124	73	32
12	116	68	30
13	114	66	30
14	84	49	22
15	84	49	22
16	59	34	15
17	34	20	9
18	34	20	9
19	19	11	5
20	11	6	3
21	6	4	2
22	2	1	1
23	2	1	1
24	2	1	1

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	334	1	55	No	No	No	No	No	No	No	No	No	No
2	2	324	1	53	No	No	No	No	No	No	No	No	No	No
3	2	317	1	52	No	No	No	No	No	No	No	No	No	No
4	2	297	1	49	No	No	No	No	No	No	No	No	No	No
5	2	264	1	43	No	No	No	No	No	No	No	No	No	No
6	2	261	1	43	No	No	No	No	No	No	No	No	No	No
7	2	257	1	42	No	No	No	No	No	No	No	No	No	No
8	2	234	1	39	No	No	No	No	No	No	No	No	No	No
9	2	231	1	38	No	No	No	No	No	No	No	No	No	No
10	2	227	1	37	No	No	No	No	No	No	No	No	No	No
11	2	197	1	32	No	No	No	No	No	No	No	No	No	No
12	2	184	1	30	No	No	No	No	No	No	No	No	No	No
13	2	180	1	30	No	No	No	No	No	No	No	No	No	No
14	2	133	1	22	No	No	No	No	No	No	No	No	No	No
15	2	133	1	22	No	No	No	No	No	No	No	No	No	No
16	2	93	1	15	No	No	No	No	No	No	No	No	No	No
17	2	54	1	9	No	No	No	No	No	No	No	No	No	No
18	2	54	1	9	No	No	No	No	No	No	No	No	No	No
19	2	30	1	5	No	No	No	No	No	No	No	No	No	No
20	2	17	1	3	No	No	No	No	No	No	No	No	No	No
21	2	10	1	2	No	No	No	No	No	No	No	No	No	No
22	2	3	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	55
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	389
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	174	144	3
2	169	140	3
3	165	137	3
4	155	128	3
5	137	114	2
6	136	112	2
7	134	111	2
8	122	101	2
9	120	99	2
10	118	98	2
11	103	85	2
12	96	79	2
13	94	78	2
14	70	58	1
15	70	58	1
16	49	40	1
17	28	23	0
18	28	23	0
19	16	13	0
20	9	7	0
21	5	4	0
22	2	1	0
23	2	1	0
24	2	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	318	1	3	No	No	No	No	No	No	No	No	No	No
2	3	309	1	3	No	No	No	No	No	No	No	No	No	No
3	3	302	1	3	No	No	No	No	No	No	No	No	No	No
4	3	283	1	3	No	No	No	No	No	No	No	No	No	No
5	3	251	1	2	No	No	No	No	No	No	No	No	No	No
6	3	248	1	2	No	No	No	No	No	No	No	No	No	No
7	3	245	1	2	No	No	No	No	No	No	No	No	No	No
8	3	223	1	2	No	No	No	No	No	No	No	No	No	No
9	3	219	1	2	No	No	No	No	No	No	No	No	No	No
10	3	216	1	2	No	No	No	No	No	No	No	No	No	No
11	3	188	1	2	No	No	No	No	No	No	No	No	No	No
12	3	175	1	2	No	No	No	No	No	No	No	No	No	No
13	3	172	1	2	No	No	No	No	No	No	No	No	No	No
14	3	128	1	1	No	No	No	No	No	No	No	No	No	No
15	3	128	1	1	No	No	No	No	No	No	No	No	No	No
16	3	89	1	1	No	No	No	No	No	No	No	No	No	No
17	3	51	1	0	No	No	No	No	No	No	No	No	No	No
18	3	51	1	0	No	No	No	No	No	No	No	No	No	No
19	3	29	1	0	No	No	No	No	No	No	No	No	No	No
20	3	16	1	0	No	No	No	No	No	No	No	No	No	No
21	3	9	1	0	No	No	No	No	No	No	No	No	No	No
22	3	3	1	0	No	No	No	No	No	No	No	No	No	No
23	3	3	1	0	No	No	No	No	No	No	No	No	No	No
24	3	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	321
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	474	498	163	29
2	460	483	158	28
3	450	473	155	28
4	422	443	145	26
5	374	393	129	23
6	370	388	127	23
7	365	383	126	22
8	332	349	114	20
9	327	344	112	20
10	322	339	111	20
11	280	294	96	17
12	261	274	90	16
13	256	269	88	16
14	190	199	65	12
15	190	199	65	12
16	133	139	46	8
17	76	80	26	5
18	76	80	26	5
19	43	45	15	3
20	24	25	8	1
21	14	15	5	1
22	5	5	2	0
23	5	5	2	0
24	5	5	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	972	2	163	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2	2	943	2	158	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
3	2	923	2	155	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
4	2	865	2	145	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
5	2	767	2	129	No	No	No	Yes	No	Yes	Yes	Yes	No	No
6	2	758	2	127	No	No	No	Yes	No	Yes	Yes	Yes	No	No
7	2	748	2	126	No	No	No	Yes	No	Yes	Yes	Yes	No	No
8	2	681	2	114	No	No	No	Yes	No	No	Yes	Yes	No	No
9	2	671	2	112	No	No	No	Yes	No	No	Yes	Yes	No	No
10	2	661	2	111	No	No	No	No	No	No	Yes	Yes	No	No
11	2	574	2	96	No	No	No	No	No	No	No	Yes	No	No
12	2	535	2	90	No	No	No	No	No	No	No	Yes	No	No
13	2	525	2	88	No	No	No	No	No	No	No	Yes	No	No
14	2	389	2	65	No	No	No	No	No	No	No	No	No	No
15	2	389	2	65	No	No	No	No	No	No	No	No	No	No
16	2	272	2	46	No	No	No	No	No	No	No	No	No	No
17	2	156	2	26	No	No	No	No	No	No	No	No	No	No
18	2	156	2	26	No	No	No	No	No	No	No	No	No	No
19	2	88	2	15	No	No	No	No	No	No	No	No	No	No
20	2	49	2	8	No	No	No	No	No	No	No	No	No	No
21	2	29	2	5	No	No	No	No	No	No	No	No	No	No
22	2	10	2	2	No	No	No	No	No	No	No	No	No	No
23	2	10	2	2	No	No	No	No	No	No	No	No	No	No
24	2	10	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	1	4	9	3	7	10	13	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	60	15
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:43	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	163	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1164	1164
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	380	501	0
2	369	486	0
3	361	476	0
4	338	446	0
5	300	396	0
6	296	391	0
7	293	386	0
8	266	351	0
9	262	346	0
10	258	341	0
11	224	296	0
12	209	276	0
13	205	271	0
14	152	200	0
15	152	200	0
16	106	140	0
17	61	80	0
18	61	80	0
19	34	45	0
20	19	25	0
21	11	15	0
22	4	5	0
23	4	5	0
24	4	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	881	1	0	No	No	No	No	No	No	No	No	No	No
2	1	855	1	0	No	No	No	No	No	No	No	No	No	No
3	1	837	1	0	No	No	No	No	No	No	No	No	No	No
4	1	784	1	0	No	No	No	No	No	No	No	No	No	No
5	1	696	1	0	No	No	No	No	No	No	No	No	No	No
6	1	687	1	0	No	No	No	No	No	No	No	No	No	No
7	1	679	1	0	No	No	No	No	No	No	No	No	No	No
8	1	617	1	0	No	No	No	No	No	No	No	No	No	No
9	1	608	1	0	No	No	No	No	No	No	No	No	No	No
10	1	599	1	0	No	No	No	No	No	No	No	No	No	No
11	1	520	1	0	No	No	No	No	No	No	No	No	No	No
12	1	485	1	0	No	No	No	No	No	No	No	No	No	No
13	1	476	1	0	No	No	No	No	No	No	No	No	No	No
14	1	352	1	0	No	No	No	No	No	No	No	No	No	No
15	1	352	1	0	No	No	No	No	No	No	No	No	No	No
16	1	246	1	0	No	No	No	No	No	No	No	No	No	No
17	1	141	1	0	No	No	No	No	No	No	No	No	No	No
18	1	141	1	0	No	No	No	No	No	No	No	No	No	No
19	1	79	1	0	No	No	No	No	No	No	No	No	No	No
20	1	44	1	0	No	No	No	No	No	No	No	No	No	No
21	1	26	1	0	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	881
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	300	461	27
2	291	447	26
3	285	438	26
4	267	410	24
5	237	364	21
6	234	360	21
7	231	355	21
8	210	323	19
9	207	318	19
10	204	313	18
11	177	272	16
12	165	254	15
13	162	249	15
14	120	184	11
15	120	184	11
16	84	129	8
17	48	74	4
18	48	74	4
19	27	41	2
20	15	23	1
21	9	14	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	761	1	27	No	No	No	No	No	No	No	No	No	No
2	1	738	1	26	No	No	No	No	No	No	No	No	No	No
3	1	723	1	26	No	No	No	No	No	No	No	No	No	No
4	1	677	1	24	No	No	No	No	No	No	No	No	No	No
5	1	601	1	21	No	No	No	No	No	No	No	No	No	No
6	1	594	1	21	No	No	No	No	No	No	No	No	No	No
7	1	586	1	21	No	No	No	No	No	No	No	No	No	No
8	1	533	1	19	No	No	No	No	No	No	No	No	No	No
9	1	525	1	19	No	No	No	No	No	No	No	No	No	No
10	1	517	1	18	No	No	No	No	No	No	No	No	No	No
11	1	449	1	16	No	No	No	No	No	No	No	No	No	No
12	1	419	1	15	No	No	No	No	No	No	No	No	No	No
13	1	411	1	15	No	No	No	No	No	No	No	No	No	No
14	1	304	1	11	No	No	No	No	No	No	No	No	No	No
15	1	304	1	11	No	No	No	No	No	No	No	No	No	No
16	1	213	1	8	No	No	No	No	No	No	No	No	No	No
17	1	122	1	4	No	No	No	No	No	No	No	No	No	No
18	1	122	1	4	No	No	No	No	No	No	No	No	No	No
19	1	68	1	2	No	No	No	No	No	No	No	No	No	No
20	1	38	1	1	No	No	No	No	No	No	No	No	No	No
21	1	23	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	27
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	788
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	56%

Warrant Analysis Traffic Volumes

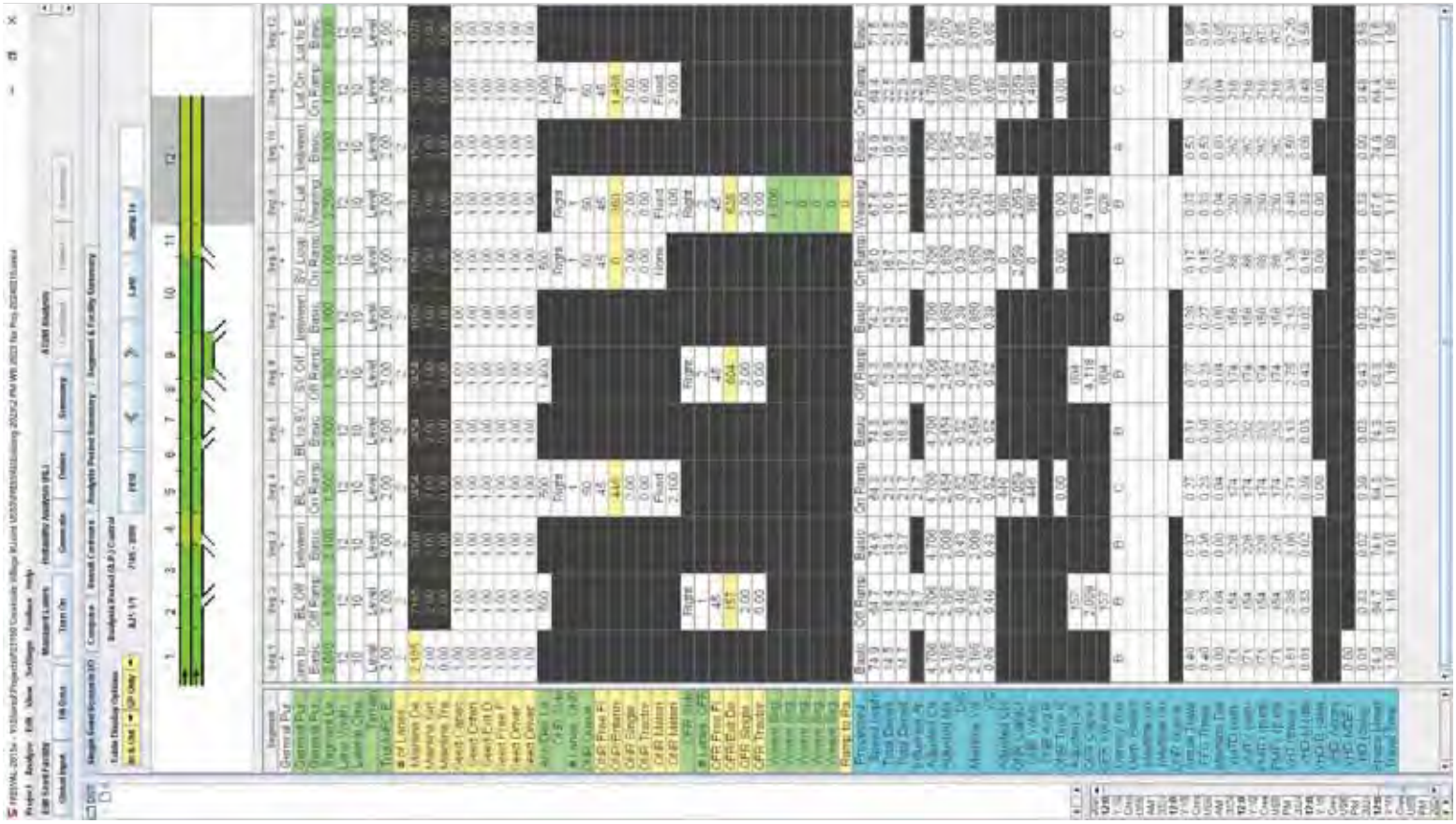
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	251	362	136	44
2	243	351	132	43
3	238	344	129	42
4	223	322	121	39
5	198	286	107	35
6	196	282	106	34
7	193	279	105	34
8	176	253	95	31
9	173	250	94	30
10	171	246	92	30
11	148	214	80	26
12	138	199	75	24
13	136	195	73	24
14	100	145	54	18
15	100	145	54	18
16	70	101	38	12
17	40	58	22	7
18	40	58	22	7
19	23	33	12	4
20	13	18	7	2
21	8	11	4	1
22	3	4	1	0
23	3	4	1	0
24	3	4	1	0

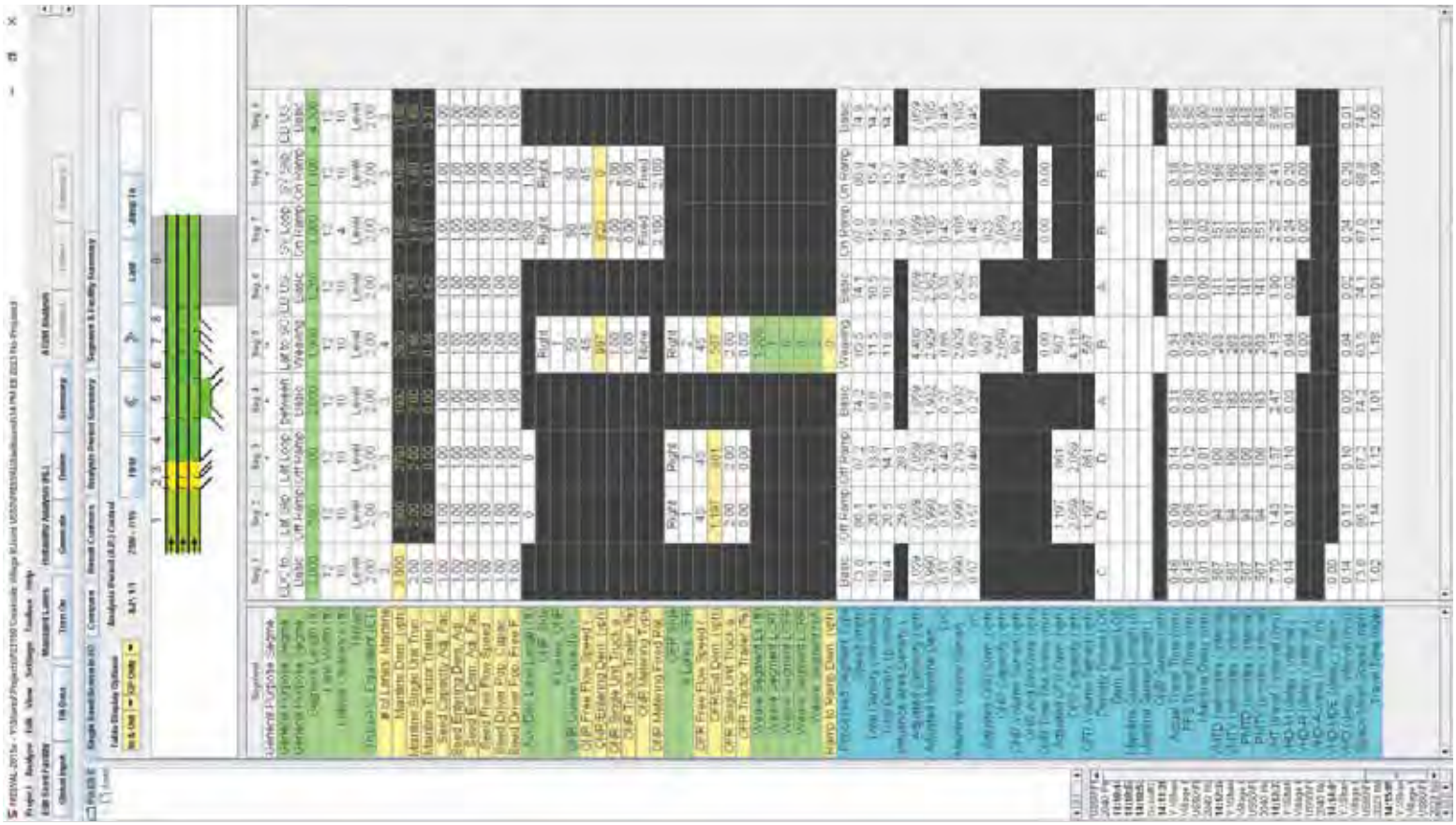
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	613	1	136	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	594	1	132	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	1	582	1	129	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	545	1	121	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	484	1	107	No	No	Yes	Yes	No	No	No	Yes	No	No
6	1	478	1	106	No	No	Yes	Yes	No	No	No	Yes	No	No
7	1	472	1	105	No	No	Yes	Yes	No	No	No	Yes	No	No
8	1	429	1	95	No	No	No	Yes	No	No	No	Yes	No	No
9	1	423	1	94	No	No	No	Yes	No	No	No	Yes	No	No
10	1	417	1	92	No	No	No	Yes	No	No	No	No	No	No
11	1	362	1	80	No	No	No	No	No	No	No	No	No	No
12	1	337	1	75	No	No	No	No	No	No	No	No	No	No
13	1	331	1	73	No	No	No	No	No	No	No	No	No	No
14	1	245	1	54	No	No	No	No	No	No	No	No	No	No
15	1	245	1	54	No	No	No	No	No	No	No	No	No	No
16	1	171	1	38	No	No	No	No	No	No	No	No	No	No
17	1	98	1	22	No	No	No	No	No	No	No	No	No	No
18	1	98	1	22	No	No	No	No	No	No	No	No	No	No
19	1	56	1	12	No	No	No	No	No	No	No	No	No	No
20	1	31	1	7	No	No	No	No	No	No	No	No	No	No
21	1	19	1	4	No	No	No	No	No	No	No	No	No	No
22	1	7	1	1	No	No	No	No	No	No	No	No	No	No
23	1	7	1	1	No	No	No	No	No	No	No	No	No	No
24	1	7	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	1	4	9	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.4	16.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:32	0:12
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	136	44
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	793	793
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	





Existing AM plus Project

Vistro File: C:\...\AM 918 DU 20240213.vistro
Report File: C:\...\3 2023 AM plus Proj.pdf

Scenario 3 2023 AM, + Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.057	116.7	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.374	155.9	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.206	113.3	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	NB Thru	1.121	36.7	D
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	WB Right	0.836	23.4	C
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.660	32.9	C
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	0.912	31.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.784	10.8	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	NB Right	0.893	51.8	D
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.911	15.0	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.852	185.7	F
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	4.443	1,681.7	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	0.300	94.2	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.886	26.6	D
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.068	12.9	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.090	12.5	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.133	8.3	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.629	38.7	E
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.398	25.8	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.463	37.7	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	1.024	91.5	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	NB Right	0.743	24.1	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.494	18.1	B
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.861	36.1	D
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.010	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.068	15.0	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.193	24.4	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	116.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.057

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	194	705	301	68	1419	40	18	11	260	467	57	108
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	59	0	0	26	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	12	0	0	78	0	0	32
Total Hourly Volume [veh/h]	5	194	764	301	68	1445	28	18	11	182	467	57	76
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	56	220	86	20	415	8	5	3	52	134	16	22
Total Analysis Volume [veh/h]	5	223	878	346	78	1661	32	21	13	209	537	66	87
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	122	122	122	122	122	122	122	122	122	122
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	51	51	7	40	40	19	19	28	28
g / C, Green / Cycle	0.14	0.42	0.42	0.06	0.33	0.33	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.25	0.22	0.04	0.45	0.46	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1858	1781	1604	1781	1744
c, Capacity [veh/h]	257	1481	661	100	613	609	277	250	404	396
d1, Uniform Delay [s]	51.21	27.61	26.59	56.79	40.98	40.98	43.99	50.45	45.30	45.34
k, delay calibration	0.11	0.04	0.14	0.04	0.50	0.50	0.04	0.04	0.25	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.29	0.14	0.83	4.79	181.82	184.56	0.04	4.28	11.80	12.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.59	0.52	0.78	1.38	1.39	0.08	0.89	0.86	0.86
d, Delay for Lane Group [s/veh]	61.50	27.76	27.42	61.58	222.80	225.54	44.03	54.73	57.10	57.65
Lane Group LOS	E	C	C	E	F	F	D	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.37	9.46	7.31	2.45	48.45	48.59	0.55	6.91	11.39	11.25
50th-Percentile Queue Length [ft/ln]	184.31	236.39	182.67	61.18	1211.27	1214.86	13.73	172.86	284.81	281.33
95th-Percentile Queue Length [veh/ln]	11.83	14.50	11.74	4.40	71.97	72.30	0.99	11.23	16.93	16.75
95th-Percentile Queue Length [ft/ln]	295.64	362.47	293.50	110.12	1799.28	1807.45	24.71	280.67	423.20	418.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.50	61.50	27.76	27.42	61.58	224.14	225.54	44.03	54.73	54.73	57.29	57.65	57.65
Movement LOS	E	E	C	C	E	F	F	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	32.97				217.01			53.81			57.37		
Approach LOS	C				F			D			E		
d_I, Intersection Delay [s/veh]	116.67												
Intersection LOS	F												
Intersection V/C	1.057												

Emissions

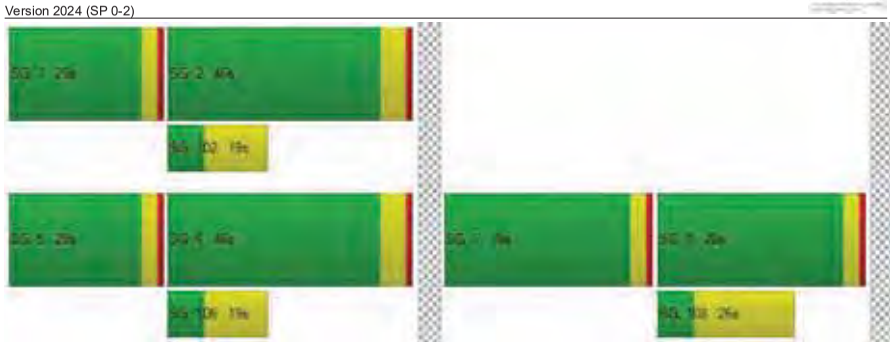
Vehicle Miles Traveled [mph]	54.44	209.63	82.61	11.47	124.66	124.39	0.90	9.51	18.17	17.85
Stops [stops/h]	217.96	559.09	216.02	72.34	1432.38	1436.62	16.23	204.42	336.80	332.68
Fuel consumption [US gal/h]	7.43	19.10	7.45	2.27	60.50	60.93	0.31	3.99	6.65	6.58
CO [g/h]	519.28	1334.83	520.64	158.68	4228.68	4258.92	22.01	279.12	464.98	460.21
NOx [g/h]	101.03	259.71	101.30	30.87	822.75	828.63	4.28	54.31	90.47	89.54
VOC [g/h]	120.35	309.36	120.66	36.78	980.04	987.04	5.10	64.69	107.76	106.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	50.38	50.38	50.38
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.151	2.278	2.377
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	662	662	575	575
d_b, Bicycle Delay [s]	27.25	27.25	30.92	30.92
l_b,int, Bicycle LOS Score for Intersection	2.753	3.031	2.089	2.751
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	155.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.374

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	348	988	150	1	148	1611	391	132	61	682	11	13	84
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	30	59	0	0	0	26	0	0	0	14	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	117	0	0	209	0	0	25
Total Hourly Volume [veh/h]	1	378	1047	105	1	148	1637	274	132	61	487	11	13	59
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	102	281	28	0	40	440	74	35	16	131	3	3	16
Total Analysis Volume [veh/h]	1	406	1126	113	1	159	1760	295	142	66	524	12	14	63
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	58	58	12	50	50	20	20	20	7	7
g / C, Green / Cycle	0.17	0.50	0.50	0.11	0.44	0.44	0.17	0.17	0.17	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.23	0.23	0.23	0.09	0.55	0.58	0.06	0.06	0.33	0.01	0.05
s, saturation flow rate [veh/h]	1781	3560	1784	1781	1870	1780	1781	1836	1589	1781	1634
c, Capacity [veh/h]	310	1792	898	190	815	775	310	320	277	110	101
d1, Uniform Delay [s]	47.39	18.43	18.43	50.33	32.39	32.39	41.53	41.51	47.39	50.87	53.03
k, delay calibration	0.50	0.13	0.13	0.04	0.50	0.50	0.04	0.04	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	161.38	0.22	0.45	3.87	127.44	155.27	0.23	0.22	414.69	0.16	4.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.31	0.46	0.46	0.84	1.26	1.33	0.33	0.33	1.89	0.11	0.76
d, Delay for Lane Group [s/veh]	208.77	18.65	18.88	54.19	159.82	187.66	41.76	41.73	462.08	51.03	57.49
Lane Group LOS	F	B	B	D	F	F	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	22.46	6.63	6.71	4.58	49.64	53.24	2.58	2.63	39.76	0.33	2.31
50th-Percentile Queue Length [ft/ln]	561.51	165.80	167.70	114.60	1241.02	1331.04	64.40	65.84	994.08	8.29	57.73
95th-Percentile Queue Length [veh/ln]	34.19	10.86	10.96	8.10	71.58	78.29	4.64	4.74	62.66	0.60	4.16
95th-Percentile Queue Length [ft/ln]	854.66	271.39	273.89	202.38	1789.38	1957.15	115.92	118.51	1566.60	14.92	103.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	208.7	208.7	18.71	18.88	54.19	54.19	171.4	187.6	41.76	41.73	462.08	51.03	57.49	57.49
Movement LOS	F	F	B	B	D	D	F	F	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	65.72				165.10				342.64			56.62		
Approach LOS	E				F				F			E		
d_I, Intersection Delay [s/veh]	155.86													
Intersection LOS	F													
Intersection V/C	1.374													

Emissions

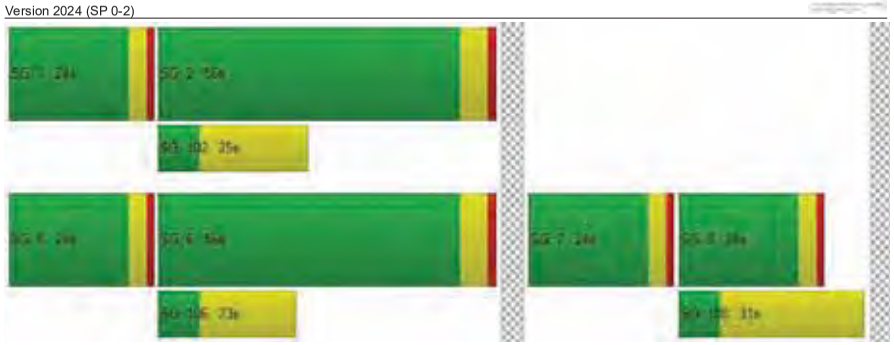
Vehicle Miles Traveled [mph]	76.60	155.30	77.87	38.20	245.33	245.33	6.41	6.56	32.68	0.59	3.75
Stops [stops/h]	704.82	416.23	210.50	143.84	1557.75	1670.73	80.84	82.64	1247.78	10.40	72.47
Fuel consumption [US gal/h]	28.68	13.63	6.88	4.86	61.19	68.41	1.58	1.62	57.50	0.21	1.46
CO [g/h]	2004.52	952.82	480.67	339.88	4277.17	4782.07	110.74	113.22	4019.33	14.41	101.75
NOx [g/h]	390.01	185.38	93.52	66.13	832.18	930.42	21.55	22.03	782.01	2.80	19.80
VOC [g/h]	464.57	220.82	111.40	78.77	991.28	1108.29	25.66	26.24	931.52	3.34	23.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	46.89	46.89	46.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.530	2.872	2.149
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	877	877	349	349
d_b, Bicycle Delay [s]	18.09	18.09	39.10	39.10
l_b,int, Bicycle LOS Score for Intersection	2.489	3.352	3.112	1.748
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	113.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.206

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1181	1173	138	3	49	1285	968	256	92	816	146	92	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	108	89	18	0	0	40	0	0	0	16	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	47	0	0	0	290	0	0	250	0	0	17
Total Hourly Volume [veh/h]	1	1289	1262	109	3	49	1325	678	256	92	582	154	92	38
Peak Hour Factor	1.000	0.840	0.840	0.840	1.000	0.840	0.840	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	384	376	32	1	15	394	202	76	27	173	46	27	11
Total Analysis Volume [veh/h]	1	1535	1502	130	3	58	1577	807	305	110	693	183	110	45
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	69	69	7	39	73	28	28	11	11	11
g / C, Green / Cycle	0.28	0.51	0.51	0.05	0.29	0.54	0.21	0.21	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.44	0.30	0.31	0.03	0.31	0.51	0.12	0.12	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1797	1781	5094	1589	1781	1826	1781	1814	1746
c, Capacity [veh/h]	951	1819	918	95	1472	851	372	381	141	144	139
d1, Uniform Delay [s]	36.83	5.84	5.92	63.12	48.34	29.83	48.11	48.11	61.52	61.49	61.56
k, delay calibration	0.27	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	279.44	1.40	3.04	2.72	45.03	20.62	0.95	0.92	3.84	3.65	4.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.61	0.59	0.61	0.64	1.07	0.95	0.55	0.55	0.80	0.79	0.80
d, Delay for Lane Group [s/veh]	316.27	7.24	8.96	65.84	93.37	50.45	49.06	49.04	65.36	65.13	65.62
Lane Group LOS	F	A	A	E	F	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	50.66	3.15	3.73	2.11	22.23	27.80	6.35	6.50	3.99	4.02	3.95
50th-Percentile Queue Length [ft/ln]	1266.45	78.78	93.14	52.65	555.75	695.12	158.73	162.62	99.71	100.57	98.78
95th-Percentile Queue Length [veh/ln]	78.15	5.67	6.71	3.79	31.28	36.45	10.48	10.69	7.18	7.24	7.11
95th-Percentile Queue Length [ft/ln]	1953.74	141.80	167.65	94.76	782.05	911.31	262.04	267.19	179.48	181.03	177.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	316.2	316.2	7.74	8.96	65.84	65.84	93.37	50.45	49.05	49.04	0.00	65.27	65.43	65.62
Movement LOS	F	F	A	A	E	E	F	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	157.38				78.52				20.42			65.37		
Approach LOS	F				E				C			E		
d_I, Intersection Delay [s/veh]	113.28													
Intersection LOS	F													
Intersection V/C	1.206													

Emissions

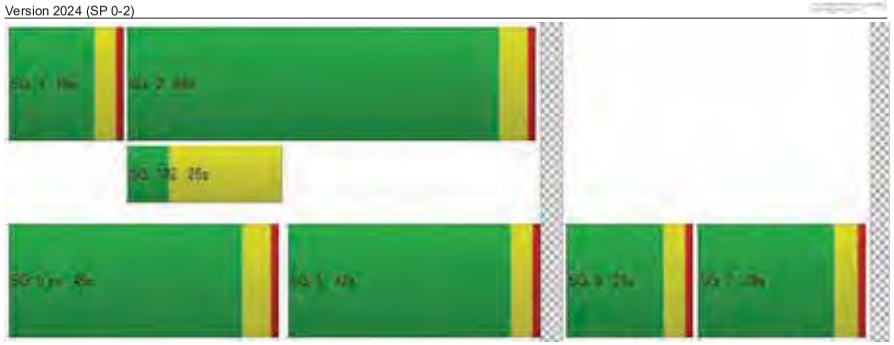
Vehicle Miles Traveled [mph]	263.07	183.26	96.25	11.48	296.78	151.87	9.48	9.72	3.58	3.62	3.54
Stops [stops/h]	2681.90	166.82	98.62	55.74	1765.33	736.01	168.06	172.19	105.58	106.49	104.59
Fuel consumption [US gal/h]	124.48	10.04	5.53	1.90	62.08	22.64	3.36	3.45	2.23	2.25	2.21
CO [g/h]	8701.30	702.01	386.68	133.08	4339.59	1582.63	235.19	240.96	155.85	157.08	154.54
NOx [g/h]	1692.96	136.59	75.23	25.89	844.33	307.92	45.76	46.88	30.32	30.56	30.07
VOC [g/h]	2016.61	162.70	89.62	30.84	1005.74	366.79	54.51	55.85	36.12	36.40	35.82

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.346	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
I_b,int, Bicycle LOS Score for Intersection	3.327		3.032		2.244		1.852	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	36.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.121

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	1965	463	0	520	1728	0	0	0	1058	0	0	528
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	215	34	0	0	64	0	0	0	53	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	149	0	0	0	0	0	0	333	0	0	158
Total Hourly Volume [veh/h]	0	2180	348	0	520	1792	0	0	0	778	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	649	104	0	155	533	0	0	0	232	0	0	110
Total Analysis Volume [veh/h]	0	2595	414	0	619	2133	0	0	0	926	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	25	35	22	
g / C, Green / Cycle	0.47	0.47	0.37	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.51	0.26	0.35	0.31	0.33	
s, saturation flow rate [veh/h]	5094	1589	1781	6792	2813	
c, Capacity [veh/h]	2395	747	661	3476	927	
d1, Uniform Delay [s]	18.02	12.91	20.61	11.82	22.79	
k, delay calibration	0.50	0.50	0.14	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	45.70	2.95	8.51	0.82	8.18	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	1.08	0.55	0.94	0.61	1.00	
d, Delay for Lane Group [s/veh]	63.72	15.86	29.13	12.63	30.97	
Lane Group LOS	F	B	C	B	C	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	19.81	4.21	9.47	4.60	7.80	
50th-Percentile Queue Length [ft/ln]	495.24	105.23	236.75	114.89	195.09	
95th-Percentile Queue Length [veh/ln]	28.72	7.57	14.52	8.11	12.39	
95th-Percentile Queue Length [ft/ln]	717.96	189.34	362.92	202.78	309.63	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	63.72	15.86	29.13	29.13	12.63	0.00	0.00	0.00	30.97	0.00	0.00	0.00
Movement LOS		F	B	C	C	B				C			
d_A, Approach Delay [s/veh]		57.13			16.34				30.97			0.00	
Approach LOS		E			B				C			A	
d_I, Intersection Delay [s/veh]	36.72												
Intersection LOS	D												
Intersection V/C	1.121												

Emissions

Vehicle Miles Traveled [mph]	375.49	59.90	106.02	365.32	66.27	
Stops [stops/h]	3146.22	222.83	501.35	973.16	826.28	
Fuel consumption [US gal/h]	85.63	6.16	13.54	30.11	13.13	
CO [g/h]	5985.80	430.60	946.20	2104.45	917.68	
NOx [g/h]	1164.62	83.78	184.10	409.45	178.55	
VOC [g/h]	1387.27	99.80	219.29	487.73	212.68	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.276
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
I_b,int, Bicycle LOS Score for Intersection	3.297	2.439	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	61	1808	235	4	440	1970	372	140	8	20	1	70	30	476
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	249	21	0	0	117	0	0	0	3	0	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	77	0	0	0	112	0	0	7	0	0	0	143
Total Hourly Volume [veh/h]	1	67	2057	179	4	440	2087	260	140	8	16	1	80	30	333
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	17	525	46	1	112	532	66	36	2	4	0	20	8	85
Total Analysis Volume [veh/h]	1	68	2099	183	4	449	2130	265	143	8	16	1	82	31	340
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	98	98	98	98	98	98	98	98	98	98	98	98
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	3	48	48	15	59	59	6	6	6	13	13	13
g / C, Green / Cycle	0.03	0.49	0.49	0.15	0.60	0.60	0.06	0.06	0.06	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.41	0.12	0.13	0.42	0.17	0.04	0.00	0.01	0.05	0.12	0.12
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1630	1589
c, Capacity [veh/h]	121	2481	774	518	3066	957	220	119	101	243	222	217
d1, Uniform Delay [s]	46.63	21.96	14.59	40.81	13.37	9.33	44.89	43.22	43.47	38.39	41.37	41.37
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.24	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	0.32	0.06	1.87	0.11	0.06	2.39	0.17	0.54	0.62	16.78	17.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.85	0.24	0.87	0.69	0.28	0.65	0.07	0.16	0.34	0.84	0.85
d, Delay for Lane Group [s/veh]	48.19	22.28	14.65	42.68	13.48	9.39	47.28	43.39	44.00	39.01	58.16	58.52
Lane Group LOS	D	C	B	D	B	A	D	D	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.85	13.25	2.30	5.41	9.72	2.54	1.76	0.19	0.38	1.84	5.41	5.30
50th-Percentile Queue Length [ft/ln]	21.24	331.18	57.55	135.35	243.09	63.54	43.98	4.68	9.51	45.93	135.37	132.58
95th-Percentile Queue Length [veh/ln]	1.53	19.22	4.14	9.23	14.84	4.57	3.17	0.34	0.68	3.31	9.23	9.08
95th-Percentile Queue Length [ft/ln]	38.22	480.41	103.58	230.75	370.94	114.37	79.16	8.43	17.12	82.67	230.78	227.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.19	48.19	22.28	14.65	42.68	42.68	13.48	9.39	47.28	43.39	44.00	39.01	39.01	58.16	58.36
Movement LOS	D	D	C	B	D	D	B	A	D	D	D	D	D	E	E
d_A, Approach Delay [s/veh]	22.45				17.74				46.78			54.81			
Approach LOS	C				B				D			D			
d_I, Intersection Delay [s/veh]	23.37														
Intersection LOS	C														
Intersection V/C	0.836														

Emissions

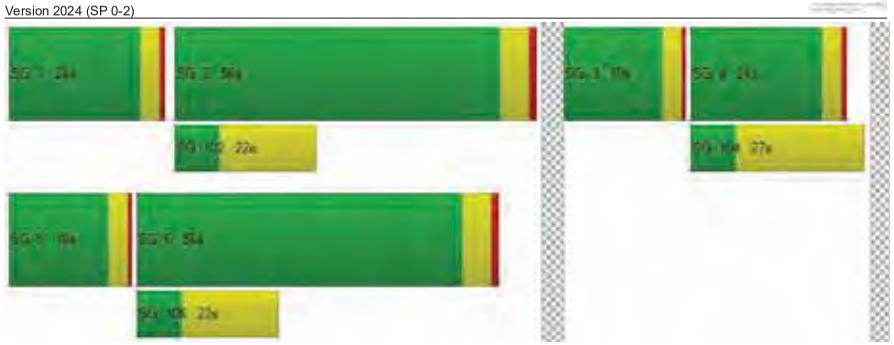
Vehicle Miles Traveled [mph]	15.40	468.45	40.84	65.55	308.20	38.34	18.24	1.02	2.04	29.13	65.92	64.29
Stops [stops/h]	62.42	1460.21	84.58	397.85	1071.81	93.38	129.27	6.89	13.98	67.50	198.95	194.85
Fuel consumption [US gal/h]	1.66	36.87	2.69	8.83	24.45	2.60	2.84	0.15	0.30	2.23	6.04	5.90
CO [g/h]	115.71	2577.23	188.33	617.26	1709.13	181.81	198.57	10.53	21.28	155.95	421.87	412.74
NOx [g/h]	22.51	501.43	36.64	120.10	332.53	35.37	38.63	2.05	4.14	30.34	82.08	80.30
VOC [g/h]	26.82	597.30	43.65	143.06	396.11	42.14	46.02	2.44	4.93	36.14	97.77	95.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	38.61	0.00	38.61	38.61
l_p,int, Pedestrian LOS Score for Intersectio	3.468	0.000	2.572	2.763
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1031	1031	418	316
d_b, Bicycle Delay [s]	11.50	11.50	30.63	34.72
l_b,int, Bicycle LOS Score for Intersection	2.894	2.941	1.703	2.409
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	84	1607	388	1	92	1561	407	2	310	108	60	298	227	187
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	276	68	0	0	130	0	0	0	0	0	30	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	137	0	0	0	122	0	0	0	18	0	0	56
Total Hourly Volume [veh/h]	2	84	1883	319	1	92	1691	285	2	310	108	42	328	227	131
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	22	501	85	0	24	450	76	1	82	29	11	87	60	35
Total Analysis Volume [veh/h]	2	89	2003	339	1	98	1799	303	2	330	115	45	349	241	139
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	91	91	10	91	91	17	16	16	18	16	16
g / C, Green / Cycle	0.06	0.58	0.58	0.06	0.58	0.58	0.11	0.10	0.10	0.11	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.22	0.03	0.36	0.19	0.10	0.04	0.05	0.10	0.07	0.09
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1682	3431	3532	1577
c, Capacity [veh/h]	111	3915	916	217	2939	917	379	184	167	391	362	162
d1, Uniform Delay [s]	72.72	19.60	17.55	70.94	21.33	17.01	68.78	66.69	66.76	68.62	67.85	69.33
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.48	1.15	0.56	0.96	0.97	2.58	0.64	0.74	2.91	0.79	5.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.51	0.37	0.46	0.61	0.33	0.88	0.45	0.46	0.89	0.67	0.86
d, Delay for Lane Group [s/veh]	78.35	20.08	18.70	71.50	22.29	17.97	71.35	67.33	67.50	71.53	68.63	74.37
Lane Group LOS	E	C	B	E	C	B	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.82	11.08	6.93	1.92	13.92	5.75	6.74	3.20	2.97	7.10	4.73	5.75
50th-Percentile Queue Length [ft/ln]	95.46	277.06	173.23	47.95	348.03	143.69	168.40	79.91	74.31	177.62	118.21	143.84
95th-Percentile Queue Length [veh/ln]	6.87	16.54	11.25	3.45	20.04	9.68	10.99	5.75	5.35	11.48	8.29	9.69
95th-Percentile Queue Length [ft/ln]	171.83	413.55	281.16	86.30	501.00	241.99	274.81	143.85	133.76	286.91	207.37	242.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.35	78.35	20.08	18.70	71.50	71.50	22.29	17.97	71.35	71.35	67.38	67.50	71.53	68.63	74.37
Movement LOS	E	E	C	B	E	E	C	B	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	22.07				23.91				70.07				71.11		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	32.90														
Intersection LOS	C														
Intersection V/C	0.660														

Emissions

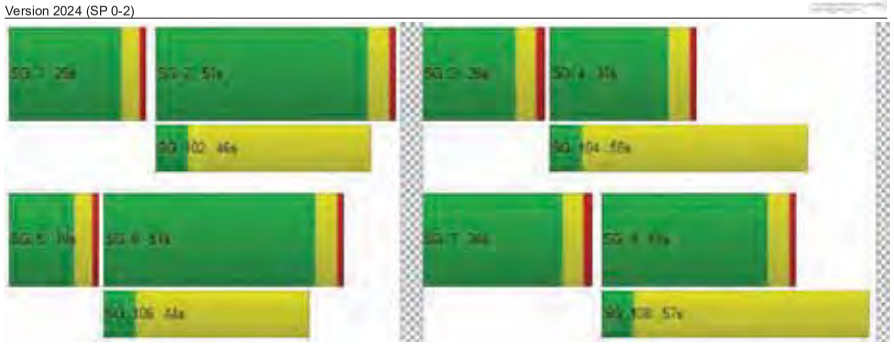
Vehicle Miles Traveled [mph]	36.23	797.46	134.97	22.09	401.50	67.62	82.74	20.68	19.19	36.59	25.27	14.57
Stops [stops/h]	87.56	1016.47	158.89	87.95	957.62	131.80	308.91	73.30	68.16	325.83	216.85	131.93
Fuel consumption [US gal/h]	3.43	46.63	7.72	3.29	33.83	5.06	9.93	2.39	2.22	8.39	5.60	3.43
CO [g/h]	239.46	3259.44	539.88	230.05	2364.74	354.02	694.30	167.31	155.46	586.17	391.70	239.92
NOx [g/h]	46.59	634.17	105.04	44.76	460.09	68.88	135.09	32.55	30.25	114.05	76.21	46.68
VOC [g/h]	55.50	755.41	125.12	53.32	548.05	82.05	160.91	38.78	36.03	135.85	90.78	55.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.588	3.876	2.710	2.905
Crosswalk LOS	D	D	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.619	2.783	1.708	2.207
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	38	1287	2	2	8	1439	388	167	4	10	3	7	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	345	0	0	0	160	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	116	0	0	3	0	0	4
Total Hourly Volume [veh/h]	1	38	1632	1	2	8	1599	272	167	4	7	3	7	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	469	0	1	2	459	78	48	1	2	1	2	3
Total Analysis Volume [veh/h]	1	44	1876	1	2	9	1838	313	192	5	8	3	8	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	42	42	1	40	40	6	6	2
g / C, Green / Cycle	0.04	0.61	0.61	0.01	0.58	0.58	0.09	0.09	0.03
(v / s)_i Volume / Saturation Flow Rate	0.03	0.50	0.50	0.01	0.58	0.60	0.06	0.06	0.01
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1870	1779	1781	1768	1708
c, Capacity [veh/h]	76	1146	1146	16	1083	1030	162	161	45
d1, Uniform Delay [s]	32.46	10.39	10.39	34.12	14.40	14.53	30.29	30.30	33.17
k, delay calibration	0.04	0.35	0.35	0.04	0.43	0.46	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.67	4.74	4.75	15.97	23.82	39.24	4.07	4.12	3.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.82	0.82	0.67	0.99	1.04	0.63	0.64	0.49
d, Delay for Lane Group [s/veh]	35.12	15.13	15.14	50.08	38.22	53.78	34.36	34.42	36.19
Lane Group LOS	D	B	B	D	D	F	C	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.77	9.99	10.00	0.24	17.33	21.05	1.77	1.76	0.39
50th-Percentile Queue Length [ft/ln]	19.24	249.87	249.95	5.96	433.14	526.33	44.20	44.04	9.73
95th-Percentile Queue Length [veh/ln]	1.39	15.18	15.18	0.43	24.15	29.58	3.18	3.17	0.70
95th-Percentile Queue Length [ft/ln]	34.64	379.49	379.59	10.74	603.80	739.48	79.55	79.27	17.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.12	35.12	15.14	15.14	50.08	50.08	44.67	53.78	34.39	34.42	34.42	36.19	36.19	36.19
Movement LOS	D	D	B	B	D	D	D	D	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	15.60				46.02				34.39			36.19		
Approach LOS	B				D				C			D		
d_I, Intersection Delay [s/veh]	31.86													
Intersection LOS	C													
Intersection V/C	0.912													

Emissions

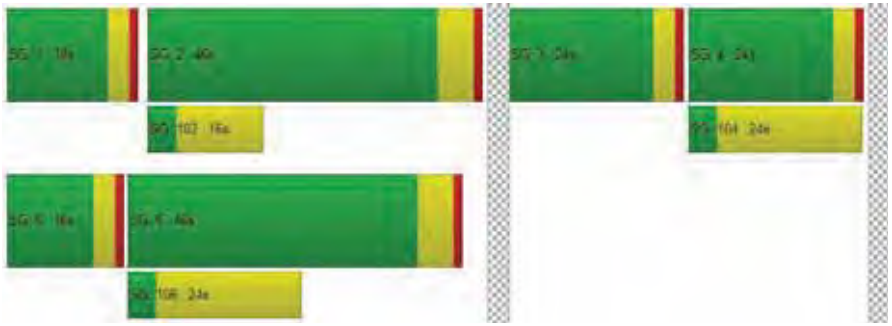
Vehicle Miles Traveled [mph]	15.92	332.10	332.10	4.38	428.19	428.19	24.74	24.63	0.42
Stops [stops/h]	40.21	522.02	522.19	12.46	904.91	1099.61	92.33	92.01	20.33
Fuel consumption [US gal/h]	1.20	19.45	19.45	0.49	39.50	46.52	2.25	2.24	0.29
CO [g/h]	83.83	1359.26	1359.42	34.25	2760.81	3251.54	157.08	156.46	20.38
NOx [g/h]	16.31	264.46	264.49	6.66	537.15	632.63	30.56	30.44	3.97
VOC [g/h]	19.43	315.02	315.06	7.94	639.85	753.58	36.41	36.26	4.72

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.93	0.00	26.93	26.93
l_p,int, Pedestrian LOS Score for Intersectio	3.027	0.000	2.158	1.730
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1161	1161	580	580
d_b, Bicycle Delay [s]	6.07	6.07	17.36	17.36
l_b,int, Bicycle LOS Score for Intersection	3.145	3.432	1.903	1.603
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	60	1194	1152	301	134	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	13	345	160	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	90	0	3
Total Hourly Volume [veh/h]	1	73	1539	1312	211	134	6
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	21	442	377	61	39	2
Total Analysis Volume [veh/h]	1	84	1769	1508	243	154	7
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	59	59	59	59	59	59
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	42	35	35	7	7
g / C, Green / Cycle	0.06	0.72	0.59	0.59	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.50	0.47	0.49	0.09	0.00
s, saturation flow rate [veh/h]	1781	3560	1870	1783	1781	1589
c, Capacity [veh/h]	114	2552	1095	1044	205	183
d1, Uniform Delay [s]	27.34	4.74	9.60	10.03	25.47	23.37
k, delay calibration	0.04	0.15	0.25	0.27	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.64	0.49	3.11	4.51	5.48	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.69	0.80	0.84	0.75	0.04
d, Delay for Lane Group [s/veh]	30.98	5.23	12.71	14.54	30.95	23.45
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.23	3.31	7.44	8.10	2.28	0.09
50th-Percentile Queue Length [ft/ln]	30.85	82.72	186.06	202.39	57.10	2.16
95th-Percentile Queue Length [veh/ln]	2.22	5.96	11.92	12.76	4.11	0.16
95th-Percentile Queue Length [ft/ln]	55.53	148.89	297.91	319.05	102.78	3.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.98	30.98	5.23	13.48	14.54	30.95	23.45
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	6.41			13.63		30.62	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	10.80						
Intersection LOS	B						
Intersection V/C	0.784						

Emissions

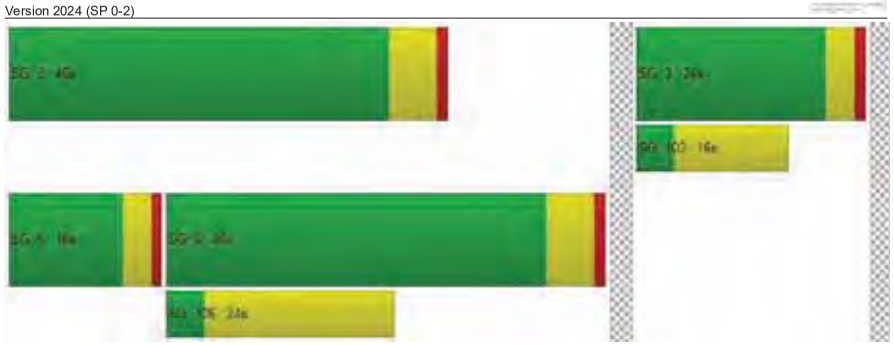
Vehicle Miles Traveled [mph]	59.31	1234.25	309.81	309.81	51.96	2.36
Stops [stops/h]	74.92	401.73	451.80	491.46	138.65	5.25
Fuel consumption [US gal/h]	3.39	54.91	17.52	18.06	3.87	0.16
CO [g/h]	237.04	3838.33	1224.30	1262.40	270.86	11.16
NOx [g/h]	46.12	746.80	238.20	245.62	52.70	2.17
VOC [g/h]	54.94	889.57	283.74	292.57	62.77	2.59

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.19	0.00	22.19
l_p,int, Pedestrian LOS Score for Intersectio	2.939	0.000	2.115
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1349	1349	675
d_b, Bicycle Delay [s]	3.14	3.14	13.02
l_b,int, Bicycle LOS Score for Intersection	3.088	3.078	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	51.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	41	605	21	209	386	563	314	41	5	136	94	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	99	358	42	0	164	0	0	0	47	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	19	0	0	169	0	0	16	0	0	101
Total Hourly Volume [veh/h]	140	963	44	209	550	394	314	41	36	155	94	234
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	271	12	59	154	111	88	12	10	44	26	66
Total Analysis Volume [veh/h]	157	1082	49	235	618	443	353	46	40	174	106	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	83	83	83	83	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	9	25	25	12	28	28	12	12	15	15
g / C, Green / Cycle	0.11	0.30	0.30	0.14	0.34	0.34	0.15	0.15	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.09	0.30	0.30	0.13	0.30	0.31	0.12	0.12	0.16	0.16
s, saturation flow rate [veh/h]	1781	1870	1842	1781	1870	1615	1781	1760	1806	1589
c, Capacity [veh/h]	194	561	553	257	627	542	262	259	331	291
d1, Uniform Delay [s]	36.29	29.15	29.15	35.16	26.36	26.54	34.60	34.60	33.07	33.08
k, delay calibration	0.06	0.40	0.41	0.30	0.40	0.41	0.12	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.74	37.87	38.62	27.00	15.47	19.46	8.17	8.27	7.40	8.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.01	1.02	0.92	0.90	0.91	0.84	0.84	0.87	0.87
d, Delay for Lane Group [s/veh]	41.03	67.02	67.77	62.16	41.83	46.00	42.77	42.87	40.48	41.52
Lane Group LOS	D	F	F	E	D	D	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.31	16.55	16.41	6.19	11.86	11.02	4.84	4.79	6.18	5.53
50th-Percentile Queue Length [ft/ln]	82.66	413.73	410.32	154.72	296.44	275.43	120.94	119.69	154.42	138.21
95th-Percentile Queue Length [veh/ln]	5.95	23.44	23.30	10.27	17.50	16.46	8.44	8.38	10.25	9.38
95th-Percentile Queue Length [ft/ln]	148.78	585.94	582.38	256.72	437.62	411.52	211.12	209.40	256.32	234.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.03	67.38	67.77	62.16	42.19	46.00	42.80	42.87	42.87	40.48	40.48	41.52
Movement LOS	D	E	E	E	D	D	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	64.18			47.11			42.82			40.96		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	51.81											
Intersection LOS	D											
Intersection V/C	0.893											

Emissions

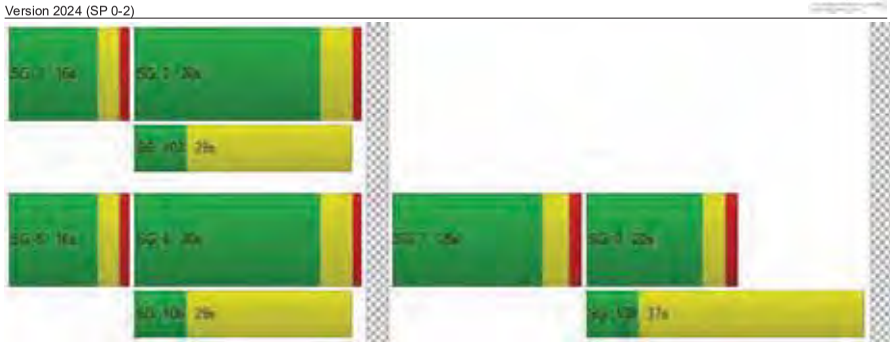
Vehicle Miles Traveled [mph]	90.67	328.82	324.35	163.96	394.40	345.87	16.61	16.41	31.92	28.14
Stops [stops/h]	143.09	716.21	710.31	267.84	513.17	476.80	209.36	207.20	267.32	239.26
Fuel consumption [US gal/h]	5.83	25.26	25.02	13.43	27.54	25.07	3.76	3.72	5.17	4.63
CO [g/h]	407.80	1765.59	1749.02	938.91	1924.85	1752.14	262.97	260.29	361.24	323.59
NOx [g/h]	79.34	343.52	340.30	182.68	374.51	340.90	51.16	50.64	70.28	62.96
VOC [g/h]	94.51	409.19	405.35	217.60	446.10	406.07	60.95	60.32	83.72	74.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.32	0.00	31.32	31.32
l_p,int, Pedestrian LOS Score for Intersectio	2.743	0.000	2.391	2.402
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	594	594	373	481
d_b, Bicycle Delay [s]	20.56	20.56	27.54	24.00
l_b,int, Bicycle LOS Score for Intersection	2.638	2.768	2.310	2.622
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	465	254	273	202	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	498	230	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	963	484	273	202	59
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	268	134	76	56	16
Total Analysis Volume [veh/h]	150	1070	538	303	224	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	51	51	51	51	51	51
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	6	33	23	23	9	9
g / C, Green / Cycle	0.11	0.64	0.45	0.45	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.57	0.29	0.19	0.13	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	194	1190	841	715	302	269
d1, Uniform Delay [s]	22.31	7.95	10.94	9.63	20.31	18.53
k, delay calibration	0.04	0.27	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.46	6.41	1.16	0.57	3.61	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.90	0.64	0.42	0.74	0.25
d, Delay for Lane Group [s/veh]	24.77	14.36	12.11	10.20	23.93	19.00
Lane Group LOS	C	B	B	B	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.56	5.04	3.16	1.55	2.60	0.65
50th-Percentile Queue Length [ft/ln]	38.91	125.95	79.11	38.67	65.01	16.31
95th-Percentile Queue Length [veh/ln]	2.80	8.72	5.70	2.78	4.68	1.17
95th-Percentile Queue Length [ft/ln]	70.03	217.97	142.39	69.61	117.01	29.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.77	14.36	12.11	10.20	23.93	19.00
Movement LOS	C	B	B	B	C	B
d_A, Approach Delay [s/veh]	15.64		11.42		22.81	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	15.01					
Intersection LOS	B					
Intersection V/C	0.911					

Emissions

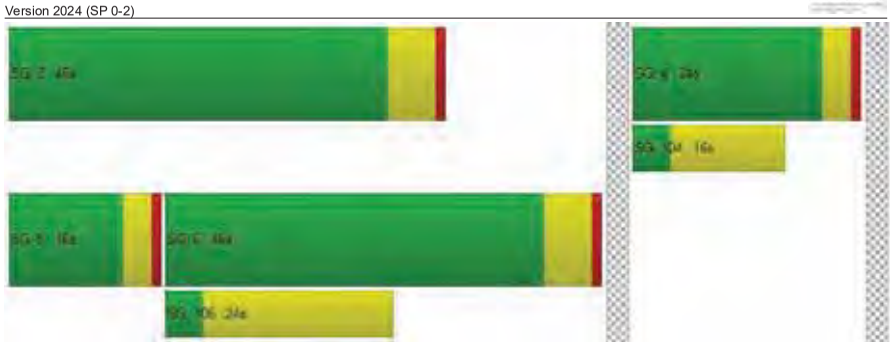
Vehicle Miles Traveled [mph]	18.51	132.02	310.71	174.99	52.61	15.50
Stops [stops/h]	109.12	353.25	221.87	108.46	182.33	45.75
Fuel consumption [US gal/h]	3.40	14.10	15.84	8.50	4.26	1.15
CO [g/h]	237.80	985.87	1107.25	593.96	298.05	80.11
NOx [g/h]	46.27	191.82	215.43	115.56	57.99	15.59
VOC [g/h]	55.11	228.49	256.62	137.66	69.08	18.57

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.29	0.00	18.29
l_p,int, Pedestrian LOS Score for Intersectio	3.001	0.000	2.156
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1558	1558	779
d_b, Bicycle Delay [s]	1.25	1.25	9.57
l_b,int, Bicycle LOS Score for Intersection	3.573	2.947	1.560
Bicycle LOS	D	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	185.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.852

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	548	0	14	295	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	466	0	0	218	16	45	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1014	0	14	513	16	45	0	5	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	276	0	4	139	4	12	0	1	0	0	10
Total Analysis Volume [veh/h]	2	1102	0	14	558	17	49	0	5	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							Yes			Yes		
Storage Area [veh]	0			0			1			1		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.85	0.00	0.01	0.00	0.00	0.15
d_M, Delay for Movement [s/veh]	8.61	0.00	0.00	10.70	0.00	0.00	185.68	163.75	129.94	59.66	48.66	21.47
Movement LOS	A	A	A	B	A	A	F	F	F	F	E	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	3.95	3.95	3.95	0.53	0.53	0.53
95th-Percentile Queue Length [ft/ln]	0.08	0.08	0.08	0.59	0.59	0.59	98.82	98.82	98.82	13.14	13.14	13.14
d_A, Approach Delay [s/veh]	0.02			0.25			180.52			21.47		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	6.02											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	1,681.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.443

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	387	32	41	254	0	0	0	0	10	0	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	24	0	0	14	141	445	6	51	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	411	32	41	268	141	482	6	69	10	2	161
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	110	9	11	72	38	130	2	19	3	1	43
Total Analysis Volume [veh/h]	63	442	34	44	288	152	518	6	74	11	2	173
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.04	0.00	0.00	4.44	0.03	0.11	0.07	0.01	0.29
d_M, Delay for Movement [s/veh]	8.41	0.00	0.00	8.45	0.00	0.00	1681.66	1668.38	1656.07	32.43	28.19	15.10
Movement LOS	A	A	A	A	A	A	F	F	F	D	D	C
95th-Percentile Queue Length [veh/ln]	0.18	0.00	0.00	0.13	0.00	0.00	62.05	62.05	62.05	1.68	1.68	1.68
95th-Percentile Queue Length [ft/ln]	4.46	0.00	0.00	3.16	0.00	0.00	1551.13	1551.13	1551.13	42.10	42.10	42.10
d_A, Approach Delay [s/veh]	0.98			0.77			1678.36			16.27		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	557.60											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	94.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.300

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	232	128	45	0	546	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	47	0	0	0	99
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	232	175	45	0	546	251
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	64	48	12	0	151	69
Total Analysis Volume [veh/h]	0	14	256	193	50	0	603	277
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.30	0.31	0.00	0.00	0.00	0.46	0.00
d_M, Delay for Movement [s/veh]	94.20	94.20	21.40	0.00	0.00	12.52	8.72	0.00
Movement LOS	F	F	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.98	3.98	3.98	0.00	0.00	1.50	1.50	1.50
95th-Percentile Queue Length [ft/ln]	99.61	99.61	99.61	0.00	0.00	37.41	37.41	37.41
d_A, Approach Delay [s/veh]	25.18			0.00		5.98		
Approach LOS	D			A		A		
d_I, Intersection Delay [s/veh]	8.66							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	26.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.886

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	2	39	63	2	30	443	13	2	9	0	225	26	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	4	0	0	0	0	0	0	0	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	39	63	2	34	443	13	2	9	0	225	26	59
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	12	19	1	10	133	4	1	3	0	68	8	18
Total Analysis Volume [veh/h]	2	47	76	2	41	534	16	2	11	0	271	31	71
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	623	669	526	603
Degree of Utilization, x	0.20	0.89	0.02	0.62

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.74	10.90	0.08	4.24
95th-Percentile Queue Length [ft]	18.62	272.46	1.90	106.09
Approach Delay [s/veh]	10.23	35.72	10.02	18.18
Approach LOS	B	E	B	C
Intersection Delay [s/veh]	26.61			
Intersection LOS	D			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.068

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	31	108	1	65	13	0	49	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	47	0	0	0	0	99	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	155	1	65	13	0	148	91
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	41	0	17	3	0	39	24
Total Analysis Volume [veh/h]	33	163	1	68	14	0	156	96
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.17	0.00	0.00	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	12.94	9.37	8.60	0.00	0.00	9.49	7.65	0.00
Movement LOS	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.22	0.59	0.00	0.00	0.00	0.34	0.34	0.00
95th-Percentile Queue Length [ft/ln]	5.44	14.76	0.04	0.04	0.04	8.59	8.59	0.00
d_A, Approach Delay [s/veh]	9.97		0.10			4.73		
Approach LOS	A		A			A		
d_I, Intersection Delay [s/veh]	5.94							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	12.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.090

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	45	43	78	31	65	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	47	0	0	99
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	43	125	31	65	150
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	12	34	8	18	41
Total Analysis Volume [veh/h]	49	47	136	34	71	163
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.05	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	12.48	9.82	0.00	0.00	7.69	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.49	0.49	0.00	0.00	0.16	0.00
95th-Percentile Queue Length [ft/ln]	12.27	12.27	0.00	0.00	3.98	0.00
d_A, Approach Delay [s/veh]	11.18		0.00		2.33	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.24					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.133

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	10	114	18	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	99	0	0	47	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	10	10	161	18	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	3	3	44	5	5
Total Analysis Volume [veh/h]	180	11	11	175	20	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	719	731	679	750	750	699
Degree of Utilization, x	0.13	0.13	0.02	0.12	0.12	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.46	0.45	0.05	0.39	0.39	0.18
95th-Percentile Queue Length [ft]	11.42	11.21	1.23	9.86	9.86	4.54
Approach Delay [s/veh]	8.42		8.13			8.46
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.29					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	38.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.629

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	227	71	37	439	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	99	0	0	0	0	0	0	0	47	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	164	0	18	66	1	8	4	227	118	37	439	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	0	5	17	0	2	1	59	30	10	113	4
Total Analysis Volume [veh/h]	169	0	19	68	1	8	4	234	122	38	453	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.63	0.00	0.03	0.25	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	38.70	17.62	9.96	23.06	23.05	15.62	8.30	0.00	0.00	8.09	0.00	0.00
Movement LOS	E	C	A	C	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.88	0.08	0.08	1.07	1.07	1.07	0.01	0.00	0.00	0.10	0.00	0.00
95th-Percentile Queue Length [ft/ln]	97.06	1.96	1.96	26.74	26.74	26.74	0.28	0.00	0.00	2.45	0.00	0.00
d_A, Approach Delay [s/veh]	35.80			22.29			0.09			0.61		
Approach LOS	E			C			A			A		
d_I, Intersection Delay [s/veh]	7.77											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	53	5	117	5	5	5	5	359	115	0	300	415	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	35	0	0	2	0	0	35	0	0	0	2
Total Hourly Volume [veh/h]	53	5	82	5	5	3	5	359	80	0	300	415	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	1	21	1	1	1	1	93	21	0	77	107	1
Total Analysis Volume [veh/h]	55	5	85	5	5	3	5	370	82	0	309	428	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	5	8	1	4	1	66	66	23	88	88
g / C, Green / Cycle	0.04	0.07	0.01	0.04	0.01	0.55	0.55	0.19	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.00	0.00	0.00	0.12	0.13	0.17	0.12	0.12
s, saturation flow rate [veh/h]	1781	1603	1781	1754	1781	1870	1755	1781	1870	1865
c, Capacity [veh/h]	72	111	12	62	12	1034	970	335	1373	1370
d1, Uniform Delay [s]	57.02	55.09	59.37	56.07	59.37	13.69	13.73	47.86	4.79	4.79
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.19	5.30	21.73	0.34	21.99	0.50	0.55	4.53	0.24	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.81	0.42	0.13	0.42	0.22	0.23	0.92	0.16	0.16
d, Delay for Lane Group [s/veh]	63.21	60.38	81.09	56.41	81.36	14.19	14.27	52.39	5.04	5.04
Lane Group LOS	E	E	F	E	F	B	B	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.78	2.85	0.22	0.24	0.22	3.31	3.18	9.46	1.55	1.54
50th-Percentile Queue Length [ft/ln]	44.40	71.18	5.59	6.03	5.60	82.81	79.51	236.57	38.67	38.59
95th-Percentile Queue Length [veh/ln]	3.20	5.13	0.40	0.43	0.40	5.96	5.72	14.51	2.78	2.78
95th-Percentile Queue Length [ft/ln]	79.91	128.13	10.06	10.85	10.08	149.05	143.12	362.69	69.61	69.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.21	60.38	60.38	81.09	56.41	56.41	81.36	14.22	14.27	52.39	52.39	5.04	5.04
Movement LOS	E	E	E	F	E	E	F	B	B	D	D	A	A
d_A, Approach Delay [s/veh]	61.45			65.91			14.97			24.81			
Approach LOS	E			E			B			C			
d_I, Intersection Delay [s/veh]	25.81												
Intersection LOS	C												
Intersection V/C	0.398												

Emissions

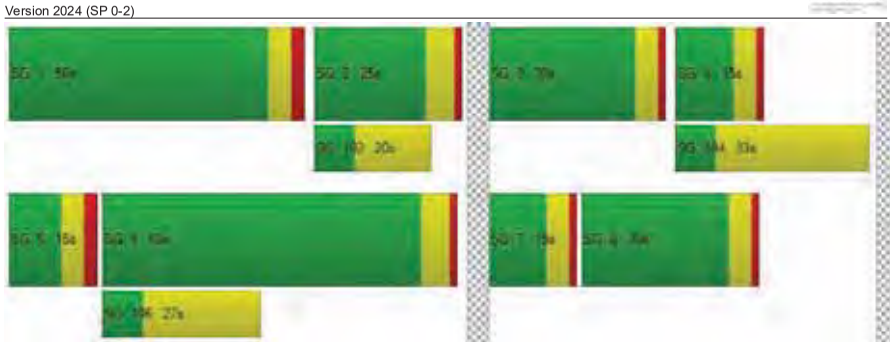
Vehicle Miles Traveled [mph]	21.19	34.68	0.17	0.28	4.21	194.56	185.81	77.01	53.77	53.64
Stops [stops/h]	53.28	85.42	6.71	7.23	6.72	99.37	95.42	283.88	46.41	46.31
Fuel consumption [US gal/h]	1.87	3.01	0.13	0.14	0.29	9.23	8.82	8.03	2.69	2.68
CO [g/h]	131.00	210.07	8.86	10.02	20.49	644.92	616.35	561.47	188.10	187.67
NOx [g/h]	25.49	40.87	1.72	1.95	3.99	125.48	119.92	109.24	36.60	36.51
VOC [g/h]	30.36	48.68	2.05	2.32	4.75	149.47	142.85	130.13	43.59	43.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0			0.0					
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00					
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00					
d_p, Pedestrian Delay [s]	49.50		49.50		49.50			0.00					
l_p,int, Pedestrian LOS Score for Intersectio	2.202		1.967		2.555			0.000					
Crosswalk LOS	B		A		B			F					
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000			2000					
c_b, Capacity of the bicycle lane [bicycles/h]	417		167		317			900					
d_b, Bicycle Delay [s]	37.60		50.42		42.50			18.15					
l_b,int, Bicycle LOS Score for Intersection	1.857		1.584		1.966			1.917					
Bicycle LOS	A		A		A			A					

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	37.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.463

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	57	7	20	114	11	147	0	145	431	12	53	508	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	68	0	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	44	0	0	0	4	0	0	61
Total Hourly Volume [veh/h]	57	7	14	114	11	103	0	145	499	8	53	538	143
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	4	31	3	28	0	40	137	2	15	148	39
Total Analysis Volume [veh/h]	63	8	15	125	12	113	0	159	548	9	58	591	157
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	6	12	9	13	14	94	94	6	85	85
g / C, Green / Cycle	0.05	0.08	0.06	0.09	0.10	0.67	0.67	0.04	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.08	0.09	0.15	0.01	0.03	0.21	0.21
s, saturation flow rate [veh/h]	1781	1677	1781	1613	1781	3560	1589	1781	1870	1737
c, Capacity [veh/h]	81	140	108	152	182	2388	1066	75	1135	1054
d1, Uniform Delay [s]	66.12	59.59	65.75	62.29	61.92	8.97	7.63	66.41	13.66	13.66
k, delay calibration	0.04	0.13	0.40	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.91	0.68	125.62	12.93	4.94	0.22	0.01	6.26	0.82	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.16	1.16	0.82	0.87	0.23	0.01	0.78	0.34	0.34
d, Delay for Lane Group [s/veh]	72.03	60.26	191.37	75.22	66.86	9.20	7.65	72.66	14.48	14.55
Lane Group LOS	E	E	F	E	E	A	A	E	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.37	0.79	7.65	4.93	5.84	3.28	0.09	2.19	6.32	5.90
50th-Percentile Queue Length [ft/ln]	59.23	19.76	191.15	123.24	146.02	82.02	2.35	54.77	157.89	147.47
95th-Percentile Queue Length [veh/ln]	4.26	1.42	12.73	8.57	9.80	5.91	0.17	3.94	10.44	9.88
95th-Percentile Queue Length [ft/ln]	106.62	35.57	318.26	214.27	245.10	147.63	4.22	98.59	260.92	247.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.03	60.26	60.26	191.37	75.22	75.22	66.86	66.86	9.20	7.65	72.66	14.50	14.55
Movement LOS	E	E	E	F	E	E	E	E	A	A	E	B	B
d_A, Approach Delay [s/veh]	68.88			133.30			21.98				18.70		
Approach LOS	E			F			C				B		
d_I, Intersection Delay [s/veh]	37.71												
Intersection LOS	D												
Intersection V/C	0.463												

Emissions

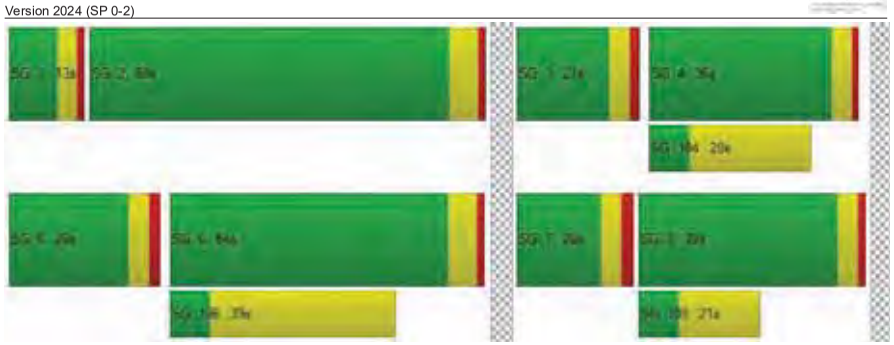
Vehicle Miles Traveled [mph]	3.15	1.15	5.81	5.81	16.67	57.45	0.94	20.31	135.67	126.25
Stops [stops/h]	60.92	20.33	196.61	126.76	150.19	168.72	2.41	56.34	162.40	151.69
Fuel consumption [US gal/h]	1.39	0.44	6.19	2.85	3.68	4.32	0.07	2.00	7.62	7.10
CO [g/h]	97.14	30.88	432.86	199.41	257.16	302.16	4.63	140.14	532.89	496.50
NOx [g/h]	18.90	6.01	84.22	38.80	50.03	58.79	0.90	27.27	103.68	96.60
VOC [g/h]	22.51	7.16	100.32	46.21	59.60	70.03	1.07	32.48	123.50	115.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
d_p, Pedestrian Delay [s]	59.43		59.43		59.43			0.00		
l_p,int, Pedestrian LOS Score for Intersectio	2.027		2.245		2.728			0.000		
Crosswalk LOS	B		B		B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	886		686		450			493		
d_b, Bicycle Delay [s]	21.73		30.23		42.04			39.75		
l_b,int, Bicycle LOS Score for Intersection	1.711		2.045		2.022			2.275		
Bicycle LOS	A		B		B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	91.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.024

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	95	50	256	155	36	46	68	194	30	162	653	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	34	0	0	10	21	47	0	16	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	87	0	0	17	0	0	9	0	0	71
Total Hourly Volume [veh/h]	95	50	203	155	36	39	89	241	21	178	673	167
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	14	58	45	10	11	26	69	6	51	193	48
Total Analysis Volume [veh/h]	109	57	233	178	41	45	102	277	24	205	774	192
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	22	22	13	13	8	39	14	45
g / C, Green / Cycle	0.20	0.20	0.13	0.13	0.07	0.37	0.13	0.43
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.10	0.05	0.06	0.16	0.12	0.53
s, saturation flow rate [veh/h]	1781	1638	1781	1712	1781	1844	1781	1807
c, Capacity [veh/h]	365	336	225	216	130	685	239	769
d1, Uniform Delay [s]	35.56	40.56	44.80	42.46	48.15	24.96	44.76	30.34
k, delay calibration	0.13	0.14	0.13	0.13	0.04	0.11	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	8.16	7.52	1.47	3.84	0.44	3.44	125.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.86	0.79	0.40	0.78	0.44	0.86	1.26
d, Delay for Lane Group [s/veh]	36.12	48.72	52.32	43.93	52.00	25.41	48.19	155.99
Lane Group LOS	D	D	D	D	D	C	D	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.43	7.96	4.96	2.15	2.77	5.66	5.44	45.49
50th-Percentile Queue Length [ft/ln]	60.70	198.92	124.11	53.65	69.16	141.62	135.99	1137.29
95th-Percentile Queue Length [veh/ln]	4.37	12.58	8.62	3.86	4.98	9.57	9.26	65.85
95th-Percentile Queue Length [ft/ln]	109.26	314.58	215.46	96.57	124.49	239.20	231.62	1646.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.12	48.72	48.72	52.32	43.93	43.93	52.00	25.41	25.41	48.19	155.99	155.99
Movement LOS	D	D	D	D	D	D	D	C	C	D	F	F
d_A, Approach Delay [s/veh]	45.28			49.59			32.14			137.12		
Approach LOS	D			D			C			F		
d_I, Intersection Delay [s/veh]	91.49											
Intersection LOS	F											
Intersection V/C	1.024											

Emissions

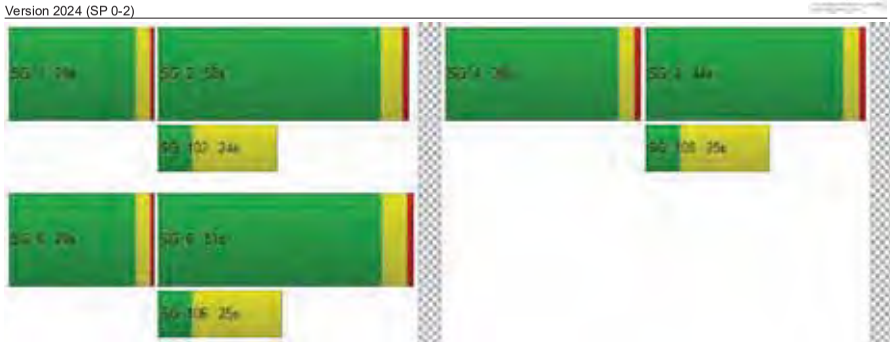
Vehicle Miles Traveled [mph]	187.55	498.99	36.09	17.44	35.72	105.40	92.50	435.88
Stops [stops/h]	82.86	271.54	169.42	73.23	94.41	193.32	185.64	1552.46
Fuel consumption [US gal/h]	8.98	24.92	4.32	1.89	3.07	6.96	6.84	57.18
CO [g/h]	627.68	1741.67	301.74	132.18	214.67	486.73	478.39	3996.82
NOx [g/h]	122.12	338.87	58.71	25.72	41.77	94.70	93.08	777.64
VOC [g/h]	145.47	403.65	69.93	30.63	49.75	112.80	110.87	926.30

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.32	42.32	42.32	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.320	2.200	2.402	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	660	755	847	853
d_b, Bicycle Delay [s]	23.69	20.45	17.52	17.34
l_b,int, Bicycle LOS Score for Intersection	2.362	2.023	2.239	3.609
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	4	4	0	354	3	602	0	0	699	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	82	0	0	37	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	4	4	0	354	3	684	0	0	736	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	1	0	113	1	219	0	0	236	10
Total Analysis Volume [veh/h]	0	0	5	5	0	454	4	877	0	0	944	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	64	64	64	64	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	0	21	21	0	21	21
g / C, Green / Cycle	0.01	0.01	0.31	0.31	0.01	0.34	0.34	0.00	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.23	0.23	0.00	0.27	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	13	11	553	493	10	631	631	0	1183	528
d1, Uniform Delay [s]	0.00	31.54	15.21	21.23	31.60	18.27	18.27	0.00	19.34	14.58
k, delay calibration	0.11	0.11	0.11	0.34	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	26.99	0.01	18.72	24.17	1.39	1.39	0.00	1.28	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.46	0.01	0.92	0.40	0.69	0.69	0.00	0.80	0.08
d, Delay for Lane Group [s/veh]	0.00	58.53	15.22	39.95	55.77	19.65	19.65	0.00	20.62	14.64
Lane Group LOS	A	E	B	D	E	B	B	A	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.16	0.05	8.48	0.13	5.30	5.30	0.00	5.94	0.37
50th-Percentile Queue Length [ft/ln]	0.00	3.89	1.19	211.98	3.14	132.48	132.48	0.00	148.53	9.37
95th-Percentile Queue Length [veh/ln]	0.00	0.28	0.09	13.25	0.23	9.07	9.07	0.00	9.94	0.67
95th-Percentile Queue Length [ft/ln]	0.00	7.00	2.14	331.37	5.65	226.86	226.86	0.00	248.46	16.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	58.53	15.22	15.22	39.95	55.77	19.65	19.65	0.00	20.62	14.64
Movement LOS	A	A	E	B	B	D	E	B	B	A	C	B
d_A, Approach Delay [s/veh]	58.53			39.68			19.82			20.38		
Approach LOS	E			D			B			C		
d_I, Intersection Delay [s/veh]	24.05											
Intersection LOS	C											
Intersection V/C	0.743											

Emissions

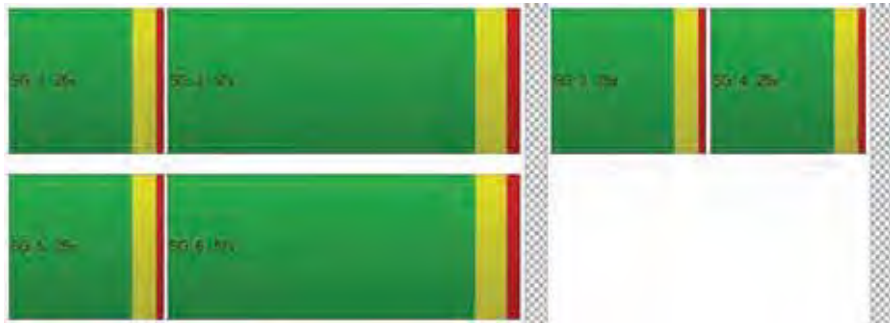
Vehicle Miles Traveled [mph]	0.00	0.25	2.37	215.36	1.80	197.86	197.86	0.00	164.67	6.98
Stops [stops/h]	0.00	8.80	2.70	479.84	7.11	299.87	299.87	0.00	672.40	21.22
Fuel consumption [US gal/h]	0.00	0.12	0.13	15.21	0.16	11.56	11.56	0.00	14.46	0.52
CO [g/h]	0.00	8.28	8.95	1062.99	11.11	807.77	807.77	0.00	1010.50	36.60
NOx [g/h]	0.00	1.61	1.74	206.82	2.16	157.16	157.16	0.00	196.61	7.12
VOC [g/h]	0.00	1.92	2.07	246.36	2.58	187.21	187.21	0.00	234.19	8.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	629	629	1572	1572
d_b, Bicycle Delay [s]	14.95	14.95	1.46	1.46
l_b,int, Bicycle LOS Score for Intersection	1.568	2.317	2.286	2.371
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.494

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	295	315	697	220	156	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	69	13	37	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	364	328	734	220	156	21
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	99	221	66	47	6
Total Analysis Volume [veh/h]	439	395	884	265	188	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	14	69	52	52	8	8	8
g / C, Green / Cycle	0.15	0.77	0.57	0.57	0.09	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.13	0.11	0.25	0.17	0.05	0.05	0.02
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	526	2744	2036	909	159	159	142
d1, Uniform Delay [s]	37.05	2.66	10.97	9.89	39.41	39.41	37.93
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.35	0.11	0.68	0.81	1.31	1.31	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.14	0.43	0.29	0.59	0.59	0.18
d, Delay for Lane Group [s/veh]	38.40	2.77	11.64	10.71	40.72	40.72	38.15
Lane Group LOS	D	A	B	B	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.70	0.67	4.78	2.69	2.03	2.03	0.51
50th-Percentile Queue Length [ft/ln]	117.58	16.80	119.50	67.18	50.80	50.80	12.85
95th-Percentile Queue Length [veh/ln]	8.26	1.21	8.37	4.84	3.66	3.66	0.93
95th-Percentile Queue Length [ft/ln]	206.50	30.24	209.14	120.92	91.45	91.45	23.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.40	2.77	11.64	10.71	40.72	38.15
Movement LOS	D	A	B	B	D	D
d_A, Approach Delay [s/veh]	21.52		11.43		40.42	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	18.07					
Intersection LOS	B					
Intersection V/C	0.494					

Emissions

Vehicle Miles Traveled [mph]	76.58	68.90	156.65	46.96	5.69	5.69	1.51
Stops [stops/h]	376.27	53.76	382.41	107.49	81.29	81.29	20.56
Fuel consumption [US gal/h]	8.66	3.36	10.66	3.10	1.46	1.46	0.37
CO [g/h]	605.46	234.60	744.89	217.00	102.22	102.22	25.86
NOx [g/h]	117.80	45.64	144.93	42.22	19.89	19.89	5.03
VOC [g/h]	140.32	54.37	172.64	50.29	23.69	23.69	5.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.248	2.508	1.931
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	78	393	0	0	223	590	694	0	169	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	13	0	0	4	0	33	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	78	406	0	0	227	543	727	0	139	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	128	0	0	72	172	230	0	44	0	0	0
Total Analysis Volume [veh/h]	0	99	514	0	0	287	687	920	0	176	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	7	53	41	41	25	25	25	
g / C, Green / Cycle	0.08	0.58	0.46	0.46	0.28	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.08	0.43	0.26	0.26	0.11	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	147	2079	1619	723	492	492	439	
d1, Uniform Delay [s]	40.10	9.11	14.56	23.58	31.79	31.79	26.51	
k, delay calibration	0.04	0.50	0.50	0.50	0.29	0.29	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.00	0.28	0.24	23.40	18.82	18.82	0.22	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.25	0.18	0.95	0.94	0.94	0.40	
d, Delay for Lane Group [s/veh]	42.10	9.39	14.80	46.98	50.61	50.61	26.73	
Lane Group LOS	D	A	B	D	D	D	C	
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	2.18	2.34	1.73	17.69	12.00	12.00	3.04	
50th-Percentile Queue Length [ft/ln]	54.62	58.52	43.24	442.20	300.12	300.12	75.93	
95th-Percentile Queue Length [veh/ln]	3.93	4.21	3.11	24.59	17.69	17.69	5.47	
95th-Percentile Queue Length [ft/ln]	98.32	105.34	77.83	614.63	442.18	442.18	136.68	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	42.10	9.39	0.00	0.00	14.80	46.98	50.61	50.61	26.73	0.00	0.00	0.00
Movement LOS	D	D	A			B	D	D	D	C			
d_A, Approach Delay [s/veh]	14.68				37.50			46.77			0.00		
Approach LOS	B				D			D			A		
d_I, Intersection Delay [s/veh]	36.07												
Intersection LOS	D												
Intersection V/C	0.861												

Emissions

Vehicle Miles Traveled [mph]	17.54	91.08	39.24	93.94	15.93	15.93	6.10	
Stops [stops/h]	87.40	187.27	138.37	707.51	480.20	480.20	121.49	
Fuel consumption [US gal/h]	2.05	5.77	3.24	14.34	8.05	8.05	1.88	
CO [g/h]	143.52	403.10	226.79	1002.60	562.40	562.40	131.39	
NOx [g/h]	27.92	78.43	44.12	195.07	109.42	109.42	25.56	
VOC [g/h]	33.26	93.42	52.56	232.36	130.34	130.34	30.45	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00	
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000	
Crosswalk LOS	F	F	F	F	
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0	
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00	
l_b,int, Bicycle LOS Score for Intersection	2.065	2.402	3.418	4.132	
Bicycle LOS	B	B	C	D	

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	548	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	468	154	68	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	18	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1016	449	86	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	254	112	22	0	0
Total Analysis Volume [veh/h]	0	1016	449	86	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.24
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		11.24	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	15.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.068

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	415	226	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	56	9	22	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	439	282	47	26	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	110	71	12	7	1
Total Analysis Volume [veh/h]	0	439	282	47	26	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	7.93	0.00	0.00	0.00	15.05	10.52
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.22	0.22
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.47	5.47
d_A, Approach Delay [s/veh]	0.00		0.00		14.58	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.53					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.193

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	238	41	52	127	9	44	72	0	37	72	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	23	13	23	10	0	0	0	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	242	41	75	140	32	54	72	0	37	72	48
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	61	10	19	35	8	14	18	0	9	18	12
Total Analysis Volume [veh/h]	6	242	41	75	140	32	54	72	0	37	72	48
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.06	0.00	0.00	0.19	0.19	0.00	0.12	0.19	0.06
d_M, Delay for Movement [s/veh]	7.57	0.00	0.00	7.91	0.00	0.00	24.41	20.86	15.56	21.49	19.11	14.46
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.14	0.14	0.14	1.73	1.73	1.73	1.66	1.66	1.66
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	3.39	3.39	3.39	43.13	43.13	43.13	41.55	41.55	41.55
d_A, Approach Delay [s/veh]	0.16			2.40			22.38			18.25		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.72											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	1016	543	39	50
2	986	527	38	49
3	965	516	37	48
4	904	483	35	45
5	803	429	31	40
6	792	424	30	39
7	782	418	30	39
8	711	380	27	35
9	701	375	27	35
10	691	369	27	34
11	599	320	23	30
12	559	299	21	28
13	549	293	21	27
14	406	217	16	20
15	406	217	16	20
16	284	152	11	14
17	163	87	6	8
18	163	87	6	8
19	91	49	4	5
20	51	27	2	3
21	30	16	1	2
22	10	5	0	1
23	10	5	0	1
24	10	5	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1559	1	50	No	No	No	No	No	No	No	Yes	No	No
2	1	1513	1	49	No	No	No	No	No	No	No	Yes	No	No
3	1	1481	1	48	No	No	No	No	No	No	No	Yes	No	No
4	1	1387	1	45	No	No	No	No	No	No	No	Yes	No	No
5	1	1232	1	40	No	No	No	No	No	No	No	No	No	No
6	1	1216	1	39	No	No	No	No	No	No	No	No	No	No
7	1	1200	1	39	No	No	No	No	No	No	No	No	No	No
8	1	1091	1	35	No	No	No	No	No	No	No	No	No	No
9	1	1076	1	35	No	No	No	No	No	No	No	No	No	No
10	1	1060	1	34	No	No	No	No	No	No	No	No	No	No
11	1	919	1	30	No	No	No	No	No	No	No	No	No	No
12	1	858	1	28	No	No	No	No	No	No	No	No	No	No
13	1	842	1	27	No	No	No	No	No	No	No	No	No	No
14	1	623	1	20	No	No	No	No	No	No	No	No	No	No
15	1	623	1	20	No	No	No	No	No	No	No	No	No	No
16	1	436	1	14	No	No	No	No	No	No	No	No	No	No
17	1	250	1	8	No	No	No	No	No	No	No	No	No	No
18	1	250	1	8	No	No	No	No	No	No	No	No	No	No
19	1	140	1	5	No	No	No	No	No	No	No	No	No	No
20	1	78	1	3	No	No	No	No	No	No	No	No	No	No
21	1	46	1	2	No	No	No	No	No	No	No	No	No	No
22	1	15	1	1	No	No	No	No	No	No	No	No	No	No
23	1	15	1	1	No	No	No	No	No	No	No	No	No	No
24	1	15	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	21.5	180.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:13	2:30
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	50
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1648	1648
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	502	450	173	557
2	487	437	168	540
3	477	428	164	529
4	447	401	154	496
5	397	356	137	440
6	392	351	135	434
7	387	347	133	429
8	351	315	121	390
9	346	311	119	384
10	341	306	118	379
11	296	266	102	329
12	276	248	95	306
13	271	243	93	301
14	201	180	69	223
15	201	180	69	223
16	141	126	48	156
17	80	72	28	89
18	80	72	28	89
19	45	41	16	50
20	25	23	9	28
21	15	14	5	17
22	5	5	2	6
23	5	5	2	6
24	5	5	2	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	952	1	557	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	924	1	540	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	905	1	529	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	848	1	496	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
5	2	753	1	440	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
6	2	743	1	434	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
7	2	734	1	429	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
8	2	666	1	390	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
9	2	657	1	384	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
10	2	647	1	379	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
11	2	562	1	329	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
12	2	524	1	306	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
13	2	514	1	301	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
14	2	381	1	223	No	No	No	Yes	No	No	No	No	Yes	No
15	2	381	1	223	No	No	No	Yes	No	No	No	No	Yes	No
16	2	267	1	156	No	No	No	No	No	No	No	No	No	No
17	2	152	1	89	No	No	No	No	No	No	No	No	No	No
18	2	152	1	89	No	No	No	No	No	No	No	No	No	No
19	2	86	1	50	No	No	No	No	No	No	No	No	No	No
20	2	48	1	28	No	No	No	No	No	No	No	No	No	No
21	2	29	1	17	No	No	No	No	No	No	No	No	No	No
22	2	10	1	6	No	No	No	No	No	No	No	No	No	No
23	2	10	1	6	No	No	No	No	No	No	No	No	No	No
24	2	10	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	3	7	10	13	15	13

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.3	1678.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:46	259:40
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	173	557
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1682	1682
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	797	220	245
2	773	213	238
3	757	209	233
4	709	196	218
5	630	174	194
6	622	172	191
7	614	169	189
8	558	154	172
9	550	152	169
10	542	150	167
11	470	130	145
12	438	121	135
13	430	119	132
14	319	88	98
15	319	88	98
16	223	62	69
17	128	35	39
18	128	35	39
19	72	20	22
20	40	11	12
21	24	7	7
22	8	2	2
23	8	2	2
24	8	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1017	1	245	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	986	1	238	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	966	1	233	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	905	1	218	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	804	1	194	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	794	1	191	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	783	1	189	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	712	1	172	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
9	1	702	1	169	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
10	1	692	1	167	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
11	1	600	1	145	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	559	1	135	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
13	1	549	1	132	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
14	1	407	1	98	No	No	No	Yes	No	No	No	No	No	No
15	1	407	1	98	No	No	No	Yes	No	No	No	No	No	No
16	1	285	1	69	No	No	No	No	No	No	No	No	No	No
17	1	163	1	39	No	No	No	No	No	No	No	No	No	No
18	1	163	1	39	No	No	No	No	No	No	No	No	No	No
19	1	92	1	22	No	No	No	No	No	No	No	No	No	No
20	1	51	1	12	No	No	No	No	No	No	No	No	No	No
21	1	31	1	7	No	No	No	No	No	No	No	No	No	No
22	1	10	1	2	No	No	No	No	No	No	No	No	No	No
23	1	10	1	2	No	No	No	No	No	No	No	No	No	No
24	1	10	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	7	11	13	13	7	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	25.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:42
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	245
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1262
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	104	492	310	11
2	101	477	301	11
3	99	467	295	10
4	93	438	276	10
5	82	389	245	9
6	81	384	242	9
7	80	379	239	8
8	73	344	217	8
9	72	339	214	8
10	71	335	211	7
11	61	290	183	6
12	57	271	171	6
13	56	266	167	6
14	42	197	124	4
15	42	197	124	4
16	29	138	87	3
17	17	79	50	2
18	17	79	50	2
19	9	44	28	1
20	5	25	16	1
21	3	15	9	0
22	1	5	3	0
23	1	5	3	0
24	1	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	596	1	310	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	1	578	1	301	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	1	566	1	295	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	531	1	276	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	471	1	245	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	465	1	242	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	459	1	239	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	417	1	217	No	Yes	Yes	Yes	No	No	No	No	No	No
9	1	411	1	214	No	Yes	Yes	Yes	No	No	No	No	No	No
10	1	406	1	211	No	Yes	Yes	Yes	No	No	No	No	No	No
11	1	351	1	183	No	No	Yes	Yes	No	No	No	No	No	No
12	1	328	1	171	No	No	No	Yes	No	No	No	No	No	No
13	1	322	1	167	No	No	No	Yes	No	No	No	No	No	No
14	1	239	1	124	No	No	No	No	No	No	No	No	No	No
15	1	239	1	124	No	No	No	No	No	No	No	No	No	No
16	1	167	1	87	No	No	No	No	No	No	No	No	No	No
17	1	96	1	50	No	No	No	No	No	No	No	No	No	No
18	1	96	1	50	No	No	No	No	No	No	No	No	No	No
19	1	53	1	28	No	No	No	No	No	No	No	No	No	No
20	1	30	1	16	No	No	No	No	No	No	No	No	No	No
21	1	18	1	9	No	No	No	No	No	No	No	No	No	No
22	1	6	1	3	No	No	No	No	No	No	No	No	No	No
23	1	6	1	3	No	No	No	No	No	No	No	No	No	No
24	1	6	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	0	0	4	7	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.2	10
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:33	0:01
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	310	11
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	917	917
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	239	79	186
2	232	77	180
3	227	75	177
4	213	70	166
5	189	62	147
6	186	62	145
7	184	61	143
8	167	55	130
9	165	55	128
10	163	54	126
11	141	47	110
12	131	43	102
13	129	43	100
14	96	32	74
15	96	32	74
16	67	22	52
17	38	13	30
18	38	13	30
19	22	7	17
20	12	4	9
21	7	2	6
22	2	1	2
23	2	1	2
24	2	1	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	318	2	186	No	No	No	No	No	No	No	No	No	No
2	2	309	2	180	No	No	No	No	No	No	No	No	No	No
3	2	302	2	177	No	No	No	No	No	No	No	No	No	No
4	2	283	2	166	No	No	No	No	No	No	No	No	No	No
5	2	251	2	147	No	No	No	No	No	No	No	No	No	No
6	2	248	2	145	No	No	No	No	No	No	No	No	No	No
7	2	245	2	143	No	No	No	No	No	No	No	No	No	No
8	2	222	2	130	No	No	No	No	No	No	No	No	No	No
9	2	220	2	128	No	No	No	No	No	No	No	No	No	No
10	2	217	2	126	No	No	No	No	No	No	No	No	No	No
11	2	188	2	110	No	No	No	No	No	No	No	No	No	No
12	2	174	2	102	No	No	No	No	No	No	No	No	No	No
13	2	172	2	100	No	No	No	No	No	No	No	No	No	No
14	2	128	2	74	No	No	No	No	No	No	No	No	No	No
15	2	128	2	74	No	No	No	No	No	No	No	No	No	No
16	2	89	2	52	No	No	No	No	No	No	No	No	No	No
17	2	51	2	30	No	No	No	No	No	No	No	No	No	No
18	2	51	2	30	No	No	No	No	No	No	No	No	No	No
19	2	29	2	17	No	No	No	No	No	No	No	No	No	No
20	2	16	2	9	No	No	No	No	No	No	No	No	No	No
21	2	9	2	6	No	No	No	No	No	No	No	No	No	No
22	2	3	2	2	No	No	No	No	No	No	No	No	No	No
23	2	3	2	2	No	No	No	No	No	No	No	No	No	No
24	2	3	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:30
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	186
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	504
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	215	156	88
2	209	151	85
3	204	148	84
4	191	139	78
5	170	123	70
6	168	122	69
7	166	120	68
8	151	109	62
9	148	108	61
10	146	106	60
11	127	92	52
12	118	86	48
13	116	84	48
14	86	62	35
15	86	62	35
16	60	44	25
17	34	25	14
18	34	25	14
19	19	14	8
20	11	8	4
21	6	5	3
22	2	2	1
23	2	2	1
24	2	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	371	1	88	No	No	No	Yes	No	No	No	No	No	No
2	2	360	1	85	No	No	No	Yes	No	No	No	No	No	No
3	2	352	1	84	No	No	No	Yes	No	No	No	No	No	No
4	2	330	1	78	No	No	No	No	No	No	No	No	No	No
5	2	293	1	70	No	No	No	No	No	No	No	No	No	No
6	2	290	1	69	No	No	No	No	No	No	No	No	No	No
7	2	286	1	68	No	No	No	No	No	No	No	No	No	No
8	2	260	1	62	No	No	No	No	No	No	No	No	No	No
9	2	256	1	61	No	No	No	No	No	No	No	No	No	No
10	2	252	1	60	No	No	No	No	No	No	No	No	No	No
11	2	219	1	52	No	No	No	No	No	No	No	No	No	No
12	2	204	1	48	No	No	No	No	No	No	No	No	No	No
13	2	200	1	48	No	No	No	No	No	No	No	No	No	No
14	2	148	1	35	No	No	No	No	No	No	No	No	No	No
15	2	148	1	35	No	No	No	No	No	No	No	No	No	No
16	2	104	1	25	No	No	No	No	No	No	No	No	No	No
17	2	59	1	14	No	No	No	No	No	No	No	No	No	No
18	2	59	1	14	No	No	No	No	No	No	No	No	No	No
19	2	33	1	8	No	No	No	No	No	No	No	No	No	No
20	2	19	1	4	No	No	No	No	No	No	No	No	No	No
21	2	11	1	3	No	No	No	No	No	No	No	No	No	No
22	2	4	1	1	No	No	No	No	No	No	No	No	No	No
23	2	4	1	1	No	No	No	No	No	No	No	No	No	No
24	2	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:16
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	88
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	459
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	176	171	36
2	171	166	35
3	167	162	34
4	157	152	32
5	139	135	28
6	137	133	28
7	136	132	28
8	123	120	25
9	121	118	25
10	120	116	24
11	104	101	21
12	97	94	20
13	95	92	19
14	70	68	14
15	70	68	14
16	49	48	10
17	28	27	6
18	28	27	6
19	16	15	3
20	9	9	2
21	5	5	1
22	2	2	0
23	2	2	0
24	2	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	347	1	36	No	No	No	No	No	No	No	No	No	No
2	3	337	1	35	No	No	No	No	No	No	No	No	No	No
3	3	329	1	34	No	No	No	No	No	No	No	No	No	No
4	3	309	1	32	No	No	No	No	No	No	No	No	No	No
5	3	274	1	28	No	No	No	No	No	No	No	No	No	No
6	3	270	1	28	No	No	No	No	No	No	No	No	No	No
7	3	268	1	28	No	No	No	No	No	No	No	No	No	No
8	3	243	1	25	No	No	No	No	No	No	No	No	No	No
9	3	239	1	25	No	No	No	No	No	No	No	No	No	No
10	3	236	1	24	No	No	No	No	No	No	No	No	No	No
11	3	205	1	21	No	No	No	No	No	No	No	No	No	No
12	3	191	1	20	No	No	No	No	No	No	No	No	No	No
13	3	187	1	19	No	No	No	No	No	No	No	No	No	No
14	3	138	1	14	No	No	No	No	No	No	No	No	No	No
15	3	138	1	14	No	No	No	No	No	No	No	No	No	No
16	3	97	1	10	No	No	No	No	No	No	No	No	No	No
17	3	55	1	6	No	No	No	No	No	No	No	No	No	No
18	3	55	1	6	No	No	No	No	No	No	No	No	No	No
19	3	31	1	3	No	No	No	No	No	No	No	No	No	No
20	3	18	1	2	No	No	No	No	No	No	No	No	No	No
21	3	10	1	1	No	No	No	No	No	No	No	No	No	No
22	3	4	1	0	No	No	No	No	No	No	No	No	No	No
23	3	4	1	0	No	No	No	No	No	No	No	No	No	No
24	3	4	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	36
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	383
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	491	349	182	75
2	476	339	177	73
3	466	332	173	71
4	437	311	162	67
5	388	276	144	59
6	383	272	142	59
7	378	269	140	58
8	344	244	127	53
9	339	241	126	52
10	334	237	124	51
11	290	206	107	44
12	270	192	100	41
13	265	188	98	41
14	196	140	73	30
15	196	140	73	30
16	137	98	51	21
17	79	56	29	12
18	79	56	29	12
19	44	31	16	7
20	25	17	9	4
21	15	10	5	2
22	5	3	2	1
23	5	3	2	1
24	5	3	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	840	2	182	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	815	2	177	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	2	798	2	173	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	2	748	2	162	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
5	2	664	2	144	No	No	Yes	Yes	No	No	Yes	Yes	No	No
6	2	655	2	142	No	No	Yes	Yes	No	No	Yes	Yes	No	No
7	2	647	2	140	No	No	Yes	Yes	No	No	Yes	Yes	No	No
8	2	588	2	127	No	No	No	Yes	No	No	No	Yes	No	No
9	2	580	2	126	No	No	No	Yes	No	No	No	Yes	No	No
10	2	571	2	124	No	No	No	Yes	No	No	No	Yes	No	No
11	2	496	2	107	No	No	No	No	No	No	No	No	No	No
12	2	462	2	100	No	No	No	No	No	No	No	No	No	No
13	2	453	2	98	No	No	No	No	No	No	No	No	No	No
14	2	336	2	73	No	No	No	No	No	No	No	No	No	No
15	2	336	2	73	No	No	No	No	No	No	No	No	No	No
16	2	235	2	51	No	No	No	No	No	No	No	No	No	No
17	2	135	2	29	No	No	No	No	No	No	No	No	No	No
18	2	135	2	29	No	No	No	No	No	No	No	No	No	No
19	2	75	2	16	No	No	No	No	No	No	No	No	No	No
20	2	42	2	9	No	No	No	No	No	No	No	No	No	No
21	2	25	2	5	No	No	No	No	No	No	No	No	No	No
22	2	8	2	2	No	No	No	No	No	No	No	No	No	No
23	2	8	2	2	No	No	No	No	No	No	No	No	No	No
24	2	8	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	4	7	10	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	35.8	22.3
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:48	0:27
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	182	75
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1097	1097
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	1016	535	0
2	986	519	0
3	965	508	0
4	904	476	0
5	803	423	0
6	792	417	0
7	782	412	0
8	711	375	0
9	701	369	0
10	691	364	0
11	599	316	0
12	559	294	0
13	549	289	0
14	406	214	0
15	406	214	0
16	284	150	0
17	163	86	0
18	163	86	0
19	91	48	0
20	51	27	0
21	30	16	0
22	10	5	0
23	10	5	0
24	10	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1551	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1505	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1473	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1380	1	0	No	No	No	No	No	No	No	No	No	No
5	1	1226	1	0	No	No	No	No	No	No	No	No	No	No
6	1	1209	1	0	No	No	No	No	No	No	No	No	No	No
7	1	1194	1	0	No	No	No	No	No	No	No	No	No	No
8	1	1086	1	0	No	No	No	No	No	No	No	No	No	No
9	1	1070	1	0	No	No	No	No	No	No	No	No	No	No
10	1	1055	1	0	No	No	No	No	No	No	No	No	No	No
11	1	915	1	0	No	No	No	No	No	No	No	No	No	No
12	1	853	1	0	No	No	No	No	No	No	No	No	No	No
13	1	838	1	0	No	No	No	No	No	No	No	No	No	No
14	1	620	1	0	No	No	No	No	No	No	No	No	No	No
15	1	620	1	0	No	No	No	No	No	No	No	No	No	No
16	1	434	1	0	No	No	No	No	No	No	No	No	No	No
17	1	249	1	0	No	No	No	No	No	No	No	No	No	No
18	1	249	1	0	No	No	No	No	No	No	No	No	No	No
19	1	139	1	0	No	No	No	No	No	No	No	No	No	No
20	1	78	1	0	No	No	No	No	No	No	No	No	No	No
21	1	46	1	0	No	No	No	No	No	No	No	No	No	No
22	1	15	1	0	No	No	No	No	No	No	No	No	No	No
23	1	15	1	0	No	No	No	No	No	No	No	No	No	No
24	1	15	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1551
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	439	329	29
2	426	319	28
3	417	313	28
4	391	293	26
5	347	260	23
6	342	257	23
7	338	253	22
8	307	230	20
9	303	227	20
10	299	224	20
11	259	194	17
12	241	181	16
13	237	178	16
14	176	132	12
15	176	132	12
16	123	92	8
17	70	53	5
18	70	53	5
19	40	30	3
20	22	16	1
21	13	10	1
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	768	1	29	No	No	No	No	No	No	No	No	No	No
2	1	745	1	28	No	No	No	No	No	No	No	No	No	No
3	1	730	1	28	No	No	No	No	No	No	No	No	No	No
4	1	684	1	26	No	No	No	No	No	No	No	No	No	No
5	1	607	1	23	No	No	No	No	No	No	No	No	No	No
6	1	599	1	23	No	No	No	No	No	No	No	No	No	No
7	1	591	1	22	No	No	No	No	No	No	No	No	No	No
8	1	537	1	20	No	No	No	No	No	No	No	No	No	No
9	1	530	1	20	No	No	No	No	No	No	No	No	No	No
10	1	523	1	20	No	No	No	No	No	No	No	No	No	No
11	1	453	1	17	No	No	No	No	No	No	No	No	No	No
12	1	422	1	16	No	No	No	No	No	No	No	No	No	No
13	1	415	1	16	No	No	No	No	No	No	No	No	No	No
14	1	308	1	12	No	No	No	No	No	No	No	No	No	No
15	1	308	1	12	No	No	No	No	No	No	No	No	No	No
16	1	215	1	8	No	No	No	No	No	No	No	No	No	No
17	1	123	1	5	No	No	No	No	No	No	No	No	No	No
18	1	123	1	5	No	No	No	No	No	No	No	No	No	No
19	1	70	1	3	No	No	No	No	No	No	No	No	No	No
20	1	38	1	1	No	No	No	No	No	No	No	No	No	No
21	1	23	1	1	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	29
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	797
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

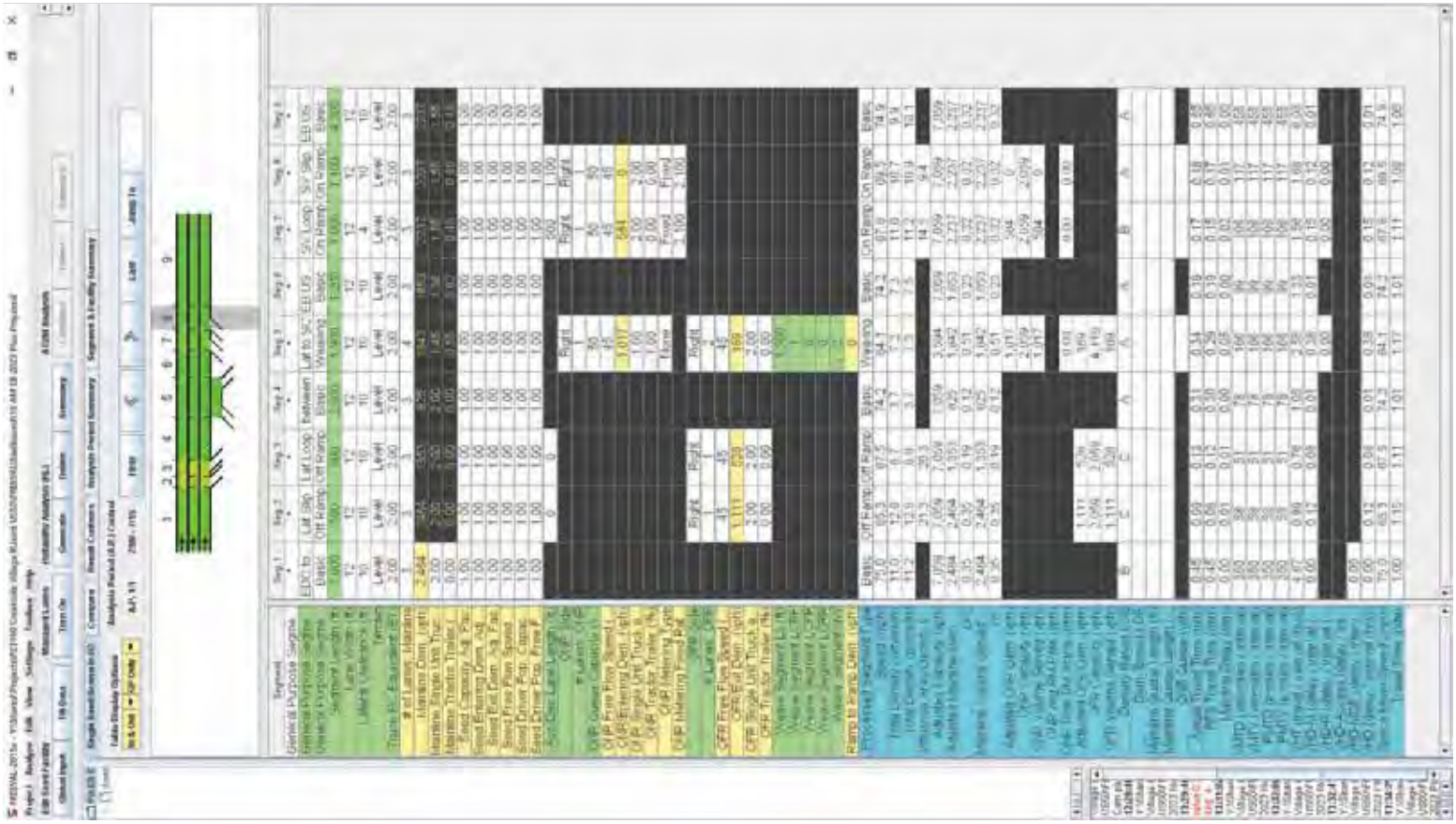
Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	289	247	157	126
2	280	240	152	122
3	275	235	149	120
4	257	220	140	112
5	228	195	124	100
6	225	193	122	98
7	223	190	121	97
8	202	173	110	88
9	199	170	108	87
10	197	168	107	86
11	171	146	93	74
12	159	136	86	69
13	156	133	85	68
14	116	99	63	50
15	116	99	63	50
16	81	69	44	35
17	46	40	25	20
18	46	40	25	20
19	26	22	14	11
20	14	12	8	6
21	9	7	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1



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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	536	1	157	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	1	520	1	152	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	510	1	149	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	477	1	140	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
5	1	423	1	124	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	418	1	122	No	Yes	Yes	Yes	No	No	No	No	No	No
7	1	413	1	121	No	Yes	Yes	Yes	No	No	No	No	No	No
8	1	375	1	110	No	No	Yes	Yes	No	No	No	No	No	No
9	1	369	1	108	No	No	Yes	Yes	No	No	No	No	No	No
10	1	365	1	107	No	No	Yes	Yes	No	No	No	No	No	No
11	1	317	1	93	No	No	No	Yes	No	No	No	No	No	No
12	1	295	1	86	No	No	No	Yes	No	No	No	No	No	No
13	1	289	1	85	No	No	No	Yes	No	No	No	No	No	No
14	1	215	1	63	No	No	No	No	No	No	No	No	No	No
15	1	215	1	63	No	No	No	No	No	No	No	No	No	No
16	1	150	1	44	No	No	No	No	No	No	No	No	No	No
17	1	86	1	25	No	No	No	No	No	No	No	No	No	No
18	1	86	1	25	No	No	No	No	No	No	No	No	No	No
19	1	48	1	14	No	No	No	No	No	No	No	No	No	No
20	1	26	1	8	No	No	No	No	No	No	No	No	No	No
21	1	16	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					2	7	10	13	0	0	1	5	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.2	22.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:47	0:47
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	157	126
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	819	819
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Creekside Village
Traffic Impact Analysis

El Dorado Hills, California

Existing PM Plus Project

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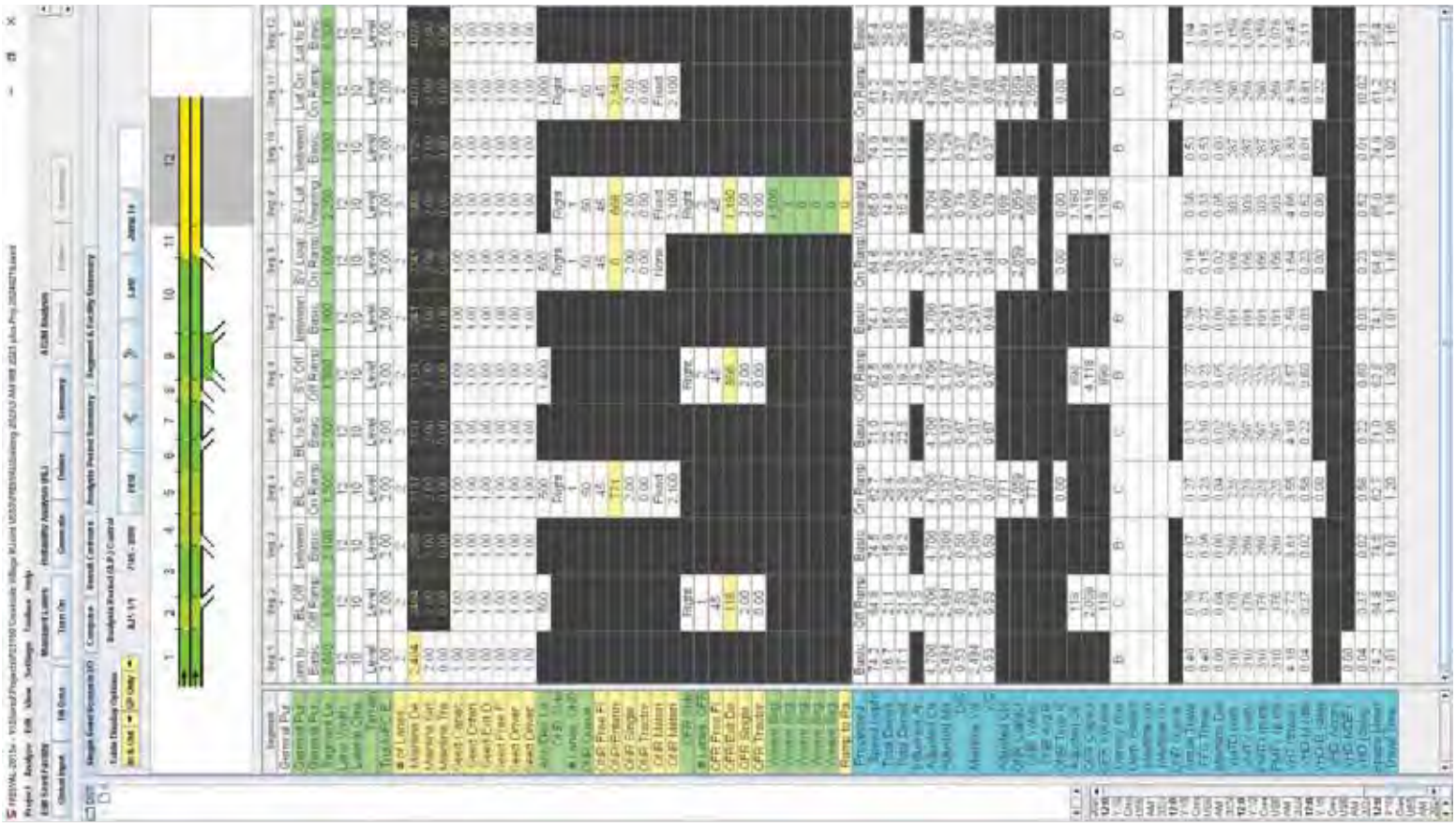

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Scenario 3 2023 PM, Plus Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.971	51.7	D
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	NB Left	1.271	119.4	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	WB Right	1.036	57.6	E
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.947	32.1	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.938	47.4	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	WB Left	0.723	59.8	E
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	0.961	44.0	D
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.834	15.8	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Right	1.059	106.6	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	SB Thru	1.044	74.5	E
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.767	212.2	F
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	4.919	1,969.4	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	10.524	5,028.9	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.772	21.2	C
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.024	17.8	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.027	12.9	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.178	8.6	A
18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	1.215	193.0	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.452	29.1	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.545	67.9	E
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	0.962	68.8	E
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	NB Right	0.765	23.9	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.706	32.1	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	NB Left	0.561	20.4	C
25	New Intersection	Two-way stop	HCM 6th Edition	SB Thru	0.010	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.126	17.6	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.134	22.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	51.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.971

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	91	1766	401	35	1038	55	36	17	54	339	52	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	36	0	0	62	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	17	0	0	16	0	0	7
Total Hourly Volume [veh/h]	3	91	1802	401	35	1100	38	36	17	38	339	52	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	26	518	115	10	316	11	10	5	11	97	15	4
Total Analysis Volume [veh/h]	3	105	2071	461	40	1264	44	41	20	44	390	60	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	40	40	2	36	36	5	5	14	14
g / C, Green / Cycle	0.08	0.51	0.51	0.03	0.46	0.46	0.06	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.58	0.29	0.02	0.35	0.35	0.02	0.04	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1848	1781	1668	1781	1787
c, Capacity [veh/h]	141	1810	808	51	856	846	105	99	319	320
d1, Uniform Delay [s]	35.53	19.36	13.41	37.99	17.85	17.87	35.67	36.24	30.55	30.55
k, delay calibration	0.04	0.06	0.06	0.04	0.16	0.16	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	65.92	0.36	9.04	2.22	2.27	0.87	2.65	4.57	4.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	1.14	0.57	0.78	0.77	0.77	0.39	0.65	0.73	0.73
d, Delay for Lane Group [s/veh]	38.74	85.28	13.77	47.04	20.07	20.14	36.54	38.89	35.12	35.10
Lane Group LOS	D	F	B	D	C	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	29.72	4.72	0.85	8.89	8.82	0.77	1.25	4.44	4.46
50th-Percentile Queue Length [ft/ln]	50.70	743.07	118.04	21.27	222.13	220.40	19.17	31.20	111.04	111.39
95th-Percentile Queue Length [veh/ln]	3.65	42.69	8.29	1.53	13.77	13.69	1.38	2.25	7.90	7.92
95th-Percentile Queue Length [ft/ln]	91.26	1067.35	207.13	38.29	344.35	342.14	34.50	56.16	197.45	197.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.74	38.74	85.28	13.77	47.04	20.11	20.14	36.54	38.89	38.89	35.11	35.10	35.10
Movement LOS	D	D	F	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	70.89				20.91			37.98			35.11		
Approach LOS	E				C			D			D		
d_I, Intersection Delay [s/veh]	51.69												
Intersection LOS	D												
Intersection V/C	0.971												

Emissions

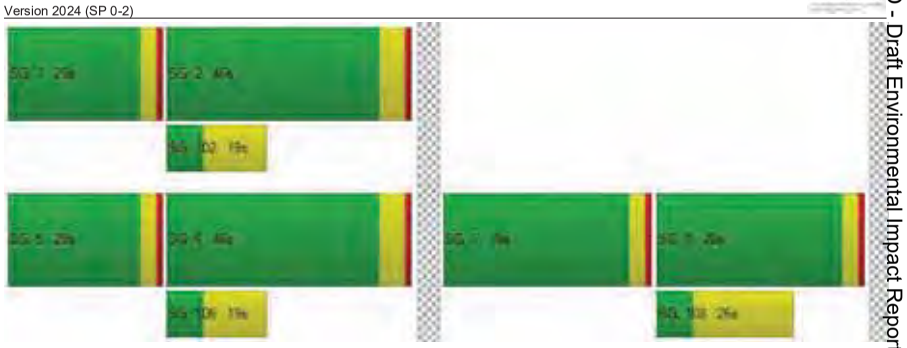
Vehicle Miles Traveled [mph]	25.79	494.62	110.10	5.88	96.64	95.67	1.75	2.73	12.20	12.24
Stops [stops/h]	92.91	2723.38	216.32	38.99	407.07	403.90	35.12	57.18	203.49	204.13
Fuel consumption [US gal/h]	2.89	86.75	7.76	1.07	11.06	10.97	0.57	0.93	3.29	3.30
CO [g/h]	202.06	6064.10	542.11	74.73	773.01	766.71	39.91	65.35	230.12	230.85
NOx [g/h]	39.31	1179.85	105.48	14.54	150.40	149.17	7.77	12.72	44.77	44.91
VOC [g/h]	46.83	1405.41	125.64	17.32	179.15	177.69	9.25	15.15	53.33	53.50

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	29.06	29.06	29.06
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.340	2.068	2.266
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1026	1026	891	891
d_b, Bicycle Delay [s]	9.32	9.32	12.08	12.08
l_b,int, Bicycle LOS Score for Intersection	3.735	2.686	1.759	2.342
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	119.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.271

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	75	4	164	1068	198	365	41	525	59	107	276
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	19	36	0	0	0	62	0	0	0	31	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	23	0	0	0	59	0	0	167	0	0	83
Total Hourly Volume [veh/h]	5	461	1652	52	4	164	1130	139	365	41	389	59	107	193
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	124	444	14	1	44	304	37	98	11	105	16	29	52
Total Analysis Volume [veh/h]	5	496	1776	56	4	176	1215	149	392	44	418	63	115	208
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	127	127	127	127	127	127	127	127	127	127	127
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	55	55	15	49	49	20	20	20	20	20
g / C, Green / Cycle	0.16	0.43	0.43	0.12	0.39	0.39	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.28	0.34	0.34	0.10	0.37	0.37	0.12	0.12	0.26	0.04	0.19
s, saturation flow rate [veh/h]	1781	3560	1841	1781	1870	1800	1781	1798	1589	1781	1679
c, Capacity [veh/h]	280	1530	791	207	727	700	280	283	250	280	264
d1, Uniform Delay [s]	53.57	31.26	31.35	55.20	37.65	37.94	51.42	51.38	53.57	46.80	53.57
k, delay calibration	0.50	0.13	0.36	0.12	0.41	0.42	0.23	0.23	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	368.75	1.13	5.83	11.24	20.15	23.09	9.37	8.97	319.24	0.15	129.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.79	0.79	0.79	0.87	0.95	0.96	0.78	0.77	1.67	0.22	1.22
d, Delay for Lane Group [s/veh]	422.31	32.39	37.17	66.44	57.80	61.03	60.79	60.35	372.81	46.95	182.84
Lane Group LOS	F	C	D	E	E	E	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	37.40	15.33	17.02	6.18	23.80	23.88	7.39	7.39	30.15	1.77	17.91
50th-Percentile Queue Length [ft/ln]	935.11	383.20	425.39	154.61	595.02	596.90	184.72	184.69	753.68	44.17	447.72
95th-Percentile Queue Length [veh/ln]	58.32	21.75	23.78	10.26	31.80	31.89	11.85	11.85	47.33	3.18	27.21
95th-Percentile Queue Length [ft/ln]	1458.11	543.71	594.52	256.57	795.04	797.24	296.17	296.13	1183.21	79.50	680.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	422.3	422.3	33.92	37.17	66.44	66.44	59.19	61.03	60.60	60.35	372.81	46.95	182.84	182.84
Movement LOS	F	F	C	D	E	E	E	E	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	117.41				60.21				213.40			160.66		
Approach LOS	F				E				F			F		
d_I, Intersection Delay [s/veh]	119.43													
Intersection LOS	F													
Intersection V/C	1.271													

Emissions

Vehicle Miles Traveled [mph]	94.29	226.83	117.94	42.99	164.94	160.83	13.57	13.62	26.07	3.07	15.75
Stops [stops/h]	1059.21	868.10	481.84	175.13	673.98	676.11	209.23	209.20	853.70	50.03	507.13
Fuel consumption [US gal/h]	59.45	26.51	14.77	6.08	22.16	22.28	4.41	4.40	37.49	1.00	15.47
CO [g/h]	4155.42	1853.18	1032.73	425.32	1548.69	1557.47	307.94	307.53	2620.88	70.23	1081.06
NOx [g/h]	808.49	360.56	200.93	82.75	301.32	303.03	59.91	59.83	509.93	13.66	210.33
VOC [g/h]	963.06	429.49	239.35	98.57	358.92	360.96	71.37	71.27	607.41	16.28	250.55

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	53.04	53.04	53.04
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.543	2.834	2.324
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	791	791	315	315
d_b, Bicycle Delay [s]	23.22	23.22	45.14	45.14
l_b,int, Bicycle LOS Score for Intersection	2.853	2.737	3.244	2.333
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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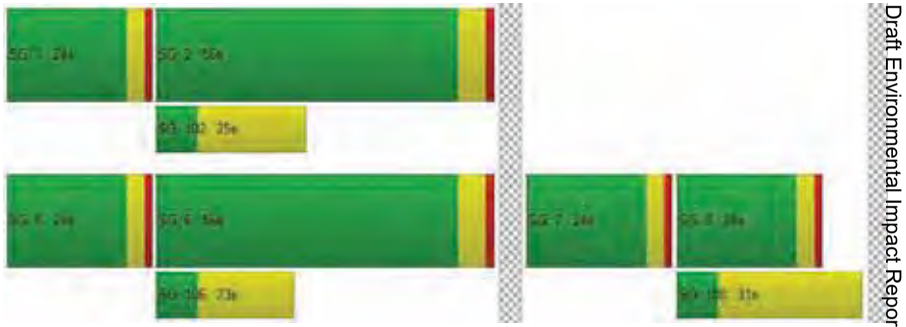


Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.036

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	980	1679	319	0	37	1192	428	208	130	290	236	80	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	66	55	10	0	0	93	0	0	0	36	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	99	0	0	0	128	0	0	98	0	0	75
Total Hourly Volume [veh/h]	1	1046	1734	230	0	37	1285	300	208	130	228	255	80	176
Peak Hour Factor	1.000	0.840	0.990	0.840	1.000	0.840	0.990	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	311	438	68	0	11	324	89	62	39	68	76	24	52
Total Analysis Volume [veh/h]	1	1245	1752	274	0	44	1298	357	248	155	271	304	95	210
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	73	73	7	34	57	18	18	18	18	18
g / C, Green / Cycle	0.33	0.54	0.54	0.05	0.25	0.42	0.13	0.13	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.36	0.38	0.40	0.02	0.26	0.22	0.11	0.11	0.11	0.11	0.13
s, saturation flow rate [veh/h]	3459	3532	1735	1781	5053	1589	1781	1847	1781	1822	1589
c, Capacity [veh/h]	1155	1901	934	86	1275	668	232	241	241	247	216
d1, Uniform Delay [s]	45.29	23.24	24.25	63.17	50.84	29.48	57.87	57.86	57.15	57.13	58.54
k, delay calibration	0.05	0.50	0.50	0.04	0.50	0.50	0.15	0.15	0.24	0.24	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	37.48	2.16	5.44	1.76	29.71	3.05	11.47	11.02	13.78	13.24	46.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.70	0.75	0.51	1.02	0.53	0.85	0.85	0.82	0.82	0.97
d, Delay for Lane Group [s/veh]	82.77	25.40	29.69	64.94	80.55	32.54	69.34	68.88	70.93	70.36	104.89
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	25.33	16.05	18.38	1.50	17.54	9.01	7.41	7.65	7.54	7.65	9.98
50th-Percentile Queue Length [ft/ln]	633.23	401.35	459.58	37.60	438.43	225.17	185.34	191.29	188.51	191.32	249.49
95th-Percentile Queue Length [veh/ln]	35.32	22.63	25.42	2.71	24.67	13.93	11.88	12.19	12.04	12.19	15.16
95th-Percentile Queue Length [ft/ln]	883.03	565.63	635.38	67.67	616.67	348.21	296.97	304.71	301.09	304.74	379.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	82.77	82.77	26.44	29.69	64.94	64.94	80.55	32.54	69.25	68.88	0.00	70.73	70.36	104.89
Movement LOS	F	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	48.16				70.06				44.14			82.45		
Approach LOS	D				E				D			F		
d_I, Intersection Delay [s/veh]	57.60													
Intersection LOS	E													
Intersection V/C	1.036													

Emissions

Vehicle Miles Traveled [mph]	213.40	227.50	119.49	8.28	244.28	67.19	9.15	9.49	6.28	6.40	6.68
Stops [stops/h]	1340.96	849.92	486.62	39.81	1392.66	238.41	196.24	202.55	199.59	202.57	264.16
Fuel consumption [US gal/h]	37.18	20.93	11.82	1.36	46.96	7.63	4.25	4.38	4.21	4.27	6.22
CO [g/h]	2598.77	1462.85	826.40	95.08	3282.69	533.39	297.32	306.43	294.43	298.27	434.50
NOx [g/h]	505.63	284.62	160.79	18.50	638.69	103.78	57.85	59.62	57.29	58.03	84.54
VOC [g/h]	602.29	339.03	191.53	22.03	760.80	123.62	68.91	71.02	68.24	69.13	100.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.564
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.413	2.540	2.225	2.124
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.947

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2117	609	1	388	1330	0	0	0	1197	0	0	861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	131	21	0	0	148	0	0	0	118	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	189	0	0	0	0	0	0	395	0	0	258
Total Hourly Volume [veh/h]	0	2248	441	1	388	1478	0	0	0	920	0	0	603
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	592	131	0	115	389	0	0	0	274	0	0	179
Total Analysis Volume [veh/h]	0	2366	525	1	462	1556	0	0	0	1095	0	0	718
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.46	0.33	0.26	0.23	0.39	
s, saturation flow rate [veh/h]	5094	1589	1781	6792	2813	
c, Capacity [veh/h]	2809	876	516	3476	927	
d1, Uniform Delay [s]	12.78	10.22	23.17	10.51	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.07	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.27	3.02	8.80	0.42	83.35	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.60	0.90	0.45	1.18	
d, Delay for Lane Group [s/veh]	16.05	13.24	31.97	10.93	106.15	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	8.06	4.57	7.43	2.96	17.49	
50th-Percentile Queue Length [ft/ln]	201.47	114.28	185.84	73.89	437.21	
95th-Percentile Queue Length [veh/ln]	12.71	8.08	11.90	5.32	26.84	
95th-Percentile Queue Length [ft/ln]	317.86	201.93	297.62	133.01	671.01	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	16.05	13.24	31.97	31.97	10.93	0.00	0.00	0.00	106.15	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]	15.54			15.76				106.15			0.00		
Approach LOS	B			B				F			A		
d_I, Intersection Delay [s/veh]	32.14												
Intersection LOS	C												
Intersection V/C	0.947												

Emissions

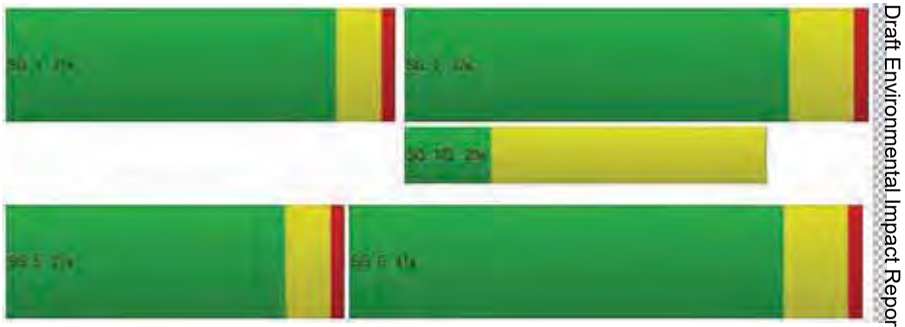
Vehicle Miles Traveled [mph]	342.35	75.97	79.30	266.49	78.36	
Stops [stops/h]	1279.90	242.00	393.53	625.93	1851.70	
Fuel consumption [US gal/h]	35.38	7.03	10.62	20.38	37.11	
CO [g/h]	2472.96	491.19	742.59	1424.52	2593.78	
NOx [g/h]	481.15	95.57	144.48	277.16	504.65	
VOC [g/h]	573.13	113.84	172.10	330.15	601.13	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.273
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	3.254	2.202	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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Page 233
GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	47.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.938

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1820	215	3	532	1803	189	299	33	67	1	91	6	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	152	12	0	0	266	0	0	0	6	0	22	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	68	0	0	0	57	0	0	22	0	0	0	181
Total Hourly Volume [veh/h]	1	27	1972	159	3	532	2069	132	299	33	51	1	113	6	423
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	7	514	41	1	139	539	34	78	9	13	0	29	2	110
Total Analysis Volume [veh/h]	1	28	2054	166	3	554	2155	138	311	34	53	1	118	6	441
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	49	49	12	59	59	12	12	12	15	15	15
g / C, Green / Cycle	0.02	0.47	0.47	0.11	0.57	0.57	0.11	0.11	0.11	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.10	0.16	0.42	0.09	0.09	0.02	0.03	0.07	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	77	2417	754	397	2889	901	395	213	181	256	229	228
d1, Uniform Delay [s]	50.38	24.18	16.11	46.26	16.98	10.73	45.07	41.78	42.43	41.08	44.59	44.59
k, delay calibration	0.04	0.04	0.04	0.15	0.04	0.04	0.08	0.08	0.08	0.08	0.41	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.13	0.34	0.05	185.93	0.15	0.03	2.65	0.26	0.66	0.98	48.25	48.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.85	0.22	1.40	0.75	0.15	0.79	0.16	0.29	0.47	0.98	0.98
d, Delay for Lane Group [s/veh]	51.51	24.52	16.17	232.19	17.12	10.75	47.72	42.03	43.09	42.06	92.84	92.98
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.38	14.25	2.30	15.36	12.07	1.47	4.04	0.80	1.28	2.87	8.79	8.76
50th-Percentile Queue Length [ft/ln]	9.61	356.37	57.55	384.06	301.82	36.70	101.05	20.12	32.09	71.68	219.63	218.97
95th-Percentile Queue Length [veh/ln]	0.69	20.45	4.14	24.60	17.77	2.64	7.28	1.45	2.31	5.16	13.65	13.61
95th-Percentile Queue Length [ft/ln]	17.30	511.17	103.60	615.05	444.28	66.05	181.90	36.22	57.76	129.03	341.15	340.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.51	51.51	24.52	16.17	232.1	232.1	17.12	10.75	47.72	42.03	43.09	42.06	42.06	92.84	92.91
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	24.25				58.85				46.62			82.22			
Approach LOS	C				E				D			F			
d_I, Intersection Delay [s/veh]	47.39														
Intersection LOS	D														
Intersection V/C	0.938														

Emissions

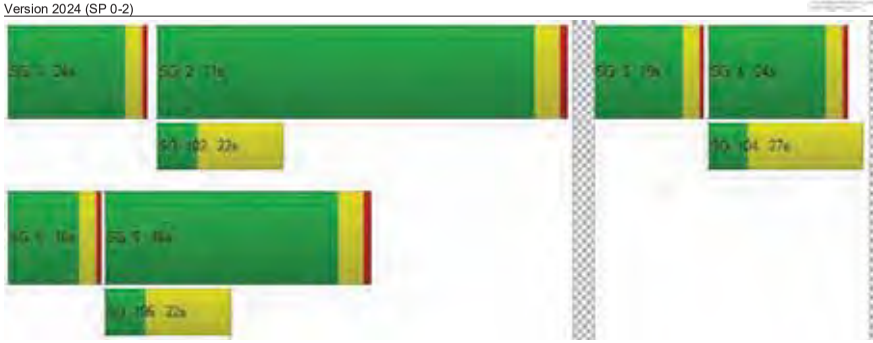
Vehicle Miles Traveled [mph]	6.47	458.53	37.06	80.60	311.82	19.97	39.67	4.34	6.76	41.77	78.60	78.29
Stops [stops/h]	26.52	1475.14	79.41	1059.84	1249.35	50.63	278.86	27.77	44.27	98.90	303.03	302.12
Fuel consumption [US gal/h]	0.72	37.27	2.51	35.49	27.25	1.40	6.19	0.62	0.99	3.28	9.14	9.11
CO [g/h]	50.12	2605.45	175.48	2480.49	1904.69	98.13	432.92	43.53	69.03	229.56	638.90	636.92
NOx [g/h]	9.75	506.93	34.14	482.61	370.58	19.09	84.23	8.47	13.43	44.66	124.31	123.92
VOC [g/h]	11.62	603.84	40.67	574.88	441.43	22.74	100.33	10.09	16.00	53.20	148.07	147.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.76	0.00	41.76	41.76
l_p,int, Pedestrian LOS Score for Intersectio	3.458	0.000	2.597	2.870
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	776	1255	393	297
d_b, Bicycle Delay [s]	19.54	7.24	33.70	37.83
l_b,int, Bicycle LOS Score for Intersection	2.833	2.854	1.906	2.597
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	59.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.723

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	73	1515	362	2	243	1325	392	2	349	336	86	393	164	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	167	41	0	0	294	0	0	0	0	0	70	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	121	0	0	0	118	0	0	0	26	0	0	58
Total Hourly Volume [veh/h]	6	73	1682	282	2	243	1619	274	2	349	336	60	463	164	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	20	452	76	1	65	435	74	1	94	90	16	124	44	37
Total Analysis Volume [veh/h]	6	78	1809	303	2	261	1741	295	2	375	361	65	498	176	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	25	50	0	0	35	50	0	0	25	15	0	15	25	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	40	56	0	0	31	21	0	21	31	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	158	158	158	158	158	158	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	85	85	14	90	90	19	21	21	15	17	17
g / C, Green / Cycle	0.06	0.54	0.54	0.09	0.57	0.57	0.12	0.13	0.13	0.09	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.19	0.08	0.34	0.19	0.11	0.12	0.12	0.14	0.05	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1772	3459	3560	1589
c, Capacity [veh/h]	111	3672	859	309	2893	903	424	249	236	328	376	168
d1, Uniform Delay [s]	72.94	22.72	20.59	70.89	22.40	18.10	68.27	67.21	67.22	71.50	66.47	69.58
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.47	0.48	0.13	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.97	0.48	1.14	2.55	0.94	0.96	2.61	31.29	32.83	236.65	0.34	5.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.49	0.35	0.85	0.60	0.33	0.89	0.88	0.88	1.52	0.47	0.87
d, Delay for Lane Group [s/veh]	76.91	23.20	21.73	73.44	23.33	19.07	70.88	98.50	100.06	308.15	66.81	74.84
Lane Group LOS	E	C	C	E	C	B	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.50	10.76	6.74	5.29	13.81	5.81	7.69	10.87	10.41	17.47	3.38	6.09
50th-Percentile Queue Length [ft/ln]	87.44	269.12	168.38	132.27	345.34	145.35	192.28	271.68	260.34	436.86	84.62	152.31
95th-Percentile Queue Length [veh/ln]	6.30	16.15	10.99	9.06	19.91	9.77	12.24	16.27	15.71	27.83	6.09	10.14
95th-Percentile Queue Length [ft/ln]	157.38	403.64	274.78	226.58	497.73	244.22	305.99	406.84	392.65	695.67	152.31	253.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.91	76.91	23.20	21.73	73.44	73.44	23.33	19.07	70.88	70.88	99.12	100.0	308.15	66.81	74.84
Movement LOS	E	E	C	C	E	E	C	B	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	25.05				28.52				85.94				214.81		
Approach LOS	C				C				F				F		
d_I, Intersection Delay [s/veh]	59.78														
Intersection LOS	E														
Intersection V/C	0.723														

Emissions

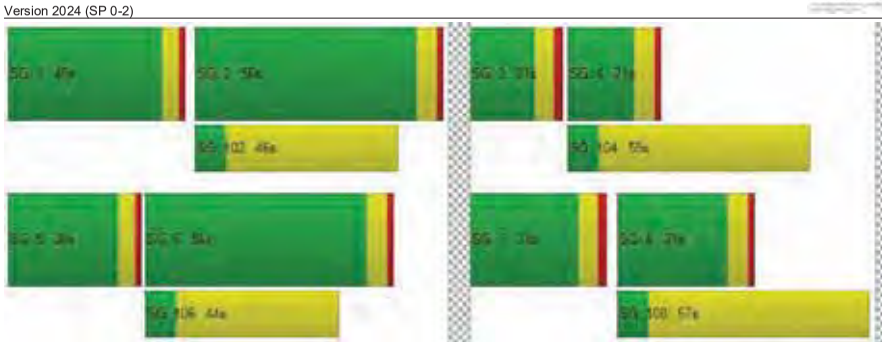
Vehicle Miles Traveled [mph]	33.44	720.14	120.62	58.71	388.65	65.85	94.09	54.55	51.77	52.03	18.39	15.25
Stops [stops/h]	79.69	981.10	153.46	241.10	944.22	132.47	350.49	247.61	237.28	796.29	154.24	138.81
Fuel consumption [US gal/h]	3.13	43.60	7.15	8.94	33.33	5.05	11.25	7.99	7.67	37.76	4.00	3.62
CO [g/h]	218.88	3047.97	500.01	624.92	2329.70	352.93	786.16	558.77	535.80	2639.62	279.72	252.90
NOx [g/h]	42.59	593.02	97.28	121.59	453.28	68.67	152.96	108.72	104.25	513.57	54.42	49.20
VOC [g/h]	50.73	706.40	115.88	144.83	539.93	81.80	182.20	129.50	124.18	611.76	64.83	58.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.38	68.38	68.38	68.38
l_p,int, Pedestrian LOS Score for Intersectio	3.551	3.864	2.760	2.971
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	637	637	194	320
d_b, Bicycle Delay [s]	36.71	36.71	64.44	55.73
l_b,int, Bicycle LOS Score for Intersection	2.513	2.745	1.934	2.284
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	44.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.961

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	6	1300	21	0	21	1371	285	408	7	15	1	4	9
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	207	0	0	0	364	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	6	0	0	0	86	0	0	5	0	0	3
Total Hourly Volume [veh/h]	1	6	1507	15	0	21	1735	199	408	7	10	1	4	6
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	423	4	0	6	487	56	115	2	3	0	1	2
Total Analysis Volume [veh/h]	1	7	1693	17	0	24	1949	224	458	8	11	1	5	7
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	72	72	72	72	72	72	72	72	72
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	40	40	1	40	40	12	12	1
g / C, Green / Cycle	0.01	0.55	0.55	0.02	0.55	0.55	0.17	0.17	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.46	0.46	0.01	0.58	0.60	0.13	0.13	0.01
s, saturation flow rate [veh/h]	1781	1870	1863	1781	1870	1804	1781	1774	1702
c, Capacity [veh/h]	20	1021	1017	30	1032	996	306	305	29
d1, Uniform Delay [s]	35.63	13.78	13.81	35.53	16.25	16.25	28.74	28.74	35.30
k, delay calibration	0.04	0.33	0.33	0.04	0.47	0.49	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.90	5.59	5.69	15.93	42.23	56.58	4.35	4.37	3.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.84	0.84	0.80	1.05	1.09	0.78	0.78	0.44
d, Delay for Lane Group [s/veh]	40.52	19.37	19.50	51.46	58.49	72.83	33.09	33.11	39.17
Lane Group LOS	D	B	B	D	F	F	C	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.16	11.39	11.41	0.52	23.53	26.67	4.17	4.16	0.25
50th-Percentile Queue Length [ft/ln]	4.09	284.67	285.30	12.91	588.27	666.79	104.32	103.95	6.32
95th-Percentile Queue Length [veh/ln]	0.29	16.92	16.95	0.93	32.80	37.61	7.51	7.48	0.45
95th-Percentile Queue Length [ft/ln]	7.36	423.03	423.80	23.24	819.98	940.33	187.78	187.11	11.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.52	40.52	19.43	19.50	51.46	51.46	64.84	72.83	33.10	33.11	33.11	39.17	39.17	39.17
Movement LOS	D	D	B	B	D	D	E	E	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	19.53				65.51				33.10			39.17		
Approach LOS	B				E				C			D		
d_I, Intersection Delay [s/veh]	43.99													
Intersection LOS	D													
Intersection V/C	0.961													

Emissions

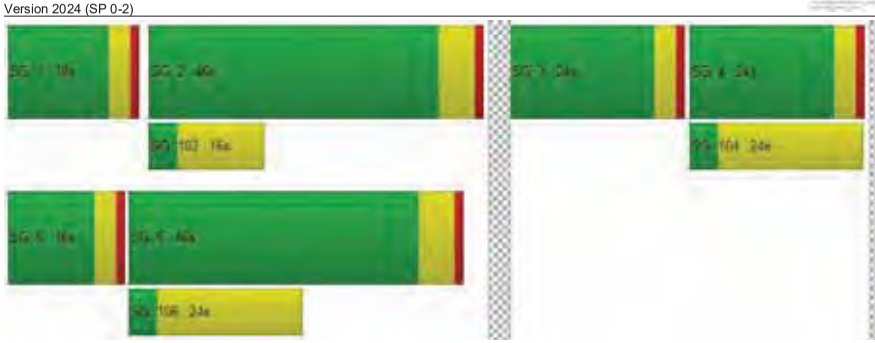
Vehicle Miles Traveled [mph]	2.83	302.77	302.33	9.55	432.52	432.52	57.55	57.32	0.25
Stops [stops/h]	8.13	566.59	567.83	25.70	1170.84	1327.12	207.64	206.89	12.57
Fuel consumption [US gal/h]	0.23	18.97	18.97	1.05	49.15	55.22	5.13	5.11	0.18
CO [g/h]	15.90	1325.85	1326.21	73.27	3435.40	3859.95	358.28	356.95	12.81
NOx [g/h]	3.09	257.96	258.03	14.26	668.40	751.01	69.71	69.45	2.49
VOC [g/h]	3.68	307.28	307.36	16.98	796.19	894.58	83.03	82.73	2.97

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.62	0.00	28.62	28.62
l_p,int, Pedestrian LOS Score for Intersectio	3.020	0.000	2.200	1.746
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1106	1106	553	553
d_b, Bicycle Delay [s]	7.23	7.23	18.94	18.94
l_b,int, Bicycle LOS Score for Intersection	2.981	3.423	2.355	1.586
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	15.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.834

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	48	1131	1259	129	197	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	207	364	0	0	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	39	0	22
Total Hourly Volume [veh/h]	0	56	1338	1623	90	197	52
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	16	376	456	25	55	15
Total Analysis Volume [veh/h]	0	63	1503	1824	101	221	58
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	66	66	66	66	66	66
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	3	46	39	39	10	10
g / C, Green / Cycle	0.05	0.69	0.58	0.58	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.04	0.42	0.51	0.52	0.12	0.04
s, saturation flow rate [veh/h]	1781	3560	1870	1836	1781	1589
c, Capacity [veh/h]	93	2463	1084	1064	281	251
d1, Uniform Delay [s]	31.00	5.47	12.13	12.37	26.94	24.49
k, delay calibration	0.04	0.15	0.35	0.36	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	0.35	7.92	9.40	4.81	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.61	0.89	0.90	0.79	0.23
d, Delay for Lane Group [s/veh]	34.19	5.82	20.05	21.78	31.76	24.96
Lane Group LOS	C	A	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.04	3.77	12.05	12.64	3.57	0.79
50th-Percentile Queue Length [ft/ln]	25.92	94.17	301.33	316.08	89.28	19.87
95th-Percentile Queue Length [veh/ln]	1.87	6.78	17.75	18.47	6.43	1.43
95th-Percentile Queue Length [ft/ln]	46.65	169.51	443.67	461.87	160.71	35.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.19	34.19	5.82	20.86	21.78	31.76	24.96
Movement LOS	C	C	A	C	C	C	C
d_A, Approach Delay [s/veh]	6.97			20.91		30.34	
Approach LOS	A			C		C	
d_I, Intersection Delay [s/veh]	15.82						
Intersection LOS	B						
Intersection V/C	0.834						

Emissions

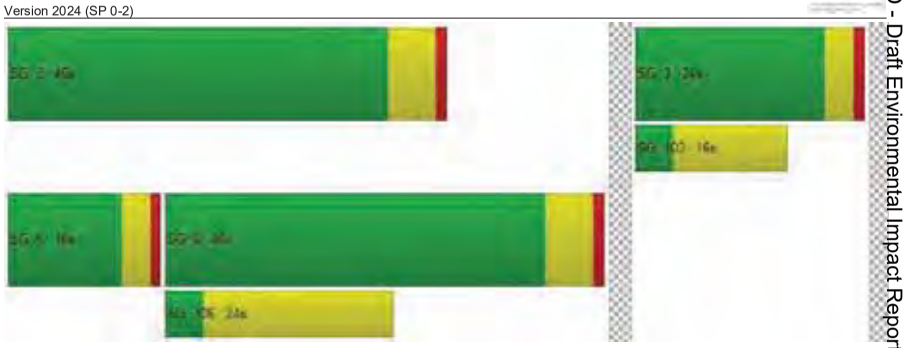
Vehicle Miles Traveled [mph]	43.96	1048.66	340.59	340.59	74.56	19.57
Stops [stops/h]	56.17	408.17	653.02	684.99	193.49	43.05
Fuel consumption [US gal/h]	2.56	47.21	21.56	22.07	5.57	1.34
CO [g/h]	178.81	3299.72	1506.73	1542.76	389.12	93.53
NOx [g/h]	34.79	642.01	293.15	300.17	75.71	18.20
VOC [g/h]	41.44	764.74	349.20	357.55	90.18	21.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.71	0.00	25.71
l_p,int, Pedestrian LOS Score for Intersectio	2.964	0.000	2.123
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	1204	602
d_b, Bicycle Delay [s]	5.26	5.26	16.23
l_b,int, Bicycle LOS Score for Intersection	2.852	3.180	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	106.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.059

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	98	575	21	249	446	625	494	119	26	13	155	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	61	215	29	0	377	0	0	0	105	44	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	188	0	0	39	0	0	33
Total Hourly Volume [veh/h]	159	790	35	249	823	437	494	119	92	57	155	77
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	217	10	68	226	120	136	33	25	16	43	21
Total Analysis Volume [veh/h]	175	868	38	274	904	480	543	131	101	63	170	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	10	23	23	12	25	25	15	15	12	12
g / C, Green / Cycle	0.12	0.28	0.28	0.15	0.31	0.31	0.19	0.19	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.24	0.15	0.38	0.40	0.22	0.22	0.13	0.05
s, saturation flow rate [veh/h]	1781	1870	1843	1781	1870	1660	1781	1754	1845	1589
c, Capacity [veh/h]	214	526	518	265	580	515	331	326	278	240
d1, Uniform Delay [s]	34.62	27.55	27.55	34.31	27.81	27.81	32.81	32.81	33.28	30.72
k, delay calibration	0.10	0.22	0.22	0.40	0.50	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.05	8.61	8.73	58.11	118.16	149.87	106.03	108.66	2.59	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.87	0.87	1.03	1.23	1.30	1.18	1.18	0.84	0.35
d, Delay for Lane Group [s/veh]	41.67	36.15	36.28	92.43	145.97	177.68	138.84	141.47	35.87	31.05
Lane Group LOS	D	D	D	F	F	F	F	F	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.68	9.22	9.10	8.95	28.60	29.93	15.99	15.99	4.50	1.47
50th-Percentile Queue Length [ft/ln]	91.97	230.45	227.57	223.76	715.09	748.29	399.71	399.63	112.47	36.74
95th-Percentile Queue Length [veh/ln]	6.62	14.20	14.05	14.07	42.22	45.15	24.38	24.43	7.98	2.65
95th-Percentile Queue Length [ft/ln]	165.55	354.93	351.27	351.68	1055.59	1128.69	609.55	610.76	199.43	66.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.67	36.22	36.28	92.43	152.66	177.68	139.59	141.47	141.47	35.87	35.87	31.05
Movement LOS	D	D	D	F	F	F	F	F	F	D	D	C
d_A, Approach Delay [s/veh]	37.10			149.95			140.15			34.58		
Approach LOS	D			F			F			C		
d_I, Intersection Delay [s/veh]	106.56											
Intersection LOS	F											
Intersection V/C	1.059											

Emissions

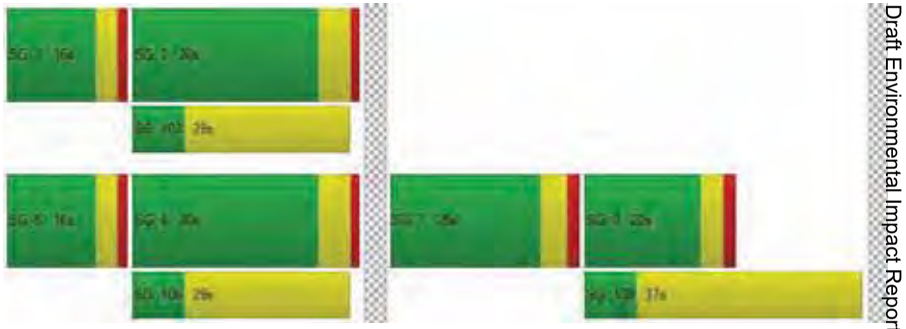
Vehicle Miles Traveled [mph]	101.07	263.53	259.71	191.17	497.72	467.91	29.30	29.00	25.77	9.40
Stops [stops/h]	164.57	412.36	407.20	400.39	1279.54	1338.94	715.22	715.07	201.24	65.74
Fuel consumption [US gal/h]	6.55	16.48	16.26	18.99	61.60	64.77	16.16	16.24	3.87	1.29
CO [g/h]	458.10	1152.23	1136.65	1327.06	4306.05	4527.30	1129.57	1135.38	270.75	89.98
NOx [g/h]	89.13	224.18	221.15	258.20	837.80	880.85	219.77	220.90	52.68	17.51
VOC [g/h]	106.17	267.04	263.43	307.56	997.97	1049.25	261.79	263.13	62.75	20.85

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.99	0.00	29.99	29.99
l_p,int, Pedestrian LOS Score for Intersectio	2.744	0.000	2.583	2.244
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	614	614	385	497
d_b, Bicycle Delay [s]	19.33	19.33	26.23	22.72
l_b,int, Bicycle LOS Score for Intersection	2.464	3.083	2.903	2.139
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	74.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.044

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	115	314	447	38	380	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	305	526	0	0	13
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	28
Total Hourly Volume [veh/h]	123	619	973	27	380	64
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	172	270	9	120	18
Total Analysis Volume [veh/h]	137	688	1081	34	481	71
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	10	64	50	50	31	31
g / C, Green / Cycle	0.09	0.61	0.48	0.48	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.37	0.58	0.02	0.27	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	169	1138	890	756	527	471
d1, Uniform Delay [s]	46.64	12.73	27.53	14.75	35.65	27.24
k, delay calibration	0.04	0.30	0.50	0.15	0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.56	1.45	106.96	0.03	8.40	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.60	1.21	0.04	0.91	0.15
d, Delay for Lane Group [s/veh]	50.20	14.18	134.49	14.78	44.05	27.39
Lane Group LOS	D	B	F	B	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.49	8.50	45.54	0.40	12.86	1.33
50th-Percentile Queue Length [ft/ln]	87.21	212.39	1138.53	9.95	321.50	33.27
95th-Percentile Queue Length [veh/ln]	6.28	13.28	65.02	0.72	18.74	2.40
95th-Percentile Queue Length [ft/ln]	156.99	331.90	1625.46	17.91	468.53	59.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.20	14.18	134.49	14.78	44.05	27.39
Movement LOS	D	B	F	B	D	C
d_A, Approach Delay [s/veh]	20.16		130.84		41.91	
Approach LOS	C		F		D	
d_I, Intersection Delay [s/veh]	74.50					
Intersection LOS	E					
Intersection V/C	1.044					

Emissions

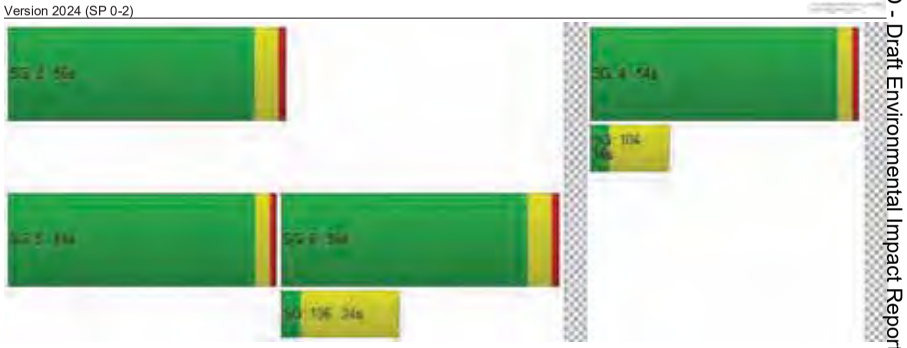
Vehicle Miles Traveled [mph]	16.90	84.89	624.30	19.64	112.97	16.68
Stops [stops/h]	119.64	291.36	1561.84	13.65	441.04	45.64
Fuel consumption [US gal/h]	4.19	10.24	79.48	1.01	11.40	1.33
CO [g/h]	292.67	715.58	5555.33	70.79	796.78	93.27
NOx [g/h]	56.94	139.23	1080.87	13.77	155.02	18.15
VOC [g/h]	67.83	165.84	1287.50	16.41	184.66	21.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.79	0.00	44.79
l_p,int, Pedestrian LOS Score for Intersectio	3.145	0.000	2.237
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	953	953	953
d_b, Bicycle Delay [s]	14.39	14.39	14.39
l_b,int, Bicycle LOS Score for Intersection	2.921	3.418	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	212.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	380	0	25	501	0	0	0	0	0	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	284	0	0	487	52	29	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	664	0	25	988	52	29	0	3	0	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	180	0	6	268	14	8	0	1	0	0	12
Total Analysis Volume [veh/h]	5	722	0	25	1074	57	32	0	3	0	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.03	0.01	0.00	0.77	0.00	0.01	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	10.83	0.00	0.00	9.12	0.00	0.00	212.24	181.87	139.90	80.57	64.39	14.53
Movement LOS	B	A	A	A	A	A	F	F	F	F	F	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.04	0.04	0.04	3.02	3.02	3.02	0.39	0.39	0.39
95th-Percentile Queue Length [ft/ln]	0.21	0.21	0.21	1.07	1.07	1.07	75.51	75.51	75.51	9.65	9.65	9.65
d_A, Approach Delay [s/veh]	0.07			0.20			206.04			14.53		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	4.17											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	1,969.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.919

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	311	16	94	407	0	0	0	0	54	0	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	19	0	0	28	434	270	0	31	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	55	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	330	16	94	435	434	307	0	86	54	5	69
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	89	4	25	117	117	83	0	23	15	1	19
Total Analysis Volume [veh/h]	97	355	17	101	468	467	330	0	92	58	5	74
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.00	0.00	0.09	0.00	0.00	4.92	0.00	0.21	0.93	0.07	0.11
d_M, Delay for Movement [s/veh]	10.66	0.00	0.00	8.32	0.00	0.00	1969.42	1951.38	1923.97	210.10	201.18	157.56
Movement LOS	B	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.46	0.00	0.00	0.28	0.00	0.00	45.91	45.91	45.91	8.05	8.05	8.05
95th-Percentile Queue Length [ft/ln]	11.38	0.00	0.00	6.96	0.00	0.00	1147.79	1147.79	1147.79	201.30	201.30	201.30
d_A, Approach Delay [s/veh]	2.21			0.81			1959.51			181.39		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	413.58											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	5,028.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	10.524

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	101	470	168	48	1	692	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	105	0	0	0	61
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	101	470	273	48	1	692	246
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	134	78	14	0	197	70
Total Analysis Volume [veh/h]	0	115	534	310	55	1	786	280
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	10.52	0.76	0.00	0.00	0.01	0.66	0.00
d_M, Delay for Movement [s/veh]	5028.94	5028.94	4704.60	0.00	0.00	29.63	10.38	0.00
Movement LOS	F	F	F	A	A	D	B	A
95th-Percentile Queue Length [veh/ln]	77.09	77.09	77.09	0.00	0.00	2.99	2.99	2.99
95th-Percentile Queue Length [ft/ln]	1927.28	1927.28	1927.28	0.00	0.00	74.85	74.85	74.85
d_A, Approach Delay [s/veh]	4762.07			0.00		7.67		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	1489.08							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	21.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	30	195	59	0	25	319	22	16	23	19	211	16	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	13	0	0	0	0	0	0	0	8
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	195	59	0	38	319	22	16	23	19	211	16	53
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	59	18	0	12	96	7	5	7	6	64	5	17
Total Analysis Volume [veh/h]	36	235	71	0	48	384	27	19	28	23	254	19	67
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	582	595	496	550
Degree of Utilization, x	0.59	0.77	0.14	0.62

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.80	7.14	0.49	4.19
95th-Percentile Queue Length [ft]	94.97	178.39	12.20	104.76
Approach Delay [s/veh]	17.64	26.52	11.44	19.57
Approach LOS	C	D	B	C
Intersection Delay [s/veh]	21.19			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	6	80	0	143	48	2	109	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	105	0	0	0	0	61	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	185	0	143	48	2	170	190
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	55	0	43	14	1	51	57
Total Analysis Volume [veh/h]	7	220	0	170	57	2	202	226
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.26	0.00	0.00	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	17.79	10.78	9.37	0.00	0.00	11.42	8.18	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.07	1.05	0.00	0.00	0.00	0.54	0.54	0.00
95th-Percentile Queue Length [ft/ln]	1.86	26.15	0.00	0.00	0.00	13.59	13.59	0.00
d_A, Approach Delay [s/veh]	10.99			0.00			3.89	
Approach LOS	B			A			A	
d_I, Intersection Delay [s/veh]	4.72							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.027

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	12	43	87	36	37	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	105	0	0	61
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	43	192	36	37	235
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	12	52	10	10	64
Total Analysis Volume [veh/h]	13	47	209	39	40	255
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.06	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	12.88	9.78	0.00	0.00	7.82	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.27	0.27	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	6.80	6.80	0.00	0.00	2.35	0.00
d_A, Approach Delay [s/veh]	10.46		0.00		1.06	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.56					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.178

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	174	0	19	125	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	61	0	0	105	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	0	19	230	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	0	5	63	0	1
Total Analysis Volume [veh/h]	255	0	21	250	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	716	716	687	760	760	715
Degree of Utilization, x	0.18	0.18	0.03	0.16	0.16	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.64	0.64	0.09	0.59	0.59	0.01
95th-Percentile Queue Length [ft]	16.09	16.09	2.36	14.67	14.67	0.32
Approach Delay [s/veh]	8.81		8.35			8.05
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.57					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	193.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.215

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	138	0	25	7	1	21	5	408	85	66	397	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	61	0	0	0	0	0	0	0	105	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	199	0	25	7	1	21	5	408	190	66	397	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	0	7	2	0	5	1	105	49	18	102	3
Total Analysis Volume [veh/h]	205	0	27	7	1	22	5	421	196	71	409	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.21	0.00	0.05	0.04	0.01	0.03	0.00	0.00	0.00	0.07	0.00	0.00
d_M, Delay for Movement [s/veh]	193.01	23.50	11.79	27.01	26.49	11.51	8.17	0.00	0.00	9.04	0.00	0.00
Movement LOS	F	C	B	D	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	11.32	0.15	0.15	0.26	0.26	0.26	0.01	0.00	0.00	0.24	0.00	0.00
95th-Percentile Queue Length [ft/ln]	283.06	3.81	3.81	6.60	6.60	6.60	0.33	0.00	0.00	5.96	0.00	0.00
d_A, Approach Delay [s/veh]	171.92			15.62			0.07			1.31		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	29.84											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

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Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	238	5	239	5	5	5	5	520	71	14	144	468	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	72	0	0	0	0	0	21	0	0	0	0
Total Hourly Volume [veh/h]	238	5	167	5	5	5	5	520	50	14	144	468	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	63	1	44	1	1	1	1	138	13	4	38	124	1
Total Analysis Volume [veh/h]	253	5	178	5	5	5	5	553	53	14	153	498	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	19	19	1	1	1	65	65	13	78	78
g / C, Green / Cycle	0.16	0.16	0.01	0.01	0.01	0.54	0.54	0.11	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.11	0.00	0.01	0.00	0.16	0.16	0.09	0.13	0.13
s, saturation flow rate [veh/h]	1781	1596	1781	1718	1781	1870	1813	1781	1870	1863
c, Capacity [veh/h]	279	251	12	13	12	1016	985	195	1208	1203
d1, Uniform Delay [s]	49.73	48.11	59.37	59.46	59.37	14.98	14.99	52.52	8.70	8.70
k, delay calibration	0.14	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.27	1.52	21.73	31.68	21.99	0.77	0.79	4.19	0.39	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.73	0.42	0.79	0.42	0.30	0.30	0.86	0.21	0.21
d, Delay for Lane Group [s/veh]	62.99	49.62	81.09	91.14	81.36	15.75	15.79	56.71	9.09	9.09
Lane Group LOS	E	D	F	F	F	B	B	E	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.47	5.31	0.22	0.42	0.22	4.75	4.63	5.17	2.73	2.72
50th-Percentile Queue Length [ft/ln]	211.69	132.87	5.59	10.39	5.60	118.63	115.78	129.19	68.14	67.94
95th-Percentile Queue Length [veh/ln]	13.24	9.10	0.40	0.75	0.40	8.32	8.16	8.90	4.91	4.89
95th-Percentile Queue Length [ft/ln]	330.99	227.39	10.06	18.70	10.08	207.94	204.02	222.39	122.66	122.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.99	49.62	49.62	81.09	91.14	91.14	81.36	15.76	15.79	56.71	56.71	9.09	9.09
Movement LOS	E	D	D	F	F	F	F	B	B	E	E	A	A
d_A, Approach Delay [s/veh]	57.38			87.79			16.30			20.96			
Approach LOS	E			F			B			C			
d_I, Intersection Delay [s/veh]	29.06												
Intersection LOS	C												
Intersection V/C	0.452												

Emissions

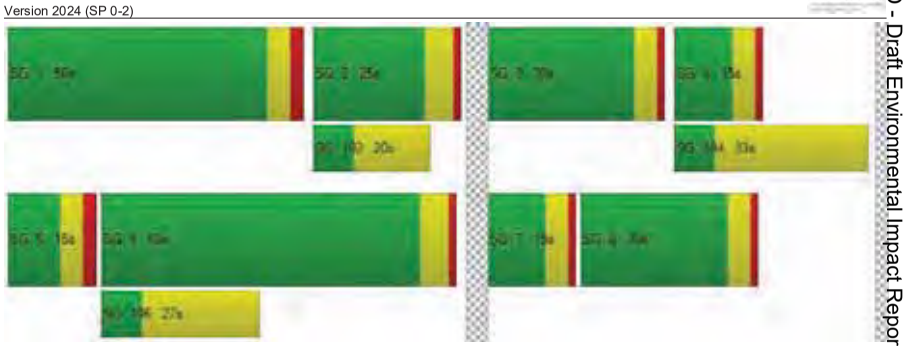
Vehicle Miles Traveled [mph]	97.48	70.51	0.23	0.46	4.21	258.37	251.59	41.68	62.87	62.67
Stops [stops/h]	254.03	159.45	6.71	12.47	6.72	142.36	138.94	155.02	81.77	81.53
Fuel consumption [US gal/h]	8.66	5.63	0.13	0.27	0.29	12.41	12.09	4.50	3.51	3.49
CO [g/h]	605.29	393.64	9.01	19.09	20.49	867.22	844.76	314.50	245.05	244.29
NOx [g/h]	117.77	76.59	1.75	3.71	3.99	168.73	164.36	61.19	47.68	47.53
VOC [g/h]	140.28	91.23	2.09	4.42	4.75	200.99	195.78	72.89	56.79	56.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.297	1.964	2.614	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.398	1.584	2.081	1.986
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	67.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.545

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	50	16	29	186	15	177	3	205	712	21	86	521	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	41	0	0	70	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	53	0	0	0	6	0	0	53
Total Hourly Volume [veh/h]	50	16	20	186	15	124	3	205	753	15	86	591	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	4	5	51	4	34	1	56	219	4	24	162	34
Total Analysis Volume [veh/h]	55	18	22	204	16	136	3	225	876	16	95	649	137
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	6	13	9	16	20	89	89	9	78	78
g / C, Green / Cycle	0.04	0.10	0.06	0.11	0.14	0.64	0.64	0.07	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.11	0.09	0.13	0.25	0.01	0.05	0.22	0.22
s, saturation flow rate [veh/h]	1781	1705	1781	1615	1781	3560	1589	1781	1870	1758
c, Capacity [veh/h]	71	163	108	180	250	2261	1010	117	1041	979
d1, Uniform Delay [s]	66.57	58.62	65.75	61.02	59.30	12.36	9.41	64.56	17.56	17.57
k, delay calibration	0.04	0.13	0.50	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	0.96	431.73	12.47	5.21	0.50	0.03	5.05	1.10	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.25	1.89	0.84	0.91	0.39	0.02	0.81	0.39	0.39
d, Delay for Lane Group [s/veh]	73.00	59.59	497.48	73.49	64.51	12.86	9.44	69.61	18.66	18.73
Lane Group LOS	E	E	F	E	E	B	A	E	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.08	1.37	16.84	5.94	8.35	6.71	0.19	3.52	7.74	7.30
50th-Percentile Queue Length [ft/ln]	52.07	34.17	421.00	148.48	208.63	167.87	4.76	88.04	193.39	182.45
95th-Percentile Queue Length [veh/ln]	3.75	2.46	27.32	9.94	13.08	10.96	0.34	6.34	12.30	11.73
95th-Percentile Queue Length [ft/ln]	93.73	61.50	682.94	248.40	327.07	274.12	8.57	158.46	307.43	293.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.00	59.59	59.59	497.48	73.49	73.49	64.51	64.51	12.86	9.44	69.61	18.69	18.73
Movement LOS	E	E	E	F	E	E	E	E	B	A	E	B	B
d_A, Approach Delay [s/veh]	67.35			316.45			23.33				24.19		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	67.90												
Intersection LOS	E												
Intersection V/C	0.545												

Emissions

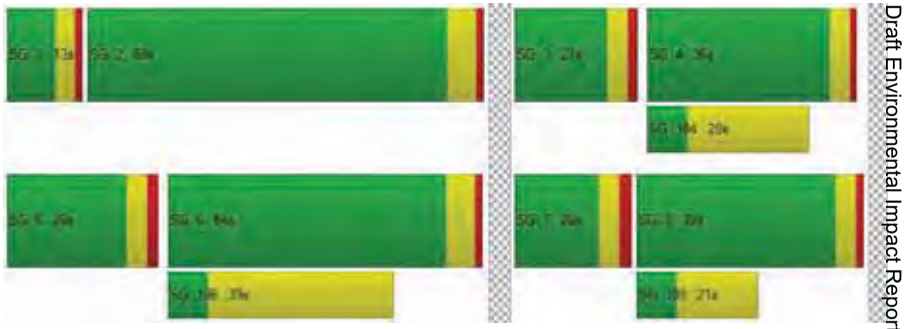
Vehicle Miles Traveled [mph]	2.75	2.00	9.48	7.07	23.82	91.53	1.67	33.26	141.81	133.42
Stops [stops/h]	53.56	35.14	433.03	152.72	214.59	345.34	4.90	90.55	198.92	187.66
Fuel consumption [US gal/h]	1.23	0.76	23.43	3.41	5.16	7.97	0.13	3.22	8.47	7.98
CO [g/h]	85.71	53.23	1637.77	238.19	360.60	557.02	8.85	224.75	592.37	557.92
NOx [g/h]	16.68	10.36	318.65	46.34	70.16	108.38	1.72	43.73	115.25	108.55
VOC [g/h]	19.86	12.34	379.57	55.20	83.57	129.09	2.05	52.09	137.29	129.30

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.051	2.310	2.811	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.731	2.234	2.303	2.330
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	68.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.962

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	57	61	268	230	100	36	33	574	121	234	562	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	21	0	0	22	12	29	0	36	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	87	0	0	17	0	0	36	0	0	47
Total Hourly Volume [veh/h]	57	61	202	230	100	41	45	603	85	270	611	111
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	16	52	59	26	11	12	155	22	70	157	29
Total Analysis Volume [veh/h]	59	63	208	237	103	42	46	622	88	278	630	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	24	24	20	20	4	45	22	62
g / C, Green / Cycle	0.19	0.19	0.16	0.16	0.03	0.35	0.17	0.48
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.13	0.08	0.03	0.39	0.16	0.41
s, saturation flow rate [veh/h]	1781	1647	1781	1779	1781	1830	1781	1821
c, Capacity [veh/h]	331	306	280	279	60	644	305	880
d1, Uniform Delay [s]	43.88	50.79	52.43	49.48	61.30	41.47	52.08	28.85
k, delay calibration	0.13	0.18	0.13	0.13	0.04	0.50	0.27	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.32	13.35	8.55	1.86	7.24	67.09	21.66	9.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.89	0.85	0.52	0.76	1.10	0.91	0.85
d, Delay for Lane Group [s/veh]	44.20	64.14	60.97	51.34	68.54	108.56	73.74	38.63
Lane Group LOS	D	E	E	D	E	F	E	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.62	9.57	8.05	4.41	1.60	31.95	10.57	21.80
50th-Percentile Queue Length [ft/ln]	40.43	239.36	201.35	110.29	40.10	798.68	264.36	544.89
95th-Percentile Queue Length [veh/ln]	2.91	14.65	12.71	7.86	2.89	44.07	15.91	29.45
95th-Percentile Queue Length [ft/ln]	72.77	366.22	317.71	196.40	72.18	1101.68	397.69	736.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.20	64.14	64.14	60.97	51.34	51.34	68.54	108.56	108.56	73.74	38.63	38.63
Movement LOS	D	E	E	E	D	D	E	F	F	E	D	D
d_A, Approach Delay [s/veh]	60.57			57.32			106.13			48.18		
Approach LOS	E			E			F			D		
d_I, Intersection Delay [s/veh]	68.82											
Intersection LOS	E											
Intersection V/C	0.962											

Emissions

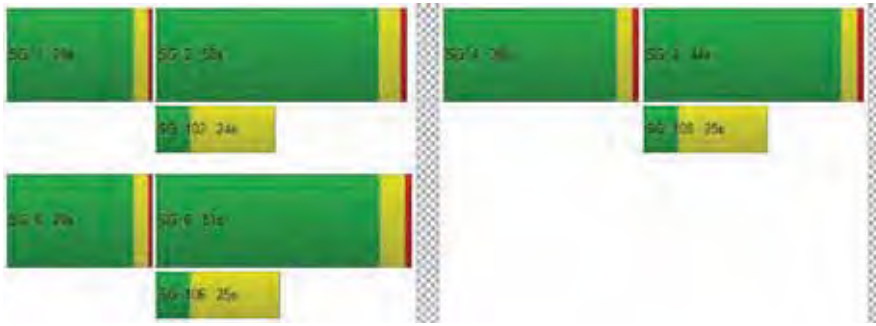
Vehicle Miles Traveled [mph]	101.52	466.29	48.05	29.40	16.11	248.61	125.44	335.71
Stops [stops/h]	45.58	269.85	227.00	124.33	45.21	900.42	298.04	614.29
Fuel consumption [US gal/h]	4.96	24.22	6.17	3.41	1.55	30.89	10.98	23.06
CO [g/h]	346.82	1693.20	431.45	238.49	108.65	2159.34	767.61	1612.06
NOx [g/h]	67.48	329.44	83.95	46.40	21.14	420.13	149.35	313.65
VOC [g/h]	80.38	392.42	99.99	55.27	25.18	500.45	177.90	373.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.34	53.34	53.34	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.380	2.199	2.509	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	545	623	700	705
d_b, Bicycle Delay [s]	33.81	30.27	26.99	26.79
l_b,int, Bicycle LOS Score for Intersection	2.248	2.218	2.866	3.323
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.765

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	1064	0	0	620	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	49	0	0	85	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1113	0	0	705	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	290	0	0	184	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	1159	0	0	734	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	66	66	66	66	66	66	66	66	66	66
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	25	25	0	24	24
g / C, Green / Cycle	0.00	0.00	0.29	0.29	0.01	0.37	0.37	0.00	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.31	0.31	0.00	0.21	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	8	7	524	468	23	694	694	0	1275	569
d1, Uniform Delay [s]	0.00	33.09	17.60	22.69	32.64	19.10	19.10	0.00	17.29	13.75
k, delay calibration	0.11	0.11	0.11	0.33	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	39.60	0.18	18.27	12.23	2.74	2.74	0.00	0.41	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.44	0.20	0.91	0.43	0.84	0.84	0.00	0.58	0.01
d, Delay for Lane Group [s/veh]	0.00	72.69	17.78	40.97	44.86	21.85	21.85	0.00	17.70	13.75
Lane Group LOS	A	E	B	D	D	C	C	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.12	1.14	8.32	0.23	7.86	7.86	0.00	4.22	0.03
50th-Percentile Queue Length [ft/ln]	0.00	3.02	28.38	207.93	5.82	196.60	196.60	0.00	105.52	0.69
95th-Percentile Queue Length [veh/ln]	0.00	0.22	2.04	13.05	0.42	12.46	12.46	0.00	7.59	0.05
95th-Percentile Queue Length [ft/ln]	0.00	5.44	51.09	326.17	10.48	311.57	311.57	0.00	189.75	1.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	72.69	17.78	17.78	40.97	44.86	21.85	21.85	0.00	17.70	13.75
Movement LOS	A	A	E	B	B	D	D	C	C	A	B	B
d_A, Approach Delay [s/veh]	72.69			36.47			22.04			17.69		
Approach LOS	E			D			C			B		
d_I, Intersection Delay [s/veh]	23.93											
Intersection LOS	C											
Intersection V/C	0.765											

Emissions

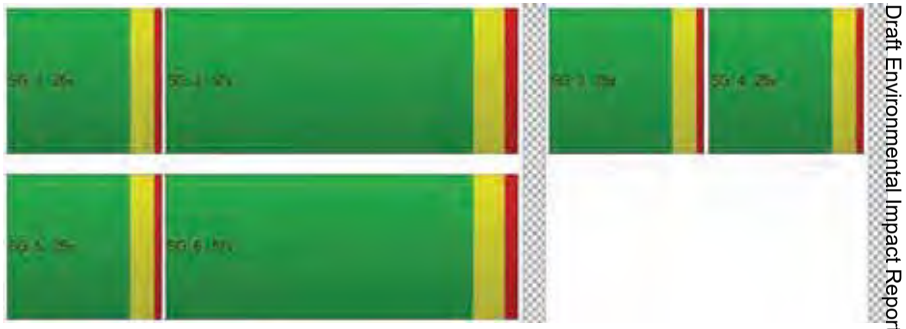
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	261.48	261.48	0.00	128.04	0.52
Stops [stops/h]	0.00	6.55	61.51	450.58	12.61	426.03	426.03	0.00	457.31	1.49
Fuel consumption [US gal/h]	0.00	0.09	2.72	14.42	0.35	15.69	15.69	0.00	10.44	0.04
CO [g/h]	0.00	6.06	190.41	1007.64	24.24	1097.05	1097.05	0.00	729.90	2.67
NOx [g/h]	0.00	1.18	37.05	196.05	4.72	213.45	213.45	0.00	142.01	0.52
VOC [g/h]	0.00	1.41	44.13	233.53	5.62	254.25	254.25	0.00	169.16	0.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	602	602	1505	1505
d_b, Bicycle Delay [s]	16.24	16.24	2.04	2.04
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	2.524	2.168
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.706

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	623	523	587	200	511	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	41	8	85	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	664	531	672	200	511	44
Peak Hour Factor	0.8300	0.9100	0.9100	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	200	146	185	60	154	13
Total Analysis Volume [veh/h]	800	584	738	241	616	53
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	22	61	35	35	16	16	16
g / C, Green / Cycle	0.24	0.68	0.39	0.39	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.23	0.16	0.21	0.15	0.17	0.17	0.03
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	838	2421	1393	622	321	321	286
d1, Uniform Delay [s]	33.62	5.51	21.05	19.67	36.59	36.59	31.30
k, delay calibration	0.04	0.50	0.50	0.50	0.30	0.30	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.16	0.24	1.45	1.82	30.10	30.10	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.24	0.53	0.39	0.96	0.96	0.19
d, Delay for Lane Group [s/veh]	36.78	5.75	22.49	21.49	66.69	66.69	31.42
Lane Group LOS	D	A	C	C	E	E	C
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.73	1.87	6.02	3.82	9.24	9.24	0.97
50th-Percentile Queue Length [ft/ln]	218.13	46.66	150.58	95.48	231.02	231.02	24.37
95th-Percentile Queue Length [veh/ln]	13.57	3.36	10.05	6.87	14.23	14.23	1.75
95th-Percentile Queue Length [ft/ln]	339.23	83.98	251.20	171.87	355.66	355.66	43.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.78	5.75	22.49	21.49	66.69	31.42
Movement LOS	D	A	C	C	E	C
d_A, Approach Delay [s/veh]	23.68		22.25		63.90	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	32.09					
Intersection LOS	C					
Intersection V/C	0.706					

Emissions

Vehicle Miles Traveled [mph]	139.55	101.87	130.78	42.71	18.65	18.65	3.21
Stops [stops/h]	698.00	149.31	481.85	152.77	369.64	369.64	39.00
Fuel consumption [US gal/h]	15.59	5.70	11.42	3.66	6.99	6.99	0.69
CO [g/h]	1089.63	398.57	798.54	255.55	488.57	488.57	47.98
NOx [g/h]	212.00	77.55	155.37	49.72	95.06	95.06	9.34
VOC [g/h]	252.53	92.37	185.07	59.23	113.23	113.23	11.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.701	2.367	2.683
Bicycle LOS	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.561

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	1	152	881	0	0	381	207	405	1	198	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	8	0	0	13	0	72	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	1	152	889	0	0	394	160	477	1	168	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	281	0	0	125	51	151	0	53	0	0	0
Total Analysis Volume [veh/h]	1	192	1125	0	0	499	203	604	1	213	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	12	60	44	44	17	17	17	
g / C, Green / Cycle	0.13	0.67	0.49	0.49	0.19	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.32	0.14	0.13	0.17	0.17	0.13	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	231	2381	1754	783	341	341	304	
d1, Uniform Delay [s]	38.24	7.22	13.48	13.29	35.46	35.46	33.99	
k, delay calibration	0.04	0.50	0.50	0.50	0.05	0.05	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.07	0.68	0.41	0.80	3.81	3.80	1.10	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.47	0.28	0.26	0.89	0.89	0.70	
d, Delay for Lane Group [s/veh]	41.30	7.89	13.89	14.09	39.27	39.26	35.09	
Lane Group LOS	D	A	B	B	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.28	4.66	2.94	2.45	6.68	6.68	4.36	
50th-Percentile Queue Length [ft/ln]	107.12	116.44	73.49	61.32	166.96	166.96	108.94	
95th-Percentile Queue Length [veh/ln]	7.68	8.20	5.29	4.41	10.92	10.92	7.78	
95th-Percentile Queue Length [ft/ln]	191.99	204.92	132.28	110.37	272.91	272.91	194.53	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.30	41.30	7.89	0.00	0.00	13.89	14.09	39.26	39.26	35.09	0.00	0.00	0.00
Movement LOS	D	D	A			B	B	D	D	D			
d_A, Approach Delay [s/veh]	12.78				13.94			38.18			0.00		
Approach LOS	B				B			D			A		
d_I, Intersection Delay [s/veh]	20.39												
Intersection LOS	C												
Intersection V/C	0.561												

Emissions

Vehicle Miles Traveled [mph]	34.20	199.36	68.23	27.76	10.48	10.48	7.38	
Stops [stops/h]	171.39	372.61	235.17	98.11	267.13	267.13	174.31	
Fuel consumption [US gal/h]	3.98	12.07	5.52	2.27	4.32	4.32	2.79	
CO [g/h]	277.99	843.88	385.73	158.45	302.26	302.25	194.86	
NOx [g/h]	54.09	164.19	75.05	30.83	58.81	58.81	37.91	
VOC [g/h]	64.43	195.58	89.40	36.72	70.05	70.05	45.16	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.646	2.178	2.959	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	380	501	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	289	462	28	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	55	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	669	963	83	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	167	241	21	0	0
Total Analysis Volume [veh/h]	0	669	963	83	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	17.27
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		17.27	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.126

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	300	441	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	58	34	25	14	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	358	475	45	41	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	90	119	11	10	1
Total Analysis Volume [veh/h]	3	358	475	45	41	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	8.44	0.00	0.00	0.00	17.62	12.81
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.43	0.43
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.00	0.00	10.73	10.73
d_A, Approach Delay [s/veh]	0.07		0.00		17.39	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.84					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	22.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.134

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	66	43	288	31	10	32	2	44	13	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	13	0	14	8	14	24	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	198	66	57	296	45	34	32	2	44	13	103
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	51	17	15	76	12	9	8	1	11	3	27
Total Analysis Volume [veh/h]	0	204	68	59	305	46	35	33	2	45	13	106
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.13	0.10	0.00	0.15	0.04	0.13
d_M, Delay for Movement [s/veh]	7.98	0.00	0.00	7.86	0.00	0.00	22.49	19.46	13.74	20.24	18.88	12.77
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.10	0.10	0.10	0.90	0.90	0.90	1.37	1.37	1.37
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.61	2.61	2.61	22.41	22.41	22.41	34.25	34.25	34.25
d_A, Approach Delay [s/veh]	0.00			1.13			20.81			15.30		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.84											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	669	1065	49	32
2	649	1033	48	31
3	636	1012	47	30
4	595	948	44	28
5	529	841	39	25
6	522	831	38	25
7	515	820	38	25
8	468	746	34	22
9	462	735	34	22
10	455	724	33	22
11	395	628	29	19
12	368	586	27	18
13	361	575	26	17
14	268	426	20	13
15	268	426	20	13
16	187	298	14	9
17	107	170	8	5
18	107	170	8	5
19	60	96	4	3
20	33	53	2	2
21	20	32	1	1
22	7	11	0	0
23	7	11	0	0
24	7	11	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1734	1	49	No	No	No	No	No	No	No	Yes	No	No
2	1	1682	1	48	No	No	No	No	No	No	No	Yes	No	No
3	1	1648	1	47	No	No	No	No	No	No	No	Yes	No	No
4	1	1543	1	44	No	No	No	No	No	No	No	Yes	No	No
5	1	1370	1	39	No	No	No	No	No	No	No	No	No	No
6	1	1353	1	38	No	No	No	No	No	No	No	No	No	No
7	1	1335	1	38	No	No	No	No	No	No	No	No	No	No
8	1	1214	1	34	No	No	No	No	No	No	No	No	No	No
9	1	1197	1	34	No	No	No	No	No	No	No	No	No	No
10	1	1179	1	33	No	No	No	No	No	No	No	No	No	No
11	1	1023	1	29	No	No	No	No	No	No	No	No	No	No
12	1	954	1	27	No	No	No	No	No	No	No	No	No	No
13	1	936	1	26	No	No	No	No	No	No	No	No	No	No
14	1	694	1	20	No	No	No	No	No	No	No	No	No	No
15	1	694	1	20	No	No	No	No	No	No	No	No	No	No
16	1	485	1	14	No	No	No	No	No	No	No	No	No	No
17	1	277	1	8	No	No	No	No	No	No	No	No	No	No
18	1	277	1	8	No	No	No	No	No	No	No	No	No	No
19	1	156	1	4	No	No	No	No	No	No	No	No	No	No
20	1	86	1	2	No	No	No	No	No	No	No	No	No	No
21	1	52	1	1	No	No	No	No	No	No	No	No	No	No
22	1	18	1	0	No	No	No	No	No	No	No	No	No	No
23	1	18	1	0	No	No	No	No	No	No	No	No	No	No
24	1	18	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.5	206
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:11	1:49
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	49	32
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1815	1815
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	436	963	128	393
2	423	934	124	381
3	414	915	122	373
4	388	857	114	350
5	344	761	101	310
6	340	751	100	307
7	336	742	99	303
8	305	674	90	275
9	301	664	88	271
10	296	655	87	267
11	257	568	76	232
12	240	530	70	216
13	235	520	69	212
14	174	385	51	157
15	174	385	51	157
16	122	270	36	110
17	70	154	20	63
18	70	154	20	63
19	39	87	12	35
20	22	48	6	20
21	13	29	4	12
22	4	10	1	4
23	4	10	1	4
24	4	10	1	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1399	1	393	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	1357	1	381	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	1329	1	373	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	1245	1	350	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2	1105	1	310	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	2	1091	1	307	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	2	1078	1	303	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	2	979	1	275	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	2	965	1	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	2	951	1	267	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	2	825	1	232	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
12	2	770	1	216	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
13	2	755	1	212	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
14	2	559	1	157	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
15	2	559	1	157	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
16	2	392	1	110	No	No	No	Yes	No	No	No	No	No	No
17	2	224	1	63	No	No	No	No	No	No	No	No	No	No
18	2	224	1	63	No	No	No	No	No	No	No	No	No	No
19	2	126	1	35	No	No	No	No	No	No	No	No	No	No
20	2	70	1	20	No	No	No	No	No	No	No	No	No	No
21	2	42	1	12	No	No	No	No	No	No	No	No	No	No
22	2	14	1	4	No	No	No	No	No	No	No	No	No	No
23	2	14	1	4	No	No	No	No	No	No	No	No	No	No
24	2	14	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	15	13

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	181.4	1959.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	6:26	213:54
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	128	393
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1920	1920
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	939	321	571
2	911	311	554
3	892	305	542
4	836	286	508
5	742	254	451
6	732	250	445
7	723	247	440
8	657	225	400
9	648	221	394
10	639	218	388
11	554	189	337
12	516	177	314
13	507	173	308
14	376	128	228
15	376	128	228
16	263	90	160
17	150	51	91
18	150	51	91
19	85	29	51
20	47	16	29
21	28	10	17
22	9	3	6
23	9	3	6
24	9	3	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1260	1	571	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1222	1	554	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1197	1	542	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1122	1	508	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	996	1	451	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	982	1	445	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	970	1	440	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	882	1	400	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	869	1	394	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	857	1	388	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	743	1	337	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	693	1	314	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	680	1	308	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	504	1	228	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	504	1	228	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	353	1	160	No	No	Yes	Yes	No	No	No	No	No	No
17	1	201	1	91	No	No	No	No	No	No	No	No	No	No
18	1	201	1	91	No	No	No	No	No	No	No	No	No	No
19	1	114	1	51	No	No	No	No	No	No	No	No	No	No
20	1	63	1	29	No	No	No	No	No	No	No	No	No	No
21	1	38	1	17	No	No	No	No	No	No	No	No	No	No
22	1	12	1	6	No	No	No	No	No	No	No	No	No	No
23	1	12	1	6	No	No	No	No	No	No	No	No	No	No
24	1	12	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	10	13	13	15	13	10

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	4762.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	755:19
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	571
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1831
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	284	379	280	58
2	275	368	272	56
3	270	360	266	55
4	253	337	249	52
5	224	299	221	46
6	222	296	218	45
7	219	292	216	45
8	199	265	196	41
9	196	262	193	40
10	193	258	190	39
11	168	224	165	34
12	156	208	154	32
13	153	205	151	31
14	114	152	112	23
15	114	152	112	23
16	80	106	78	16
17	45	61	45	9
18	45	61	45	9
19	26	34	25	5
20	14	19	14	3
21	9	11	8	2
22	3	4	3	1
23	3	4	3	1
24	3	4	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	663	1	280	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	643	1	272	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	630	1	266	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	590	1	249	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	523	1	221	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	518	1	218	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	511	1	216	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	464	1	196	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	458	1	193	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	451	1	190	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	392	1	165	No	No	Yes	Yes	No	No	No	No	No	No
12	1	364	1	154	No	No	Yes	Yes	No	No	No	No	No	No
13	1	358	1	151	No	No	Yes	Yes	No	No	No	No	No	No
14	1	266	1	112	No	No	No	No	No	No	No	No	No	No
15	1	266	1	112	No	No	No	No	No	No	No	No	No	No
16	1	186	1	78	No	No	No	No	No	No	No	No	No	No
17	1	106	1	45	No	No	No	No	No	No	No	No	No	No
18	1	106	1	45	No	No	No	No	No	No	No	No	No	No
19	1	60	1	25	No	No	No	No	No	No	No	No	No	No
20	1	33	1	14	No	No	No	No	No	No	No	No	No	No
21	1	20	1	8	No	No	No	No	No	No	No	No	No	No
22	1	7	1	3	No	No	No	No	No	No	No	No	No	No
23	1	7	1	3	No	No	No	No	No	No	No	No	No	No
24	1	7	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					7	10	13	13	0	3	4	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.6	11.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:31	0:11
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	280	58
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1001	1001
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	362	191	191
2	351	185	185
3	344	181	181
4	322	170	170
5	286	151	151
6	282	149	149
7	279	147	147
8	253	134	134
9	250	132	132
10	246	130	130
11	214	113	113
12	199	105	105
13	195	103	103
14	145	76	76
15	145	76	76
16	101	53	53
17	58	31	31
18	58	31	31
19	33	17	17
20	18	10	10
21	11	6	6
22	4	2	2
23	4	2	2
24	4	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	553	2	191	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	536	2	185	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	525	2	181	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	492	2	170	No	Yes	Yes	Yes	No	No	No	No	No	No
5	2	437	2	151	No	No	Yes	Yes	No	No	No	No	No	No
6	2	431	2	149	No	No	Yes	Yes	No	No	No	No	No	No
7	2	426	2	147	No	No	Yes	Yes	No	No	No	No	No	No
8	2	387	2	134	No	No	No	Yes	No	No	No	No	No	No
9	2	382	2	132	No	No	No	Yes	No	No	No	No	No	No
10	2	376	2	130	No	No	No	Yes	No	No	No	No	No	No
11	2	327	2	113	No	No	No	No	No	No	No	No	No	No
12	2	304	2	105	No	No	No	No	No	No	No	No	No	No
13	2	298	2	103	No	No	No	No	No	No	No	No	No	No
14	2	221	2	76	No	No	No	No	No	No	No	No	No	No
15	2	221	2	76	No	No	No	No	No	No	No	No	No	No
16	2	154	2	53	No	No	No	No	No	No	No	No	No	No
17	2	89	2	31	No	No	No	No	No	No	No	No	No	No
18	2	89	2	31	No	No	No	No	No	No	No	No	No	No
19	2	50	2	17	No	No	No	No	No	No	No	No	No	No
20	2	28	2	10	No	No	No	No	No	No	No	No	No	No
21	2	17	2	6	No	No	No	No	No	No	No	No	No	No
22	2	6	2	2	No	No	No	No	No	No	No	No	No	No
23	2	6	2	2	No	No	No	No	No	No	No	No	No	No
24	2	6	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	11
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:34
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	191
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	744
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	272	228	55
2	264	221	53
3	258	217	52
4	242	203	49
5	215	180	43
6	212	178	43
7	209	176	42
8	190	160	39
9	188	157	38
10	185	155	37
11	160	135	32
12	150	125	30
13	147	123	30
14	109	91	22
15	109	91	22
16	76	64	15
17	44	36	9
18	44	36	9
19	24	21	5
20	14	11	3
21	8	7	2
22	3	2	1
23	3	2	1
24	3	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	500	1	55	No	No	No	No	No	No	No	No	No	No
2	2	485	1	53	No	No	No	No	No	No	No	No	No	No
3	2	475	1	52	No	No	No	No	No	No	No	No	No	No
4	2	445	1	49	No	No	No	No	No	No	No	No	No	No
5	2	395	1	43	No	No	No	No	No	No	No	No	No	No
6	2	390	1	43	No	No	No	No	No	No	No	No	No	No
7	2	385	1	42	No	No	No	No	No	No	No	No	No	No
8	2	350	1	39	No	No	No	No	No	No	No	No	No	No
9	2	345	1	38	No	No	No	No	No	No	No	No	No	No
10	2	340	1	37	No	No	No	No	No	No	No	No	No	No
11	2	295	1	32	No	No	No	No	No	No	No	No	No	No
12	2	275	1	30	No	No	No	No	No	No	No	No	No	No
13	2	270	1	30	No	No	No	No	No	No	No	No	No	No
14	2	200	1	22	No	No	No	No	No	No	No	No	No	No
15	2	200	1	22	No	No	No	No	No	No	No	No	No	No
16	2	140	1	15	No	No	No	No	No	No	No	No	No	No
17	2	80	1	9	No	No	No	No	No	No	No	No	No	No
18	2	80	1	9	No	No	No	No	No	No	No	No	No	No
19	2	45	1	5	No	No	No	No	No	No	No	No	No	No
20	2	25	1	3	No	No	No	No	No	No	No	No	No	No
21	2	15	1	2	No	No	No	No	No	No	No	No	No	No
22	2	5	1	1	No	No	No	No	No	No	No	No	No	No
23	2	5	1	1	No	No	No	No	No	No	No	No	No	No
24	2	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	55
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	555
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	235	249	3
2	228	242	3
3	223	237	3
4	209	222	3
5	186	197	2
6	183	194	2
7	181	192	2
8	165	174	2
9	162	172	2
10	160	169	2
11	139	147	2
12	129	137	2
13	127	134	2
14	94	100	1
15	94	100	1
16	66	70	1
17	38	40	0
18	38	40	0
19	21	22	0
20	12	12	0
21	7	7	0
22	2	2	0
23	2	2	0
24	2	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	484	1	3	No	No	No	No	No	No	No	No	No	No
2	3	470	1	3	No	No	No	No	No	No	No	No	No	No
3	3	460	1	3	No	No	No	No	No	No	No	No	No	No
4	3	431	1	3	No	No	No	No	No	No	No	No	No	No
5	3	383	1	2	No	No	No	No	No	No	No	No	No	No
6	3	377	1	2	No	No	No	No	No	No	No	No	No	No
7	3	373	1	2	No	No	No	No	No	No	No	No	No	No
8	3	339	1	2	No	No	No	No	No	No	No	No	No	No
9	3	334	1	2	No	No	No	No	No	No	No	No	No	No
10	3	329	1	2	No	No	No	No	No	No	No	No	No	No
11	3	286	1	2	No	No	No	No	No	No	No	No	No	No
12	3	266	1	2	No	No	No	No	No	No	No	No	No	No
13	3	261	1	2	No	No	No	No	No	No	No	No	No	No
14	3	194	1	1	No	No	No	No	No	No	No	No	No	No
15	3	194	1	1	No	No	No	No	No	No	No	No	No	No
16	3	136	1	1	No	No	No	No	No	No	No	No	No	No
17	3	78	1	0	No	No	No	No	No	No	No	No	No	No
18	3	78	1	0	No	No	No	No	No	No	No	No	No	No
19	3	43	1	0	No	No	No	No	No	No	No	No	No	No
20	3	24	1	0	No	No	No	No	No	No	No	No	No	No
21	3	14	1	0	No	No	No	No	No	No	No	No	No	No
22	3	4	1	0	No	No	No	No	No	No	No	No	No	No
23	3	4	1	0	No	No	No	No	No	No	No	No	No	No
24	3	4	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	487
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	474	603	224	29
2	460	585	217	28
3	450	573	213	28
4	422	537	199	26
5	374	476	177	23
6	370	470	175	23
7	365	464	172	22
8	332	422	157	20
9	327	416	155	20
10	322	410	152	20
11	280	356	132	17
12	261	332	123	16
13	256	326	121	16
14	190	241	90	12
15	190	241	90	12
16	133	169	63	8
17	76	96	36	5
18	76	96	36	5
19	43	54	20	3
20	24	30	11	1
21	14	18	7	1
22	5	6	2	0
23	5	6	2	0
24	5	6	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1077	2	224	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	2	1045	2	217	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	2	1023	2	213	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	2	959	2	199	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
5	2	850	2	177	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	2	840	2	175	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	2	829	2	172	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	2	754	2	157	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
9	2	743	2	155	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
10	2	732	2	152	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
11	2	636	2	132	No	No	No	Yes	No	No	Yes	Yes	No	No
12	2	593	2	123	No	No	No	Yes	No	No	No	Yes	No	No
13	2	582	2	121	No	No	No	Yes	No	No	No	Yes	No	No
14	2	431	2	90	No	No	No	No	No	No	No	No	No	No
15	2	431	2	90	No	No	No	No	No	No	No	No	No	No
16	2	302	2	63	No	No	No	No	No	No	No	No	No	No
17	2	172	2	36	No	No	No	No	No	No	No	No	No	No
18	2	172	2	36	No	No	No	No	No	No	No	No	No	No
19	2	97	2	20	No	No	No	No	No	No	No	No	No	No
20	2	54	2	11	No	No	No	No	No	No	No	No	No	No
21	2	32	2	7	No	No	No	No	No	No	No	No	No	No
22	2	11	2	2	No	No	No	No	No	No	No	No	No	No
23	2	11	2	2	No	No	No	No	No	No	No	No	No	No
24	2	11	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	4	10	11	13	3	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	171.9	15.6
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	10:41	0:07
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	224	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1330	1330
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	No
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	669	1046	0
2	649	1015	0
3	636	994	0
4	595	931	0
5	529	826	0
6	522	816	0
7	515	805	0
8	468	732	0
9	462	722	0
10	455	711	0
11	395	617	0
12	368	575	0
13	361	565	0
14	268	418	0
15	268	418	0
16	187	293	0
17	107	167	0
18	107	167	0
19	60	94	0
20	33	52	0
21	20	31	0
22	7	10	0
23	7	10	0
24	7	10	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1715	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1664	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1630	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1526	1	0	No	No	No	No	No	No	No	No	No	No
5	1	1355	1	0	No	No	No	No	No	No	No	No	No	No
6	1	1338	1	0	No	No	No	No	No	No	No	No	No	No
7	1	1320	1	0	No	No	No	No	No	No	No	No	No	No
8	1	1200	1	0	No	No	No	No	No	No	No	No	No	No
9	1	1184	1	0	No	No	No	No	No	No	No	No	No	No
10	1	1166	1	0	No	No	No	No	No	No	No	No	No	No
11	1	1012	1	0	No	No	No	No	No	No	No	No	No	No
12	1	943	1	0	No	No	No	No	No	No	No	No	No	No
13	1	926	1	0	No	No	No	No	No	No	No	No	No	No
14	1	686	1	0	No	No	No	No	No	No	No	No	No	No
15	1	686	1	0	No	No	No	No	No	No	No	No	No	No
16	1	480	1	0	No	No	No	No	No	No	No	No	No	No
17	1	274	1	0	No	No	No	No	No	No	No	No	No	No
18	1	274	1	0	No	No	No	No	No	No	No	No	No	No
19	1	154	1	0	No	No	No	No	No	No	No	No	No	No
20	1	85	1	0	No	No	No	No	No	No	No	No	No	No
21	1	51	1	0	No	No	No	No	No	No	No	No	No	No
22	1	17	1	0	No	No	No	No	No	No	No	No	No	No
23	1	17	1	0	No	No	No	No	No	No	No	No	No	No
24	1	17	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1715
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	361	520	43
2	350	504	42
3	343	494	41
4	321	463	38
5	285	411	34
6	282	406	34
7	278	400	33
8	253	364	30
9	249	359	30
10	245	354	29
11	213	307	25
12	199	286	24
13	195	281	23
14	144	208	17
15	144	208	17
16	101	146	12
17	58	83	7
18	58	83	7
19	32	47	4
20	18	26	2
21	11	16	1
22	4	5	0
23	4	5	0
24	4	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	881	1	43	No	No	No	No	No	No	No	Yes	No	No
2	1	854	1	42	No	No	No	No	No	No	No	Yes	No	No
3	1	837	1	41	No	No	No	No	No	No	No	No	No	No
4	1	784	1	38	No	No	No	No	No	No	No	No	No	No
5	1	696	1	34	No	No	No	No	No	No	No	No	No	No
6	1	688	1	34	No	No	No	No	No	No	No	No	No	No
7	1	678	1	33	No	No	No	No	No	No	No	No	No	No
8	1	617	1	30	No	No	No	No	No	No	No	No	No	No
9	1	608	1	30	No	No	No	No	No	No	No	No	No	No
10	1	599	1	29	No	No	No	No	No	No	No	No	No	No
11	1	520	1	25	No	No	No	No	No	No	No	No	No	No
12	1	485	1	24	No	No	No	No	No	No	No	No	No	No
13	1	476	1	23	No	No	No	No	No	No	No	No	No	No
14	1	352	1	17	No	No	No	No	No	No	No	No	No	No
15	1	352	1	17	No	No	No	No	No	No	No	No	No	No
16	1	247	1	12	No	No	No	No	No	No	No	No	No	No
17	1	141	1	7	No	No	No	No	No	No	No	No	No	No
18	1	141	1	7	No	No	No	No	No	No	No	No	No	No
19	1	79	1	4	No	No	No	No	No	No	No	No	No	No
20	1	44	1	2	No	No	No	No	No	No	No	No	No	No
21	1	27	1	1	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	2	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:12
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	43
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	924
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

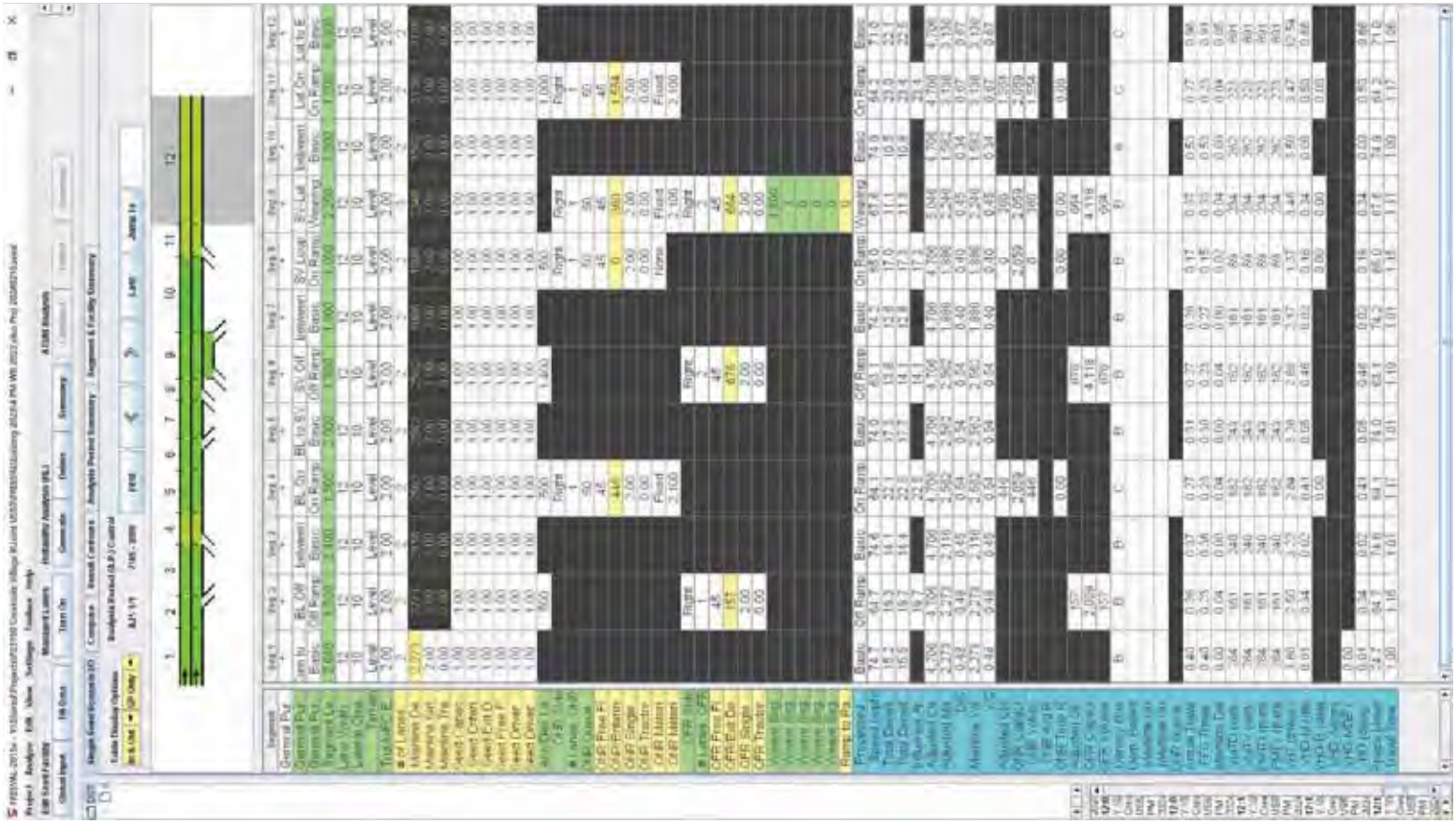
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	264	398	160	68
2	256	386	155	66
3	251	378	152	65
4	235	354	142	61
5	209	314	126	54
6	206	310	125	53
7	203	306	123	52
8	185	279	112	48
9	182	275	110	47
10	180	271	109	46
11	156	235	94	40
12	145	219	88	37
13	143	215	86	37
14	106	159	64	27
15	106	159	64	27
16	74	111	45	19
17	42	64	26	11
18	42	64	26	11
19	24	36	14	6
20	13	20	8	3
21	8	12	5	2
22	3	4	2	1
23	3	4	2	1
24	3	4	2	1

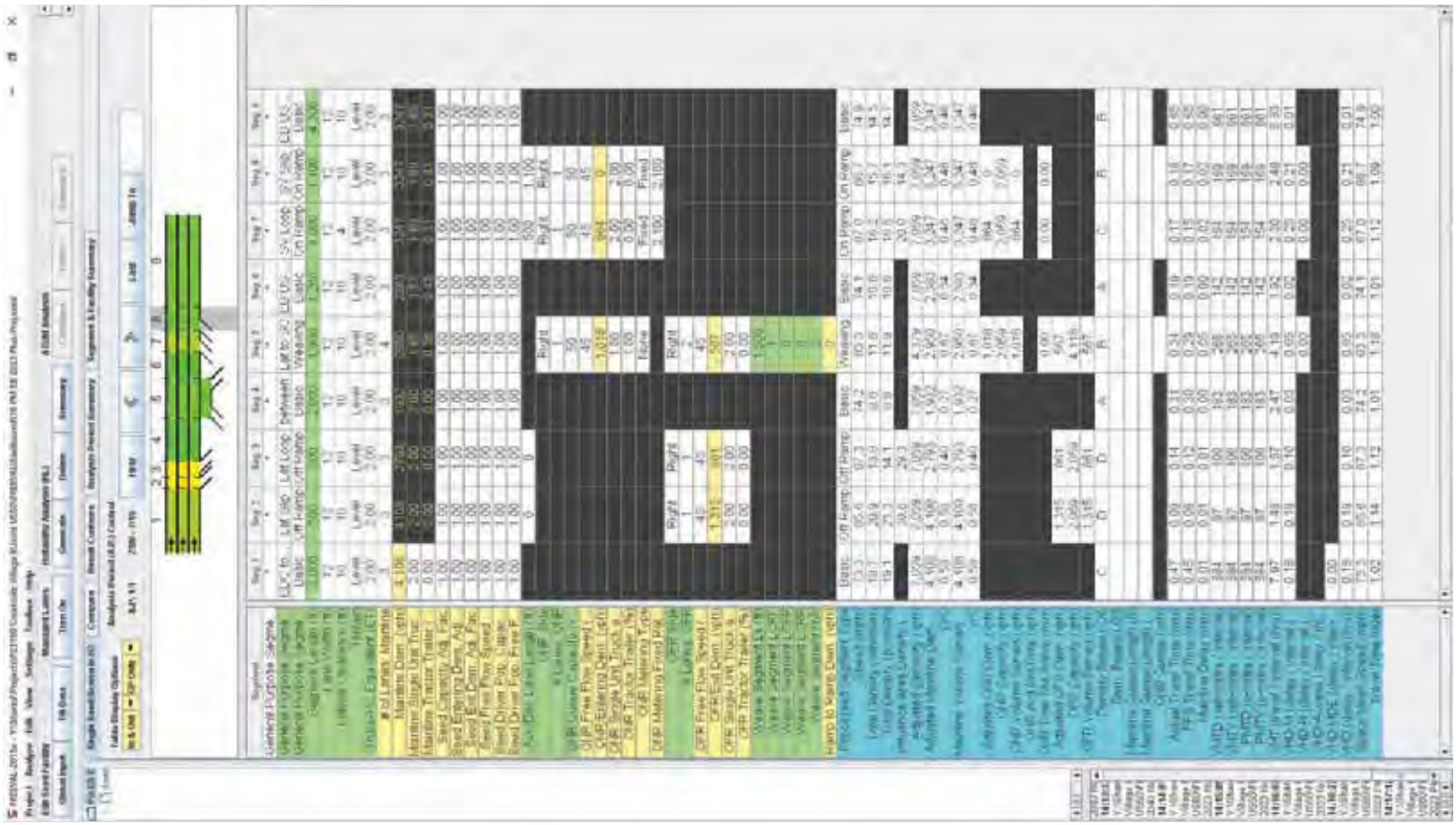
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	662	1	160	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	642	1	155	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	629	1	152	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	589	1	142	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	523	1	126	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	1	516	1	125	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	1	509	1	123	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	1	464	1	112	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	457	1	110	No	No	Yes	Yes	No	No	No	Yes	No	No
10	1	451	1	109	No	No	Yes	Yes	No	No	No	Yes	No	No
11	1	391	1	94	No	No	No	Yes	No	No	No	No	No	No
12	1	364	1	88	No	No	No	Yes	No	No	No	No	No	No
13	1	358	1	86	No	No	No	Yes	No	No	No	No	No	No
14	1	265	1	64	No	No	No	No	No	No	No	No	No	No
15	1	265	1	64	No	No	No	No	No	No	No	No	No	No
16	1	185	1	45	No	No	No	No	No	No	No	No	No	No
17	1	106	1	26	No	No	No	No	No	No	No	No	No	No
18	1	106	1	26	No	No	No	No	No	No	No	No	No	No
19	1	60	1	14	No	No	No	No	No	No	No	No	No	No
20	1	33	1	8	No	No	No	No	No	No	No	No	No	No
21	1	20	1	5	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	3	4	10	7	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.3	20.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:40	0:23
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	160	68
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	890	890
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	





Existing AM plus abated Project

Vistro File: C:\...\AM 918 DU 20240212 - ABATED.vistro Scenario 3 Abated 2023 AM, + Project
Report File: C:\...\5 2023 AM plus abated Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.278	134.0	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	0.946	89.7	F
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	WB Right	0.836	23.4	C
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.660	32.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.745	9.2	A
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	NB Right	0.869	45.3	D
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.972	11.0	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.323	38.7	E
12	Latrobe Rd/Royal Oaks Dr	Signalized	HCM 6th Edition	SB Left	0.737	19.4	B
13	Golden Foothill/Robert J Mathews	Roundabout	HCM 6th Edition	EB Thru		6.4	A
18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 6th Edition	EB Left	0.598	14.5	B
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	0.884	44.4	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Version 2024 (SP 0-2)

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	134.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.278

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	348	988	150	1	148	1611	391	132	61	682	11	13	84
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	30	59	0	0	0	26	0	0	0	14	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	117	0	0	209	0	0	25
Total Hourly Volume [veh/h]	1	378	1047	105	1	148	1637	274	132	61	487	11	13	59
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	102	281	28	0	40	440	74	35	16	131	3	3	16
Total Analysis Volume [veh/h]	1	406	1126	113	1	159	1760	295	142	66	524	12	14	63
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	26	50	0	0	20	44	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	0.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	24	50	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	58	58	12	44	44	20	20	20	7	7
g / C, Green / Cycle	0.23	0.50	0.50	0.11	0.38	0.38	0.17	0.17	0.17	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.23	0.23	0.23	0.09	0.49	0.19	0.06	0.06	0.33	0.01	0.05
s, saturation flow rate [veh/h]	1781	3560	1784	1781	3560	1589	1781	1836	1589	1781	1634
c, Capacity [veh/h]	403	1792	898	190	1365	609	310	320	277	110	101
d1, Uniform Delay [s]	44.39	18.42	18.42	50.34	35.39	26.79	41.53	41.51	47.39	50.87	53.03
k, delay calibration	0.44	0.13	0.13	0.04	0.20	0.13	0.04	0.04	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.34	0.22	0.45	3.90	132.57	0.72	0.23	0.22	414.69	0.16	4.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.46	0.46	0.84	1.29	0.48	0.33	0.33	1.89	0.11	0.76
d, Delay for Lane Group [s/veh]	88.73	18.64	18.87	54.25	167.96	27.52	41.76	41.73	462.08	51.03	57.49
Lane Group LOS	F	B	B	D	F	C	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	15.96	6.63	6.71	4.59	42.93	5.95	2.58	2.63	39.76	0.33	2.31
50th-Percentile Queue Length [ft/ln]	399.11	165.74	167.64	114.66	1073.18	148.66	64.40	65.84	994.08	8.29	57.73
95th-Percentile Queue Length [veh/ln]	22.63	10.85	10.95	8.10	62.96	9.95	4.64	4.74	62.66	0.60	4.16
95th-Percentile Queue Length [ft/ln]	565.82	271.30	273.81	202.46	1574.08	248.64	115.92	118.51	1566.60	14.92	103.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	88.73	88.73	18.70	18.87	54.25	54.25	167.9	27.52	41.76	41.73	462.08	51.03	57.49	57.49
Movement LOS	F	F	B	B	D	D	F	C	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	36.03				141.04				342.64			56.62		
Approach LOS	D				F				F			E		
d_I, Intersection Delay [s/veh]	134.04													
Intersection LOS	F													
Intersection V/C	1.278													

Emissions

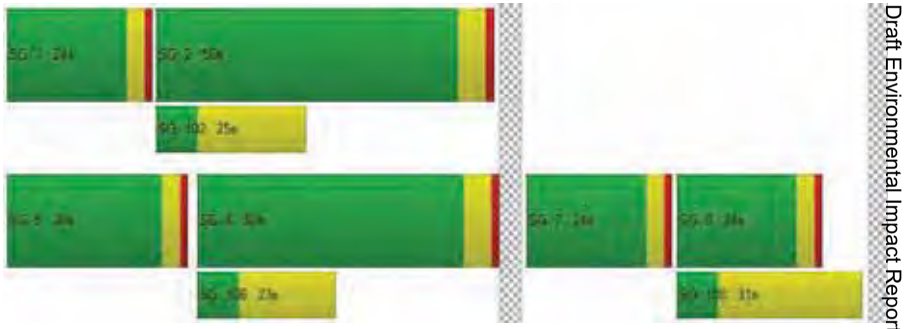
Vehicle Miles Traveled [mph]	76.60	155.30	77.87	38.20	420.22	70.43	6.41	6.56	32.68	0.59	3.75
Stops [stops/h]	500.97	416.07	210.42	143.92	2694.15	186.60	80.84	82.64	1247.78	10.40	72.47
Fuel consumption [US gal/h]	16.20	13.63	6.87	4.87	108.05	6.39	1.58	1.62	57.50	0.21	1.46
CO [g/h]	1132.56	952.54	480.53	340.06	7552.42	446.40	110.74	113.22	4019.33	14.41	101.75
NOx [g/h]	220.35	185.33	93.49	66.16	1469.43	86.85	21.55	22.03	782.01	2.80	19.80
VOC [g/h]	262.48	220.76	111.37	78.81	1750.35	103.46	25.66	26.24	931.52	3.34	23.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	46.89	46.89	46.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.542	2.872	2.149
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	877	772	349	349
d_b, Bicycle Delay [s]	18.09	21.61	39.10	39.10
l_b,int, Bicycle LOS Score for Intersection	2.489	3.352	3.112	1.748
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	89.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.946

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1181	1173	138	3	49	1285	968	256	92	816	146	92	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	108	89	18	0	0	40	0	0	0	16	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	47	0	0	0	290	0	0	250	0	0	17
Total Hourly Volume [veh/h]	1	1289	1262	109	3	49	1325	678	256	92	582	154	92	38
Peak Hour Factor	1.000	0.840	0.840	0.840	1.000	0.840	0.840	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	384	376	32	1	15	394	202	76	27	173	46	27	11
Total Analysis Volume [veh/h]	1	1535	1502	130	3	58	1577	807	305	110	693	183	110	45
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	45	76	0	0	19	50	20	0	20	0	0	20	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	40	77	77	7	44	69	19	19	11	11	11
g / C, Green / Cycle	0.30	0.57	0.57	0.05	0.33	0.51	0.14	0.14	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.44	0.30	0.31	0.03	0.31	0.51	0.12	0.12	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1797	1781	5094	1589	1781	1826	1781	1814	1746
c, Capacity [veh/h]	1035	2044	1032	96	1674	811	256	263	141	144	139
d1, Uniform Delay [s]	33.83	1.31	1.32	62.59	44.07	32.90	55.92	55.91	61.07	61.03	61.10
k, delay calibration	0.22	0.50	0.50	0.04	0.50	0.50	0.18	0.18	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	220.16	0.96	2.07	2.62	11.99	30.45	9.20	8.95	3.84	3.64	4.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.48	0.52	0.54	0.64	0.94	1.00	0.80	0.80	0.80	0.79	0.80
d, Delay for Lane Group [s/veh]	253.99	2.27	3.38	65.22	56.05	63.35	65.11	64.87	64.90	64.68	65.17
Lane Group LOS	F	A	A	E	E	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	46.09	1.01	1.37	2.09	18.33	31.12	7.42	7.58	3.96	3.99	3.92
50th-Percentile Queue Length [ft/ln]	1152.28	25.29	34.22	52.16	458.20	778.00	185.41	189.60	98.94	99.79	98.02
95th-Percentile Queue Length [veh/ln]	70.20	1.82	2.46	3.76	25.35	40.27	11.88	12.10	7.12	7.19	7.06
95th-Percentile Queue Length [ft/ln]	1754.89	45.53	61.60	93.89	633.73	1006.72	297.06	302.51	178.10	179.63	176.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	253.9	253.9	2.59	3.38	65.22	65.22	56.05	63.35	65.03	64.87	0.00	64.82	64.97	65.17
Movement LOS	F	F	A	A	E	E	E	E	E	E		E	E	E
d_A, Approach Delay [s/veh]	124.51				58.69				27.05			64.91		
Approach LOS	F				E				C			E		
d_I, Intersection Delay [s/veh]	89.72													
Intersection LOS	F													
Intersection V/C	0.946													

Emissions

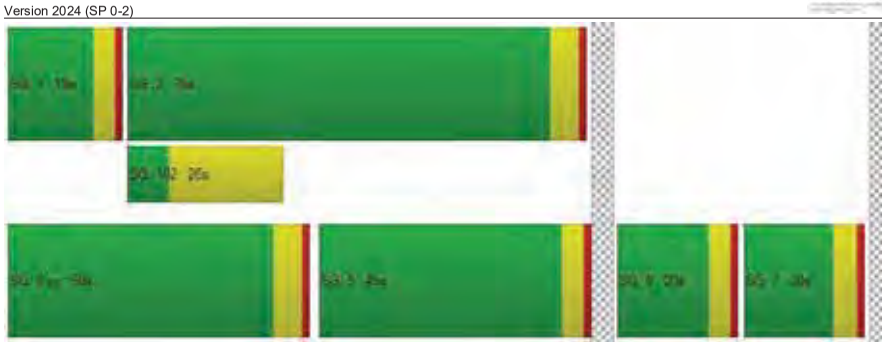
Vehicle Miles Traveled [mph]	263.07	183.26	96.25	11.48	296.78	151.87	9.48	9.72	3.58	3.62	3.54
Stops [stops/h]	2458.20	53.96	36.51	55.64	1466.24	829.86	197.77	202.24	105.54	106.45	104.56
Fuel consumption [US gal/h]	103.78	8.34	4.55	1.89	46.39	25.93	4.20	4.29	2.22	2.24	2.20
CO [g/h]	7254.53	582.77	318.11	132.45	3242.71	1812.24	293.44	299.86	155.11	156.32	153.80
NOx [g/h]	1411.47	113.39	61.89	25.77	630.91	352.60	57.09	58.34	30.18	30.41	29.92
VOC [g/h]	1681.31	135.06	73.72	30.70	751.53	420.00	68.01	69.50	35.95	36.23	35.64

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	56.95
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.345
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1040	655	221	228
d_b, Bicycle Delay [s]	15.55	30.54	53.42	52.98
l_b,int, Bicycle LOS Score for Intersection	3.327	3.032	2.244	1.852
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	61	1808	235	4	440	1970	372	140	8	20	1	70	30	476
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	249	21	0	0	117	0	0	0	3	0	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	77	0	0	0	112	0	0	7	0	0	0	143
Total Hourly Volume [veh/h]	1	67	2057	179	4	440	2087	260	140	8	16	1	80	30	333
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	17	525	46	1	112	532	66	36	2	4	0	20	8	85
Total Analysis Volume [veh/h]	1	68	2099	183	4	449	2130	265	143	8	16	1	82	31	340
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	98	98	98	98	98	98	98	98	98	98	98	98
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	3	48	48	15	59	59	6	6	6	13	13	13
g / C, Green / Cycle	0.03	0.49	0.49	0.15	0.60	0.60	0.06	0.06	0.06	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.41	0.12	0.13	0.42	0.17	0.04	0.00	0.01	0.05	0.12	0.12
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1630	1589
c, Capacity [veh/h]	121	2481	774	518	3066	957	220	119	101	243	222	217
d1, Uniform Delay [s]	46.63	21.96	14.59	40.81	13.37	9.33	44.89	43.22	43.47	38.39	41.37	41.37
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.24	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	0.32	0.06	1.87	0.11	0.06	2.39	0.17	0.54	0.62	16.78	17.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.85	0.24	0.87	0.69	0.28	0.65	0.07	0.16	0.34	0.84	0.85
d, Delay for Lane Group [s/veh]	48.19	22.28	14.65	42.68	13.48	9.39	47.28	43.39	44.00	39.01	58.16	58.52
Lane Group LOS	D	C	B	D	B	A	D	D	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.85	13.25	2.30	5.41	9.72	2.54	1.76	0.19	0.38	1.84	5.41	5.30
50th-Percentile Queue Length [ft/ln]	21.24	331.18	57.55	135.35	243.09	63.54	43.98	4.68	9.51	45.93	135.37	132.58
95th-Percentile Queue Length [veh/ln]	1.53	19.22	4.14	9.23	14.84	4.57	3.17	0.34	0.68	3.31	9.23	9.08
95th-Percentile Queue Length [ft/ln]	38.22	480.41	103.58	230.75	370.94	114.37	79.16	8.43	17.12	82.67	230.78	227.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.19	48.19	22.28	14.65	42.68	42.68	13.48	9.39	47.28	43.39	44.00	39.01	39.01	58.16	58.36
Movement LOS	D	D	C	B	D	D	B	A	D	D	D	D	D	E	E
d_A, Approach Delay [s/veh]	22.45				17.74				46.78			54.81			
Approach LOS	C				B				D			D			
d_I, Intersection Delay [s/veh]	23.37														
Intersection LOS	C														
Intersection V/C	0.836														

Emissions

Vehicle Miles Traveled [mph]	15.40	468.45	40.84	65.55	308.20	38.34	18.24	1.02	2.04	29.13	65.92	64.29
Stops [stops/h]	62.42	1460.21	84.58	397.85	1071.81	93.38	129.27	6.89	13.98	67.50	198.95	194.85
Fuel consumption [US gal/h]	1.66	36.87	2.69	8.83	24.45	2.60	2.84	0.15	0.30	2.23	6.04	5.90
CO [g/h]	115.71	2577.23	188.33	617.26	1709.13	181.81	198.57	10.53	21.28	155.95	421.87	412.74
NOx [g/h]	22.51	501.43	36.64	120.10	332.53	35.37	38.63	2.05	4.14	30.34	82.08	80.30
VOC [g/h]	26.82	597.30	43.65	143.06	396.11	42.14	46.02	2.44	4.93	36.14	97.77	95.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	38.61	0.00	38.61	38.61
l_p,int, Pedestrian LOS Score for Intersectio	3.468	0.000	2.572	2.763
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1031	1031	418	316
d_b, Bicycle Delay [s]	11.50	11.50	30.63	34.72
l_b,int, Bicycle LOS Score for Intersection	2.894	2.941	1.703	2.409
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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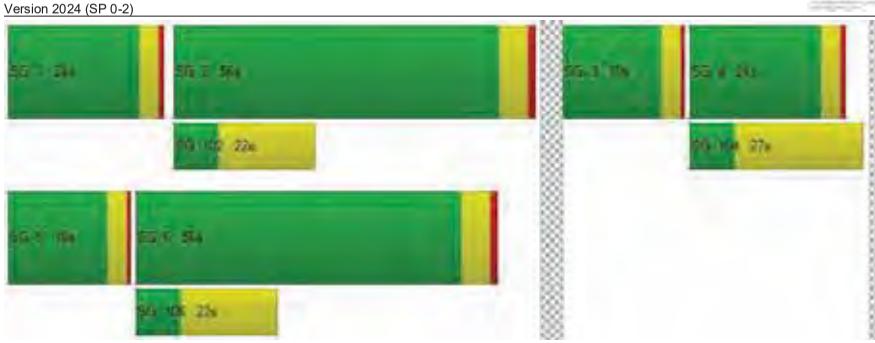

Scenario 3: 3 Abated 2023 AM, + Project Report File: C:\...\5 2023 AM plus abated Proj.pdf 2/14/2024
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Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	84	1607	388	1	92	1561	407	2	310	108	60	298	227	187
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	276	68	0	0	130	0	0	0	0	0	30	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	137	0	0	0	122	0	0	0	18	0	0	56
Total Hourly Volume [veh/h]	2	84	1883	319	1	92	1691	285	2	310	108	42	328	227	131
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	22	501	85	0	24	450	76	1	82	29	11	87	60	35
Total Analysis Volume [veh/h]	2	89	2003	339	1	98	1799	303	2	330	115	45	349	241	139
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	91	91	10	91	91	17	16	16	18	16	16
g / C, Green / Cycle	0.06	0.58	0.58	0.06	0.58	0.58	0.11	0.10	0.10	0.11	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.22	0.03	0.36	0.19	0.10	0.04	0.05	0.10	0.07	0.09
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1682	3431	3532	1577
c, Capacity [veh/h]	111	3915	916	217	2939	917	379	184	167	391	362	162
d1, Uniform Delay [s]	72.72	19.60	17.55	70.94	21.33	17.01	68.78	66.69	66.76	68.62	67.85	69.33
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.48	1.15	0.56	0.96	0.97	2.58	0.64	0.74	2.91	0.79	5.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.51	0.37	0.46	0.61	0.33	0.88	0.45	0.46	0.89	0.67	0.86
d, Delay for Lane Group [s/veh]	78.35	20.08	18.70	71.50	22.29	17.97	71.35	67.33	67.50	71.53	68.63	74.37
Lane Group LOS	E	C	B	E	C	B	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.82	11.08	6.93	1.92	13.92	5.75	6.74	3.20	2.97	7.10	4.73	5.75
50th-Percentile Queue Length [ft/ln]	95.46	277.06	173.23	47.95	348.03	143.69	168.40	79.91	74.31	177.62	118.21	143.84
95th-Percentile Queue Length [veh/ln]	6.87	16.54	11.25	3.45	20.04	9.68	10.99	5.75	5.35	11.48	8.29	9.69
95th-Percentile Queue Length [ft/ln]	171.83	413.55	281.16	86.30	501.00	241.99	274.81	143.85	133.76	286.91	207.37	242.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.35	78.35	20.08	18.70	71.50	71.50	22.29	17.97	71.35	71.35	67.38	67.50	71.53	68.63	74.37
Movement LOS	E	E	C	B	E	E	C	B	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	22.07				23.91				70.07				71.11		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	32.90														
Intersection LOS	C														
Intersection V/C	0.660														

Emissions

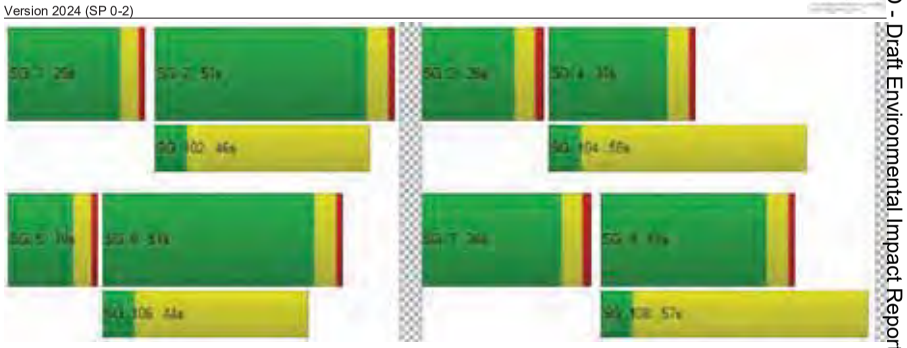
Vehicle Miles Traveled [mph]	36.23	797.46	134.97	22.09	401.50	67.62	82.74	20.68	19.19	36.59	25.27	14.57
Stops [stops/h]	87.56	1016.47	158.89	87.95	957.62	131.80	308.91	73.30	68.16	325.83	216.85	131.93
Fuel consumption [US gal/h]	3.43	46.63	7.72	3.29	33.83	5.06	9.93	2.39	2.22	8.39	5.60	3.43
CO [g/h]	239.46	3259.44	539.88	230.05	2364.74	354.02	694.30	167.31	155.46	586.17	391.70	239.92
NOx [g/h]	46.59	634.17	105.04	44.76	460.09	68.88	135.09	32.55	30.25	114.05	76.21	46.68
VOC [g/h]	55.50	755.41	125.12	53.32	548.05	82.05	160.91	38.78	36.03	135.85	90.78	55.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.588	3.876	2.710	2.905
Crosswalk LOS	D	D	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.619	2.783	1.708	2.207
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

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Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	60	1194	1152	301	134	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	13	345	160	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	90	0	3
Total Hourly Volume [veh/h]	1	73	1539	1312	211	134	6
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	21	442	377	61	39	2
Total Analysis Volume [veh/h]	1	84	1769	1508	243	154	7
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	C
C, Cycle Length [s]	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	41	33	33	5	5
g / C, Green / Cycle	0.07	0.74	0.60	0.60	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.05	0.50	0.47	0.49	0.05	0.05
s, saturation flow rate [veh/h]	1781	3560	1870	1783	1781	1762
c, Capacity [veh/h]	118	2627	1122	1070	147	146
d1, Uniform Delay [s]	25.51	3.80	8.38	8.76	24.55	24.56
k, delay calibration	0.04	0.15	0.22	0.24	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.12	0.43	2.43	3.47	3.16	3.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.67	0.78	0.82	0.55	0.55
d, Delay for Lane Group [s/veh]	28.63	4.24	10.81	12.23	27.71	27.78
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.13	2.21	6.19	6.71	1.08	1.08
50th-Percentile Queue Length [ft/ln]	28.32	55.37	154.74	167.72	27.10	27.00
95th-Percentile Queue Length [veh/ln]	2.04	3.99	10.27	10.96	1.95	1.94
95th-Percentile Queue Length [ft/ln]	50.97	99.67	256.74	273.92	48.79	48.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.63	28.63	4.24	11.40	12.23	27.74	27.78
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	5.36			11.52		27.75	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	9.18						
Intersection LOS	A						
Intersection V/C	0.745						

Emissions

Vehicle Miles Traveled [mph]	59.31	1234.25	309.81	309.81	27.24	27.08
Stops [stops/h]	73.31	286.68	400.55	434.17	70.16	69.89
Fuel consumption [US gal/h]	3.34	53.92	16.89	17.33	1.96	1.95
CO [g/h]	233.58	3768.96	1180.79	1211.47	137.31	136.64
NOx [g/h]	45.45	733.30	229.74	235.71	26.72	26.58
VOC [g/h]	54.13	873.49	273.66	280.77	31.82	31.67

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.39	0.00	20.39
l_p,int, Pedestrian LOS Score for Intersectio	2.936	0.000	2.112
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1438	1438	719
d_b, Bicycle Delay [s]	2.20	2.20	11.41
l_b,int, Bicycle LOS Score for Intersection	3.088	3.078	1.830
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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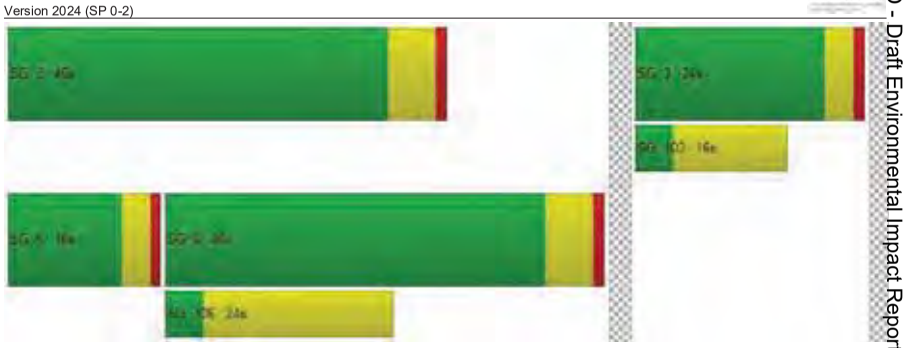

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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

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Version 2024 (SP 0-2)

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	41	605	21	209	386	563	314	41	5	136	94	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	99	358	42	0	164	0	0	0	47	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	19	0	0	169	0	0	16	0	0	101
Total Hourly Volume [veh/h]	140	963	44	209	550	394	314	41	36	155	94	234
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	271	12	59	154	111	88	12	10	44	26	66
Total Analysis Volume [veh/h]	157	1082	49	235	618	443	353	46	40	174	106	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	26	25	0	26	25	0	0	30	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	30	30	0	0	35	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	9	25	25	13	29	29	10	10	15	15
g / C, Green / Cycle	0.11	0.31	0.31	0.15	0.35	0.35	0.13	0.13	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.09	0.30	0.30	0.13	0.30	0.31	0.10	0.05	0.16	0.16
s, saturation flow rate [veh/h]	1781	1870	1842	1781	1870	1615	3459	1728	1806	1589
c, Capacity [veh/h]	194	570	562	275	655	566	442	221	332	292
d1, Uniform Delay [s]	35.67	28.47	28.49	33.76	24.81	24.97	34.74	32.82	32.51	32.52
k, delay calibration	0.04	0.39	0.39	0.04	0.39	0.40	0.04	0.04	0.10	0.10
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.00	32.97	33.66	2.95	11.31	14.29	1.28	0.42	6.78	7.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.00	1.00	0.85	0.86	0.88	0.80	0.39	0.87	0.87
d, Delay for Lane Group [s/veh]	38.67	61.43	62.15	36.71	36.11	39.26	36.02	33.24	39.29	40.26
Lane Group LOS	D	E	F	D	D	D	D	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.15	15.78	15.67	4.34	10.75	9.92	3.41	1.56	6.01	5.37
50th-Percentile Queue Length [ft/ln]	78.79	394.38	391.70	108.51	268.73	247.96	85.22	38.97	150.21	134.36
95th-Percentile Queue Length [veh/ln]	5.67	22.29	22.16	7.76	16.13	15.08	6.14	2.81	10.03	9.18
95th-Percentile Queue Length [ft/ln]	141.83	557.23	553.99	193.93	403.15	377.09	153.40	70.15	250.71	229.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.67	61.77	62.15	36.71	36.38	39.26	36.02	33.24	33.24	39.29	39.29	40.26
Movement LOS	D	E	E	D	D	D	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	58.97			37.43			35.47			39.74		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	45.32											
Intersection LOS	D											
Intersection V/C	0.869											

Emissions

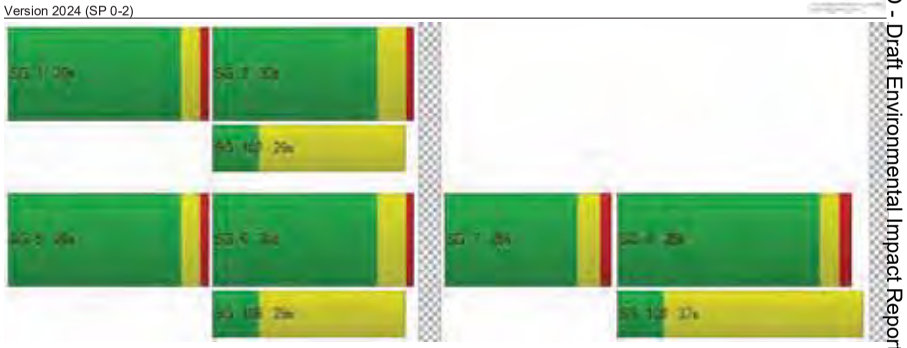
Vehicle Miles Traveled [mph]	90.67	328.82	324.35	163.96	394.40	345.87	26.56	6.47	31.92	28.14
Stops [stops/h]	138.72	694.33	689.61	191.03	473.11	436.55	300.08	68.61	264.45	236.54
Fuel consumption [US gal/h]	5.73	24.49	24.26	10.79	26.14	23.64	5.34	1.23	5.08	4.55
CO [g/h]	400.84	1711.87	1696.11	754.13	1826.86	1652.37	373.15	85.78	355.28	317.99
NOx [g/h]	77.99	333.07	330.00	146.73	355.44	321.49	72.60	16.69	69.12	61.87
VOC [g/h]	92.90	396.74	393.09	174.78	423.39	382.95	86.48	19.88	82.34	73.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.64	0.00	30.64	30.64
l_p,int, Pedestrian LOS Score for Intersectio	2.742	0.000	2.473	2.401
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	604	604	746	489
d_b, Bicycle Delay [s]	19.93	19.93	16.08	23.34
l_b,int, Bicycle LOS Score for Intersection	2.638	2.768	2.310	2.622
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.972

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	465	254	273	202	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	498	230	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	963	484	273	202	59
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	268	134	76	56	16
Total Analysis Volume [veh/h]	150	1070	538	303	224	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	16	54	34	0	56	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	14	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	60	40	0	60	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	1.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	22	14	14	5	5
g / C, Green / Cycle	0.11	0.60	0.38	0.38	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.08	0.57	0.29	0.19	0.08	0.08
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1686
c, Capacity [veh/h]	194	1121	715	608	233	220
d1, Uniform Delay [s]	16.07	6.95	9.91	8.73	15.27	15.28
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	2.42	0.61	0.23	1.08	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.95	0.75	0.50	0.64	0.64
d, Delay for Lane Group [s/veh]	18.55	9.37	10.52	8.96	16.35	16.45
Lane Group LOS	B	A	B	A	B	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.97	1.00	1.87	0.91	1.05	1.01
50th-Percentile Queue Length [ft/ln]	24.36	24.89	46.84	22.71	26.18	25.14
95th-Percentile Queue Length [veh/ln]	1.75	1.79	3.37	1.64	1.89	1.81
95th-Percentile Queue Length [ft/ln]	43.84	44.80	84.31	40.88	47.13	45.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.55	9.37	10.52	8.96	16.38	16.45
Movement LOS	B	A	B	A	B	B
d_A, Approach Delay [s/veh]	10.50		9.96		16.39	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.03					
Intersection LOS	B					
Intersection V/C	0.972					

Emissions

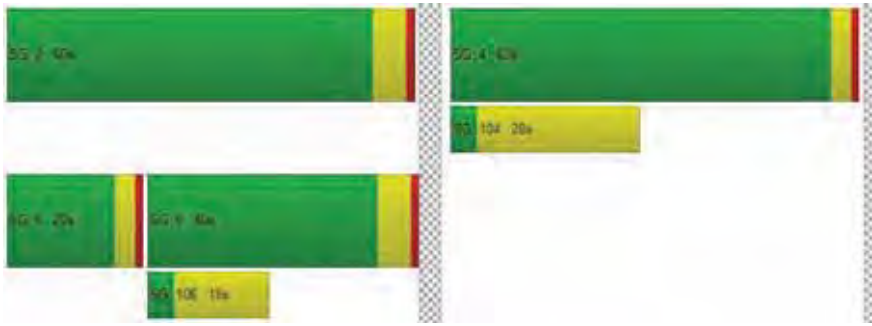
Vehicle Miles Traveled [mph]	18.51	132.03	310.71	174.99	34.84	33.27
Stops [stops/h]	94.91	96.99	182.53	88.51	102.04	97.96
Fuel consumption [US gal/h]	2.95	8.26	14.94	8.05	2.49	2.38
CO [g/h]	206.09	577.29	1044.03	562.71	174.17	166.70
NOx [g/h]	40.10	112.32	203.13	109.48	33.89	32.43
VOC [g/h]	47.76	133.79	241.96	130.41	40.37	38.63

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.34	0.00	11.34
l_p,int, Pedestrian LOS Score for Intersectio	2.982	0.000	2.136
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2923	1840	3031
d_b, Bicycle Delay [s]	3.93	0.12	4.91
l_b,int, Bicycle LOS Score for Intersection	3.573	2.947	2.038
Bicycle LOS	D	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	38.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.323

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	548	0	14	295	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	466	0	0	218	16	45	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1014	0	14	513	16	45	0	5	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	276	0	4	139	4	12	0	1	0	0	10
Total Analysis Volume [veh/h]	2	1102	0	14	558	17	49	0	5	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					Yes		No	
Number of Storage Spaces in Median	0		0		1		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.32	0.00	0.01	0.00	0.00	0.15
d_M, Delay for Movement [s/veh]	8.61	0.00	0.00	10.81	0.00	0.00	38.65	33.37	21.82	58.94	48.09	21.47
Movement LOS	A	A	A	B	A	A	E	D	C	F	E	C
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.07	0.00	0.00	1.31	1.31	1.31	0.53	0.53	0.53
95th-Percentile Queue Length [ft/ln]	0.15	0.00	0.00	1.69	0.00	0.00	32.73	32.73	32.73	13.14	13.14	13.14
d_A, Approach Delay [s/veh]	0.02			0.26			37.09			21.47		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	1.68											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	387	32	41	254	0	0	0	0	10	0	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	24	0	0	14	141	445	6	51	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	42	0	0	21	0	0	48
Total Hourly Volume [veh/h]	59	411	22	41	268	99	482	6	48	10	2	113
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	110	6	11	72	27	130	2	13	3	1	30
Total Analysis Volume [veh/h]	63	442	24	44	288	106	518	6	52	11	2	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	C
C, Cycle Length [s]	51	51	51	51	51	51	51	51	51
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	16	2	15	15	11	11	11	6
g / C, Green / Cycle	0.06	0.32	0.05	0.30	0.30	0.21	0.21	0.21	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.28	0.03	0.17	0.07	0.16	0.16	0.04	0.09
s, saturation flow rate [veh/h]	1603	1668	1603	1683	1431	1603	1605	1431	1446
c, Capacity [veh/h]	93	528	74	512	435	336	337	300	167
d1, Uniform Delay [s]	23.65	16.62	23.98	14.98	13.41	19.12	19.12	16.60	22.10
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.13	2.00	2.87	0.36	0.11	1.49	1.49	0.10	3.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.88	0.60	0.56	0.24	0.78	0.78	0.17	0.81
d, Delay for Lane Group [s/veh]	26.77	18.61	26.85	15.34	13.51	20.61	20.61	16.70	25.56
Lane Group LOS	C	B	C	B	B	C	C	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.69	3.96	0.49	2.09	0.68	2.74	2.75	0.46	1.60
50th-Percentile Queue Length [ft/ln]	17.33	99.12	12.22	52.15	17.08	68.61	68.67	11.44	39.98
95th-Percentile Queue Length [veh/ln]	1.25	7.14	0.88	3.75	1.23	4.94	4.94	0.82	2.88
95th-Percentile Queue Length [ft/ln]	31.19	178.42	22.00	93.87	30.75	123.49	123.61	20.59	71.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.77	18.61	18.61	26.85	15.34	13.51	20.61	20.61	16.70	25.56	25.56	25.56
Movement LOS	C	B	B	C	B	B	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	19.59			16.05			20.26			25.56		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.37											
Intersection LOS	B											
Intersection V/C	0.737											

Emissions

Vehicle Miles Traveled [mph]	21.37	158.07	4.46	29.20	10.75	17.38	17.40	3.45	113.97
Stops [stops/h]	48.88	279.66	34.48	147.13	48.19	193.56	193.75	32.27	112.80
Fuel consumption [US gal/h]	1.97	12.25	1.03	4.61	1.55	2.88	2.89	0.50	6.02
CO [g/h]	137.43	856.10	72.00	322.14	108.07	201.56	201.76	34.75	420.60
NOx [g/h]	26.74	166.57	14.01	62.68	21.03	39.22	39.25	6.76	81.83
VOC [g/h]	31.85	198.41	16.69	74.66	25.05	46.71	46.76	8.05	97.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.31	17.31	17.31	17.31
l_p,int, Pedestrian LOS Score for Intersectio	2.469	2.907	2.330	1.885
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1176	1176	1176	1176
d_b, Bicycle Delay [s]	4.34	4.34	4.34	4.34
l_b,int, Bicycle LOS Score for Intersection	2.449	2.352	2.545	1.862
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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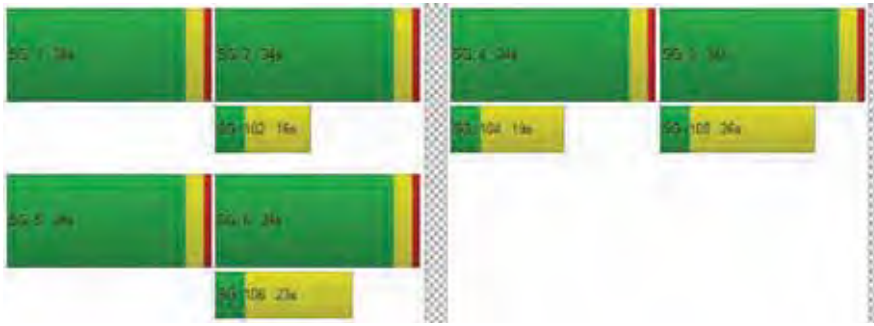


Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Roundabout	Delay (sec / veh):	6.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	232	128	45	0	546	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	47	0	0	0	99
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	232	175	45	0	546	251
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	64	48	12	0	151	69
Total Analysis Volume [veh/h]	0	14	256	193	50	0	603	277
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1		1		
Circulating Flow Rate [veh/h]	197			615		14		
Exiting Flow Rate [veh/h]	666			297		458		
Demand Flow Rate [veh/h]	0	13	232	175	45	0	546	251
Adjusted Demand Flow Rate [veh/h]	0	14	256	193	50	0	603	277

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1380.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00102	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	15	262	248	616	283
Capacity of Entry and Bypass Lanes [veh/h]	1188	1188	737	1402	1402
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1164	1164	723	1375	1375
X, volume / capacity	0.01	0.22	0.34	0.44	0.20

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.04	0.84	1.48	2.29	0.75
95th-Percentile Queue Length [ft]	0.91	20.99	37.09	57.28	18.83
Approach Delay [s/veh]	4.97		9.17	6.04	
Approach LOS	A		A	A	
Intersection Delay [s/veh]	6.38				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.598

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	227	71	37	439	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	99	0	0	0	0	0	0	0	47	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	164	0	18	66	1	8	4	227	118	37	439	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	0	5	17	0	2	1	59	30	10	113	4
Total Analysis Volume [veh/h]	169	0	19	68	1	8	4	234	122	38	453	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	9	0	0	9	0	9	9	0	9	9	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	L	C
C, Cycle Length [s]	35	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	3	0	10	2	11
g / C, Green / Cycle	0.14	0.14	0.08	0.01	0.28	0.04	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.01	0.04	0.00	0.20	0.02	0.25
s, saturation flow rate [veh/h]	1781	1589	1760	1781	1763	1781	1859
c, Capacity [veh/h]	246	220	135	10	500	81	601
d1, Uniform Delay [s]	14.38	13.18	15.63	17.38	11.28	16.33	10.74
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.36	0.17	3.75	22.89	1.90	4.23	2.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.09	0.57	0.39	0.71	0.47	0.78
d, Delay for Lane Group [s/veh]	17.75	13.34	19.38	40.27	13.18	20.57	12.98
Lane Group LOS	B	B	B	D	B	C	B
Critical Lane Group	Yes	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.25	0.12	0.63	0.09	2.08	0.34	2.68
50th-Percentile Queue Length [ft/ln]	31.32	2.89	15.73	2.29	51.96	8.56	66.98
95th-Percentile Queue Length [veh/ln]	2.25	0.21	1.13	0.17	3.74	0.62	4.82
95th-Percentile Queue Length [ft/ln]	56.37	5.20	28.32	4.13	93.52	15.40	120.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.75	17.75	13.34	19.38	19.38	19.38	40.27	13.18	13.18	20.57	12.98	12.98
Movement LOS	B	B	B	B	B	B	D	B	B	C	B	B
d_A, Approach Delay [s/veh]	17.30			19.38			13.48			13.55		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.55											
Intersection LOS	B											
Intersection V/C	0.598											

Emissions

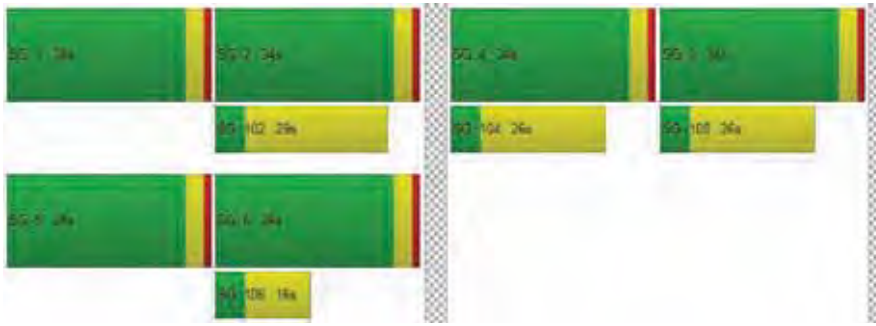
Vehicle Miles Traveled [mph]	50.17	5.64	1.72	0.57	50.97	31.98	393.84
Stops [stops/h]	129.25	11.92	64.92	9.46	214.40	35.30	276.39
Fuel consumption [US gal/h]	3.39	0.35	0.73	0.11	4.24	1.67	18.98
CO [g/h]	236.95	24.44	51.24	7.59	296.23	116.77	1326.41
NOx [g/h]	46.10	4.76	9.97	1.48	57.63	22.72	258.07
VOC [g/h]	54.92	5.66	11.87	1.76	68.65	27.06	307.41

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	9.61	9.61	9.61	9.61
l_p,int, Pedestrian LOS Score for Intersectio	2.164	1.710	2.210	2.157
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1719	1719	1719	1719
d_b, Bicycle Delay [s]	0.34	0.34	0.34	0.34
l_b,int, Bicycle LOS Score for Intersection	1.870	1.687	2.154	2.395
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	44.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	375.00	100.00	150.00	400.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

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Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	95	50	256	155	36	46	68	194	30	162	653	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	34	0	0	10	21	47	0	16	20	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	87	0	0	17	0	0	9	0	0	71
Total Hourly Volume [veh/h]	95	50	203	155	36	39	89	241	21	178	673	167
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	14	58	45	10	11	26	69	6	51	193	48
Total Analysis Volume [veh/h]	109	57	233	178	41	45	102	277	24	205	774	192
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	21	21	13	13	8	38	38	14	44	44
g / C, Green / Cycle	0.21	0.21	0.13	0.13	0.07	0.37	0.37	0.13	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.10	0.05	0.06	0.15	0.02	0.12	0.41	0.12
s, saturation flow rate [veh/h]	1781	1638	1781	1712	1781	1870	1589	1781	1870	1589
c, Capacity [veh/h]	366	337	226	217	131	688	585	240	790	671
d1, Uniform Delay [s]	35.01	39.94	44.12	41.82	47.46	24.45	21.14	44.09	29.66	19.77
k, delay calibration	0.13	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.43	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	7.90	7.40	1.46	3.81	0.38	0.03	3.39	25.15	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.86	0.79	0.40	0.78	0.40	0.04	0.86	0.98	0.29
d, Delay for Lane Group [s/veh]	35.57	47.84	51.53	43.27	51.26	24.83	21.17	47.48	54.82	20.07
Lane Group LOS	D	D	D	D	D	C	C	D	D	C
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.39	7.81	4.88	2.11	2.72	5.06	0.38	5.35	23.71	3.06
50th-Percentile Queue Length [ft/ln]	59.69	195.33	122.10	52.79	68.08	126.62	9.47	133.78	592.86	76.62
95th-Percentile Queue Length [veh/ln]	4.30	12.40	8.51	3.80	4.90	8.76	0.68	9.14	31.70	5.52
95th-Percentile Queue Length [ft/ln]	107.44	309.94	212.71	95.01	122.55	218.89	17.04	228.62	792.52	137.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.57	47.84	47.84	51.53	43.27	43.27	51.26	24.83	21.17	47.48	54.82	20.07
Movement LOS	D	D	D	D	D	D	D	C	C	D	D	C
d_A, Approach Delay [s/veh]	44.49			48.84			31.30			47.83		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	44.38											
Intersection LOS	D											
Intersection V/C	0.884											

Emissions

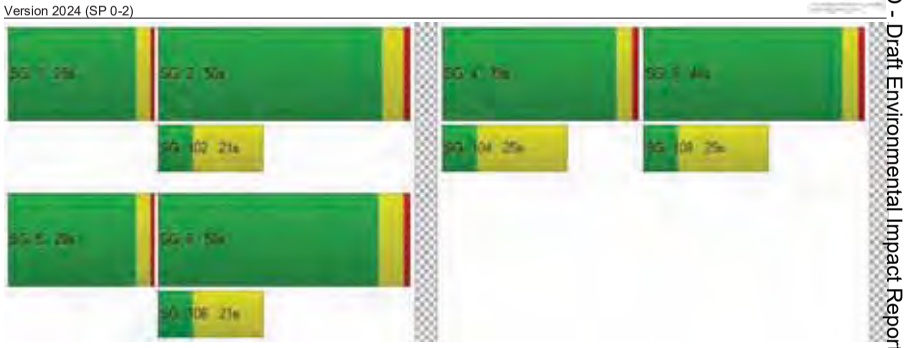
Vehicle Miles Traveled [mph]	187.55	498.99	36.09	17.44	35.72	96.99	8.40	92.50	349.25	86.63
Stops [stops/h]	82.66	270.49	169.08	73.10	94.28	175.34	13.11	185.25	820.98	106.10
Fuel consumption [US gal/h]	8.97	24.86	4.29	1.88	3.06	6.36	0.52	6.81	27.55	4.94
CO [g/h]	626.75	1737.65	299.59	131.33	213.56	444.64	36.47	476.15	1925.49	345.09
NOx [g/h]	121.94	338.08	58.29	25.55	41.55	86.51	7.10	92.64	374.63	67.14
VOC [g/h]	145.25	402.72	69.43	30.44	49.49	103.05	8.45	110.35	446.25	79.98

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.58	41.58	41.58	41.58
l_p,int, Pedestrian LOS Score for Intersectio	2.319	2.200	2.481	2.731
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	669	765	860	846
d_b, Bicycle Delay [s]	23.02	19.81	16.90	17.30
l_b,int, Bicycle LOS Score for Intersection	2.362	2.023	2.239	3.609
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	1016	543	39	50
2	986	527	38	49
3	965	516	37	48
4	904	483	35	45
5	803	429	31	40
6	792	424	30	39
7	782	418	30	39
8	711	380	27	35
9	701	375	27	35
10	691	369	27	34
11	599	320	23	30
12	559	299	21	28
13	549	293	21	27
14	406	217	16	20
15	406	217	16	20
16	284	152	11	14
17	163	87	6	8
18	163	87	6	8
19	91	49	4	5
20	51	27	2	3
21	30	16	1	2
22	10	5	0	1
23	10	5	0	1
24	10	5	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1559	1	50	No	No	No	No	No	No	No	Yes	No	No
2	2	1513	1	49	No	No	No	No	No	No	No	Yes	No	No
3	2	1481	1	48	No	No	No	No	No	No	No	Yes	No	No
4	2	1387	1	45	No	No	No	No	No	No	No	Yes	No	No
5	2	1232	1	40	No	No	No	No	No	No	No	No	No	No
6	2	1216	1	39	No	No	No	No	No	No	No	No	No	No
7	2	1200	1	39	No	No	No	No	No	No	No	No	No	No
8	2	1091	1	35	No	No	No	No	No	No	No	No	No	No
9	2	1076	1	35	No	No	No	No	No	No	No	No	No	No
10	2	1060	1	34	No	No	No	No	No	No	No	No	No	No
11	2	919	1	30	No	No	No	No	No	No	No	No	No	No
12	2	858	1	28	No	No	No	No	No	No	No	No	No	No
13	2	842	1	27	No	No	No	No	No	No	No	No	No	No
14	2	623	1	20	No	No	No	No	No	No	No	No	No	No
15	2	623	1	20	No	No	No	No	No	No	No	No	No	No
16	2	436	1	14	No	No	No	No	No	No	No	No	No	No
17	2	250	1	8	No	No	No	No	No	No	No	No	No	No
18	2	250	1	8	No	No	No	No	No	No	No	No	No	No
19	2	140	1	5	No	No	No	No	No	No	No	No	No	No
20	2	78	1	3	No	No	No	No	No	No	No	No	No	No
21	2	46	1	2	No	No	No	No	No	No	No	No	No	No
22	2	15	1	1	No	No	No	No	No	No	No	No	No	No
23	2	15	1	1	No	No	No	No	No	No	No	No	No	No
24	2	15	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	21.5	37.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:13	0:30
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	50
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1648	1648
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Existing PM plus abated Project

Vistro File: C:\...\PM 918 DU 20240212 - ABATED.vistro Scenario 3 Abated 2023 PM, Plus Project
Report File: C:\...\6 2023 PM plus abated Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.232	99.5	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	WB Right	1.036	57.6	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	WB Right	0.940	37.5	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.722	43.3	D
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.795	12.8	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Right	0.975	75.7	E
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	SB Thru	0.990	50.2	D
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.219	35.9	E
12	Latrobe Rd/Royal Oaks Dr	Signalized	HCM 6th Edition	WB Left	0.634	17.9	B
13	Golden Foothill/Robert J Mathews	Roundabout	HCM 6th Edition	EB Thru		10.6	B
18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 6th Edition	EB Left	0.668	15.0	B
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	WB Left	0.902	50.3	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	99.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.232

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	75	4	164	1068	198	365	41	525	59	107	276
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	19	36	0	0	0	62	0	0	0	31	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	23	0	0	0	59	0	0	167	0	0	83
Total Hourly Volume [veh/h]	5	461	1652	52	4	164	1130	139	365	41	389	59	107	193
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	124	444	14	1	44	304	37	98	11	105	16	29	52
Total Analysis Volume [veh/h]	5	496	1776	56	4	176	1215	149	392	44	418	63	115	208
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	26	50	0	0	20	44	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	0.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	24	50	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	128	128	128	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	55	55	15	44	44	20	20	20	20	20
g / C, Green / Cycle	0.20	0.43	0.43	0.12	0.34	0.34	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.28	0.34	0.34	0.10	0.34	0.09	0.12	0.12	0.26	0.04	0.19
s, saturation flow rate [veh/h]	1781	3560	1841	1781	3560	1589	1781	1798	1589	1781	1679
c, Capacity [veh/h]	363	1538	795	207	1227	548	279	282	249	279	263
d1, Uniform Delay [s]	50.85	31.15	31.24	55.48	41.64	30.27	51.74	51.70	53.85	47.08	53.85
k, delay calibration	0.50	0.13	0.36	0.12	0.13	0.13	0.23	0.23	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	188.16	1.09	5.71	11.60	11.08	0.32	9.68	9.27	322.54	0.15	131.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.38	0.78	0.79	0.87	0.99	0.27	0.78	0.78	1.68	0.23	1.23
d, Delay for Lane Group [s/veh]	239.01	32.24	36.95	67.07	52.72	30.59	61.42	60.96	376.39	47.23	185.32
Lane Group LOS	F	C	D	E	D	C	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	30.19	15.33	17.01	6.23	20.04	3.29	7.45	7.45	30.28	1.78	18.03
50th-Percentile Queue Length [ft/ln]	754.78	383.30	425.16	155.82	501.02	82.13	186.22	186.18	757.07	44.43	450.83
95th-Percentile Queue Length [veh/ln]	45.64	21.75	23.77	10.33	27.38	5.91	11.92	11.92	47.55	3.20	27.42
95th-Percentile Queue Length [ft/ln]	1141.08	543.84	594.24	258.19	684.57	147.83	298.12	298.07	1188.79	79.97	685.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	239.0	239.0	33.76	36.95	67.07	67.07	52.72	30.59	61.22	60.96	376.39	47.23	185.32	185.32
Movement LOS	F	F	C	D	E	E	D	C	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	77.91				52.25				215.47			162.78		
Approach LOS	E				D				F			F		
d_I, Intersection Delay [s/veh]	99.53													
Intersection LOS	F													
Intersection V/C	1.232													

Emissions

Vehicle Miles Traveled [mph]	94.29	226.83	117.94	42.99	290.18	35.59	13.57	13.62	26.07	3.07	15.75
Stops [stops/h]	851.12	864.45	479.43	175.71	1129.94	92.61	209.99	209.95	853.71	50.10	508.38
Fuel consumption [US gal/h]	38.18	26.43	14.72	6.11	37.03	3.30	4.44	4.43	37.80	1.01	15.64
CO [g/h]	2668.58	1847.60	1028.62	427.43	2588.33	230.58	310.16	309.71	2642.18	70.51	1092.94
NOx [g/h]	519.21	359.48	200.13	83.16	503.60	44.86	60.35	60.26	514.07	13.72	212.65
VOC [g/h]	618.47	428.20	238.39	99.06	599.87	53.44	71.88	71.78	612.35	16.34	253.30

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	53.32	53.32	53.32
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.543	2.834	2.325
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	788	694	313	313
d_b, Bicycle Delay [s]	23.46	27.23	45.42	45.42
l_b,int, Bicycle LOS Score for Intersection	2.853	2.737	3.244	2.333
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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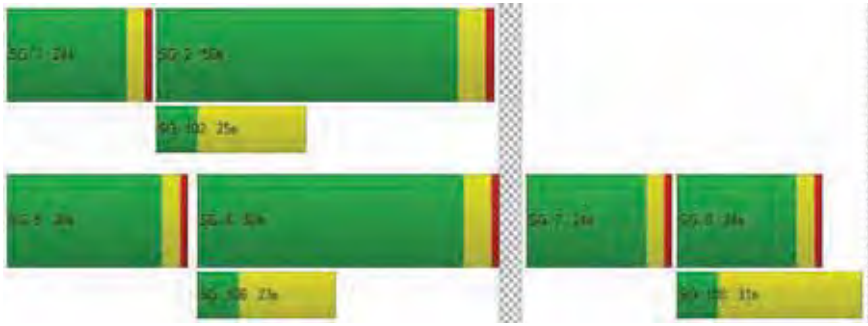

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.036

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	980	1679	319	0	37	1192	428	208	130	290	236	80	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	66	55	10	0	0	93	0	0	0	36	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	99	0	0	0	128	0	0	98	0	0	75
Total Hourly Volume [veh/h]	1	1046	1734	230	0	37	1285	300	208	130	228	255	80	176
Peak Hour Factor	1.000	0.840	0.990	0.840	1.000	0.840	0.990	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	311	438	68	0	11	324	89	62	39	68	76	24	52
Total Analysis Volume [veh/h]	1	1245	1752	274	0	44	1298	357	248	155	271	304	95	210
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	73	73	7	34	57	18	18	18	18	18
g / C, Green / Cycle	0.33	0.54	0.54	0.05	0.25	0.42	0.13	0.13	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.36	0.38	0.40	0.02	0.26	0.22	0.11	0.11	0.11	0.11	0.13
s, saturation flow rate [veh/h]	3459	3532	1735	1781	5053	1589	1781	1847	1781	1822	1589
c, Capacity [veh/h]	1155	1901	934	86	1275	668	232	241	241	247	216
d1, Uniform Delay [s]	45.29	23.24	24.25	63.17	50.84	29.48	57.87	57.86	57.15	57.13	58.54
k, delay calibration	0.05	0.50	0.50	0.04	0.50	0.50	0.15	0.15	0.24	0.24	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	37.48	2.16	5.44	1.76	29.71	3.05	11.47	11.02	13.78	13.24	46.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.70	0.75	0.51	1.02	0.53	0.85	0.85	0.82	0.82	0.97
d, Delay for Lane Group [s/veh]	82.77	25.40	29.69	64.94	80.55	32.54	69.34	68.88	70.93	70.36	104.89
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	25.33	16.05	18.38	1.50	17.54	9.01	7.41	7.65	7.54	7.65	9.98
50th-Percentile Queue Length [ft/ln]	633.23	401.35	459.58	37.60	438.43	225.17	185.34	191.29	188.51	191.32	249.49
95th-Percentile Queue Length [veh/ln]	35.32	22.63	25.42	2.71	24.67	13.93	11.88	12.19	12.04	12.19	15.16
95th-Percentile Queue Length [ft/ln]	883.03	565.63	635.38	67.67	616.67	348.21	296.97	304.71	301.09	304.74	379.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	82.77	82.77	26.44	29.69	64.94	64.94	80.55	32.54	69.25	68.88	0.00	70.73	70.36	104.89
Movement LOS	F	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	48.16				70.06				44.14			82.45		
Approach LOS	D				E				D			F		
d_I, Intersection Delay [s/veh]	57.60													
Intersection LOS	E													
Intersection V/C	1.036													

Emissions

Vehicle Miles Traveled [mph]	213.40	227.50	119.49	8.28	244.28	67.19	9.15	9.49	6.28	6.40	6.68
Stops [stops/h]	1340.96	849.92	486.62	39.81	1392.66	238.41	196.24	202.55	199.59	202.57	264.16
Fuel consumption [US gal/h]	37.18	20.93	11.82	1.36	46.96	7.63	4.25	4.38	4.21	4.27	6.22
CO [g/h]	2598.77	1462.85	826.40	95.08	3282.69	533.39	297.32	306.43	294.43	298.27	434.50
NOx [g/h]	505.63	284.62	160.79	18.50	638.69	103.78	57.85	59.62	57.29	58.03	84.54
VOC [g/h]	602.29	339.03	191.53	22.03	760.80	123.62	68.91	71.02	68.24	69.13	100.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.564
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.413	2.540	2.225	2.124
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.940

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	160.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1820	215	3	532	1803	189	299	33	67	1	91	6	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	152	12	0	0	266	0	0	0	6	0	22	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	68	0	0	0	57	0	0	22	0	0	0	181
Total Hourly Volume [veh/h]	1	27	1972	159	3	532	2069	132	299	33	51	1	113	6	423
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	7	514	41	1	139	539	34	78	9	13	0	29	2	110
Total Analysis Volume [veh/h]	1	28	2054	166	3	554	2155	138	311	34	53	1	118	6	441
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	20	60	0	20	20	0	0	20	20	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	24	66	0	24	24	0	0	24	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				Yes	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	103	103	103	103	103	103	103	103	103	103	103	103
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	40	40	19	56	56	12	12	12	17	17	17
g / C, Green / Cycle	0.02	0.39	0.39	0.18	0.55	0.55	0.11	0.11	0.11	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.10	0.16	0.42	0.09	0.09	0.02	0.03	0.07	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	77	1972	615	625	2778	867	396	214	182	290	260	259
d1, Uniform Delay [s]	49.87	31.71	21.70	41.39	18.53	11.71	44.56	41.31	41.96	38.85	42.17	42.17
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	20.46	0.09	1.82	0.18	0.03	2.58	0.25	0.65	0.69	15.65	15.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	1.04	0.27	0.89	0.78	0.16	0.78	0.16	0.29	0.41	0.86	0.86
d, Delay for Lane Group [s/veh]	50.98	52.17	21.79	43.21	18.71	11.74	47.14	41.56	42.60	39.54	57.82	57.88
Lane Group LOS	D	F	C	D	B	B	D	D	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.38	19.46	2.73	7.00	12.66	1.54	3.99	0.79	1.27	2.75	6.63	6.61
50th-Percentile Queue Length [ft/ln]	9.49	486.62	68.35	175.04	316.58	38.47	99.71	19.87	31.68	68.75	165.84	165.31
95th-Percentile Queue Length [veh/ln]	0.68	27.47	4.92	11.34	18.50	2.77	7.18	1.43	2.28	4.95	10.86	10.83
95th-Percentile Queue Length [ft/ln]	17.09	686.77	123.03	283.53	462.48	69.25	179.47	35.76	57.02	123.75	271.44	270.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.98	50.98	52.17	21.79	43.21	43.21	18.71	11.74	47.14	41.56	42.60	39.54	39.54	57.82	57.85
Movement LOS	D	D	F	C	D	D	B	B	D	D	D	D	D	E	E
d_A, Approach Delay [s/veh]	49.91				23.16				46.06			54.00			
Approach LOS	D				C				D			D			
d_I, Intersection Delay [s/veh]	37.46														
Intersection LOS	D														
Intersection V/C	0.940														

Emissions

Vehicle Miles Traveled [mph]	6.47	458.53	37.06	80.60	311.82	19.97	39.67	4.34	6.76	41.77	78.60	78.29
Stops [stops/h]	26.49	2036.63	95.35	488.40	1324.95	53.67	278.20	27.71	44.19	95.91	231.37	230.61
Fuel consumption [US gal/h]	0.71	51.93	2.79	10.91	28.36	1.45	6.15	0.62	0.98	3.21	7.15	7.12
CO [g/h]	49.89	3630.04	194.91	762.86	1982.45	101.23	430.12	43.28	68.63	224.15	499.68	497.98
NOx [g/h]	9.71	706.27	37.92	148.42	385.71	19.70	83.69	8.42	13.35	43.61	97.22	96.89
VOC [g/h]	11.56	841.30	45.17	176.80	459.45	23.46	99.69	10.03	15.91	51.95	115.81	115.41

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.20	0.00	41.20	41.20
l_p,int, Pedestrian LOS Score for Intersectio	3.458	0.000	2.596	2.870
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	785	1172	397	397
d_b, Bicycle Delay [s]	19.06	8.84	33.15	33.15
l_b,int, Bicycle LOS Score for Intersection	2.833	2.854	1.906	2.597
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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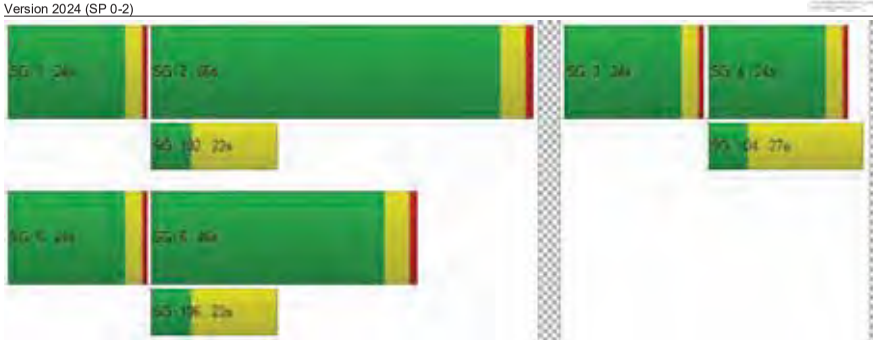


Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	73	1515	362	2	243	1325	392	2	349	336	86	393	164	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	167	41	0	0	294	0	0	0	0	0	70	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	121	0	0	0	118	0	0	0	26	0	0	58
Total Hourly Volume [veh/h]	6	73	1682	282	2	243	1619	274	2	349	336	60	463	164	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	20	452	76	1	65	435	74	1	94	90	16	124	44	37
Total Analysis Volume [veh/h]	6	78	1809	303	2	261	1741	295	2	375	361	65	498	176	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	0	20	50	0	0	23	31	0	36	44	0
Amber [s]	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0	0.0	5.0	5.0	0.0	5.0	5.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	4.0	0.0	0.0	3.0	4.0	0.0	0.0	4.5	4.0	0.0	4.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	56	0	0	25	56	0	0	29	37	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	6.00	6.00	5.00	6.00	6.00	6.50	6.00	6.00	6.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	4.00	4.00	3.00	4.00	4.00	4.50	4.00	4.00	4.50	4.00	4.00
g_i, Effective Green Time [s]	10	76	76	14	81	81	19	21	21	25	27	27
g / C, Green / Cycle	0.06	0.48	0.48	0.09	0.50	0.50	0.12	0.13	0.13	0.16	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.19	0.08	0.34	0.19	0.11	0.12	0.12	0.14	0.05	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1772	3459	3560	1589
c, Capacity [veh/h]	110	3233	757	307	2563	800	419	245	232	544	596	266
d1, Uniform Delay [s]	73.95	29.94	27.14	71.92	30.00	24.25	69.34	68.40	68.42	66.35	58.36	61.09
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.16	0.70	1.58	2.72	1.47	1.31	2.89	4.45	4.74	2.65	0.10	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.56	0.40	0.86	0.68	0.37	0.90	0.89	0.89	0.91	0.30	0.55
d, Delay for Lane Group [s/veh]	78.11	30.64	28.72	74.64	31.48	25.56	72.23	72.86	73.16	69.00	58.46	61.75
Lane Group LOS	E	C	C	E	C	C	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.55	12.73	7.97	5.37	16.66	6.99	7.82	9.15	8.70	10.26	3.17	5.54
50th-Percentile Queue Length [ft/ln]	88.76	318.21	199.15	134.35	416.47	174.78	195.53	228.71	217.57	256.39	79.21	138.40
95th-Percentile Queue Length [veh/ln]	6.39	18.58	12.59	9.18	23.35	11.33	12.41	14.11	13.54	15.51	5.70	9.39
95th-Percentile Queue Length [ft/ln]	159.77	464.48	314.86	229.39	583.81	283.19	310.19	352.72	338.52	387.69	142.57	234.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.11	78.11	30.64	28.72	74.64	74.64	31.48	25.56	72.23	72.23	72.97	73.16	69.00	58.46	61.75
Movement LOS	E	E	C	C	E	E	C	C	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	32.19				35.65				72.64				65.45		
Approach LOS	C				D				E				E		
d_I, Intersection Delay [s/veh]	43.26														
Intersection LOS	D														
Intersection V/C	0.722														

Emissions

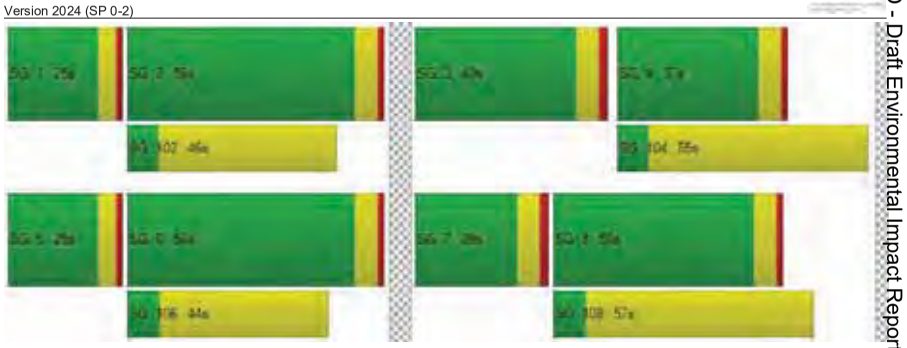
Vehicle Miles Traveled [mph]	33.44	720.14	120.62	58.71	388.65	65.85	94.09	54.55	51.77	52.03	18.39	15.25
Stops [stops/h]	79.88	1145.54	179.23	241.83	1124.46	157.30	351.95	205.84	195.81	461.50	142.57	124.56
Fuel consumption [US gal/h]	3.15	47.25	7.73	9.01	38.45	5.75	11.36	6.62	6.30	11.68	3.64	3.15
CO [g/h]	220.39	3303.06	540.07	630.04	2687.95	401.75	793.93	462.92	440.43	816.67	254.32	220.22
NOx [g/h]	42.88	642.65	105.08	122.58	522.98	78.17	154.47	90.07	85.69	158.89	49.48	42.85
VOC [g/h]	51.08	765.52	125.17	146.02	622.96	93.11	184.00	107.29	102.07	189.27	58.94	51.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersectio	3.552	3.864	2.760	2.972
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	625	625	388	550
d_b, Bicycle Delay [s]	37.81	37.81	52.00	42.05
l_b,int, Bicycle LOS Score for Intersection	2.513	2.745	1.934	2.284
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.795

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	48	1131	1259	129	197	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	207	364	0	0	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	39	0	22
Total Hourly Volume [veh/h]	0	56	1338	1623	90	197	52
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	16	376	456	25	55	15
Total Analysis Volume [veh/h]	0	63	1503	1824	101	221	58
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	C
C, Cycle Length [s]	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	3	44	37	37	7	7
g / C, Green / Cycle	0.05	0.72	0.60	0.60	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.42	0.51	0.52	0.08	0.08
s, saturation flow rate [veh/h]	1781	3560	1870	1836	1781	1694
c, Capacity [veh/h]	96	2564	1125	1104	211	200
d1, Uniform Delay [s]	28.70	4.19	10.12	10.32	26.14	26.16
k, delay calibration	0.04	0.15	0.31	0.32	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.82	0.31	5.41	6.33	3.76	4.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.59	0.86	0.87	0.68	0.68
d, Delay for Lane Group [s/veh]	31.52	4.50	15.52	16.66	29.90	30.21
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.95	2.60	9.53	9.94	2.11	2.04
50th-Percentile Queue Length [ft/ln]	23.68	65.07	238.13	248.41	52.87	51.12
95th-Percentile Queue Length [veh/ln]	1.70	4.69	14.59	15.11	3.81	3.68
95th-Percentile Queue Length [ft/ln]	42.62	117.13	364.67	377.65	95.17	92.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.52	31.52	4.50	16.06	16.66	30.01	30.21
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	5.59			16.09		30.05	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	12.76						
Intersection LOS	B						
Intersection V/C	0.795						

Emissions

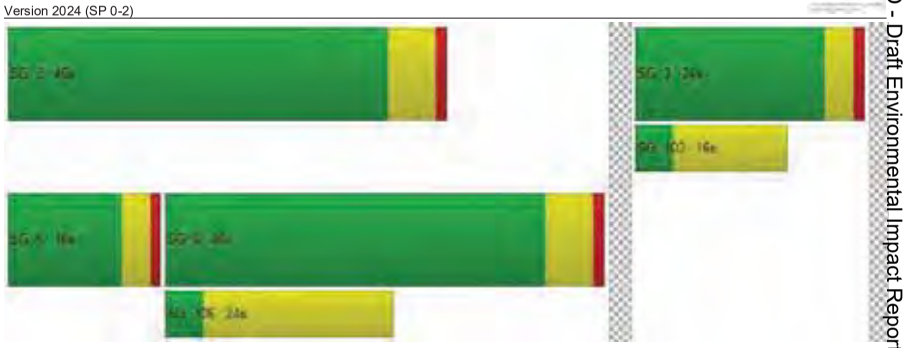
Vehicle Miles Traveled [mph]	43.82	1045.41	340.59	340.59	48.04	46.09
Stops [stops/h]	55.21	303.47	555.29	579.27	123.30	119.21
Fuel consumption [US gal/h]	2.51	46.09	20.13	20.48	3.53	3.40
CO [g/h]	175.66	3221.60	1407.08	1431.82	246.40	237.38
NOx [g/h]	34.18	626.81	273.77	278.58	47.94	46.19
VOC [g/h]	40.71	746.64	326.10	331.84	57.11	55.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	23.39	0.00	23.39
l_p,int, Pedestrian LOS Score for Intersectio	2.960	0.000	2.119
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1295	1295	648
d_b, Bicycle Delay [s]	3.83	3.83	14.12
l_b,int, Bicycle LOS Score for Intersection	2.852	3.180	2.056
Bicycle LOS	C	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	75.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.975

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

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Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	98	575	21	249	446	625	494	119	26	13	155	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	61	215	29	0	377	0	0	0	105	44	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	188	0	0	39	0	0	33
Total Hourly Volume [veh/h]	159	790	35	249	823	437	494	119	92	57	155	77
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	217	10	68	226	120	136	33	25	16	43	21
Total Analysis Volume [veh/h]	175	868	38	274	904	480	543	131	101	63	170	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	26	25	0	26	25	0	0	30	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	0.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	30	30	0	0	35	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	10	22	22	14	26	26	15	15	12	12
g / C, Green / Cycle	0.12	0.27	0.27	0.18	0.32	0.32	0.18	0.18	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.24	0.15	0.38	0.40	0.16	0.13	0.13	0.05
s, saturation flow rate [veh/h]	1781	1870	1843	1781	1870	1660	3459	1737	1845	1589
c, Capacity [veh/h]	213	497	489	313	602	534	627	315	275	237
d1, Uniform Delay [s]	35.42	29.40	29.40	33.08	27.94	27.94	32.76	31.88	34.13	31.51
k, delay calibration	0.04	0.23	0.23	0.04	0.50	0.50	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.01	13.91	14.10	3.05	99.46	129.51	1.45	1.27	2.77	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.92	0.92	0.88	1.19	1.26	0.87	0.74	0.85	0.36
d, Delay for Lane Group [s/veh]	38.44	43.31	43.50	36.13	127.40	157.45	34.21	33.15	36.90	31.85
Lane Group LOS	D	D	D	D	F	F	C	C	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.52	10.30	10.18	5.06	26.80	28.26	5.22	4.34	4.62	1.51
50th-Percentile Queue Length [ft/ln]	87.99	257.53	254.42	126.43	670.02	706.38	130.44	108.60	115.56	37.69
95th-Percentile Queue Length [veh/ln]	6.34	15.56	15.41	8.75	39.15	42.22	8.96	7.76	8.15	2.71
95th-Percentile Queue Length [ft/ln]	158.38	389.12	385.22	218.63	978.72	1055.49	224.10	194.05	203.71	67.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.44	43.40	43.50	36.13	133.74	157.45	34.21	33.15	33.15	36.90	36.90	31.85
Movement LOS	D	D	D	D	F	F	C	C	C	D	D	C
d_A, Approach Delay [s/veh]	42.60			124.47			33.89			35.55		
Approach LOS	D			F			C			D		
d_I, Intersection Delay [s/veh]	75.68											
Intersection LOS	E											
Intersection V/C	0.975											

Emissions

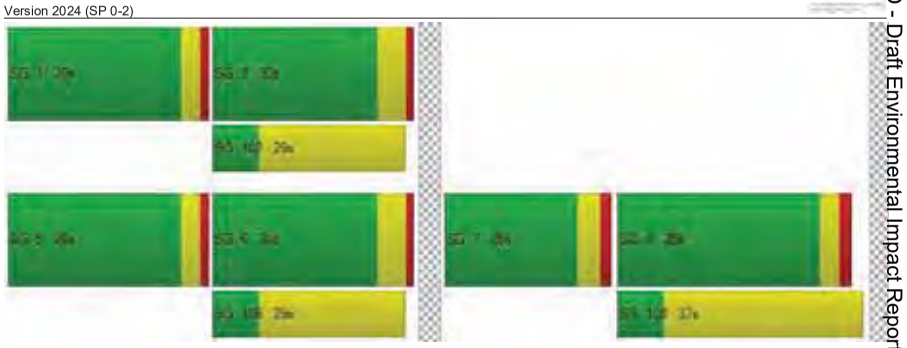
Vehicle Miles Traveled [mph]	101.07	263.53	259.71	190.58	496.18	466.47	40.85	17.45	25.77	9.40
Stops [stops/h]	154.18	451.26	445.82	221.54	1174.06	1237.76	457.14	190.30	202.49	66.04
Fuel consumption [US gal/h]	6.38	17.36	17.14	12.50	56.90	60.08	7.99	3.33	3.93	1.30
CO [g/h]	446.04	1213.72	1197.74	874.09	3977.14	4199.55	558.34	233.09	274.65	91.06
NOx [g/h]	86.78	236.15	233.04	170.07	773.81	817.08	108.63	45.35	53.44	17.72
VOC [g/h]	103.37	281.29	277.59	202.58	921.74	973.29	129.40	54.02	63.65	21.10

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.83	0.00	30.83	30.83
l_p,int, Pedestrian LOS Score for Intersectio	2.746	0.000	2.627	2.245
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	601	601	742	487
d_b, Bicycle Delay [s]	20.10	20.10	16.25	23.52
l_b,int, Bicycle LOS Score for Intersection	2.464	3.083	2.903	2.139
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	50.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.990

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	115	314	447	38	380	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	305	526	0	0	13
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	28
Total Hourly Volume [veh/h]	123	619	973	27	380	64
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	172	270	9	120	18
Total Analysis Volume [veh/h]	137	688	1081	34	481	71
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	4	4	0
Auxiliary Signal Groups						
Maximum Green [s]	16	54	34	56	56	0
Amber [s]	3.0	5.0	5.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Walk [s]	0	0	4	4	4	0
Pedestrian Clearance [s]	0	0	14	24	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	2.0	2.0	0.0
Detector Location [ft]	20.0	20.0	20.0	20.0	20.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	245.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	60	40	60	60	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	5	5	0
Vehicle Extension [s]	1.0	1.0	1.0	1.0	1.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	7	45	34	34	12	12
g / C, Green / Cycle	0.10	0.67	0.51	0.51	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.37	0.58	0.02	0.16	0.16
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1727
c, Capacity [veh/h]	176	1243	947	805	332	321
d1, Uniform Delay [s]	29.54	5.96	16.55	8.35	26.37	26.38
k, delay calibration	0.04	0.04	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.83	0.14	76.26	0.01	2.30	2.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.55	1.14	0.04	0.85	0.85
d, Delay for Lane Group [s/veh]	32.37	6.11	92.81	8.35	28.67	28.75
Lane Group LOS	C	A	F	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.03	2.45	29.94	0.18	4.29	4.17
50th-Percentile Queue Length [ft/ln]	50.80	61.24	748.40	4.51	107.30	104.26
95th-Percentile Queue Length [veh/ln]	3.66	4.41	42.88	0.32	7.69	7.51
95th-Percentile Queue Length [ft/ln]	91.44	110.23	1072.09	8.11	192.24	187.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.37	6.11	92.81	8.35	28.70	28.75
Movement LOS	C	A	F	A	C	C
d_A, Approach Delay [s/veh]	10.47		90.24		28.71	
Approach LOS	B		F		C	
d_I, Intersection Delay [s/veh]	50.20					
Intersection LOS	D					
Intersection V/C	0.990					

Emissions

Vehicle Miles Traveled [mph]	16.90	84.89	624.30	19.64	65.81	63.84
Stops [stops/h]	109.22	131.66	1609.10	9.69	230.71	224.17
Fuel consumption [US gal/h]	3.50	6.14	71.19	0.89	5.62	5.46
CO [g/h]	244.40	429.21	4975.96	62.54	392.74	381.42
NOx [g/h]	47.55	83.51	968.14	12.17	76.41	74.21
VOC [g/h]	56.64	99.47	1153.23	14.49	91.02	88.40

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0		8.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	25.97		0.00		25.97	
l_p,int, Pedestrian LOS Score for Intersectio	3.123		0.000		2.216	
Crosswalk LOS	C		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1613		1015		1672	
d_b, Bicycle Delay [s]	1.26		8.12		0.90	
l_b,int, Bicycle LOS Score for Intersection	2.921		3.418		2.517	
Bicycle LOS	C		C		B	

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	35.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.219

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	380	0	25	501	0	0	0	0	0	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	284	0	0	487	52	29	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	664	0	25	988	52	29	0	3	0	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	180	0	6	268	14	8	0	1	0	0	12
Total Analysis Volume [veh/h]	5	722	0	25	1074	57	32	0	3	0	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					Yes		No	
Number of Storage Spaces in Median	0		0		1		1	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.03	0.01	0.00	0.22	0.00	0.01	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	10.88	0.00	0.00	9.21	0.00	0.00	35.89	31.88	25.23	76.48	61.20	14.53
Movement LOS	B	A	A	A	A	A	E	D	D	F	F	B
95th-Percentile Queue Length [veh/ln]	0.02	0.00	0.00	0.09	0.00	0.00	0.80	0.80	0.80	0.39	0.39	0.39
95th-Percentile Queue Length [ft/ln]	0.61	0.00	0.00	2.19	0.00	0.00	20.05	20.05	20.05	9.65	9.65	9.65
d_A, Approach Delay [s/veh]	0.07			0.20			34.98			14.53		
Approach LOS	A			A			D			B		
d_I, Intersection Delay [s/veh]	1.13											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	311	16	94	407	0	0	0	0	54	0	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	19	0	0	28	434	270	0	31	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	55	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	5	0	0	130	0	0	26	0	0	21
Total Hourly Volume [veh/h]	90	330	11	94	435	304	307	0	60	54	5	48
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	89	3	25	117	82	83	0	16	15	1	13
Total Analysis Volume [veh/h]	97	355	12	101	468	327	330	0	65	58	5	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	C
C, Cycle Length [s]	45	45	45	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	14	4	14	14	7	7	7	4
g / C, Green / Cycle	0.08	0.32	0.08	0.32	0.32	0.15	0.15	0.15	0.09
(v / s)_i Volume / Saturation Flow Rate	0.05	0.20	0.06	0.25	0.21	0.09	0.09	0.04	0.07
s, saturation flow rate [veh/h]	1781	1859	1781	1870	1589	1781	1781	1589	1692
c, Capacity [veh/h]	140	595	143	602	512	276	276	246	154
d1, Uniform Delay [s]	20.30	13.02	20.28	13.87	13.10	17.80	17.80	16.84	20.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.98	1.04	6.23	2.21	1.34	2.08	2.08	0.57	7.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.62	0.71	0.78	0.64	0.60	0.60	0.26	0.75
d, Delay for Lane Group [s/veh]	26.28	14.07	26.51	16.09	14.43	19.88	19.88	17.41	27.11
Lane Group LOS	C	B	C	B	B	B	B	B	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.00	2.23	1.05	3.16	2.03	1.56	1.56	0.56	1.35
50th-Percentile Queue Length [ft/ln]	25.08	55.69	26.24	79.05	50.79	38.97	38.97	14.01	33.76
95th-Percentile Queue Length [veh/ln]	1.81	4.01	1.89	5.69	3.66	2.81	2.81	1.01	2.43
95th-Percentile Queue Length [ft/ln]	45.14	100.23	47.24	142.30	91.42	70.14	70.14	25.21	60.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.28	14.07	14.07	26.51	16.09	14.43	19.88	19.88	17.41	27.11	27.11	27.11
Movement LOS	C	B	B	C	B	B	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	16.62			16.66			19.47			27.11		
Approach LOS	B			B			B			C		
d_I, Intersection Delay [s/veh]	17.89											
Intersection LOS	B											
Intersection V/C	0.634											

Emissions

Vehicle Miles Traveled [mph]	32.89	124.45	10.25	47.48	33.18	11.03	11.03	4.35	97.08
Stops [stops/h]	80.16	177.98	83.88	252.66	162.33	124.54	124.54	44.77	107.89
Fuel consumption [US gal/h]	3.11	8.52	2.45	7.81	5.09	1.81	1.81	0.66	5.23
CO [g/h]	217.25	595.52	170.96	546.16	355.47	126.51	126.51	45.89	365.38
NOx [g/h]	42.27	115.87	33.26	106.26	69.16	24.61	24.61	8.93	71.09
VOC [g/h]	50.35	138.02	39.62	126.58	82.38	29.32	29.32	10.64	84.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.43	14.43	14.43	14.43
l_p,int, Pedestrian LOS Score for Intersectio	2.559	3.087	2.371	1.833
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1332	1332	1332	1332
d_b, Bicycle Delay [s]	2.52	2.52	2.52	2.52
l_b,int, Bicycle LOS Score for Intersection	2.333	3.253	2.254	1.784
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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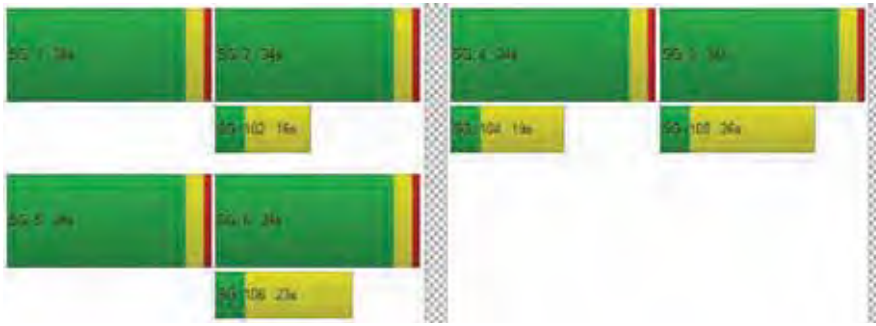

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Roundabout	Delay (sec / veh):	10.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	101	470	168	48	1	692	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	105	0	0	0	61
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	101	470	273	48	1	692	246
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	134	78	14	0	197	70
Total Analysis Volume [veh/h]	0	115	534	310	55	1	786	280
Pedestrian Volume [ped/h]	0			0		0		

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Intersection Settings

Number of Conflicting Circulating Lanes	1			1		1		
Circulating Flow Rate [veh/h]	317			803		117		
Exiting Flow Rate [veh/h]	858			403		862		
Demand Flow Rate [veh/h]	0	101	470	273	48	1	692	246
Adjusted Demand Flow Rate [veh/h]	0	115	534	310	55	1	786	280

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1380.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00102	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	118	545	373	803	286
Capacity of Entry and Bypass Lanes [veh/h]	1064	1064	609	1277	1277
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1044	1044	597	1252	1252
X, volume / capacity	0.11	0.51	0.61	0.63	0.22

Movement, Approach, & Intersection Results

Lane LOS	A	A	C	B	A
95th-Percentile Queue Length [veh]	0.37	3.00	4.14	4.70	0.86
95th-Percentile Queue Length [ft]	9.26	75.12	103.42	117.62	21.47
Approach Delay [s/veh]	8.66		18.14	9.21	
Approach LOS	A		C	A	
Intersection Delay [s/veh]	10.60				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	138	0	25	7	1	21	5	408	85	66	397	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	61	0	0	0	0	0	0	0	105	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	6	0	0	57	0	0	3
Total Hourly Volume [veh/h]	199	0	17	7	1	15	5	408	133	66	397	8
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	0	5	2	0	4	1	105	34	18	102	2
Total Analysis Volume [veh/h]	205	0	18	7	1	15	5	421	137	71	409	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	9	0	0	9	0	9	9	0	9	9	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	L	C
C, Cycle Length [s]	43	43	43	43	43	43	43
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	1	0	16	3	18
g / C, Green / Cycle	0.16	0.16	0.03	0.01	0.37	0.07	0.43
(v / s)_i Volume / Saturation Flow Rate	0.12	0.01	0.01	0.00	0.31	0.04	0.22
s, saturation flow rate [veh/h]	1781	1589	1654	1781	1792	1781	1864
c, Capacity [veh/h]	284	253	47	12	665	120	804
d1, Uniform Delay [s]	17.07	15.28	20.46	21.14	12.28	19.36	8.91
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.48	0.12	7.74	20.50	2.94	4.61	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.07	0.49	0.41	0.84	0.59	0.52
d, Delay for Lane Group [s/veh]	20.55	15.40	28.20	41.64	15.22	23.98	9.43
Lane Group LOS	C	B	C	D	B	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.91	0.14	0.30	0.11	4.25	0.76	2.19
50th-Percentile Queue Length [ft/ln]	47.82	3.43	7.55	2.85	106.13	18.92	54.69
95th-Percentile Queue Length [veh/ln]	3.44	0.25	0.54	0.21	7.62	1.36	3.94
95th-Percentile Queue Length [ft/ln]	86.08	6.17	13.58	5.13	190.61	34.06	98.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.55	20.55	15.40	28.20	28.20	28.20	41.64	15.22	15.22	23.98	9.43	9.43
Movement LOS	C	C	B	C	C	C	D	B	B	C	A	A
d_A, Approach Delay [s/veh]	20.14			28.20			15.46			11.54		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.02											
Intersection LOS	B											
Intersection V/C	0.668											

Emissions

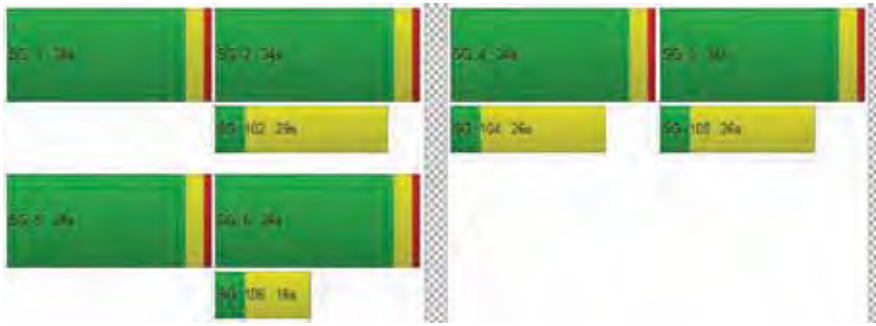
Vehicle Miles Traveled [mph]	60.86	5.34	0.55	0.72	79.90	59.75	350.92
Stops [stops/h]	161.58	11.58	25.50	9.63	358.61	63.93	184.77
Fuel consumption [US gal/h]	4.26	0.34	0.30	0.13	7.00	3.16	16.27
CO [g/h]	297.45	23.79	20.64	8.74	489.24	220.84	1137.05
NOx [g/h]	57.87	4.63	4.02	1.70	95.19	42.97	221.23
VOC [g/h]	68.94	5.51	4.78	2.03	113.39	51.18	263.52

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.26	13.26	13.26	13.26
l_p,int, Pedestrian LOS Score for Intersectio	2.225	1.706	2.390	2.213
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1408	1408	1408	1408
d_b, Bicycle Delay [s]	1.87	1.87	1.87	1.87
l_b,int, Bicycle LOS Score for Intersection	1.941	1.607	2.583	2.370
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	50.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.902

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	375.00	100.00	150.00	400.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	57	61	268	230	100	36	33	574	121	234	562	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	21	0	0	22	12	29	0	36	49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	87	0	0	17	0	0	36	0	0	47
Total Hourly Volume [veh/h]	57	61	202	230	100	41	45	603	85	270	611	111
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	16	52	59	26	11	12	155	22	70	157	29
Total Analysis Volume [veh/h]	59	63	208	237	103	42	46	622	88	278	630	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	124	124	124	124	124	124	124	124	124	124
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	23	23	20	20	4	43	43	21	60	60
g / C, Green / Cycle	0.19	0.19	0.16	0.16	0.03	0.35	0.35	0.17	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.13	0.08	0.03	0.33	0.06	0.16	0.34	0.07
s, saturation flow rate [veh/h]	1781	1647	1781	1779	1781	1870	1589	1781	1870	1589
c, Capacity [veh/h]	331	306	280	280	60	650	553	305	897	762
d1, Uniform Delay [s]	42.72	49.44	51.04	48.17	59.74	39.73	28.07	50.72	25.44	18.17
k, delay calibration	0.13	0.17	0.13	0.13	0.04	0.39	0.11	0.26	0.41	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.32	12.59	8.47	1.85	7.53	22.24	0.13	20.56	3.77	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.89	0.85	0.52	0.77	0.96	0.16	0.91	0.70	0.15
d, Delay for Lane Group [s/veh]	43.04	62.03	59.51	50.02	67.27	61.97	28.20	71.28	29.22	18.29
Lane Group LOS	D	E	E	D	E	E	C	E	C	B
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.57	9.26	7.83	4.29	1.57	22.35	1.85	10.23	15.29	1.88
50th-Percentile Queue Length [ft/ln]	39.27	231.62	195.86	107.18	39.16	558.64	46.31	255.74	382.29	46.99
95th-Percentile Queue Length [veh/ln]	2.83	14.26	12.42	7.68	2.82	30.10	3.33	15.47	21.70	3.38
95th-Percentile Queue Length [ft/ln]	70.68	356.42	310.62	192.07	70.49	752.45	83.37	386.87	542.62	84.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.04	62.03	62.03	59.51	50.02	50.02	67.27	61.97	28.20	71.28	29.22	18.29
Movement LOS	D	E	E	E	D	D	E	E	C	E	C	B
d_A, Approach Delay [s/veh]	58.64			55.91			58.36			39.44		
Approach LOS	E			E			E			D		
d_I, Intersection Delay [s/veh]	50.25											
Intersection LOS	D											
Intersection V/C	0.902											

Emissions

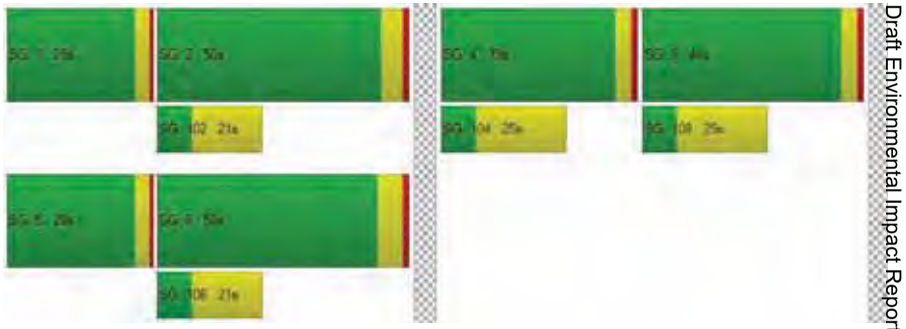
Vehicle Miles Traveled [mph]	101.52	466.29	48.05	29.40	16.11	217.80	30.81	125.44	284.27	51.44
Stops [stops/h]	45.44	268.02	226.64	124.02	45.31	646.44	53.59	295.93	442.37	54.37
Fuel consumption [US gal/h]	4.95	24.10	6.10	3.37	1.54	20.38	2.07	10.83	17.89	2.84
CO [g/h]	345.78	1684.39	426.38	235.64	107.86	1424.60	144.67	757.07	1250.64	198.68
NOx [g/h]	67.28	327.72	82.96	45.85	20.99	277.18	28.15	147.30	243.33	38.65
VOC [g/h]	80.14	390.37	98.82	54.61	25.00	330.16	33.53	175.46	289.85	46.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.71	51.71	51.71	51.71
l_p,int, Pedestrian LOS Score for Intersectio	2.379	2.197	2.573	2.755
Crosswalk LOS	B	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	559	640	718	707
d_b, Bicycle Delay [s]	32.29	28.79	25.55	26.00
l_b,int, Bicycle LOS Score for Intersection	2.248	2.218	2.866	3.323
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	669	1065	49	32
2	649	1033	48	31
3	636	1012	47	30
4	595	948	44	28
5	529	841	39	25
6	522	831	38	25
7	515	820	38	25
8	468	746	34	22
9	462	735	34	22
10	455	724	33	22
11	395	628	29	19
12	368	586	27	18
13	361	575	26	17
14	268	426	20	13
15	268	426	20	13
16	187	298	14	9
17	107	170	8	5
18	107	170	8	5
19	60	96	4	3
20	33	53	2	2
21	20	32	1	1
22	7	11	0	0
23	7	11	0	0
24	7	11	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1734	1	49	No	No	No	No	No	No	No	Yes	No	No
2	2	1682	1	48	No	No	No	No	No	No	No	Yes	No	No
3	2	1648	1	47	No	No	No	No	No	No	No	Yes	No	No
4	2	1543	1	44	No	No	No	No	No	No	No	Yes	No	No
5	2	1370	1	39	No	No	No	No	No	No	No	No	No	No
6	2	1353	1	38	No	No	No	No	No	No	No	No	No	No
7	2	1335	1	38	No	No	No	No	No	No	No	No	No	No
8	2	1214	1	34	No	No	No	No	No	No	No	No	No	No
9	2	1197	1	34	No	No	No	No	No	No	No	No	No	No
10	2	1179	1	33	No	No	No	No	No	No	No	No	No	No
11	2	1023	1	29	No	No	No	No	No	No	No	No	No	No
12	2	954	1	27	No	No	No	No	No	No	No	No	No	No
13	2	936	1	26	No	No	No	No	No	No	No	No	No	No
14	2	694	1	20	No	No	No	No	No	No	No	No	No	No
15	2	694	1	20	No	No	No	No	No	No	No	No	No	No
16	2	485	1	14	No	No	No	No	No	No	No	No	No	No
17	2	277	1	8	No	No	No	No	No	No	No	No	No	No
18	2	277	1	8	No	No	No	No	No	No	No	No	No	No
19	2	156	1	4	No	No	No	No	No	No	No	No	No	No
20	2	86	1	2	No	No	No	No	No	No	No	No	No	No
21	2	52	1	1	No	No	No	No	No	No	No	No	No	No
22	2	18	1	0	No	No	No	No	No	No	No	No	No	No
23	2	18	1	0	No	No	No	No	No	No	No	No	No	No
24	2	18	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.5	35
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:11	0:18
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	49	32
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1815	1815
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

EPAP AM no Project

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Report File: C:\...\7 2033 AM no Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.156	177.9	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.396	162.8	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.106	92.6	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	1.040	32.3	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.969	39.4	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.773	44.3	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	1.094	84.0	F
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.822	13.7	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Thru	1.040	90.2	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.753	12.2	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Right	0.090	14.1	B
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.049	25.9	D
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	2.315	1,336.5	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	1.712	203.9	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.218	13.7	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.192	15.1	C
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.108	8.0	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.381	34.5	D
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.585	29.2	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.625	40.1	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	1.314	252.3	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.857	35.7	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.686	21.7	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	1.021	69.7	E
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.007	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.010	13.8	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.142	20.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	177.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.156

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	232	792	301	70	1655	46	23	14	260	467	64	111
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	3	0	0	-6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	14	0	0	78	0	0	33
Total Hourly Volume [veh/h]	5	232	795	301	70	1649	32	23	14	182	467	64	78
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	67	228	86	20	474	9	7	4	52	134	18	22
Total Analysis Volume [veh/h]	5	267	914	346	80	1895	37	26	16	209	537	74	90
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	128	128	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	54	54	7	40	40	20	20	29	29
g / C, Green / Cycle	0.17	0.42	0.42	0.06	0.31	0.31	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.15	0.26	0.22	0.04	0.52	0.52	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1857	1781	1607	1781	1744
c, Capacity [veh/h]	299	1499	669	103	581	577	279	252	405	396
d1, Uniform Delay [s]	52.59	29.01	27.56	59.83	44.34	44.34	46.44	53.21	47.95	47.99
k, delay calibration	0.25	0.04	0.17	0.04	0.50	0.50	0.04	0.04	0.29	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.28	0.15	0.97	4.78	305.40	310.44	0.05	4.43	14.10	14.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.61	0.52	0.78	1.66	1.67	0.09	0.89	0.87	0.88
d, Delay for Lane Group [s/veh]	72.87	29.16	28.53	64.61	349.74	354.77	46.49	57.65	62.05	62.73
Lane Group LOS	E	C	C	E	F	F	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.07	10.53	7.73	2.65	67.03	67.38	0.72	7.43	12.48	12.34
50th-Percentile Queue Length [ft/ln]	251.84	263.13	193.24	66.36	1675.64	1684.57	18.05	185.75	311.90	308.49
95th-Percentile Queue Length [veh/ln]	15.28	15.85	12.29	4.78	103.07	103.76	1.30	11.90	18.27	18.10
95th-Percentile Queue Length [ft/ln]	381.96	396.15	307.23	119.44	2576.64	2594.06	32.50	297.51	456.72	452.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.87	72.87	29.16	28.53	64.61	352.21	354.77	46.49	57.65	57.65	62.28	62.73	62.73
Movement LOS	E	E	C	C	E	F	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	36.78				340.82			56.49			62.39		
Approach LOS	D				F			E			E		
d_I, Intersection Delay [s/veh]	177.93												
Intersection LOS	F												
Intersection V/C	1.156												

Emissions

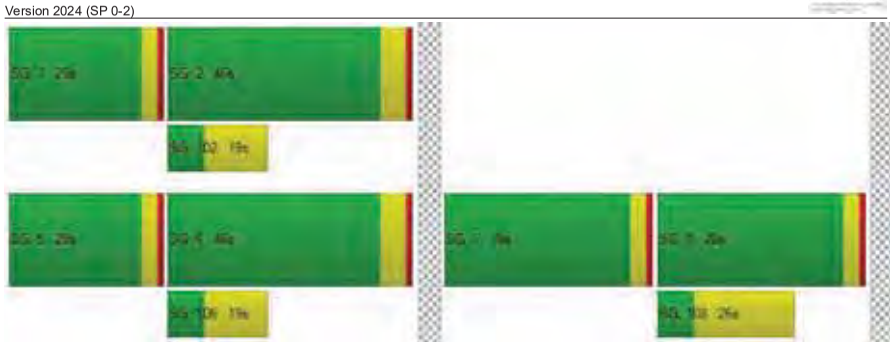
Vehicle Miles Traveled [mph]	64.96	218.29	82.64	11.76	142.03	142.03	1.11	9.61	18.50	18.18
Stops [stops/h]	282.37	590.07	216.67	74.40	1878.78	1888.79	20.24	208.27	349.71	345.89
Fuel consumption [US gal/h]	9.77	20.24	7.54	2.38	96.97	98.08	0.40	4.19	7.16	7.10
CO [g/h]	682.96	1414.93	526.73	166.36	6777.86	6855.70	28.21	292.56	500.23	495.95
NOx [g/h]	132.88	275.29	102.48	32.37	1318.73	1333.87	5.49	56.92	97.33	96.49
VOC [g/h]	158.28	327.92	122.07	38.56	1570.83	1588.88	6.54	67.80	115.93	114.94

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	53.69	53.69	53.69
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.240	2.303	2.386
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	628	628	545	545
d_b, Bicycle Delay [s]	30.24	30.24	33.98	33.98
l_b,int, Bicycle LOS Score for Intersection	2.819	3.231	2.102	2.771
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	162.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.396

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	413	988	150	1	218	1727	441	150	61	708	33	34	191
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	3	0	0	0	-6	0	0	0	-3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	132	0	0	212	0	0	57
Total Hourly Volume [veh/h]	1	415	991	105	1	218	1721	309	150	61	493	33	34	134
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	112	266	28	0	59	463	83	40	16	133	9	9	36
Total Analysis Volume [veh/h]	1	446	1066	113	1	234	1851	332	161	66	530	35	37	144
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	5	3	8	1
Auxiliary Signal Groups														1,8
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	20	0	20	20
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	1.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0
l2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	2.0	0.0	2.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	24	0	24	24
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	4	0	5	4
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	123	123	123	123	123	123	123	123	123	123	123
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	52	52	18	50	50	20	20	20	16	16
g / C, Green / Cycle	0.16	0.42	0.42	0.15	0.41	0.41	0.16	0.16	0.16	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.25	0.22	0.22	0.13	0.52	0.21	0.06	0.06	0.33	0.02	0.11
s, saturation flow rate [veh/h]	1781	3560	1780	1781	3560	1589	1781	1831	1589	1781	1640
c, Capacity [veh/h]	289	1497	748	262	1443	644	289	297	258	226	208
d1, Uniform Delay [s]	51.67	26.58	26.59	51.67	36.67	27.56	46.20	46.18	51.67	47.97	52.86
k, delay calibration	0.50	0.13	0.14	0.26	0.20	0.13	0.04	0.04	0.50	0.04	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	262.99	0.35	0.72	21.30	129.30	0.77	0.32	0.31	488.51	0.12	14.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.53	0.53	0.90	1.28	0.52	0.39	0.39	2.06	0.16	0.87
d, Delay for Lane Group [s/veh]	314.66	26.93	27.31	72.97	165.97	28.33	46.52	46.48	540.17	48.09	66.92
Lane Group LOS	F	C	C	E	F	C	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	29.76	8.27	8.35	8.49	46.30	7.18	3.12	3.18	42.91	0.97	6.31
50th-Percentile Queue Length [ft/ln]	743.92	206.74	208.79	212.35	1157.41	179.55	78.02	79.48	1072.85	24.31	157.79
95th-Percentile Queue Length [veh/ln]	46.05	12.99	13.09	13.27	67.48	11.58	5.62	5.72	67.64	1.75	10.43
95th-Percentile Queue Length [ft/ln]	1151.15	324.64	327.28	331.84	1686.89	289.42	140.43	143.06	1691.09	43.76	260.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	314.6	314.6	27.03	27.31	72.97	72.97	165.9	28.33	46.52	46.48	540.17	48.09	66.92	66.92
Movement LOS	F	F	C	C	E	E	F	C	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	106.12				138.03				392.14			63.87		
Approach LOS	F				F				F			E		
d_I, Intersection Delay [s/veh]	162.84													
Intersection LOS	F													
Intersection V/C	1.396													

Emissions

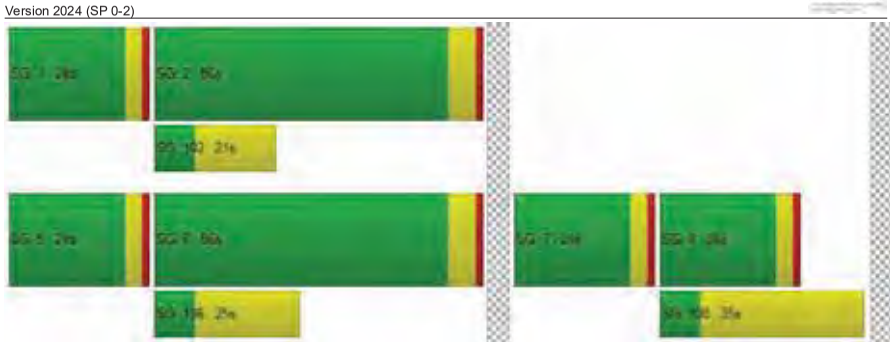
Vehicle Miles Traveled [mph]	84.12	147.91	73.98	56.13	442.08	79.29	7.01	7.15	33.05	1.71	8.83
Stops [stops/h]	869.09	483.05	243.92	248.08	2704.33	209.76	91.14	92.85	1253.38	28.40	184.34
Fuel consumption [US gal/h]	42.31	15.38	7.75	8.50	111.28	7.24	1.86	1.89	66.53	0.57	3.85
CO [g/h]	2957.17	1075.22	541.92	593.99	7778.60	506.06	129.74	132.19	4650.55	39.82	268.87
NOx [g/h]	575.36	209.20	105.44	115.57	1513.43	98.46	25.24	25.72	904.83	7.75	52.31
VOC [g/h]	685.35	249.19	125.60	137.66	1802.77	117.28	30.07	30.64	1077.81	9.23	62.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.12	51.12	51.12
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.628	2.915	2.274
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	816	816	325	325
d_b, Bicycle Delay [s]	21.59	21.59	43.25	43.25
l_b,int, Bicycle LOS Score for Intersection	2.478	3.470	3.158	2.010
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	92.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.106

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1417	1188	141	3	69	1353	1044	256	92	816	171	99	105
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	5	2	0	0	-9	0	0	0	-4	-2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	43	0	0	0	313	0	0	244	0	0	32
Total Hourly Volume [veh/h]	1	1421	1193	100	3	69	1344	731	256	92	568	169	99	73
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	355	298	25	1	17	336	183	64	23	142	42	25	18
Total Analysis Volume [veh/h]	1	1421	1193	100	3	69	1344	731	256	92	568	169	99	73
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	71	71	8	41	73	27	27	11	11	11
g / C, Green / Cycle	0.28	0.52	0.52	0.06	0.30	0.53	0.20	0.20	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.41	0.24	0.25	0.04	0.26	0.46	0.10	0.10	0.06	0.06	0.07
s, saturation flow rate [veh/h]	3459	3560	1798	1781	5094	1589	1781	1826	1781	1827	1674
c, Capacity [veh/h]	951	1845	932	99	1520	847	351	360	145	149	137
d1, Uniform Delay [s]	36.83	4.98	5.00	63.24	45.46	27.44	48.51	48.50	61.30	61.25	61.40
k, delay calibration	0.22	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	225.32	0.83	1.73	3.85	7.85	11.28	0.79	0.76	3.56	3.32	4.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.50	0.46	0.47	0.73	0.88	0.86	0.49	0.49	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	262.15	5.81	6.73	67.09	53.31	38.72	49.30	49.26	64.86	64.57	65.64
Lane Group LOS	F	A	A	E	D	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	43.51	2.18	2.50	2.52	15.06	21.70	5.30	5.42	4.04	4.09	3.92
50th-Percentile Queue Length [ft/ln]	1087.72	54.59	62.53	62.90	376.51	542.39	132.54	135.57	100.90	102.14	97.96
95th-Percentile Queue Length [veh/ln]	66.39	3.93	4.50	4.53	21.42	29.33	9.08	9.24	7.26	7.35	7.05
95th-Percentile Queue Length [ft/ln]	1659.82	98.26	112.56	113.23	535.62	733.37	226.94	231.05	181.61	183.85	176.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	262.1	262.1	6.07	6.73	67.09	67.09	53.31	38.72	49.29	49.26	0.00	64.77	64.98	65.64
Movement LOS	F	F	A	A	E	E	D	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	140.22				48.81				18.72			65.01		
Approach LOS	F				D				B			E		
d_I, Intersection Delay [s/veh]	92.63													
Intersection LOS	F													
Intersection V/C	1.106													

Emissions

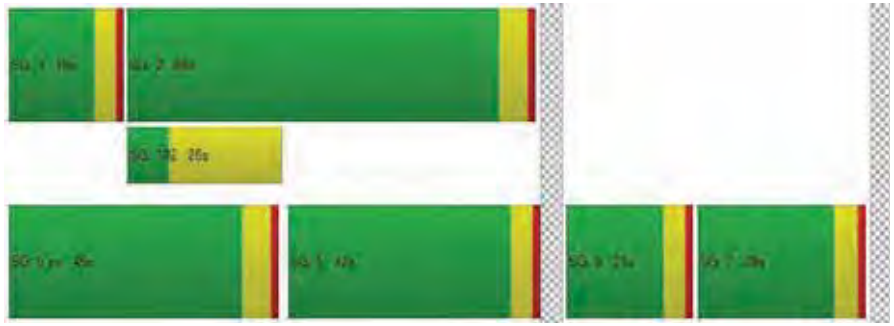
Vehicle Miles Traveled [mph]	243.54	145.71	75.74	13.55	252.93	137.57	7.95	8.14	3.64	3.69	3.51
Stops [stops/h]	2303.42	115.60	66.21	66.60	1195.97	574.30	140.33	143.55	106.83	108.15	103.73
Fuel consumption [US gal/h]	98.60	7.64	4.09	2.28	38.12	17.62	2.83	2.89	2.25	2.28	2.19
CO [g/h]	6891.80	534.22	285.88	159.05	2664.57	1231.36	197.67	202.20	157.32	159.11	153.15
NOx [g/h]	1340.89	103.94	55.62	30.95	518.43	239.58	38.46	39.34	30.61	30.96	29.80
VOC [g/h]	1597.24	123.81	66.26	36.86	617.54	285.38	45.81	46.86	36.46	36.88	35.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			57.44		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			2.361		
Crosswalk LOS	F			F			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	915			576			337			241		
d_b, Bicycle Delay [s]	20.02			34.45			47.03			52.59		
I_b,int, Bicycle LOS Score for Intersection	3.076			2.875			2.134			1.867		
Bicycle LOS	C			C			B			A		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.040

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2219	463	0	520	1821	0	0	0	1266	0	0	528
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	2	0	0	-15	0	0	0	-13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	140	0	0	0	0	0	0	376	0	0	158
Total Hourly Volume [veh/h]	0	2230	325	0	520	1806	0	0	0	877	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	664	97	0	155	538	0	0	0	261	0	0	110
Total Analysis Volume [veh/h]	0	2655	387	0	619	2150	0	0	0	1044	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	25	35	22	
g / C, Green / Cycle	0.47	0.47	0.37	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.45	0.44	0.35	0.32	0.37	
s, saturation flow rate [veh/h]	5094	1716	1781	6792	2813	
c, Capacity [veh/h]	2395	807	661	3476	927	
d1, Uniform Delay [s]	17.29	17.15	20.61	11.86	22.80	
k, delay calibration	0.50	0.50	0.14	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	10.24	20.49	8.51	0.84	58.28	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.95	0.94	0.94	0.62	1.13	
d, Delay for Lane Group [s/veh]	27.53	37.64	29.13	12.69	81.08	
Lane Group LOS	C	D	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	11.12	13.37	9.47	4.65	14.26	
50th-Percentile Queue Length [ft/ln]	278.01	334.16	236.75	116.27	356.53	
95th-Percentile Queue Length [veh/ln]	16.59	19.36	14.52	8.19	21.95	
95th-Percentile Queue Length [ft/ln]	414.73	484.05	362.92	204.69	548.68	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	28.95	37.64	29.13	29.13	12.69	0.00	0.00	0.00	81.08	0.00	0.00	0.00
Movement LOS		C	D	C	C	B				F			
d_A, Approach Delay [s/veh]	30.06			16.37			81.08				0.00		
Approach LOS	C			B			F				A		
d_I, Intersection Delay [s/veh]	32.30												
Intersection LOS	C												
Intersection V/C	1.040												

Emissions

Vehicle Miles Traveled [mph]	330.13	110.04	106.02	368.23	74.71	
Stops [stops/h]	1766.17	707.62	501.35	984.89	1510.00	
Fuel consumption [US gal/h]	46.06	18.39	13.54	30.42	28.64	
CO [g/h]	3219.50	1285.79	946.20	2126.52	2002.06	
NOx [g/h]	626.40	250.17	184.10	413.74	389.53	
VOC [g/h]	746.15	297.99	219.29	492.84	464.00	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.258
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.872	2.446	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.969

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	68	1965	251	4	537	2174	372	156	9	24	1	72	32	557
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	13	1	0	0	-28	0	0	0	0	0	-2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	76	0	0	0	112	0	0	7	0	0	0	167
Total Hourly Volume [veh/h]	1	69	1978	176	4	537	2146	260	156	9	17	1	70	32	390
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	18	505	45	1	137	547	66	40	2	4	0	18	8	99
Total Analysis Volume [veh/h]	1	70	2018	180	4	548	2190	265	159	9	17	1	71	33	398
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	49	49	15	60	60	7	7	7	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.15	0.59	0.59	0.07	0.07	0.07	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.44	0.13	0.18	0.48	0.19	0.05	0.01	0.01	0.04	0.15	0.15
s, saturation flow rate [veh/h]	3113	4584	1431	3113	4584	1431	3113	1683	1431	1603	1464	1431
c, Capacity [veh/h]	120	2191	684	455	2686	838	228	124	105	235	214	209
d1, Uniform Delay [s]	48.50	24.96	15.98	43.76	16.84	10.79	46.38	44.25	44.54	39.12	43.76	43.76
k, delay calibration	0.04	0.04	0.04	0.09	0.04	0.04	0.08	0.08	0.08	0.08	0.44	0.44
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.75	0.75	0.08	99.22	0.24	0.08	2.83	0.18	0.53	0.54	62.16	62.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.92	0.26	1.21	0.82	0.32	0.70	0.07	0.16	0.31	1.02	1.02
d, Delay for Lane Group [s/veh]	50.25	25.71	16.06	142.98	17.07	10.87	49.22	44.43	45.07	39.66	105.92	106.60
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.92	14.53	2.48	11.98	12.46	2.90	2.06	0.22	0.42	1.65	9.06	8.90
50th-Percentile Queue Length [ft/ln]	22.96	363.26	61.95	299.50	311.52	72.61	51.43	5.47	10.49	41.19	226.58	222.41
95th-Percentile Queue Length [veh/ln]	1.65	20.78	4.46	19.14	18.25	5.23	3.70	0.39	0.75	2.97	14.11	13.90
95th-Percentile Queue Length [ft/ln]	41.32	519.55	111.52	478.53	456.25	130.71	92.57	9.84	18.87	74.15	352.85	347.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.25	50.25	25.71	16.06	142.9	142.9	17.07	10.87	49.22	44.43	45.07	39.66	39.66	105.9	106.2
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	25.71				39.64				48.60			96.73			
Approach LOS	C				D				D			F			
d_I, Intersection Delay [s/veh]	39.43														
Intersection LOS	D														
Intersection V/C	0.969														

Emissions

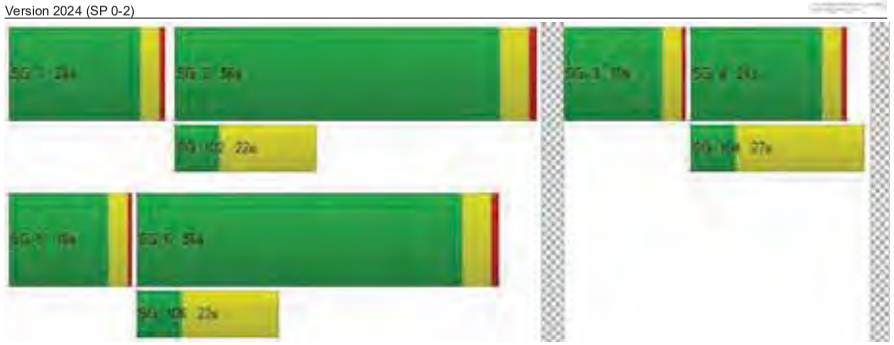
Vehicle Miles Traveled [mph]	15.85	450.37	40.17	79.87	316.89	38.34	20.28	1.15	2.17	25.27	76.50	74.77
Stops [stops/h]	64.58	1532.90	87.15	842.57	1314.56	102.14	144.68	7.69	14.75	57.94	318.70	312.85
Fuel consumption [US gal/h]	1.74	37.57	2.72	24.00	27.92	2.73	3.23	0.17	0.33	1.94	9.61	9.43
CO [g/h]	121.28	2625.97	190.37	1677.70	1951.47	190.77	225.54	11.96	22.83	135.71	671.59	658.94
NOx [g/h]	23.60	510.92	37.04	326.42	379.68	37.12	43.88	2.33	4.44	26.40	130.67	128.21
VOC [g/h]	28.11	608.59	44.12	388.82	452.27	44.21	52.27	2.77	5.29	31.45	155.65	152.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.78	0.00	40.78	40.78
l_p,int, Pedestrian LOS Score for Intersectio	3.465	0.000	2.578	2.833
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	987	987	400	303
d_b, Bicycle Delay [s]	13.14	13.14	32.74	36.86
l_b,int, Bicycle LOS Score for Intersection	2.849	2.974	1.718	2.548
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	121	1681	388	1	95	1737	444	2	355	391	78	425	318	248
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	16	4	0	0	-30	0	0	0	0	0	-7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	118	0	0	0	133	0	0	0	23	0	0	74
Total Hourly Volume [veh/h]	2	121	1697	274	1	95	1707	311	2	355	391	55	418	318	174
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	451	73	0	25	454	83	1	94	104	15	111	85	46
Total Analysis Volume [veh/h]	2	129	1805	291	1	101	1816	331	2	378	416	59	445	338	185
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	13	82	82	10	79	79	20	23	23	20	23	23
g / C, Green / Cycle	0.09	0.52	0.52	0.06	0.50	0.50	0.12	0.14	0.14	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.18	0.03	0.36	0.21	0.11	0.13	0.13	0.13	0.10	0.12
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1775	3431	3532	1577
c, Capacity [veh/h]	151	3520	824	218	2529	789	427	267	255	437	518	231
d1, Uniform Delay [s]	70.87	24.45	21.95	70.93	30.58	24.80	67.65	66.21	66.22	68.50	63.22	64.77
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.04	0.23	0.23	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.03	0.54	1.19	0.58	1.79	1.64	2.57	20.82	21.61	17.05	0.52	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.51	0.35	0.47	0.72	0.42	0.89	0.91	0.91	1.02	0.65	0.80
d, Delay for Lane Group [s/veh]	90.91	24.99	23.14	71.51	32.37	26.43	70.22	87.03	87.83	85.55	63.74	67.21
Lane Group LOS	F	C	C	E	C	C	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.08	11.17	6.66	1.98	17.63	7.99	7.69	11.16	10.75	9.84	6.46	7.35
50th-Percentile Queue Length [ft/ln]	151.91	279.32	166.62	49.43	440.65	199.70	192.37	279.09	268.70	246.06	161.38	183.85
95th-Percentile Queue Length [veh/ln]	10.12	16.65	10.90	3.56	24.51	12.62	12.24	16.64	16.12	15.11	10.62	11.80
95th-Percentile Queue Length [ft/ln]	252.98	416.37	272.46	88.98	612.79	315.58	306.10	416.08	403.12	377.70	265.55	295.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.91	90.91	24.99	23.14	71.51	71.51	32.37	26.43	70.22	70.22	87.36	87.83	85.55	63.74	67.21
Movement LOS	F	F	C	C	E	E	C	C	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	28.62				33.27				79.78				74.43		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	44.26														
Intersection LOS	D														
Intersection V/C	0.773														

Emissions

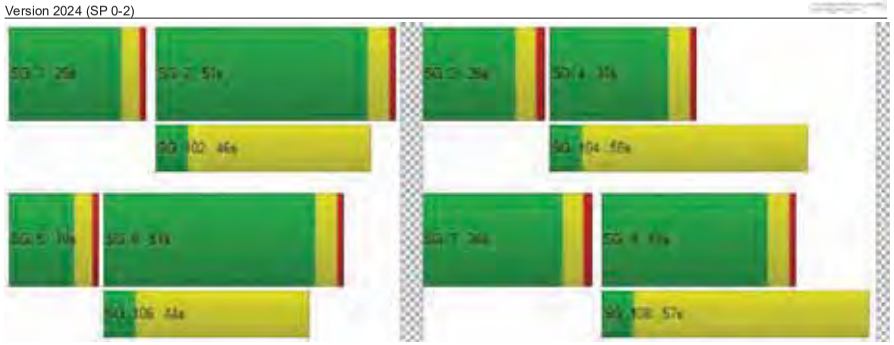
Vehicle Miles Traveled [mph]	52.16	718.63	115.86	22.76	405.29	73.87	94.70	60.47	57.91	46.65	35.44	19.40
Stops [stops/h]	139.33	1024.78	152.82	90.68	1212.50	183.17	352.88	255.98	246.45	451.37	296.03	168.62
Fuel consumption [US gal/h]	5.34	44.42	6.98	3.39	40.93	6.59	11.28	8.20	7.90	12.16	7.48	4.26
CO [g/h]	373.26	3105.11	488.17	237.09	2861.01	460.65	788.30	573.16	552.08	849.98	522.72	297.77
NOx [g/h]	72.62	604.14	94.98	46.13	556.65	89.62	153.37	111.52	107.41	165.37	101.70	57.94
VOC [g/h]	86.51	719.64	113.14	54.95	663.07	106.76	182.70	132.84	127.95	196.99	121.15	69.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
I_p,int, Pedestrian LOS Score for Intersectio	3.551	3.888	2.806	3.000
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
I_b,int, Bicycle LOS Score for Intersection	2.526	2.814	1.972	2.419
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	84.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.094

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	57	1777	2	2	18	1704	532	257	5	15	4	9	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	0	0	0	-38	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	50	0	0	5	0	0	5
Total Hourly Volume [veh/h]	1	57	1797	2	2	18	1666	482	257	5	10	4	9	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	16	516	1	1	5	479	139	74	1	3	1	3	3
Total Analysis Volume [veh/h]	1	66	2066	2	2	21	1915	554	295	6	11	5	10	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	73	73	73	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	43	43	1	40	40	9	9	2
g / C, Green / Cycle	0.05	0.59	0.59	0.02	0.55	0.55	0.12	0.12	0.03
(v / s)_i Volume / Saturation Flow Rate	0.04	0.55	0.55	0.01	0.66	0.71	0.09	0.09	0.02
s, saturation flow rate [veh/h]	1781	1870	1869	1781	1870	1733	1781	1769	1725
c, Capacity [veh/h]	92	1093	1093	29	1026	951	219	217	51
d1, Uniform Delay [s]	34.04	14.08	14.08	35.73	16.44	16.44	30.75	30.75	34.86
k, delay calibration	0.04	0.44	0.44	0.04	0.50	0.50	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.98	15.55	15.61	16.03	100.65	141.88	4.33	4.37	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.95	0.95	0.79	1.20	1.30	0.72	0.72	0.51
d, Delay for Lane Group [s/veh]	38.02	29.63	29.69	51.76	117.09	158.32	35.08	35.12	37.79
Lane Group LOS	D	C	C	D	F	F	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.24	17.41	17.43	0.50	40.23	48.17	2.81	2.80	0.48
50th-Percentile Queue Length [ft/ln]	30.89	435.24	435.75	12.48	1005.85	1204.31	70.26	69.91	12.08
95th-Percentile Queue Length [veh/ln]	2.22	24.25	24.28	0.90	58.08	71.55	5.06	5.03	0.87
95th-Percentile Queue Length [ft/ln]	55.59	606.32	606.92	22.46	1451.88	1788.78	126.47	125.84	21.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.02	38.02	29.66	29.69	51.76	51.76	131.7	158.3	35.10	35.12	35.12	37.79	37.79	37.79
Movement LOS	D	D	C	C	D	D	F	F	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	29.92				136.91				35.10			37.79		
Approach LOS	C				F				D			D		
d_I, Intersection Delay [s/veh]	83.99													
Intersection LOS	F													
Intersection V/C	1.094													

Emissions

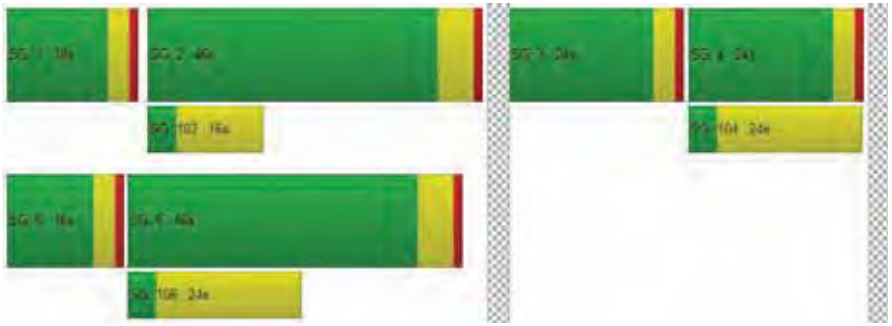
Vehicle Miles Traveled [mph]	23.71	365.89	365.89	9.16	491.49	491.49	37.68	37.46	0.49
Stops [stops/h]	61.15	861.72	862.72	24.71	1991.43	2384.36	139.11	138.42	23.92
Fuel consumption [US gal/h]	1.83	26.06	26.08	1.01	82.84	100.50	3.44	3.42	0.35
CO [g/h]	128.07	1821.43	1822.69	70.42	5790.78	7024.68	240.21	238.95	24.64
NOx [g/h]	24.92	354.38	354.63	13.70	1126.67	1366.75	46.74	46.49	4.79
VOC [g/h]	29.68	422.13	422.43	16.32	1342.07	1628.04	55.67	55.38	5.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.81	0.00	28.81	28.81
l_p,int, Pedestrian LOS Score for Intersectio	3.086	0.000	2.263	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	1100	550	550
d_b, Bicycle Delay [s]	7.37	7.37	19.12	19.12
l_b,int, Bicycle LOS Score for Intersection	3.320	3.639	2.083	1.611
Bicycle LOS	C	D	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	92	1693	1327	397	153	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	-38	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	119	0	17
Total Hourly Volume [veh/h]	1	92	1713	1289	278	153	40
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	26	492	370	80	44	11
Total Analysis Volume [veh/h]	1	106	1969	1482	320	176	46
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5	47	38	38	9	9
g / C, Green / Cycle	0.08	0.72	0.58	0.58	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.06	0.55	0.48	0.51	0.10	0.03
s, saturation flow rate [veh/h]	1781	3560	1870	1760	1781	1589
c, Capacity [veh/h]	139	2548	1077	1014	234	209
d1, Uniform Delay [s]	29.53	5.91	11.32	12.03	27.35	25.38
k, delay calibration	0.04	0.15	0.30	0.33	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.34	0.73	4.85	8.15	4.84	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.77	0.84	0.89	0.75	0.22
d, Delay for Lane Group [s/veh]	32.87	6.65	16.18	20.17	32.18	25.91
Lane Group LOS	C	A	B	C	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.70	5.26	9.78	11.14	2.82	0.64
50th-Percentile Queue Length [ft/ln]	42.55	131.42	244.57	278.51	70.61	15.98
95th-Percentile Queue Length [veh/ln]	3.06	9.02	14.91	16.61	5.08	1.15
95th-Percentile Queue Length [ft/ln]	76.58	225.42	372.81	415.35	127.09	28.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.87	32.87	6.65	17.74	20.17	32.18	25.91
Movement LOS	C	C	A	B	C	C	C
d_A, Approach Delay [s/veh]	8.00			18.17		30.88	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	13.71						
Intersection LOS	B						
Intersection V/C	0.822						

Emissions

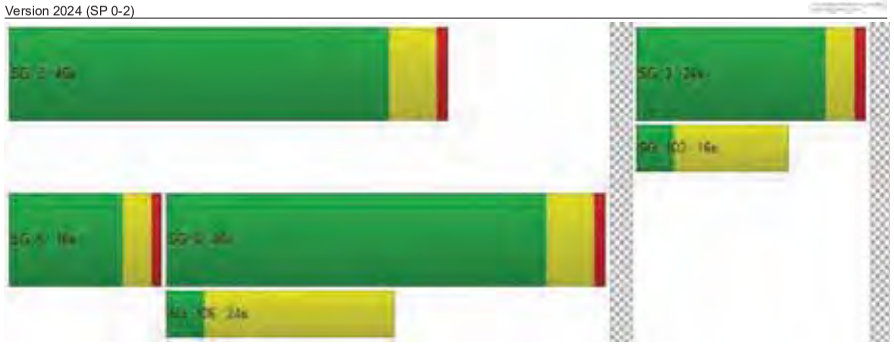
Vehicle Miles Traveled [mph]	74.65	1373.79	318.83	318.83	59.38	15.52
Stops [stops/h]	93.97	580.49	540.15	615.10	155.94	35.30
Fuel consumption [US gal/h]	4.31	62.43	19.08	20.22	4.46	1.08
CO [g/h]	301.14	4363.53	1333.39	1413.53	311.67	75.24
NOx [g/h]	58.59	848.98	259.43	275.02	60.64	14.64
VOC [g/h]	69.79	1011.29	309.03	327.60	72.23	17.44

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.09	0.00	25.09
l_p,int, Pedestrian LOS Score for Intersectio	2.992	0.000	2.206
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1227	1227	613
d_b, Bicycle Delay [s]	4.87	4.87	15.67
l_b,int, Bicycle LOS Score for Intersection	3.271	3.144	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	90.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.040

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	53	773	21	249	386	750	514	69	78	136	241	520
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	8	2	0	-15	-23	12	2	-5	-3	-4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	7	0	0	218	0	0	22	0	0	156
Total Hourly Volume [veh/h]	56	781	16	249	371	509	526	71	51	133	237	364
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	219	4	70	104	143	148	20	14	37	67	102
Total Analysis Volume [veh/h]	63	878	18	280	417	572	591	80	57	149	266	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	89	89	89	89	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	4	23	23	12	31	31	15	15	20	20
g / C, Green / Cycle	0.05	0.26	0.26	0.14	0.35	0.35	0.17	0.17	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.16	0.22	0.36	0.21	0.21	0.23	0.25
s, saturation flow rate [veh/h]	1781	1870	1857	1781	1870	1589	1781	1766	1829	1589
c, Capacity [veh/h]	83	484	481	241	650	552	301	298	412	358
d1, Uniform Delay [s]	41.83	32.10	32.10	38.40	24.33	28.97	36.90	36.90	34.40	34.40
k, delay calibration	0.04	0.27	0.27	0.50	0.22	0.50	0.50	0.50	0.41	0.47
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.16	17.20	17.29	109.22	2.19	47.85	122.84	123.96	50.48	78.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.93	0.93	1.16	0.64	1.04	1.21	1.22	1.04	1.11
d, Delay for Lane Group [s/veh]	46.99	49.29	49.38	147.62	26.53	76.82	159.74	160.86	84.88	112.52
Lane Group LOS	D	D	D	F	C	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.47	11.42	11.36	12.12	6.87	17.55	16.64	16.59	14.40	15.26
50th-Percentile Queue Length [ft/ln]	36.68	285.62	283.91	302.94	171.69	438.64	415.99	414.84	359.94	381.59
95th-Percentile Queue Length [veh/ln]	2.64	16.97	16.88	19.01	11.17	24.99	25.51	25.46	21.06	22.89
95th-Percentile Queue Length [ft/ln]	66.03	424.20	422.07	475.14	279.14	624.83	637.63	636.58	526.49	572.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.99	49.33	49.38	147.62	26.53	76.82	160.17	160.86	160.86	84.88	84.88	112.52
Movement LOS	D	D	D	F	C	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	49.18			75.91			160.29			98.17		
Approach LOS	D			E			F			F		
d_I, Intersection Delay [s/veh]	90.23											
Intersection LOS	F											
Intersection V/C	1.040											

Emissions

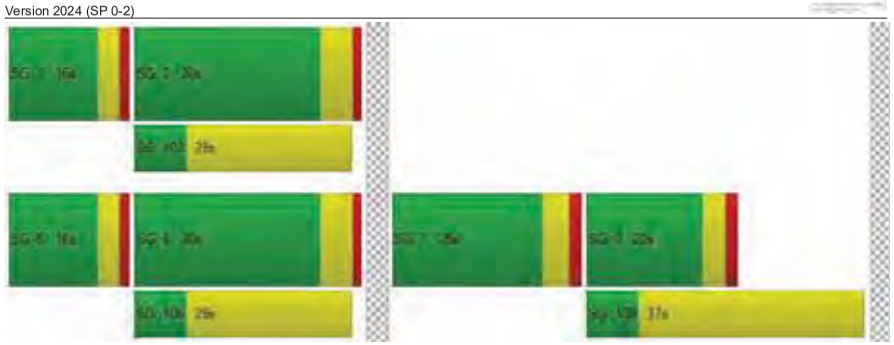
Vehicle Miles Traveled [mph]	36.38	259.65	257.81	195.36	290.94	399.09	27.47	27.30	47.30	43.84
Stops [stops/h]	59.50	463.26	460.48	491.35	278.47	711.45	674.71	672.84	583.80	618.91
Fuel consumption [US gal/h]	2.43	17.76	17.64	24.07	17.16	35.51	16.73	16.72	12.56	14.30
CO [g/h]	169.78	1241.25	1233.25	1682.59	1199.21	2481.90	1169.20	1168.46	877.78	999.46
NOx [g/h]	33.03	241.50	239.95	327.37	233.32	482.89	227.48	227.34	170.78	194.46
VOC [g/h]	39.35	287.67	285.82	389.96	277.93	575.20	270.97	270.80	203.43	231.63

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.07	0.00	34.07	34.07
l_p,int, Pedestrian LOS Score for Intersectio	2.623	0.000	2.578	2.605
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	556	349	451
d_b, Bicycle Delay [s]	23.13	23.13	30.24	26.64
l_b,int, Bicycle LOS Score for Intersection	2.357	2.786	2.797	3.177
Bicycle LOS	B	C	C	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	575	254	291	262	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-3	0	0	-23	13	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	575	254	268	275	90
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	160	71	74	76	25
Total Analysis Volume [veh/h]	132	639	282	298	306	100
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	19	11	11	9	9
g / C, Green / Cycle	0.10	0.50	0.29	0.29	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.07	0.34	0.15	0.19	0.17	0.06
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	178	935	550	467	420	375
d1, Uniform Delay [s]	16.55	7.19	11.11	11.61	13.34	11.79
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.26	1.27	1.06	2.06	2.43	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.68	0.51	0.64	0.73	0.27
d, Delay for Lane Group [s/veh]	18.81	8.46	12.17	13.68	15.77	12.16
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	1.52	1.29	1.51	2.18	0.59
50th-Percentile Queue Length [ft/ln]	22.09	37.97	32.13	37.72	54.46	14.66
95th-Percentile Queue Length [veh/ln]	1.59	2.73	2.31	2.72	3.92	1.06
95th-Percentile Queue Length [ft/ln]	39.76	68.34	57.83	67.89	98.03	26.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.81	8.46	12.17	13.68	15.77	12.16
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	10.24		12.94		14.88	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	12.20					
Intersection LOS	B					
Intersection V/C	0.753					

Emissions

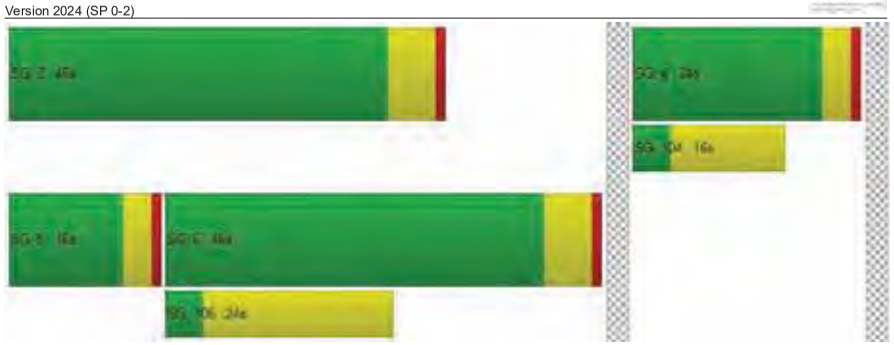
Vehicle Miles Traveled [mph]	16.29	78.84	162.86	172.10	71.87	23.49
Stops [stops/h]	84.30	144.90	122.61	143.96	207.85	55.96
Fuel consumption [US gal/h]	2.62	6.43	8.42	9.26	5.09	1.52
CO [g/h]	182.85	449.43	588.83	647.31	355.71	106.50
NOx [g/h]	35.58	87.44	114.56	125.94	69.21	20.72
VOC [g/h]	42.38	104.16	136.47	150.02	82.44	24.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0		8.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	11.71		0.00		11.71	
l_p,int, Pedestrian LOS Score for Intersectio	2.583		0.000		2.168	
Crosswalk LOS	B		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	2120		2120		1060	
d_b, Bicycle Delay [s]	0.07		0.07		4.17	
l_b,int, Bicycle LOS Score for Intersection	2.832		2.517		1.560	
Bicycle LOS	C		B		A	

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.090

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	328	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	0	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	655	0	14	330	0	0	0	0	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	178	0	4	90	0	0	0	0	0	0	10
Total Analysis Volume [veh/h]	0	712	0	14	359	0	0	0	0	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	8.00	0.00	0.00	9.07	0.00	0.00	26.92	22.28	10.25	25.16	23.11	14.15
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.30	0.30	0.30
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.59	0.59	0.59	0.00	0.00	0.00	7.39	7.39	7.39
d_A, Approach Delay [s/veh]	0.00			0.34			19.82			14.15		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.60											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	25.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.049

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	408	41	74	254	0	0	0	0	11	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	0	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	405	41	74	256	0	0	0	0	11	0	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	109	11	20	69	0	0	0	0	3	0	67
Total Analysis Volume [veh/h]	0	435	44	80	275	0	0	0	0	12	0	269
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.45
d_M, Delay for Movement [s/veh]	7.79	0.00	0.00	8.59	0.00	0.00	37.94	19.24	9.71	25.85	24.87	17.02
Movement LOS	A	A	A	A	A	A	E	C	A	D	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	2.73	2.73	2.73
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	5.97	0.00	0.00	0.00	0.00	0.00	68.30	68.30	68.30
d_A, Approach Delay [s/veh]	0.00			1.94			22.30			17.39		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	5.00											
Intersection LOS	D											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	1,336.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.315

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	460	201	51	0	862	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	14	-5	-8	0	-26	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	18	474	196	43	0	836	185
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	131	54	12	0	231	51
Total Analysis Volume [veh/h]	0	20	523	216	47	0	923	204
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	2.31	0.65	0.00	0.00	0.00	0.71	0.00
d_M, Delay for Movement [s/veh]	1336.45	1336.45	924.30	0.00	0.00	20.85	10.25	0.00
Movement LOS	F	F	F	A	A	C	B	A
95th-Percentile Queue Length [veh/ln]	49.16	49.16	49.16	0.00	0.00	3.44	3.44	3.44
95th-Percentile Queue Length [ft/ln]	1228.90	1228.90	1228.90	0.00	0.00	86.02	86.02	86.02
d_A, Approach Delay [s/veh]	939.48			0.00		8.40		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	268.80							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	203.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.712

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	9	149	80	2	30	779	37	11	17	0	240	45	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	-36	20	15	0	0	-26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	149	80	2	30	779	1	31	32	0	240	19	62
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	45	24	1	9	235	0	9	10	0	72	6	19
Total Analysis Volume [veh/h]	11	180	96	2	36	939	1	37	39	0	289	23	75
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	543	978	453	530
Degree of Utilization, x	0.53	1.71	0.17	0.73

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.07	57.24	0.60	6.07
95th-Percentile Queue Length [ft]	76.74	1430.99	14.93	151.67
Approach Delay [s/veh]	16.82	344.09	12.54	26.03
Approach LOS	C	F	B	D
Intersection Delay [s/veh]	203.92			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.218

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	110	126	1	106	95	0	67	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-13	0	-1	0	0	7	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	113	1	105	95	0	74	129
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	30	0	28	25	0	19	34
Total Analysis Volume [veh/h]	116	119	1	111	100	0	78	136
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.13	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	13.65	9.70	8.82	0.00	0.00	10.10	7.81	0.00
Movement LOS	B	A	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.82	0.46	0.00	0.00	0.00	0.18	0.18	0.00
95th-Percentile Queue Length [ft/ln]	20.61	11.61	0.05	0.05	0.05	4.56	4.56	0.00
d_A, Approach Delay [s/veh]	11.65		0.04			2.85		
Approach LOS	B		A			A		
d_I, Intersection Delay [s/veh]	5.08							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.192

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	83	80	145	57	121	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-13	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	80	132	57	121	102
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	22	36	15	33	28
Total Analysis Volume [veh/h]	90	87	143	62	132	111
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.10	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	15.06	11.34	0.00	0.00	7.92	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.19	1.19	0.00	0.00	0.32	0.00
95th-Percentile Queue Length [ft/ln]	29.78	29.78	0.00	0.00	8.00	0.00
d_A, Approach Delay [s/veh]	13.23		0.00		4.30	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.42					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.108

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	11	165	19	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	0	-13	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	10	11	152	19	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	3	3	41	5	5
Total Analysis Volume [veh/h]	80	11	12	165	21	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	723	748	690	764	764	732
Degree of Utilization, x	0.06	0.06	0.02	0.11	0.11	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.20	0.19	0.05	0.36	0.36	0.18
95th-Percentile Queue Length [ft]	5.03	4.85	1.33	9.05	9.05	4.44
Approach Delay [s/veh]	7.92		7.99			8.21
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.00					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	34.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.381

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	296	125	50	536	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	0	0	0	0	0	0	-13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	0	18	66	1	8	4	296	112	50	536	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	0	5	17	0	2	1	76	29	13	138	4
Total Analysis Volume [veh/h]	74	0	19	68	1	8	4	305	115	52	553	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.00	0.03	0.35	0.00	0.02	0.00	0.00	0.00	0.05	0.01	0.00
d_M, Delay for Movement [s/veh]	34.49	21.66	10.43	33.40	32.51	21.67	8.60	0.00	0.00	8.31	0.00	0.00
Movement LOS	D	C	B	D	D	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.66	0.09	0.09	1.61	1.61	1.61	0.01	0.00	0.00	0.14	0.00	0.00
95th-Percentile Queue Length [ft/ln]	41.54	2.15	2.15	40.18	40.18	40.18	0.30	0.00	0.00	3.58	0.00	0.00
d_A, Approach Delay [s/veh]	29.57			32.17			0.08			0.70		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	4.69											
Intersection LOS	D											

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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Scenario 2: 2 2033 AM with CCSP, No Project
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Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	72	5	189	5	5	5	5	632	184	0	378	502	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	57	0	0	2	0	0	55	0	0	0	2
Total Hourly Volume [veh/h]	72	5	132	5	5	3	5	632	129	0	378	502	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	1	34	1	1	1	1	163	33	0	97	129	1
Total Analysis Volume [veh/h]	74	5	136	5	5	3	5	652	133	0	390	518	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	6	12	1	7	1	57	57	28	84	84
g / C, Green / Cycle	0.05	0.10	0.01	0.06	0.01	0.47	0.47	0.23	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.00	0.00	0.00	0.22	0.22	0.22	0.14	0.14
s, saturation flow rate [veh/h]	1781	1598	1781	1754	1781	1870	1762	1781	1870	1866
c, Capacity [veh/h]	96	165	12	99	12	885	834	415	1308	1305
d1, Uniform Delay [s]	56.04	52.90	59.33	53.65	59.34	21.23	21.24	45.20	6.30	6.30
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.83	4.72	19.50	0.13	19.95	1.69	1.81	8.64	0.34	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.85	0.40	0.08	0.40	0.46	0.46	0.94	0.20	0.20
d, Delay for Lane Group [s/veh]	60.87	57.61	78.83	53.78	79.29	22.92	23.05	53.84	6.65	6.65
Lane Group LOS	E	E	E	D	E	C	C	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	4.39	0.22	0.23	0.22	7.96	7.55	12.32	2.28	2.28
50th-Percentile Queue Length [ft/ln]	58.56	109.83	5.48	5.83	5.50	199.09	188.65	308.10	57.00	56.89
95th-Percentile Queue Length [veh/ln]	4.22	7.83	0.39	0.42	0.40	12.59	12.05	18.08	4.10	4.10
95th-Percentile Queue Length [ft/ln]	105.40	195.77	9.86	10.49	9.90	314.79	301.28	452.04	102.59	102.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.87	57.61	57.61	78.83	53.78	53.78	79.29	22.97	23.05	53.84	53.84	6.65	6.65
Movement LOS	E	E	E	E	D	D	E	C	C	D	D	A	A
d_A, Approach Delay [s/veh]	58.73			63.41			23.34			26.85			
Approach LOS	E			E			C			C			
d_I, Intersection Delay [s/veh]	29.21												
Intersection LOS	C												
Intersection V/C	0.585												

Emissions

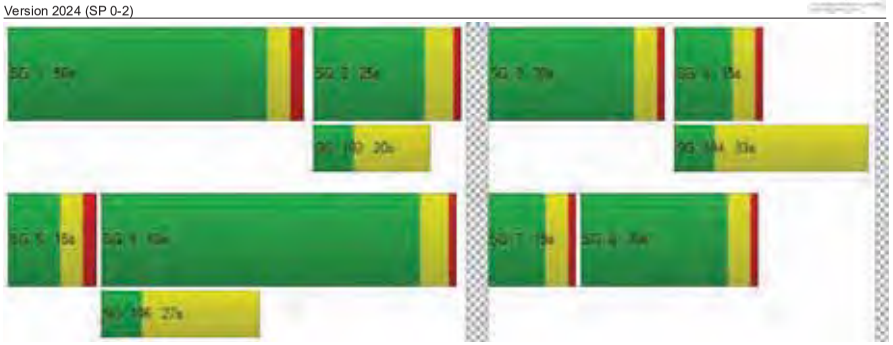
Vehicle Miles Traveled [mph]	28.51	54.33	0.17	0.28	4.21	339.83	320.77	97.19	64.98	64.85
Stops [stops/h]	70.27	131.80	6.57	6.99	6.60	238.91	226.38	369.72	68.40	68.27
Fuel consumption [US gal/h]	2.48	4.62	0.12	0.14	0.29	17.19	16.24	10.32	3.41	3.40
CO [g/h]	173.25	322.77	8.65	9.62	20.30	1201.81	1135.42	721.11	238.07	237.59
NOx [g/h]	33.71	62.80	1.68	1.87	3.95	233.83	220.91	140.30	46.32	46.23
VOC [g/h]	40.15	74.80	2.00	2.23	4.70	278.53	263.15	167.12	55.18	55.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		0.0						
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00						
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00						
d_p, Pedestrian Delay [s]	49.50		49.50		49.50		0.00						
l_p,int, Pedestrian LOS Score for Intersectio	2.313		1.967		2.673		0.000						
Crosswalk LOS	B		A		B		F						
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000						
c_b, Capacity of the bicycle lane [bicycles/h]	417		167		317		900						
d_b, Bicycle Delay [s]	37.60		50.42		42.50		18.15						
l_b,int, Bicycle LOS Score for Intersection	2.008		1.584		2.257		1.991						
Bicycle LOS	B		A		B		A						

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	59	7	20	114	11	203	0	243	569	62	55	729	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-2	0	1	3	0	0	-5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	60	0	0	0	19	0	0	62
Total Hourly Volume [veh/h]	59	7	14	114	11	141	0	244	572	43	55	724	143
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	4	31	3	39	0	67	157	12	15	199	39
Total Analysis Volume [veh/h]	65	8	15	125	12	155	0	268	629	47	60	796	157
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	7	16	9	17	23	90	90	6	73	73
g / C, Green / Cycle	0.05	0.11	0.06	0.12	0.16	0.64	0.64	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.10	0.15	0.18	0.03	0.03	0.26	0.26
s, saturation flow rate [veh/h]	1781	1677	1781	1607	1781	3560	1589	1781	1870	1764
c, Capacity [veh/h]	83	188	108	195	289	2283	1019	77	969	915
d1, Uniform Delay [s]	66.05	55.95	65.75	60.32	57.82	10.95	9.29	66.32	22.00	22.01
k, delay calibration	0.04	0.13	0.40	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.95	0.36	125.62	12.51	5.42	0.30	0.09	6.24	1.88	2.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.12	1.16	0.86	0.93	0.28	0.05	0.78	0.51	0.51
d, Delay for Lane Group [s/veh]	72.00	56.31	191.37	72.83	63.23	11.25	9.37	72.56	23.89	24.00
Lane Group LOS	E	E	F	E	E	B	A	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.44	0.76	7.65	6.51	9.80	4.32	0.56	2.26	11.05	10.45
50th-Percentile Queue Length [ft/ln]	61.10	18.92	191.15	162.71	244.91	108.06	14.00	56.62	276.19	261.33
95th-Percentile Queue Length [veh/ln]	4.40	1.36	12.73	10.69	14.93	7.73	1.01	4.08	16.50	15.76
95th-Percentile Queue Length [ft/ln]	109.98	34.06	318.26	267.31	373.23	193.31	25.21	101.91	412.46	393.89

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.00	56.31	56.31	191.37	72.83	72.83	63.23	63.23	11.25	9.37	72.56	23.93	24.00
Movement LOS	E	E	E	F	E	E	E	E	B	A	E	C	C
d_A, Approach Delay [s/veh]	67.90			123.57			25.91				26.82		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	40.09												
Intersection LOS	D												
Intersection V/C	0.625												

Emissions

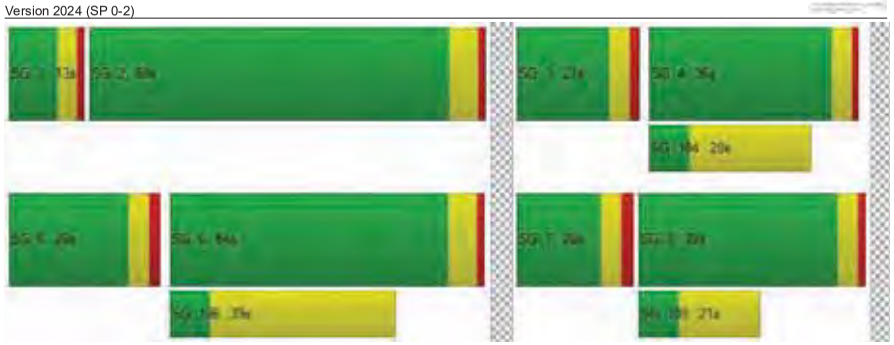
Vehicle Miles Traveled [mph]	3.25	1.15	5.81	7.76	28.10	65.94	4.93	21.01	171.69	162.01
Stops [stops/h]	62.85	19.46	196.61	167.36	251.90	222.30	14.40	58.24	284.08	268.79
Fuel consumption [US gal/h]	1.43	0.42	6.19	3.72	6.00	5.38	0.37	2.07	11.02	10.41
CO [g/h]	100.19	29.25	432.86	259.95	419.16	376.25	26.01	144.86	770.37	727.95
NOx [g/h]	19.49	5.69	84.22	50.58	81.55	73.20	5.06	28.18	149.89	141.63
VOC [g/h]	23.22	6.78	100.32	60.25	97.14	87.20	6.03	33.57	178.54	168.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
d_p, Pedestrian Delay [s]	59.43		59.43		59.43			0.00		
l_p,int, Pedestrian LOS Score for Intersectio	2.045		2.322		2.832			0.000		
Crosswalk LOS	B		B		C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	886		686		450			493		
d_b, Bicycle Delay [s]	21.73		30.23		42.04			39.75		
l_b,int, Bicycle LOS Score for Intersection	1.715		2.140		2.133			2.446		
Bicycle LOS	A		B		B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	252.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.314

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	115	53	383	193	45	46	218	278	224	320	839	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	1	0	-1	0	0	3	0	-2	-5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	115	0	0	14	0	0	67	0	0	92
Total Hourly Volume [veh/h]	115	54	269	193	44	32	218	281	157	318	834	215
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	16	77	55	13	9	63	81	45	91	240	62
Total Analysis Volume [veh/h]	132	62	309	222	51	37	251	323	180	366	959	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	138	138	138	138	138	138	138	138
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	33	33	20	20	21	42	25	45
g / C, Green / Cycle	0.24	0.24	0.15	0.15	0.15	0.31	0.18	0.33
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.12	0.05	0.14	0.29	0.21	0.67
s, saturation flow rate [veh/h]	1781	1630	1781	1741	1781	1759	1781	1805
c, Capacity [veh/h]	432	396	259	253	276	537	323	590
d1, Uniform Delay [s]	42.65	51.13	57.47	52.99	57.24	46.54	56.39	46.38
k, delay calibration	0.13	0.39	0.13	0.13	0.25	0.36	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	26.79	9.77	1.02	21.57	20.44	90.88	476.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.94	0.86	0.35	0.91	0.94	1.13	2.05
d, Delay for Lane Group [s/veh]	43.14	77.92	67.24	54.01	78.81	66.98	147.26	522.77
Lane Group LOS	D	E	E	D	E	E	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.77	15.46	8.25	2.83	10.25	19.71	19.36	98.00
50th-Percentile Queue Length [ft/ln]	94.33	386.47	206.34	70.78	256.15	492.77	484.01	2449.97
95th-Percentile Queue Length [veh/ln]	6.79	21.91	12.97	5.10	15.50	26.99	28.31	154.37
95th-Percentile Queue Length [ft/ln]	169.79	547.67	324.13	127.40	387.39	674.80	707.79	3859.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.14	77.92	77.92	67.24	54.01	54.01	78.81	66.98	66.98	147.26	522.77	522.77
Movement LOS	D	E	E	E	D	D	E	E	E	F	F	F
d_A, Approach Delay [s/veh]	68.79			63.48			70.92			435.34		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	252.35											
Intersection LOS	F											
Intersection V/C	1.314											

Emissions

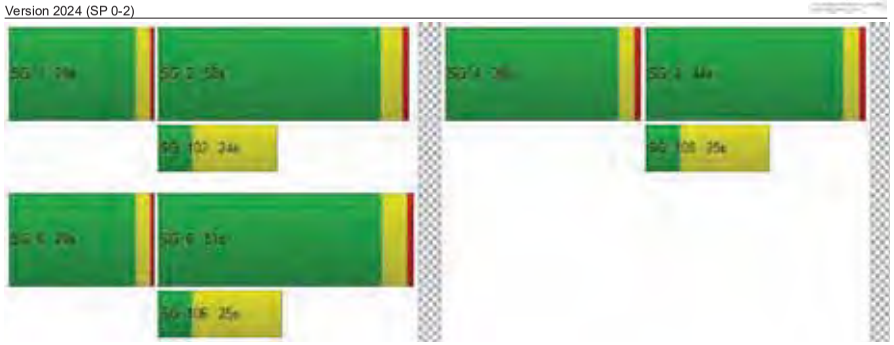
Vehicle Miles Traveled [mph]	227.13	638.36	45.01	17.84	87.89	176.13	165.15	544.18
Stops [stops/h]	98.77	404.65	216.05	74.11	268.20	515.95	506.78	2565.22
Fuel consumption [US gal/h]	11.05	34.40	6.08	2.11	9.12	16.96	20.56	164.84
CO [g/h]	772.70	2404.32	425.26	147.55	637.82	1185.23	1437.47	11522.41
NOx [g/h]	150.34	467.79	82.74	28.71	124.10	230.60	279.68	2241.84
VOC [g/h]	179.08	557.22	98.56	34.20	147.82	274.69	333.15	2670.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.21	58.21	58.21	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.541	2.298	2.694	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	506	579	650	654
d_b, Bicycle Delay [s]	38.37	34.72	31.33	31.13
l_b,int, Bicycle LOS Score for Intersection	2.579	2.094	2.914	4.305
Bicycle LOS	B	B	C	E

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	5	4	0	354	3	851	0	4	1112	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	5	0	0	-8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	5	4	0	354	3	856	0	4	1104	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	1	0	113	1	274	0	1	354	10
Total Analysis Volume [veh/h]	0	0	6	5	0	454	4	1097	0	5	1415	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	1	1	20	20	0	38	38	1	39	39
g / C, Green / Cycle	0.01	0.01	0.24	0.24	0.01	0.47	0.47	0.01	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.29	0.29	0.00	0.40	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	15	13	435	389	10	882	882	12	1683	751
d1, Uniform Delay [s]	0.00	40.39	23.41	30.90	40.53	16.16	16.16	40.45	18.86	11.66
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	23.82	0.01	100.02	23.84	0.72	0.72	20.32	1.20	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.46	0.01	1.17	0.40	0.62	0.62	0.41	0.84	0.05
d, Delay for Lane Group [s/veh]	0.00	64.21	23.42	130.91	64.37	16.89	16.89	60.77	20.06	11.69
Lane Group LOS	A	E	C	F	E	B	B	E	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.20	0.07	18.13	0.15	7.25	7.25	0.17	10.95	0.38
50th-Percentile Queue Length [ft/ln]	0.00	5.09	1.82	453.15	3.63	181.31	181.31	4.19	273.74	9.47
95th-Percentile Queue Length [veh/ln]	0.00	0.37	0.13	27.31	0.26	11.67	11.67	0.30	16.38	0.68
95th-Percentile Queue Length [ft/ln]	0.00	9.16	3.27	682.68	6.53	291.73	291.73	7.55	409.42	17.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	64.21	23.42	23.42	130.91	64.37	16.89	16.89	60.77	20.06	11.69
Movement LOS	A	A	E	C	C	F	E	B	B	E	C	B
d_A, Approach Delay [s/veh]	64.21			129.74			17.06			19.97		
Approach LOS	E			F			B			B		
d_I, Intersection Delay [s/veh]	35.65											
Intersection LOS	D											
Intersection V/C	0.857											

Emissions

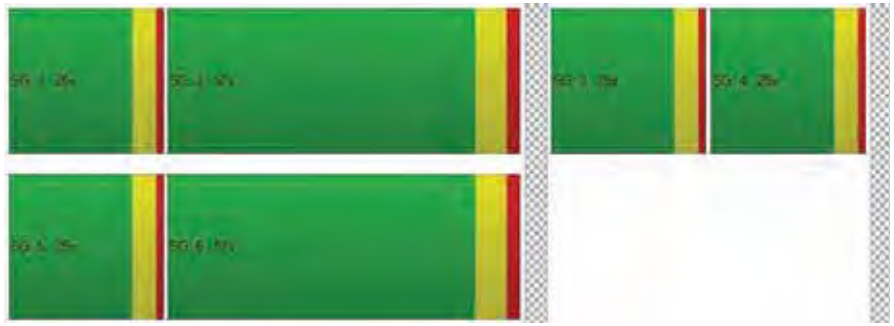
Vehicle Miles Traveled [mph]	0.00	0.30	2.37	215.36	1.80	247.50	247.50	0.87	246.84	6.98
Stops [stops/h]	0.00	8.97	3.20	798.99	6.40	319.69	319.69	7.39	965.32	16.70
Fuel consumption [US gal/h]	0.00	0.14	0.14	25.37	0.16	13.84	13.84	0.14	21.27	0.47
CO [g/h]	0.00	9.81	9.73	1773.59	11.33	967.40	967.40	9.69	1486.92	33.18
NOx [g/h]	0.00	1.91	1.89	345.08	2.20	188.22	188.22	1.88	289.30	6.46
VOC [g/h]	0.00	2.27	2.25	411.05	2.63	224.20	224.20	2.24	344.61	7.69

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	490	490	1224	1224
d_b, Bicycle Delay [s]	23.28	23.28	6.14	6.14
l_b,int, Bicycle LOS Score for Intersection	1.570	2.317	2.468	2.764
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	481	379	1054	278	213	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	1	-8	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	485	380	1046	278	213	81
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	146	114	315	84	64	24
Total Analysis Volume [veh/h]	584	458	1260	335	257	98
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	17	69	47	47	9	9	9
g / C, Green / Cycle	0.19	0.76	0.52	0.52	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.17	0.13	0.35	0.21	0.07	0.07	0.06
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	668	2716	1862	831	173	173	154
d1, Uniform Delay [s]	35.24	2.90	15.84	12.97	39.54	39.54	39.10
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.46	0.13	1.99	1.45	2.37	2.37	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.17	0.68	0.40	0.74	0.74	0.64
d, Delay for Lane Group [s/veh]	36.70	3.04	17.84	14.42	41.92	41.92	40.72
Lane Group LOS	D	A	B	B	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.21	0.85	9.32	4.17	2.84	2.84	2.13
50th-Percentile Queue Length [ft/ln]	155.22	21.18	232.91	104.16	71.06	71.06	53.17
95th-Percentile Queue Length [veh/ln]	10.30	1.52	14.32	7.50	5.12	5.12	3.83
95th-Percentile Queue Length [ft/ln]	257.39	38.12	358.05	187.49	127.91	127.91	95.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.70	3.04	17.84	14.42	41.92	40.72
Movement LOS	D	A	B	B	D	D
d_A, Approach Delay [s/veh]	21.90		17.12		41.59	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	21.69					
Intersection LOS	C					
Intersection V/C	0.686					

Emissions

Vehicle Miles Traveled [mph]	101.87	79.89	223.28	59.36	7.78	7.78	5.93
Stops [stops/h]	496.72	67.77	745.30	166.66	113.70	113.70	85.07
Fuel consumption [US gal/h]	11.30	3.95	17.88	4.35	2.04	2.04	1.53
CO [g/h]	789.81	275.86	1250.07	303.92	142.92	142.92	106.69
NOx [g/h]	153.67	53.67	243.22	59.13	27.81	27.81	20.76
VOC [g/h]	183.05	63.93	289.72	70.44	33.12	33.12	24.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.419	2.875	2.165
Bicycle LOS	B	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	69.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.021

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	78	514	0	0	391	671	941	0	298	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	-1	0	-7	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	78	515	0	0	390	624	934	0	268	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	163	0	0	123	197	296	0	85	0	0	0
Total Analysis Volume [veh/h]	0	99	652	0	0	494	790	1182	0	339	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	7	51	40	40	26	26	26	
g / C, Green / Cycle	0.08	0.57	0.44	0.44	0.29	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.14	0.50	0.33	0.33	0.21	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	147	2027	1567	699	518	518	462	
d1, Uniform Delay [s]	40.10	10.22	16.39	25.20	31.91	31.91	28.77	
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.00	0.42	0.53	75.64	84.51	84.51	3.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.32	0.32	1.13	1.14	1.14	0.73	
d, Delay for Lane Group [s/veh]	42.10	10.64	16.92	100.84	116.42	116.42	32.28	
Lane Group LOS	D	B	B	F	F	F	C	
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	2.18	3.27	3.30	28.56	22.99	22.99	6.85	
50th-Percentile Queue Length [ft/ln]	54.62	81.67	82.50	714.05	574.84	574.84	171.16	
95th-Percentile Queue Length [veh/ln]	3.93	5.88	5.94	40.69	33.40	33.40	11.14	
95th-Percentile Queue Length [ft/ln]	98.32	147.01	148.50	1017.24	835.03	835.03	278.44	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	42.10	10.64	0.00	0.00	16.92	100.84	116.42	116.42	32.28	0.00	0.00	0.00
Movement LOS	D	D	B			B	F	F	F	C			
d_A, Approach Delay [s/veh]	14.79				68.55			97.67			0.00		
Approach LOS	B				E			F			A		
d_I, Intersection Delay [s/veh]	69.65												
Intersection LOS	E												
Intersection V/C	1.021												

Emissions

Vehicle Miles Traveled [mph]	17.54	115.54	67.55	108.02	20.47	20.47	11.74	
Stops [stops/h]	87.40	261.36	264.00	1142.49	919.75	919.75	273.86	
Fuel consumption [US gal/h]	2.05	7.61	5.94	26.97	19.92	19.92	4.22	
CO [g/h]	143.52	532.12	415.20	1885.09	1392.68	1392.68	295.22	
NOx [g/h]	27.92	103.53	80.78	366.77	270.96	270.96	57.44	
VOC [g/h]	33.26	123.32	96.23	436.89	322.77	322.77	68.42	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		0.00	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		0.000	
Crosswalk LOS	F		F		F		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1204		582		516		0	
d_b, Bicycle Delay [s]	7.12		22.61		24.79		45.00	
I_b,int, Bicycle LOS Score for Intersection	2.179		2.658		4.119		4.132	
Bicycle LOS	B		B		D		D	

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	658	328	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	655	330	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	164	83	0	0	0
Total Analysis Volume [veh/h]	0	655	330	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.06
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.06	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	445	227	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	442	229	38	4	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	111	57	10	1	0
Total Analysis Volume [veh/h]	0	442	229	38	4	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.78	0.00	0.00	0.00	13.85	9.64
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.74	0.74
d_A, Approach Delay [s/veh]	0.00		0.00		13.85	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.142

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	238	41	52	127	9	47	81	0	37	73	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	0	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	235	41	52	129	9	47	81	0	37	73	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	59	10	13	32	2	12	20	0	9	18	11
Total Analysis Volume [veh/h]	6	235	41	52	129	9	47	81	0	37	73	43
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.14	0.19	0.00	0.11	0.16	0.05
d_M, Delay for Movement [s/veh]	7.50	0.00	0.00	7.86	0.00	0.00	20.32	17.72	13.38	18.90	16.74	13.23
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.09	0.09	0.09	1.41	1.41	1.41	1.39	1.39	1.39
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.26	2.26	2.26	35.13	35.13	35.13	34.85	34.85	34.85
d_A, Approach Delay [s/veh]	0.16			2.15			18.67			16.27		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.08											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	655	344	39	0
2	635	334	38	0
3	622	327	37	0
4	583	306	35	0
5	517	272	31	0
6	511	268	30	0
7	504	265	30	0
8	458	241	27	0
9	452	237	27	0
10	445	234	27	0
11	386	203	23	0
12	360	189	21	0
13	354	186	21	0
14	262	138	16	0
15	262	138	16	0
16	183	96	11	0
17	105	55	6	0
18	105	55	6	0
19	59	31	4	0
20	33	17	2	0
21	20	10	1	0
22	7	3	0	0
23	7	3	0	0
24	7	3	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	999	1	39	No	No	No	No	No	No	No	No	No	No
2	1	969	1	38	No	No	No	No	No	No	No	No	No	No
3	1	949	1	37	No	No	No	No	No	No	No	No	No	No
4	1	889	1	35	No	No	No	No	No	No	No	No	No	No
5	1	789	1	31	No	No	No	No	No	No	No	No	No	No
6	1	779	1	30	No	No	No	No	No	No	No	No	No	No
7	1	769	1	30	No	No	No	No	No	No	No	No	No	No
8	1	699	1	27	No	No	No	No	No	No	No	No	No	No
9	1	689	1	27	No	No	No	No	No	No	No	No	No	No
10	1	679	1	27	No	No	No	No	No	No	No	No	No	No
11	1	589	1	23	No	No	No	No	No	No	No	No	No	No
12	1	549	1	21	No	No	No	No	No	No	No	No	No	No
13	1	540	1	21	No	No	No	No	No	No	No	No	No	No
14	1	400	1	16	No	No	No	No	No	No	No	No	No	No
15	1	400	1	16	No	No	No	No	No	No	No	No	No	No
16	1	279	1	11	No	No	No	No	No	No	No	No	No	No
17	1	160	1	6	No	No	No	No	No	No	No	No	No	No
18	1	160	1	6	No	No	No	No	No	No	No	No	No	No
19	1	90	1	4	No	No	No	No	No	No	No	No	No	No
20	1	50	1	2	No	No	No	No	No	No	No	No	No	No
21	1	30	1	1	No	No	No	No	No	No	No	No	No	No
22	1	10	1	0	No	No	No	No	No	No	No	No	No	No
23	1	10	1	0	No	No	No	No	No	No	No	No	No	No
24	1	10	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.1	19.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1038	1038
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	446	330	261	0
2	433	320	253	0
3	424	314	248	0
4	397	294	232	0
5	352	261	206	0
6	348	257	204	0
7	343	254	201	0
8	312	231	183	0
9	308	228	180	0
10	303	224	177	0
11	263	195	154	0
12	245	182	144	0
13	241	178	141	0
14	178	132	104	0
15	178	132	104	0
16	125	92	73	0
17	71	53	42	0
18	71	53	42	0
19	40	30	23	0
20	22	17	13	0
21	13	10	8	0
22	4	3	3	0
23	4	3	3	0
24	4	3	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	776	1	261	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	753	1	253	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	738	1	248	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	691	1	232	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
5	2	613	1	206	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	2	605	1	204	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	2	597	1	201	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	2	543	1	183	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
9	2	536	1	180	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
10	2	527	1	177	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
11	2	458	1	154	No	No	Yes	Yes	No	No	No	No	No	No
12	2	427	1	144	No	No	Yes	Yes	No	No	No	No	No	No
13	2	419	1	141	No	No	No	Yes	No	No	No	No	No	No
14	2	310	1	104	No	No	No	No	No	No	No	No	No	No
15	2	310	1	104	No	No	No	No	No	No	No	No	No	No
16	2	217	1	73	No	No	No	No	No	No	No	No	No	No
17	2	124	1	42	No	No	No	No	No	No	No	No	No	No
18	2	124	1	42	No	No	No	No	No	No	No	No	No	No
19	2	70	1	23	No	No	No	No	No	No	No	No	No	No
20	2	39	1	13	No	No	No	No	No	No	No	No	No	No
21	2	23	1	8	No	No	No	No	No	No	No	No	No	No
22	2	7	1	3	No	No	No	No	No	No	No	No	No	No
23	2	7	1	3	No	No	No	No	No	No	No	No	No	No
24	2	7	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					6	10	12	13	0	3	4	10	10	4

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.4	22.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:15	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	261	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1037	1037
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1021	239	492
2	990	232	477
3	970	227	467
4	909	213	438
5	807	189	389
6	796	186	384
7	786	184	379
8	715	167	344
9	704	165	339
10	694	163	335
11	602	141	290
12	562	131	271
13	551	129	266
14	408	96	197
15	408	96	197
16	286	67	138
17	163	38	79
18	163	38	79
19	92	22	44
20	51	12	25
21	31	7	15
22	10	2	5
23	10	2	5
24	10	2	5

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1260	1	492	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1222	1	477	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1197	1	467	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1122	1	438	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	996	1	389	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	982	1	384	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	970	1	379	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	882	1	344	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	869	1	339	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	857	1	335	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	743	1	290	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	693	1	271	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	680	1	266	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	504	1	197	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	504	1	197	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	353	1	138	No	No	Yes	Yes	No	No	No	No	No	No
17	1	201	1	79	No	No	No	No	No	No	No	No	No	No
18	1	201	1	79	No	No	No	No	No	No	No	No	No	No
19	1	114	1	44	No	No	No	No	No	No	No	No	No	No
20	1	63	1	25	No	No	No	No	No	No	No	No	No	No
21	1	38	1	15	No	No	No	No	No	No	No	No	No	No
22	1	12	1	5	No	No	No	No	No	No	No	No	No	No
23	1	12	1	5	No	No	No	No	No	No	No	No	No	No
24	1	12	1	5	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	10	13	13	15	13	9

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	939.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	128:23
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	492
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1752
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	238	812	321	63
2	231	788	311	61
3	226	771	305	60
4	212	723	286	56
5	188	641	254	50
6	186	633	250	49
7	183	625	247	49
8	167	568	225	44
9	164	560	221	43
10	162	552	218	43
11	140	479	189	37
12	131	447	177	35
13	129	438	173	34
14	95	325	128	25
15	95	325	128	25
16	67	227	90	18
17	38	130	51	10
18	38	130	51	10
19	21	73	29	6
20	12	41	16	3
21	7	24	10	2
22	2	8	3	1
23	2	8	3	1
24	2	8	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1050	1	321	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1019	1	311	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	997	1	305	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	935	1	286	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	829	1	254	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	819	1	250	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	808	1	247	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	735	1	225	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
9	1	724	1	221	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
10	1	714	1	218	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
11	1	619	1	189	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	578	1	177	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
13	1	567	1	173	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
14	1	420	1	128	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	420	1	128	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	294	1	90	No	No	No	Yes	No	No	No	No	No	No
17	1	168	1	51	No	No	No	No	No	No	No	No	No	No
18	1	168	1	51	No	No	No	No	No	No	No	No	No	No
19	1	94	1	29	No	No	No	No	No	No	No	No	No	No
20	1	53	1	16	No	No	No	No	No	No	No	No	No	No
21	1	31	1	10	No	No	No	No	No	No	No	No	No	No
22	1	10	1	3	No	No	No	No	No	No	No	No	No	No
23	1	10	1	3	No	No	No	No	No	No	No	No	No	No
24	1	10	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	7	11	13	15	10	3

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	26	12.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:19	0:13
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	321	63
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1434	1434
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	203	201	223
2	197	195	216
3	193	191	212
4	181	179	198
5	160	159	176
6	158	157	174
7	156	155	172
8	142	141	156
9	140	139	154
10	138	137	152
11	120	119	132
12	112	111	123
13	110	109	120
14	81	80	89
15	81	80	89
16	57	56	62
17	32	32	36
18	32	32	36
19	18	18	20
20	10	10	11
21	6	6	7
22	2	2	2
23	2	2	2
24	2	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	404	2	223	No	No	No	Yes	No	No	No	No	No	No
2	2	392	2	216	No	No	No	Yes	No	No	No	No	No	No
3	2	384	2	212	No	No	No	Yes	No	No	No	No	No	No
4	2	360	2	198	No	No	No	Yes	No	No	No	No	No	No
5	2	319	2	176	No	No	No	No	No	No	No	No	No	No
6	2	315	2	174	No	No	No	No	No	No	No	No	No	No
7	2	311	2	172	No	No	No	No	No	No	No	No	No	No
8	2	283	2	156	No	No	No	No	No	No	No	No	No	No
9	2	279	2	154	No	No	No	No	No	No	No	No	No	No
10	2	275	2	152	No	No	No	No	No	No	No	No	No	No
11	2	239	2	132	No	No	No	No	No	No	No	No	No	No
12	2	223	2	123	No	No	No	No	No	No	No	No	No	No
13	2	219	2	120	No	No	No	No	No	No	No	No	No	No
14	2	161	2	89	No	No	No	No	No	No	No	No	No	No
15	2	161	2	89	No	No	No	No	No	No	No	No	No	No
16	2	113	2	62	No	No	No	No	No	No	No	No	No	No
17	2	64	2	36	No	No	No	No	No	No	No	No	No	No
18	2	64	2	36	No	No	No	No	No	No	No	No	No	No
19	2	36	2	20	No	No	No	No	No	No	No	No	No	No
20	2	20	2	11	No	No	No	No	No	No	No	No	No	No
21	2	12	2	7	No	No	No	No	No	No	No	No	No	No
22	2	4	2	2	No	No	No	No	No	No	No	No	No	No
23	2	4	2	2	No	No	No	No	No	No	No	No	No	No
24	2	4	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	223
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	627
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	223	189	163
2	216	183	158
3	212	180	155
4	198	168	145
5	176	149	129
6	174	147	127
7	172	146	126
8	156	132	114
9	154	130	112
10	152	129	111
11	132	112	96
12	123	104	90
13	120	102	88
14	89	76	65
15	89	76	65
16	62	53	46
17	36	30	26
18	36	30	26
19	20	17	15
20	11	9	8
21	7	6	5
22	2	2	2
23	2	2	2
24	2	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	412	1	163	No	No	No	Yes	No	No	No	No	No	No
2	2	399	1	158	No	No	No	Yes	No	No	No	No	No	No
3	2	392	1	155	No	No	No	Yes	No	No	No	No	No	No
4	2	366	1	145	No	No	No	Yes	No	No	No	No	No	No
5	2	325	1	129	No	No	No	No	No	No	No	No	No	No
6	2	321	1	127	No	No	No	No	No	No	No	No	No	No
7	2	318	1	126	No	No	No	No	No	No	No	No	No	No
8	2	288	1	114	No	No	No	No	No	No	No	No	No	No
9	2	284	1	112	No	No	No	No	No	No	No	No	No	No
10	2	281	1	111	No	No	No	No	No	No	No	No	No	No
11	2	244	1	96	No	No	No	No	No	No	No	No	No	No
12	2	227	1	90	No	No	No	No	No	No	No	No	No	No
13	2	222	1	88	No	No	No	No	No	No	No	No	No	No
14	2	165	1	65	No	No	No	No	No	No	No	No	No	No
15	2	165	1	65	No	No	No	No	No	No	No	No	No	No
16	2	115	1	46	No	No	No	No	No	No	No	No	No	No
17	2	66	1	26	No	No	No	No	No	No	No	No	No	No
18	2	66	1	26	No	No	No	No	No	No	No	No	No	No
19	2	37	1	15	No	No	No	No	No	No	No	No	No	No
20	2	20	1	8	No	No	No	No	No	No	No	No	No	No
21	2	13	1	5	No	No	No	No	No	No	No	No	No	No
22	2	4	1	2	No	No	No	No	No	No	No	No	No	No
23	2	4	1	2	No	No	No	No	No	No	No	No	No	No
24	2	4	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:35
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	163
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	575
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

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Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	84	163	37
2	81	158	36
3	80	155	35
4	75	145	33
5	66	129	29
6	66	127	29
7	65	126	28
8	59	114	26
9	58	112	26
10	57	111	25
11	50	96	22
12	46	90	20
13	45	88	20
14	34	65	15
15	34	65	15
16	24	46	10
17	13	26	6
18	13	26	6
19	8	15	3
20	4	8	2
21	3	5	1
22	1	2	0
23	1	2	0
24	1	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	247	1	37	No	No	No	No	No	No	No	No	No	No
2	3	239	1	36	No	No	No	No	No	No	No	No	No	No
3	3	235	1	35	No	No	No	No	No	No	No	No	No	No
4	3	220	1	33	No	No	No	No	No	No	No	No	No	No
5	3	195	1	29	No	No	No	No	No	No	No	No	No	No
6	3	193	1	29	No	No	No	No	No	No	No	No	No	No
7	3	191	1	28	No	No	No	No	No	No	No	No	No	No
8	3	173	1	26	No	No	No	No	No	No	No	No	No	No
9	3	170	1	26	No	No	No	No	No	No	No	No	No	No
10	3	168	1	25	No	No	No	No	No	No	No	No	No	No
11	3	146	1	22	No	No	No	No	No	No	No	No	No	No
12	3	136	1	20	No	No	No	No	No	No	No	No	No	No
13	3	133	1	20	No	No	No	No	No	No	No	No	No	No
14	3	99	1	15	No	No	No	No	No	No	No	No	No	No
15	3	99	1	15	No	No	No	No	No	No	No	No	No	No
16	3	70	1	10	No	No	No	No	No	No	No	No	No	No
17	3	39	1	6	No	No	No	No	No	No	No	No	No	No
18	3	39	1	6	No	No	No	No	No	No	No	No	No	No
19	3	23	1	3	No	No	No	No	No	No	No	No	No	No
20	3	12	1	2	No	No	No	No	No	No	No	No	No	No
21	3	8	1	1	No	No	No	No	No	No	No	No	No	No
22	3	3	1	0	No	No	No	No	No	No	No	No	No	No
23	3	3	1	0	No	No	No	No	No	No	No	No	No	No
24	3	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	37
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	284
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	601	412	90	75
2	583	400	87	73
3	571	391	86	71
4	535	367	80	67
5	475	325	71	59
6	469	321	70	59
7	463	317	69	58
8	421	288	63	53
9	415	284	62	52
10	409	280	61	51
11	355	243	53	44
12	331	227	50	41
13	325	222	49	41
14	240	165	36	30
15	240	165	36	30
16	168	115	25	21
17	96	66	14	12
18	96	66	14	12
19	54	37	8	7
20	30	21	5	4
21	18	12	3	2
22	6	4	1	1
23	6	4	1	1
24	6	4	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1013	1	90	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
2	2	983	1	87	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
3	2	962	1	86	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
4	2	902	1	80	No	No	No	No	Yes	Yes	Yes	Yes	No	No
5	2	800	1	71	No	No	No	No	No	Yes	Yes	Yes	No	No
6	2	790	1	70	No	No	No	No	No	Yes	Yes	Yes	No	No
7	2	780	1	69	No	No	No	No	No	Yes	Yes	Yes	No	No
8	2	709	1	63	No	No	No	No	No	No	Yes	Yes	No	No
9	2	699	1	62	No	No	No	No	No	No	Yes	Yes	No	No
10	2	689	1	61	No	No	No	No	No	No	Yes	Yes	No	No
11	2	598	1	53	No	No	No	No	No	No	No	Yes	No	No
12	2	558	1	50	No	No	No	No	No	No	No	Yes	No	No
13	2	547	1	49	No	No	No	No	No	No	No	Yes	No	No
14	2	405	1	36	No	No	No	No	No	No	No	No	No	No
15	2	405	1	36	No	No	No	No	No	No	No	No	No	No
16	2	283	1	25	No	No	No	No	No	No	No	No	No	No
17	2	162	1	14	No	No	No	No	No	No	No	No	No	No
18	2	162	1	14	No	No	No	No	No	No	No	No	No	No
19	2	91	1	8	No	No	No	No	No	No	No	No	No	No
20	2	51	1	5	No	No	No	No	No	No	No	No	No	No
21	2	30	1	3	No	No	No	No	No	No	No	No	No	No
22	2	10	1	1	No	No	No	No	No	No	No	No	No	No
23	2	10	1	1	No	No	No	No	No	No	No	No	No	No
24	2	10	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	4	7	10	13	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	29.6	32.2
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:44	0:40
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	90	75
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1178	1178
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	655	330	0
2	635	320	0
3	622	314	0
4	583	294	0
5	517	261	0
6	511	257	0
7	504	254	0
8	458	231	0
9	452	228	0
10	445	224	0
11	386	195	0
12	360	182	0
13	354	178	0
14	262	132	0
15	262	132	0
16	183	92	0
17	105	53	0
18	105	53	0
19	59	30	0
20	33	17	0
21	20	10	0
22	7	3	0
23	7	3	0
24	7	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	985	1	0	No	No	No	No	No	No	No	No	No	No
2	1	955	1	0	No	No	No	No	No	No	No	No	No	No
3	1	936	1	0	No	No	No	No	No	No	No	No	No	No
4	1	877	1	0	No	No	No	No	No	No	No	No	No	No
5	1	778	1	0	No	No	No	No	No	No	No	No	No	No
6	1	768	1	0	No	No	No	No	No	No	No	No	No	No
7	1	758	1	0	No	No	No	No	No	No	No	No	No	No
8	1	689	1	0	No	No	No	No	No	No	No	No	No	No
9	1	680	1	0	No	No	No	No	No	No	No	No	No	No
10	1	669	1	0	No	No	No	No	No	No	No	No	No	No
11	1	581	1	0	No	No	No	No	No	No	No	No	No	No
12	1	542	1	0	No	No	No	No	No	No	No	No	No	No
13	1	532	1	0	No	No	No	No	No	No	No	No	No	No
14	1	394	1	0	No	No	No	No	No	No	No	No	No	No
15	1	394	1	0	No	No	No	No	No	No	No	No	No	No
16	1	275	1	0	No	No	No	No	No	No	No	No	No	No
17	1	158	1	0	No	No	No	No	No	No	No	No	No	No
18	1	158	1	0	No	No	No	No	No	No	No	No	No	No
19	1	89	1	0	No	No	No	No	No	No	No	No	No	No
20	1	50	1	0	No	No	No	No	No	No	No	No	No	No
21	1	30	1	0	No	No	No	No	No	No	No	No	No	No
22	1	10	1	0	No	No	No	No	No	No	No	No	No	No
23	1	10	1	0	No	No	No	No	No	No	No	No	No	No
24	1	10	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	985
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	442	267	4
2	429	259	4
3	420	254	4
4	393	238	4
5	349	211	3
6	345	208	3
7	340	206	3
8	309	187	3
9	305	184	3
10	301	182	3
11	261	158	2
12	243	147	2
13	239	144	2
14	177	107	2
15	177	107	2
16	124	75	1
17	71	43	1
18	71	43	1
19	40	24	0
20	22	13	0
21	13	8	0
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	709	1	4	No	No	No	No	No	No	No	No	No	No
2	1	688	1	4	No	No	No	No	No	No	No	No	No	No
3	1	674	1	4	No	No	No	No	No	No	No	No	No	No
4	1	631	1	4	No	No	No	No	No	No	No	No	No	No
5	1	560	1	3	No	No	No	No	No	No	No	No	No	No
6	1	553	1	3	No	No	No	No	No	No	No	No	No	No
7	1	546	1	3	No	No	No	No	No	No	No	No	No	No
8	1	496	1	3	No	No	No	No	No	No	No	No	No	No
9	1	489	1	3	No	No	No	No	No	No	No	No	No	No
10	1	483	1	3	No	No	No	No	No	No	No	No	No	No
11	1	419	1	2	No	No	No	No	No	No	No	No	No	No
12	1	390	1	2	No	No	No	No	No	No	No	No	No	No
13	1	383	1	2	No	No	No	No	No	No	No	No	No	No
14	1	284	1	2	No	No	No	No	No	No	No	No	No	No
15	1	284	1	2	No	No	No	No	No	No	No	No	No	No
16	1	199	1	1	No	No	No	No	No	No	No	No	No	No
17	1	114	1	1	No	No	No	No	No	No	No	No	No	No
18	1	114	1	1	No	No	No	No	No	No	No	No	No	No
19	1	64	1	0	No	No	No	No	No	No	No	No	No	No
20	1	35	1	0	No	No	No	No	No	No	No	No	No	No
21	1	21	1	0	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	4
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	713
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

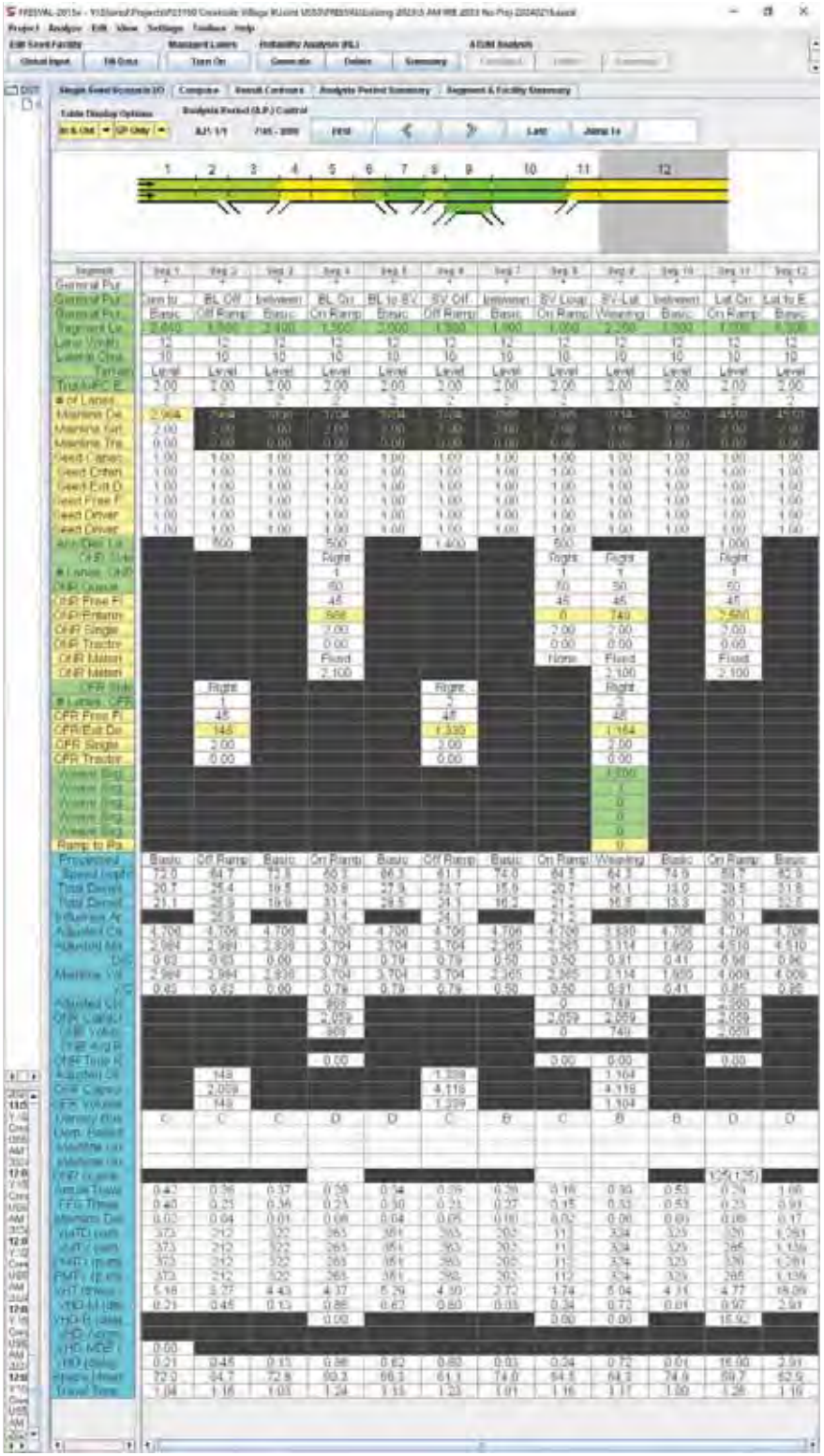
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	282	190	153	128
2	274	184	148	124
3	268	181	145	122
4	251	169	136	114
5	223	150	121	101
6	220	148	119	100
7	217	146	118	99
8	197	133	107	90
9	195	131	106	88
10	192	129	104	87
11	166	112	90	76
12	155	105	84	70
13	152	103	83	69
14	113	76	61	51
15	113	76	61	51
16	79	53	43	36
17	45	30	24	20
18	45	30	24	20
19	25	17	14	12
20	14	10	8	6
21	8	6	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	472	1	153	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	458	1	148	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	449	1	145	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	420	1	136	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	1	373	1	121	No	No	Yes	Yes	No	No	No	No	No	No
6	1	368	1	119	No	No	Yes	Yes	No	No	No	No	No	No
7	1	363	1	118	No	No	Yes	Yes	No	No	No	No	No	No
8	1	330	1	107	No	No	No	Yes	No	No	No	No	No	No
9	1	326	1	106	No	No	No	Yes	No	No	No	No	No	No
10	1	321	1	104	No	No	No	Yes	No	No	No	No	No	No
11	1	278	1	90	No	No	No	No	No	No	No	No	No	No
12	1	260	1	84	No	No	No	No	No	No	No	No	No	No
13	1	255	1	83	No	No	No	No	No	No	No	No	No	No
14	1	189	1	61	No	No	No	No	No	No	No	No	No	No
15	1	189	1	61	No	No	No	No	No	No	No	No	No	No
16	1	132	1	43	No	No	No	No	No	No	No	No	No	No
17	1	75	1	24	No	No	No	No	No	No	No	No	No	No
18	1	75	1	24	No	No	No	No	No	No	No	No	No	No
19	1	42	1	14	No	No	No	No	No	No	No	No	No	No
20	1	24	1	8	No	No	No	No	No	No	No	No	No	No
21	1	14	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	4	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.3	18.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:41	0:39
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	153	128
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	753	753
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	



EPAP PM no Project

Vistro File: C:\...\PM 918 DU 20240212.vistro
Report File: C:\...\8 2033 PM no Proj.pdf

Scenario 2 2033 PM with CCSP, No Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.974	55.7	E
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.242	112.0	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	WB Right	0.985	50.7	D
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.938	58.1	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	1.016	52.3	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	WB Left	0.786	79.6	E
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	1.069	80.0	E
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	EB Left	0.875	22.6	C
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Left	1.102	132.3	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.785	19.1	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Left	0.011	24.9	C
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.355	35.9	E
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	27.742	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	NB Thru	1.351	135.9	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.374	21.4	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.308	20.2	C
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.147	8.2	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	1.659	411.5	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.581	32.9	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.603	67.2	E
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	1.375	259.5	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.901	37.9	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	NB Left	0.775	49.9	D
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.686	23.0	C
25	New Intersection	Two-way stop	HCM 6th Edition	SB Thru	0.005	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.074	15.7	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	WB Left	0.147	19.2	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	55.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	113	1766	404	35	1126	67	53	25	85	339	61	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-7	0	0	1	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	20	0	0	26	0	0	7
Total Hourly Volume [veh/h]	3	113	1759	404	35	1127	47	53	25	59	339	61	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	505	116	10	324	14	15	7	17	97	18	4
Total Analysis Volume [veh/h]	3	130	2022	464	40	1295	54	61	29	68	390	70	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	81	81	81	81	81	81	81	81	81	81
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	40	40	2	35	35	7	7	15	15
g / C, Green / Cycle	0.10	0.49	0.49	0.03	0.43	0.43	0.08	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.07	0.57	0.29	0.02	0.36	0.36	0.03	0.06	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1844	1781	1664	1781	1791
c, Capacity [veh/h]	170	1750	781	51	794	783	147	137	321	322
d1, Uniform Delay [s]	36.03	20.72	14.88	39.32	21.16	21.19	35.52	36.43	31.62	31.62
k, delay calibration	0.04	0.07	0.08	0.04	0.20	0.20	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.96	70.96	0.54	9.24	4.99	5.17	0.70	2.48	4.77	4.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	1.16	0.59	0.78	0.85	0.86	0.42	0.71	0.74	0.74
d, Delay for Lane Group [s/veh]	38.99	91.68	15.42	48.56	26.15	26.37	36.21	38.91	36.39	36.36
Lane Group LOS	D	F	B	D	C	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.57	30.85	5.30	0.88	11.12	11.04	1.16	1.93	4.72	4.74
50th-Percentile Queue Length [ft/ln]	64.15	771.29	132.47	22.09	277.97	276.07	28.90	48.34	118.03	118.61
95th-Percentile Queue Length [veh/ln]	4.62	44.37	9.07	1.59	16.59	16.49	2.08	3.48	8.28	8.32
95th-Percentile Queue Length [ft/ln]	115.47	1109.21	226.85	39.76	414.68	412.31	52.02	87.01	207.11	207.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.99	38.99	91.68	15.42	48.56	26.25	26.37	36.21	38.91	38.91	36.38	36.36	36.36
Movement LOS	D	D	F	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	75.49				26.90			37.87			36.37		
Approach LOS	E				C			D			D		
d_I, Intersection Delay [s/veh]	55.66												
Intersection LOS	E												
Intersection V/C	0.974												

Emissions

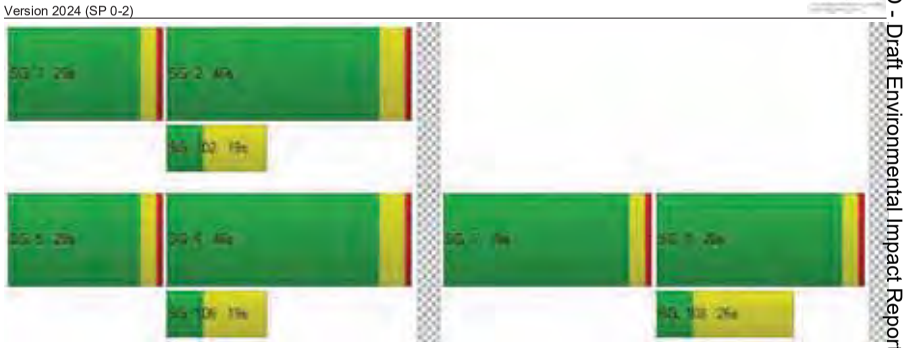
Vehicle Miles Traveled [mph]	31.76	482.92	110.82	5.88	99.74	98.60	2.61	4.14	12.45	12.51
Stops [stops/h]	113.59	2731.39	234.57	39.11	492.19	488.82	51.17	85.59	208.99	210.02
Fuel consumption [US gal/h]	3.56	88.23	8.17	1.08	13.15	13.06	0.84	1.41	3.43	3.44
CO [g/h]	248.59	6167.45	571.19	75.71	919.11	912.58	58.68	98.66	239.63	240.80
NOx [g/h]	48.37	1199.96	111.13	14.73	178.83	177.56	11.42	19.20	46.62	46.85
VOC [g/h]	57.61	1429.37	132.38	17.55	213.01	211.50	13.60	22.87	55.54	55.81

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	30.41	30.41	30.41
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.351	2.120	2.275
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	991	991	861	861
d_b, Bicycle Delay [s]	10.35	10.35	13.19	13.19
l_b,int, Bicycle LOS Score for Intersection	3.718	2.722	1.863	2.358
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	112.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.242

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	173	4	218	1133	198	380	48	581	63	107	286
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	-7	0	0	0	1	0	0	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	52	0	0	0	59	0	0	175	0	0	86
Total Hourly Volume [veh/h]	5	439	1609	121	4	218	1134	139	380	48	407	63	107	200
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	118	433	33	1	59	305	37	102	13	109	17	29	54
Total Analysis Volume [veh/h]	5	472	1730	130	4	234	1219	149	409	52	438	68	115	215
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	125	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	48	48	18	47	47	20	20	20	20	20
g / C, Green / Cycle	0.16	0.39	0.39	0.15	0.38	0.38	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.27	0.35	0.35	0.13	0.34	0.09	0.13	0.13	0.28	0.04	0.20
s, saturation flow rate [veh/h]	1781	3560	1804	1781	3560	1589	1781	1800	1589	1781	1677
c, Capacity [veh/h]	286	1383	701	264	1340	598	286	289	255	286	269
d1, Uniform Delay [s]	52.30	35.58	35.82	52.14	36.84	26.73	50.42	50.36	52.30	45.65	52.30
k, delay calibration	0.50	0.13	0.36	0.28	0.13	0.13	0.25	0.25	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	315.82	2.58	12.95	22.60	3.27	0.26	11.63	10.96	338.60	0.16	129.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.67	0.89	0.90	0.90	0.91	0.25	0.81	0.80	1.72	0.24	1.23
d, Delay for Lane Group [s/veh]	368.11	38.16	48.77	74.75	40.11	26.99	62.05	61.32	390.89	45.80	182.27
Lane Group LOS	F	D	D	E	D	C	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	33.75	17.00	19.58	8.78	17.31	3.01	7.84	7.81	31.95	1.86	18.11
50th-Percentile Queue Length [ft/ln]	843.85	425.08	489.60	219.39	432.68	75.14	195.91	195.15	798.67	46.54	452.69
95th-Percentile Queue Length [veh/ln]	52.48	23.77	26.84	13.63	24.13	5.41	12.43	12.39	50.21	3.35	27.52
95th-Percentile Queue Length [ft/ln]	1311.97	594.15	671.04	340.85	603.25	135.25	310.68	309.70	1255.13	83.78	687.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	368.1	368.1	41.23	48.77	74.75	74.75	40.11	26.99	61.73	61.32	390.89	45.80	182.27	182.27
Movement LOS	F	F	D	D	E	E	D	C	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	108.37				44.02				222.08			158.95		
Approach LOS	F				D				F			F		
d_I, Intersection Delay [s/veh]	112.00													
Intersection LOS	F													
Intersection V/C	1.242													

Emissions

Vehicle Miles Traveled [mph]	89.45	230.49	118.31	56.84	291.14	35.59	14.35	14.40	27.32	3.32	16.09
Stops [stops/h]	975.70	982.99	566.09	253.67	1000.57	86.88	226.52	225.64	923.46	53.81	523.42
Fuel consumption [US gal/h]	50.92	29.67	17.35	8.72	32.37	3.12	4.75	4.72	41.06	1.07	15.79
CO [g/h]	3559.45	2073.67	1213.11	609.69	2262.56	217.98	331.88	329.91	2870.09	74.62	1103.87
NOx [g/h]	692.54	403.46	236.03	118.62	440.21	42.41	64.57	64.19	558.42	14.52	214.77
VOC [g/h]	824.94	480.59	281.15	141.30	524.37	50.52	76.92	76.46	665.17	17.29	255.83

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0				11.0			11.0			11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00				0.00			0.00			0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00				0.00			0.00			0.00
d_p, Pedestrian Delay [s]	0.00				51.76			51.76			51.76
l_p,int, Pedestrian LOS Score for Intersectio	0.000				3.551			2.851			2.388
Crosswalk LOS	F				D			C			B
s_b, Saturation Flow Rate of the bicycle lane	2000				2000			2000			2000
c_b, Capacity of the bicycle lane [bicycles/h]	808				808			321			321
d_b, Bicycle Delay [s]	22.13				22.13			43.88			43.88
l_b,int, Bicycle LOS Score for Intersection	2.871				2.740			3.332			2.358
Bicycle LOS	C				B			C			B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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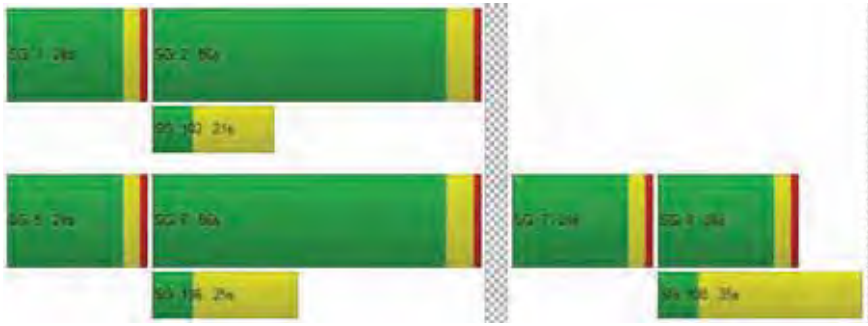

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	50.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.985

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1224	1679	414	0	37	1252	493	306	130	404	236	88	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-10	-10	-2	0	0	2	0	0	0	1	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	124	0	0	0	148	0	0	122	0	0	75
Total Hourly Volume [veh/h]	1	1214	1669	288	0	37	1254	345	306	130	283	237	88	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	304	417	72	0	9	314	86	77	33	71	59	22	44
Total Analysis Volume [veh/h]	1	1214	1669	288	0	37	1254	345	306	130	283	237	88	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.35	0.36	0.39	0.02	0.25	0.22	0.12	0.12	0.09	0.09	0.11
s, saturation flow rate [veh/h]	3459	3532	1725	1781	5053	1589	1781	1832	1781	1828	1589
c, Capacity [veh/h]	1155	1914	935	81	1279	685	249	257	223	228	199
d1, Uniform Delay [s]	45.28	22.41	23.41	63.30	50.45	28.15	57.19	57.19	57.24	57.21	58.55
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.12	0.11	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.55	1.89	4.79	1.51	20.87	2.64	12.22	11.90	4.77	4.44	23.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.05	0.67	0.72	0.46	0.98	0.50	0.86	0.86	0.72	0.72	0.89
d, Delay for Lane Group [s/veh]	70.83	24.29	28.20	64.81	71.32	30.79	69.41	69.09	62.01	61.65	81.74
Lane Group LOS	F	C	C	E	E	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	23.42	15.01	17.17	1.26	16.17	8.41	8.08	8.29	5.63	5.72	7.25
50th-Percentile Queue Length [ft/ln]	585.62	375.18	429.14	31.57	404.27	210.14	202.10	207.28	140.79	143.07	181.28
95th-Percentile Queue Length [veh/ln]	32.44	21.36	23.96	2.27	22.77	13.16	12.75	13.01	9.52	9.65	11.67
95th-Percentile Queue Length [ft/ln]	811.09	534.01	599.01	56.82	569.14	329.01	318.67	325.34	238.08	241.15	291.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.83	70.83	25.20	28.20	64.81	64.81	71.32	30.79	69.32	69.09	0.00	61.90	61.65	81.74
Movement LOS	E	F	C	C	E	E	E	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	42.95				62.62				41.99			68.82		
Approach LOS	D				E				D			E		
d_I, Intersection Delay [s/veh]	50.74													
Intersection LOS	D													
Intersection V/C	0.985													

Emissions

Vehicle Miles Traveled [mph]	208.99	220.70	115.91	6.94	235.16	64.70	9.94	10.23	5.11	5.22	5.60
Stops [stops/h]	1240.14	794.49	454.38	33.42	1284.14	222.51	213.99	219.48	149.07	151.48	191.94
Fuel consumption [US gal/h]	32.97	19.82	11.15	1.14	42.22	7.15	4.63	4.74	3.06	3.11	4.22
CO [g/h]	2304.35	1385.29	779.37	79.78	2951.48	499.48	323.44	331.40	214.18	217.42	294.84
NOx [g/h]	448.34	269.53	151.64	15.52	574.25	97.18	62.93	64.48	41.67	42.30	57.36
VOC [g/h]	534.06	321.05	180.63	18.49	684.03	115.76	74.96	76.80	49.64	50.39	68.33

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.539
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.372	2.520	2.279	2.035
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	58.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.938

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

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Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2456	609	1	388	1504	0	0	0	1591	0	0	861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-22	-4	0	0	4	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	182	0	0	0	0	0	0	478	0	0	258
Total Hourly Volume [veh/h]	0	2434	423	1	388	1508	0	0	0	1115	0	0	603
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	641	126	0	115	397	0	0	0	332	0	0	179
Total Analysis Volume [veh/h]	0	2562	504	1	462	1587	0	0	0	1327	0	0	718
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.45	0.46	0.26	0.23	0.47	
s, saturation flow rate [veh/h]	5094	1676	1781	6792	2813	
c, Capacity [veh/h]	2809	924	516	3476	927	
d1, Uniform Delay [s]	12.47	12.61	23.17	10.58	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.80	8.54	8.80	0.43	196.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.82	0.83	0.90	0.46	1.43	
d, Delay for Lane Group [s/veh]	15.27	21.15	31.97	11.01	219.31	
Lane Group LOS	B	C	C	B	F	
Critical Lane Group	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	7.57	9.11	7.43	3.03	32.05	
50th-Percentile Queue Length [ft/ln]	189.14	227.63	185.84	75.84	801.34	
95th-Percentile Queue Length [veh/ln]	12.08	14.05	11.90	5.46	50.02	
95th-Percentile Queue Length [ft/ln]	301.91	351.35	297.62	136.52	1250.55	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.88	21.15	31.97	31.97	11.01	0.00	0.00	0.00	219.31	0.00	0.00	0.00
Movement LOS		B	C	C	C	B				F			
d_A, Approach Delay [s/veh]	16.74			15.74				219.31			0.00		
Approach LOS	B			B				F			A		
d_I, Intersection Delay [s/veh]	58.15												
Intersection LOS	E												
Intersection V/C	0.938												

Emissions

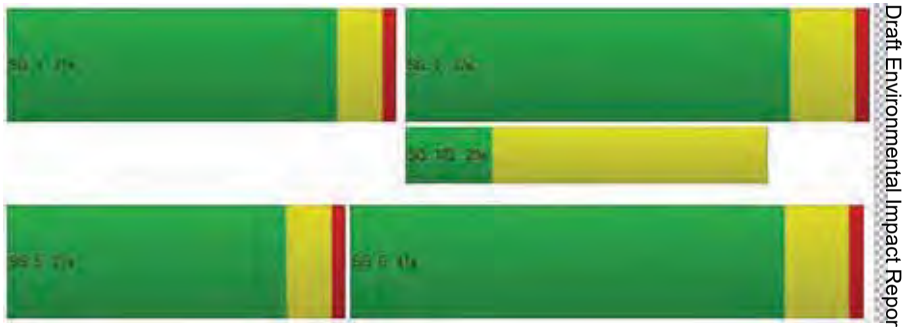
Vehicle Miles Traveled [mph]	332.73	110.91	79.64	272.97	94.96	
Stops [stops/h]	1201.60	482.04	393.53	642.43	3393.91	
Fuel consumption [US gal/h]	33.49	13.09	10.64	20.90	81.87	
CO [g/h]	2341.14	915.31	743.40	1460.96	5722.94	
NOx [g/h]	455.50	178.09	144.64	284.25	1113.48	
VOC [g/h]	542.58	212.13	172.29	338.59	1326.35	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.259
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.899	2.215	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	52.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.016

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1987	233	3	570	1937	585	460	37	83	1	92	6	615
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-26	-2	0	0	6	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	69	0	0	0	176	0	0	25	0	0	0	185
Total Hourly Volume [veh/h]	1	24	1961	162	3	570	1943	409	460	37	58	1	92	6	430
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	511	42	1	148	506	107	120	10	15	0	24	2	112
Total Analysis Volume [veh/h]	1	25	2043	169	3	594	2024	426	479	39	60	1	96	6	448
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	101	101	101	101	101	101	101	101	101	101	101	101
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	42	42	12	51	51	16	16	16	15	15	15
g / C, Green / Cycle	0.02	0.41	0.41	0.12	0.51	0.51	0.16	0.16	0.16	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.11	0.17	0.40	0.27	0.14	0.02	0.04	0.05	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	72	2100	655	411	2599	811	561	304	258	264	237	236
d1, Uniform Delay [s]	48.83	29.15	19.53	44.54	20.11	16.56	41.16	36.22	36.85	38.76	42.74	42.74
k, delay calibration	0.04	0.04	0.04	0.17	0.04	0.04	0.08	0.08	0.08	0.08	0.39	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	2.10	0.08	209.05	0.20	0.20	2.86	0.14	0.34	0.63	42.70	42.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.97	0.26	1.45	0.78	0.53	0.85	0.13	0.23	0.37	0.96	0.96
d, Delay for Lane Group [s/veh]	49.98	31.25	19.61	253.59	20.31	16.75	44.03	36.36	37.19	39.39	85.45	85.56
Lane Group LOS	D	C	B	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.33	15.88	2.59	17.01	12.19	6.36	5.95	0.83	1.31	2.20	8.38	8.35
50th-Percentile Queue Length [ft/ln]	8.33	396.99	64.67	425.16	304.87	158.99	148.83	20.82	32.74	54.99	209.42	208.78
95th-Percentile Queue Length [veh/ln]	0.60	22.41	4.66	27.16	17.92	10.50	9.95	1.50	2.36	3.96	13.12	13.09
95th-Percentile Queue Length [ft/ln]	15.00	560.37	116.41	679.10	448.04	262.38	248.87	37.47	58.92	98.98	328.08	327.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.98	49.98	31.25	19.61	253.5	253.5	20.31	16.75	44.03	36.36	37.19	39.39	39.39	85.45	85.50
Movement LOS	D	D	C	B	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	30.59				65.52				42.80			77.39			
Approach LOS	C				E				D			E			
d_I, Intersection Delay [s/veh]	52.30														
Intersection LOS	D														
Intersection V/C	1.016														

Emissions

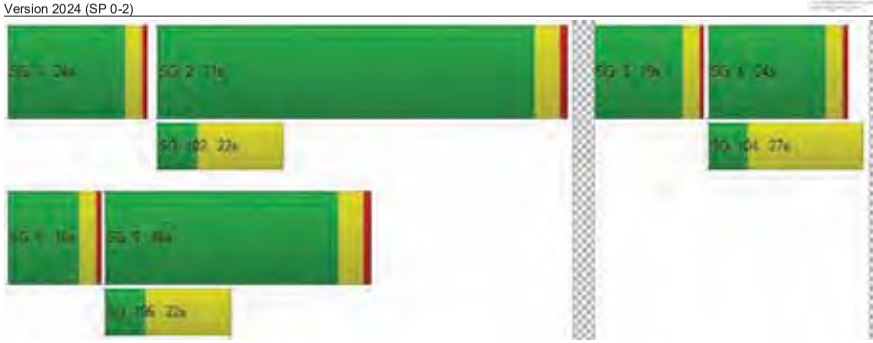
Vehicle Miles Traveled [mph]	5.80	456.07	37.73	86.38	292.87	61.64	61.10	4.97	7.65	34.04	79.83	79.51
Stops [stops/h]	23.78	1698.92	92.26	1212.97	1304.68	226.79	424.61	29.70	46.70	78.45	298.73	297.83
Fuel consumption [US gal/h]	0.63	41.15	2.74	41.06	27.63	5.24	9.15	0.66	1.03	2.61	8.89	8.86
CO [g/h]	44.37	2876.65	191.33	2870.09	1931.22	366.49	639.76	45.95	71.80	182.61	621.47	619.52
NOx [g/h]	8.63	559.69	37.23	558.42	375.75	71.31	124.47	8.94	13.97	35.53	120.92	120.54
VOC [g/h]	10.28	666.69	44.34	665.17	447.58	84.94	148.27	10.65	16.64	42.32	144.03	143.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.07	0.00	40.07	40.07
l_p,int, Pedestrian LOS Score for Intersectio	3.441	0.000	2.695	2.882
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	802	1298	406	307
d_b, Bicycle Delay [s]	18.10	6.22	32.05	36.16
l_b,int, Bicycle LOS Score for Intersection	2.828	3.006	2.057	2.616
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	79.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	125	1673	518	2	253	1422	436	2	376	472	124	516	223	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-28	-8	0	0	6	0	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	153	0	0	0	131	0	0	0	37	0	0	58
Total Hourly Volume [veh/h]	6	125	1645	357	2	253	1428	305	2	376	472	87	517	223	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	442	96	1	68	384	82	1	101	127	23	139	60	37
Total Analysis Volume [veh/h]	6	134	1769	384	2	272	1535	328	2	404	508	94	556	240	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	25	50	0	0	35	50	0	0	25	15	0	15	25	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	40	56	0	0	31	21	0	21	31	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	158	158	158	158	158	158	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	14	84	84	15	84	84	21	22	22	15	17	17
g / C, Green / Cycle	0.09	0.53	0.53	0.09	0.53	0.53	0.13	0.14	0.14	0.09	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.24	0.08	0.30	0.21	0.12	0.17	0.17	0.16	0.07	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1770	3459	3560	1589
c, Capacity [veh/h]	162	3588	840	321	2702	843	453	266	252	328	378	169
d1, Uniform Delay [s]	70.88	23.77	23.18	70.60	24.94	21.95	67.60	67.77	67.77	71.50	67.68	69.50
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.50	0.50	0.19	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	0.49	1.79	2.50	0.87	1.35	2.61	106.79	108.24	317.14	0.66	5.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.49	0.46	0.85	0.57	0.39	0.90	1.16	1.16	1.69	0.64	0.87
d, Delay for Lane Group [s/veh]	76.17	24.26	24.98	73.10	25.81	23.31	70.21	174.56	176.01	388.64	68.34	74.58
Lane Group LOS	E	C	C	E	C	C	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.86	10.77	9.43	5.51	12.69	7.36	8.27	18.66	17.76	21.14	4.71	6.08
50th-Percentile Queue Length [ft/ln]	146.59	269.16	235.79	137.66	317.31	183.91	206.85	466.50	444.01	528.62	117.80	152.05
95th-Percentile Queue Length [veh/ln]	9.84	16.15	14.47	9.35	18.54	11.80	12.99	27.59	26.43	33.61	8.27	10.13
95th-Percentile Queue Length [ft/ln]	245.88	403.69	361.70	233.87	463.38	295.11	324.78	689.78	660.77	840.33	206.80	253.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.17	76.17	24.26	24.98	73.10	73.10	25.81	23.31	70.21	70.21	175.1	176.0	388.64	68.34	74.58
Movement LOS	E	E	C	C	E	E	C	C	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	27.55				31.49				132.95				258.36		
Approach LOS	C				C				F				F		
d_I, Intersection Delay [s/veh]	79.60														
Intersection LOS	E														
Intersection V/C	0.786														

Emissions

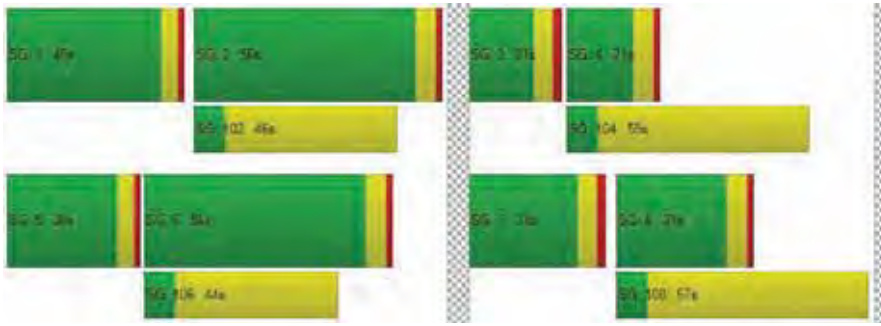
Vehicle Miles Traveled [mph]	55.74	704.35	152.89	61.17	342.67	73.22	101.33	77.19	73.05	58.09	25.08	15.25
Stops [stops/h]	133.60	981.26	214.89	250.93	867.59	167.61	377.04	425.16	404.67	963.56	214.73	138.58
Fuel consumption [US gal/h]	5.20	43.15	9.43	9.29	30.60	6.15	12.05	16.51	15.73	51.68	5.56	3.61
CO [g/h]	363.67	3016.20	659.37	649.50	2138.63	429.85	842.60	1154.14	1099.23	3612.24	388.37	252.27
NOx [g/h]	70.76	586.84	128.29	126.37	416.10	83.63	163.94	224.55	213.87	702.81	75.56	49.08
VOC [g/h]	84.28	699.03	152.81	150.53	495.65	99.62	195.28	267.48	254.76	837.17	90.01	58.47

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.38	68.38	68.38	68.38
l_p,int, Pedestrian LOS Score for Intersectio	3.599	3.859	2.837	3.026
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	637	637	194	320
d_b, Bicycle Delay [s]	36.71	36.71	64.44	55.73
l_b,int, Bicycle LOS Score for Intersection	2.566	2.657	2.088	2.385
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	80.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.069

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	11	1588	30	0	34	1590	454	703	9	27	1	6	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-36	0	0	0	7	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	9	0	0	0	136	0	0	8	0	0	6
Total Hourly Volume [veh/h]	1	11	1552	21	0	34	1597	318	703	9	19	1	6	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	436	6	0	10	449	89	197	3	5	0	2	4
Total Analysis Volume [veh/h]	1	12	1744	24	0	39	1794	357	790	10	21	1	7	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	40	40	2	41	41	20	20	2
g / C, Green / Cycle	0.02	0.49	0.49	0.03	0.50	0.50	0.24	0.24	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.47	0.47	0.02	0.58	0.61	0.23	0.23	0.01
s, saturation flow rate [veh/h]	1781	1870	1861	1781	1870	1767	1781	1772	1674
c, Capacity [veh/h]	30	905	901	52	928	877	431	429	45
d1, Uniform Delay [s]	40.22	20.86	20.92	39.82	20.81	20.81	30.85	30.87	39.66
k, delay calibration	0.04	0.42	0.42	0.04	0.50	0.50	0.40	0.40	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.61	22.50	23.28	8.10	83.61	112.17	28.58	29.15	3.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.98	0.98	0.76	1.16	1.23	0.95	0.96	0.51
d, Delay for Lane Group [s/veh]	43.83	43.36	44.20	47.92	104.42	132.98	59.43	60.02	42.97
Lane Group LOS	D	D	D	D	F	F	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.29	20.62	20.81	0.84	35.37	40.37	11.15	11.19	0.49
50th-Percentile Queue Length [ft/ln]	7.19	515.47	520.19	21.08	884.31	1009.23	278.83	279.72	12.36
95th-Percentile Queue Length [veh/ln]	0.52	28.07	28.29	1.52	50.29	58.69	16.63	16.67	0.89
95th-Percentile Queue Length [ft/ln]	12.94	701.64	707.21	37.95	1257.32	1467.16	415.76	416.86	22.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.83	43.83	43.77	44.20	47.92	47.92	115.8	132.9	59.71	60.02	60.02	42.97	42.97	42.97
Movement LOS	D	D	D	D	D	D	F	F	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	43.78				117.44				59.72			42.97		
Approach LOS	D				F				E			D		
d_I, Intersection Delay [s/veh]	80.00													
Intersection LOS	E													
Intersection V/C	1.069													

Emissions

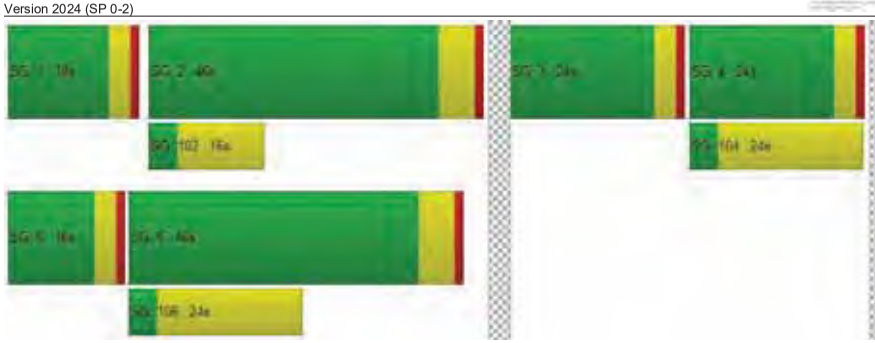
Vehicle Miles Traveled [mph]	4.60	312.98	312.52	15.53	428.22	428.22	99.04	98.78	0.44
Stops [stops/h]	12.55	900.19	908.43	36.82	1544.31	1762.46	486.94	488.48	21.59
Fuel consumption [US gal/h]	0.37	25.66	25.83	1.58	65.86	76.16	11.74	11.77	0.34
CO [g/h]	26.19	1793.88	1805.41	110.69	4603.67	5323.69	820.51	822.84	23.65
NOx [g/h]	5.09	349.02	351.27	21.54	895.71	1035.80	159.64	160.10	4.60
VOC [g/h]	6.07	415.75	418.42	25.65	1066.94	1233.82	190.16	190.70	5.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.62	0.00	33.62	33.62
l_p,int, Pedestrian LOS Score for Intersectio	3.016	0.000	2.386	1.776
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	970	970	485	485
d_b, Bicycle Delay [s]	10.93	10.93	23.65	23.65
l_b,int, Bicycle LOS Score for Intersection	3.036	3.446	2.927	1.607
Bicycle LOS	C	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	90	1321	1429	190	309	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-36	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	57	0	53
Total Hourly Volume [veh/h]	0	89	1285	1436	133	309	125
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	361	403	37	87	35
Total Analysis Volume [veh/h]	0	100	1444	1613	149	347	140
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	6	49	39	39	17	17
g / C, Green / Cycle	0.07	0.64	0.52	0.52	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.41	0.47	0.49	0.19	0.09
s, saturation flow rate [veh/h]	1781	3560	1870	1816	1781	1589
c, Capacity [veh/h]	131	2295	970	942	399	356
d1, Uniform Delay [s]	34.58	8.08	16.66	17.12	28.44	25.11
k, delay calibration	0.04	0.15	0.37	0.39	0.24	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.48	0.41	10.84	14.41	12.21	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.63	0.91	0.94	0.87	0.39
d, Delay for Lane Group [s/veh]	38.06	8.49	27.50	31.52	40.66	25.82
Lane Group LOS	D	A	C	C	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.89	5.72	15.00	16.17	7.16	2.14
50th-Percentile Queue Length [ft/ln]	47.25	143.00	374.90	404.37	178.99	53.46
95th-Percentile Queue Length [veh/ln]	3.40	9.64	21.35	22.77	11.55	3.85
95th-Percentile Queue Length [ft/ln]	85.05	241.05	533.68	569.26	288.69	96.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.06	38.06	8.49	29.33	31.52	40.66	25.82
Movement LOS	D	D	A	C	C	D	C
d_A, Approach Delay [s/veh]	10.40			29.51		36.39	
Approach LOS	B			C		D	
d_I, Intersection Delay [s/veh]	22.62						
Intersection LOS	C						
Intersection V/C	0.875						

Emissions

Vehicle Miles Traveled [mph]	69.56	1004.38	311.69	311.69	117.08	47.24
Stops [stops/h]	89.71	543.04	711.87	767.82	339.86	101.51
Fuel consumption [US gal/h]	4.13	46.84	21.69	22.72	9.57	3.24
CO [g/h]	288.94	3274.22	1516.44	1588.47	668.81	226.54
NOx [g/h]	56.22	637.04	295.04	309.06	130.13	44.08
VOC [g/h]	66.96	758.83	351.45	368.14	155.00	52.50

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.34	0.00	30.34
l_p,int, Pedestrian LOS Score for Intersectio	2.947	0.000	2.285
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1055	1055	527
d_b, Bicycle Delay [s]	8.47	8.47	20.56
l_b,int, Bicycle LOS Score for Intersection	2.833	3.060	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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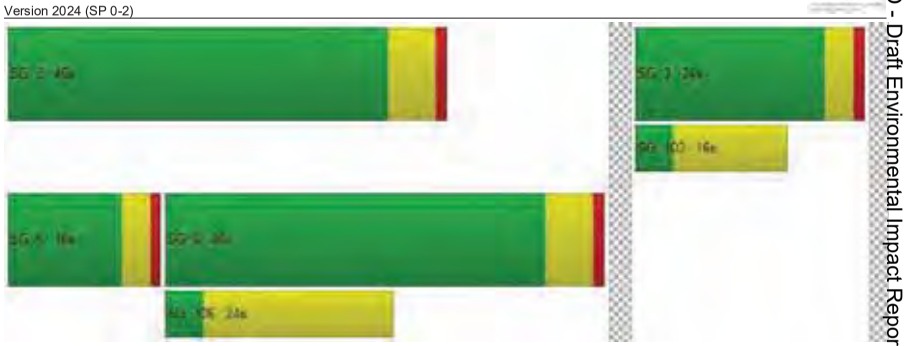

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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	132.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.102

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

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Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	108	575	28	352	446	809	686	216	57	68	155	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-5	-15	-3	0	3	4	-22	-4	1	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	244	0	0	17	0	0	45
Total Hourly Volume [veh/h]	103	560	17	352	449	569	664	212	41	69	156	105
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	154	5	97	123	156	182	58	11	19	43	29
Total Analysis Volume [veh/h]	113	615	19	387	493	625	730	233	45	76	171	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	77	77	77	77	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	6	19	19	12	25	25	15	15	12	12
g / C, Green / Cycle	0.08	0.25	0.25	0.16	0.32	0.32	0.19	0.19	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.17	0.22	0.26	0.39	0.28	0.28	0.13	0.07
s, saturation flow rate [veh/h]	1781	1870	1850	1781	1870	1589	1781	1801	1842	1589
c, Capacity [veh/h]	145	467	462	276	604	513	345	349	293	253
d1, Uniform Delay [s]	34.86	26.28	26.28	32.71	24.10	26.21	31.21	31.21	31.63	29.52
k, delay calibration	0.04	0.04	0.04	0.50	0.24	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.34	0.66	0.67	201.35	6.02	114.74	222.72	215.48	2.57	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.68	0.68	1.40	0.82	1.22	1.46	1.44	0.84	0.46
d, Delay for Lane Group [s/veh]	38.20	26.94	26.95	234.06	30.12	140.95	253.93	246.69	34.20	30.00
Lane Group LOS	D	C	C	F	C	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.17	5.17	5.12	20.05	8.05	24.33	27.52	27.13	4.54	1.92
50th-Percentile Queue Length [ft/ln]	54.20	129.24	127.99	501.30	201.21	608.16	688.01	678.30	113.57	47.92
95th-Percentile Queue Length [veh/ln]	3.90	8.90	8.83	31.44	12.70	36.41	42.64	41.96	8.04	3.45
95th-Percentile Queue Length [ft/ln]	97.56	222.46	220.76	786.08	317.52	910.33	1065.99	1048.91	200.95	86.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.20	26.94	26.95	234.06	30.12	140.95	251.69	246.69	246.69	34.20	34.20	30.00
Movement LOS	D	C	C	F	C	F	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	28.65			128.59			250.31			32.86		
Approach LOS	C			F			F			C		
d_I, Intersection Delay [s/veh]	132.29											
Intersection LOS	F											
Intersection V/C	1.102											

Emissions

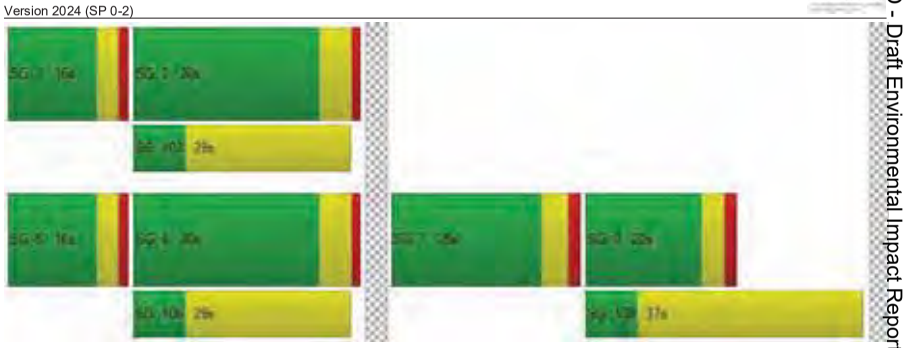
Vehicle Miles Traveled [mph]	65.26	183.99	182.16	269.18	342.91	434.72	37.92	37.92	27.32	12.72
Stops [stops/h]	100.94	240.70	238.37	933.60	374.73	1132.63	1281.33	1263.24	211.50	89.24
Fuel consumption [US gal/h]	4.12	10.65	10.55	44.78	21.45	53.50	34.68	33.84	4.01	1.72
CO [g/h]	288.18	744.48	737.14	3129.83	1499.59	3740.00	2424.11	2365.23	280.44	120.14
NOx [g/h]	56.07	144.85	143.42	608.95	291.77	727.67	471.64	460.19	54.56	23.37
VOC [g/h]	66.79	172.54	170.84	725.37	347.55	866.78	561.81	548.16	64.99	27.84

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.44	0.00	28.44	28.44
l_p,int, Pedestrian LOS Score for Intersectio	2.573	0.000	2.664	2.338
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	639	639	401	517
d_b, Bicycle Delay [s]	17.91	17.91	24.71	21.25
l_b,int, Bicycle LOS Score for Intersection	2.182	3.003	3.251	2.231
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	148	314	452	119	397	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	4	-23	-3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	37	0	0
Total Hourly Volume [veh/h]	149	314	452	86	374	117
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	87	126	27	118	33
Total Analysis Volume [veh/h]	166	349	502	109	473	130
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	7	31	20	20	19	19
g / C, Green / Cycle	0.12	0.52	0.33	0.33	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.19	0.27	0.07	0.27	0.08
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	213	969	620	527	560	500
d1, Uniform Delay [s]	25.58	8.54	18.28	14.35	19.14	15.31
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.32	0.32	3.64	0.27	3.57	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.36	0.81	0.21	0.84	0.26
d, Delay for Lane Group [s/veh]	27.90	8.86	21.92	14.63	22.72	15.58
Lane Group LOS	C	A	C	B	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.07	1.79	5.48	0.87	6.02	1.24
50th-Percentile Queue Length [ft/ln]	51.87	44.78	136.94	21.68	150.57	30.99
95th-Percentile Queue Length [veh/ln]	3.73	3.22	9.32	1.56	10.05	2.23
95th-Percentile Queue Length [ft/ln]	93.37	80.61	232.90	39.03	251.19	55.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.90	8.86	21.92	14.63	22.72	15.58
Movement LOS	C	A	C	B	C	B
d_A, Approach Delay [s/veh]	15.00		20.62		21.18	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	19.14					
Intersection LOS	B					
Intersection V/C	0.785					

Emissions

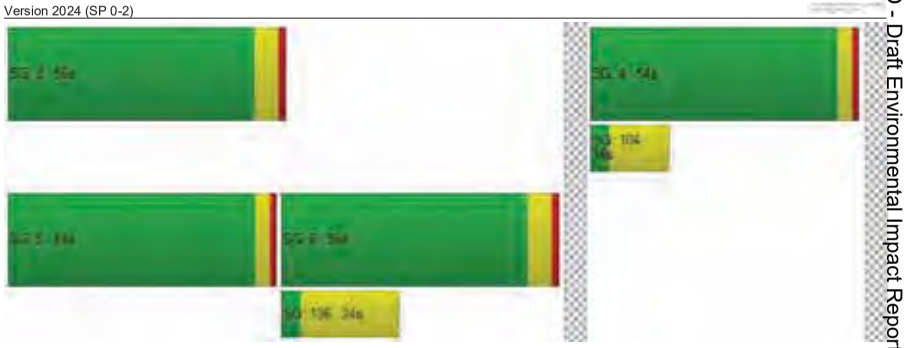
Vehicle Miles Traveled [mph]	20.48	43.06	289.92	62.95	111.09	30.53
Stops [stops/h]	125.08	107.99	330.21	52.28	363.08	74.73
Fuel consumption [US gal/h]	3.95	4.08	18.07	3.40	8.77	2.08
CO [g/h]	276.16	284.89	1263.14	237.76	612.75	145.54
NOx [g/h]	53.73	55.43	245.76	46.26	119.22	28.32
VOC [g/h]	64.00	66.03	292.75	55.10	142.01	33.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.39	0.00	22.39
l_p,int, Pedestrian LOS Score for Intersectio	2.606	0.000	2.220
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1675	1675	1675
d_b, Bicycle Delay [s]	0.79	0.79	0.79
l_b,int, Bicycle LOS Score for Intersection	2.409	2.629	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	24.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	413	0	25	547	0	0	0	0	2	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	414	0	25	544	0	0	0	0	2	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	113	0	6	148	0	0	0	0	1	0	12
Total Analysis Volume [veh/h]	0	450	0	25	591	0	0	0	0	2	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.08
d_M, Delay for Movement [s/veh]	8.66	0.00	0.00	8.27	0.00	0.00	26.89	22.34	12.10	24.87	22.85	11.42
Movement LOS	A	A	A	A	A	A	D	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.26	0.26	0.26
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.06	1.06	1.06	0.00	0.00	0.00	6.60	6.60	6.60
d_A, Approach Delay [s/veh]	0.00			0.34			20.44			11.94		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.73											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	35.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.355

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	314	19	123	426	0	0	0	0	59	0	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	315	19	123	423	0	0	0	0	59	0	99
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	85	5	33	114	0	0	0	0	16	0	27
Total Analysis Volume [veh/h]	0	339	20	132	455	0	0	0	0	63	0	106
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.15
d_M, Delay for Movement [s/veh]	8.26	0.00	0.00	8.37	0.00	0.00	31.02	23.50	10.95	35.92	33.89	20.83
Movement LOS	A	A	A	A	A	A	D	C	B	E	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	2.73	2.73	2.73
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	9.25	0.00	0.00	0.00	0.00	0.00	68.24	68.24	68.24
d_A, Approach Delay [s/veh]	0.00			1.88			21.82			26.45		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	5.00											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	27.742

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	114	790	168	55	1	886	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-9	-26	1	1	0	5	-5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	105	764	169	56	1	891	180
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	30	217	48	16	0	253	51
Total Analysis Volume [veh/h]	0	119	868	192	64	1	1013	205
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	27.74	1.06	0.00	0.00	0.00	0.77	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	10000.00	14.29	0.00
Movement LOS	F	F	F	A	A	F	B	A
95th-Percentile Queue Length [veh/ln]	122.12	122.12	122.12	0.00	0.00	6.98	6.98	6.98
95th-Percentile Queue Length [ft/ln]	3053.07	3053.07	3053.07	0.00	0.00	174.39	174.39	174.39
d_A, Approach Delay [s/veh]	10000.00			0.00		20.08		
Approach LOS	F			A		C		
d_I, Intersection Delay [s/veh]	4018.88							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	135.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.351

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	49	466	87	0	33	476	32	39	34	32	218	16	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	7	-37	-26	0	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	466	87	0	33	476	39	2	8	32	218	21	66
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	140	26	0	10	143	12	1	2	10	66	6	21
Total Analysis Volume [veh/h]	59	561	105	0	42	573	47	2	10	39	263	25	84
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	725	662	423	491
Degree of Utilization, x	1.35	1.24	0.12	0.76

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	32.01	25.71	0.41	6.53
95th-Percentile Queue Length [ft]	800.34	642.71	10.21	163.15
Approach Delay [s/veh]	190.04	145.74	12.69	29.82
Approach LOS	F	F	B	D
Intersection Delay [s/veh]	135.91			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	21.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.374

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	109	80	0	143	180	2	109	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	0	0	0	-13	-1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	82	0	143	180	2	96	194
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	24	0	43	54	1	29	58
Total Analysis Volume [veh/h]	130	98	0	170	214	2	114	231
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.13	0.00	0.00	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	21.42	10.42	9.41	0.00	0.00	11.72	8.41	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.69	0.44	0.00	0.00	0.00	0.33	0.33	0.00
95th-Percentile Queue Length [ft/ln]	42.21	11.01	0.00	0.00	0.00	8.37	8.37	0.00
d_A, Approach Delay [s/veh]	16.69			0.00			2.83	
Approach LOS	C			A			A	
d_I, Intersection Delay [s/veh]	4.99							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.308

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	107	158	87	152	170	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	2	0	0	-13
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	158	89	152	170	161
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	43	24	41	46	44
Total Analysis Volume [veh/h]	116	172	97	165	185	175
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.31	0.18	0.00	0.00	0.14	0.00
d_M, Delay for Movement [s/veh]	20.23	14.42	0.00	0.00	8.22	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.67	2.67	0.00	0.00	0.49	0.00
95th-Percentile Queue Length [ft/ln]	66.69	66.69	0.00	0.00	12.37	0.00
d_A, Approach Delay [s/veh]	16.76		0.00		4.22	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	6.98					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.147

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	199	12	27	171	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-13	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	12	27	173	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	3	7	47	0	1
Total Analysis Volume [veh/h]	202	13	29	188	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	730	743	692	766	766	744
Degree of Utilization, x	0.15	0.14	0.04	0.12	0.12	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.51	0.50	0.13	0.42	0.42	0.01
95th-Percentile Queue Length [ft]	12.86	12.61	3.27	10.44	10.44	0.30
Approach Delay [s/veh]	8.42		8.07			7.86
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.24					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	411.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.659

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	172	0	29	7	1	21	5	578	115	81	536	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-13	0	0	0	0	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	0	29	7	1	21	5	578	117	81	536	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	0	8	2	0	5	1	149	30	22	138	3
Total Analysis Volume [veh/h]	164	0	31	7	1	22	5	596	121	87	553	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.66	0.00	0.07	0.07	0.01	0.04	0.00	0.01	0.00	0.10	0.01	0.00
d_M, Delay for Movement [s/veh]	411.55	34.33	13.29	43.43	38.07	13.80	8.59	0.00	0.00	9.52	0.00	0.00
Movement LOS	F	D	B	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	12.91	0.21	0.21	0.41	0.41	0.41	0.01	0.00	0.00	0.33	0.00	0.00
95th-Percentile Queue Length [ft/ln]	322.72	5.33	5.33	10.18	10.18	10.18	0.37	0.00	0.00	8.16	0.00	0.00
d_A, Approach Delay [s/veh]	348.24			21.52			0.06			1.27		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	43.44											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Windfield Way									White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	278	5	310	5	5	5	5	663	84	14	225	542	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	93	0	0	0	0	0	25	0	0	0	0
Total Hourly Volume [veh/h]	278	5	217	5	5	5	5	663	59	14	225	542	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	74	1	58	1	1	1	1	176	16	4	60	144	1
Total Analysis Volume [veh/h]	296	5	231	5	5	5	5	705	63	14	239	577	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	22	22	1	1	1	57	57	19	75	75
g / C, Green / Cycle	0.18	0.18	0.01	0.01	0.01	0.47	0.47	0.16	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.17	0.15	0.00	0.01	0.00	0.21	0.21	0.14	0.16	0.16
s, saturation flow rate [veh/h]	1781	1595	1781	1718	1781	1870	1817	1781	1870	1864
c, Capacity [veh/h]	321	289	12	13	12	881	856	280	1162	1159
d1, Uniform Delay [s]	48.33	47.22	59.33	59.43	59.34	21.19	21.20	49.66	10.18	10.18
k, delay calibration	0.24	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.74	2.17	19.50	27.26	19.95	1.61	1.66	4.34	0.52	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.82	0.40	0.76	0.40	0.44	0.44	0.90	0.25	0.25
d, Delay for Lane Group [s/veh]	68.07	49.39	78.83	86.69	79.29	22.80	22.86	53.99	10.70	10.70
Lane Group LOS	E	D	E	F	E	C	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.44	6.94	0.22	0.40	0.22	7.63	7.44	7.77	3.52	3.51
50th-Percentile Queue Length [ft/ln]	260.93	173.40	5.48	10.09	5.50	190.84	185.96	194.31	87.98	87.74
95th-Percentile Queue Length [veh/ln]	15.74	11.25	0.39	0.73	0.40	12.16	11.91	12.34	6.33	6.32
95th-Percentile Queue Length [ft/ln]	393.38	281.37	9.86	18.17	9.90	304.11	297.78	308.62	158.37	157.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.07	49.39	49.39	78.83	86.69	86.69	79.29	22.83	22.86	53.99	53.99	10.70	10.70
Movement LOS	E	D	D	E	F	F	E	C	C	D	D	B	B
d_A, Approach Delay [s/veh]	59.78			84.07			23.20			23.81			
Approach LOS	E			F			C			C			
d_I, Intersection Delay [s/veh]	32.89												
Intersection LOS	C												
Intersection V/C	0.581												

Emissions

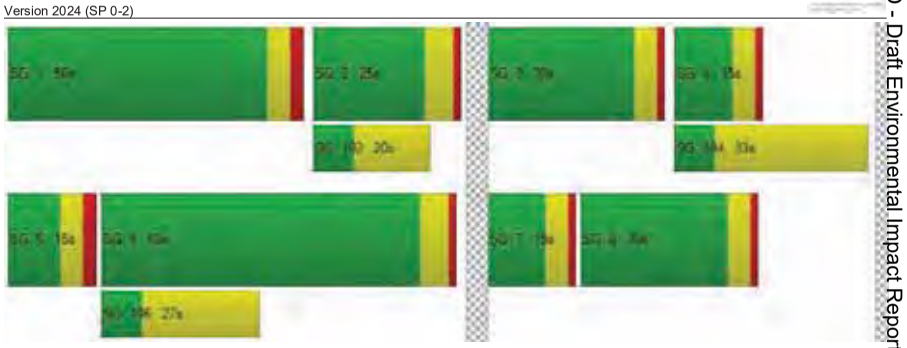
Vehicle Miles Traveled [mph]	114.05	90.93	0.23	0.46	4.21	327.63	318.66	63.14	72.73	72.52
Stops [stops/h]	313.11	208.08	6.57	12.11	6.60	229.00	223.15	233.18	105.58	105.28
Fuel consumption [US gal/h]	10.53	7.26	0.13	0.26	0.29	16.56	16.11	6.67	4.21	4.20
CO [g/h]	735.70	507.80	8.80	18.32	20.29	1157.47	1126.28	466.03	294.41	293.55
NOx [g/h]	143.14	98.80	1.71	3.56	3.95	225.20	219.13	90.67	57.28	57.11
VOC [g/h]	170.51	117.69	2.04	4.25	4.70	268.25	261.03	108.01	68.23	68.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.397	1.964	2.676	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.591	1.584	2.218	2.051
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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TKEAR

Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	67.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

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TKEAR

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	69	16	29	189	15	238	3	218	967	55	86	623	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-2	-6	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	71	0	0	0	17	0	0	53
Total Hourly Volume [veh/h]	69	16	20	189	15	167	3	216	961	38	86	624	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	4	5	52	4	46	1	59	279	10	24	171	34
Total Analysis Volume [veh/h]	76	18	22	208	16	184	3	237	1117	42	95	686	137
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	8	20	9	20	21	83	83	9	71	71
g / C, Green / Cycle	0.05	0.14	0.06	0.14	0.15	0.59	0.59	0.07	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.12	0.12	0.13	0.31	0.03	0.05	0.23	0.23
s, saturation flow rate [veh/h]	1781	1705	1781	1609	1781	3560	1589	1781	1870	1763
c, Capacity [veh/h]	96	240	108	229	261	2101	938	117	945	891
d1, Uniform Delay [s]	65.45	52.93	65.75	58.78	58.90	17.13	12.08	64.56	22.14	22.14
k, delay calibration	0.04	0.13	0.50	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.40	447.82	11.99	5.39	0.97	0.09	5.05	1.54	1.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.17	1.92	0.87	0.92	0.53	0.04	0.81	0.45	0.45
d, Delay for Lane Group [s/veh]	70.84	53.34	513.57	70.77	64.28	18.10	12.17	69.61	23.67	23.77
Lane Group LOS	E	D	F	E	E	B	B	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.84	1.28	17.32	7.72	8.79	10.90	0.59	3.52	9.36	8.85
50th-Percentile Queue Length [ft/ln]	70.90	31.95	433.09	193.05	219.75	272.39	14.65	88.04	234.01	221.28
95th-Percentile Queue Length [veh/ln]	5.11	2.30	28.06	12.28	13.65	16.31	1.05	6.34	14.38	13.73
95th-Percentile Queue Length [ft/ln]	127.63	57.52	701.52	306.99	341.30	407.73	26.37	158.46	359.45	343.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.84	53.34	53.34	513.57	70.77	70.77	64.28	64.28	18.10	12.17	69.61	23.71	23.77
Movement LOS	E	D	D	F	E	E	E	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	64.81			296.51			25.85				28.47		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	67.15												
Intersection LOS	E												
Intersection V/C	0.603												

Emissions

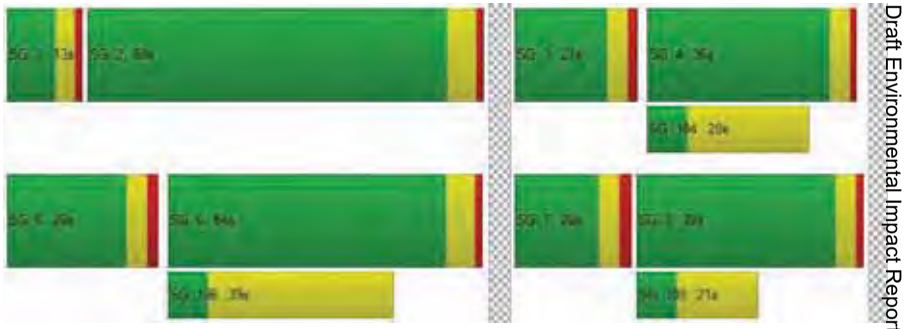
Vehicle Miles Traveled [mph]	3.80	2.00	9.67	9.30	25.08	116.71	4.39	33.26	148.31	139.87
Stops [stops/h]	72.93	32.87	445.46	198.57	226.03	560.35	15.07	90.55	240.70	227.61
Fuel consumption [US gal/h]	1.65	0.70	24.59	4.36	5.42	12.01	0.37	3.22	9.48	8.95
CO [g/h]	115.68	48.80	1719.00	304.74	378.88	839.85	25.72	224.75	662.35	625.43
NOx [g/h]	22.51	9.49	334.45	59.29	73.72	163.40	5.00	43.73	128.87	121.69
VOC [g/h]	26.81	11.31	398.39	70.63	87.81	194.64	5.96	52.09	153.51	144.95

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.070	2.363	2.894	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.766	2.350	2.532	2.361
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	259.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.375

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	102	74	453	315	125	60	66	907	231	350	734	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-3	0	0	0	0	-6	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	135	0	0	18	0	0	69	0	0	56
Total Hourly Volume [veh/h]	102	73	315	315	125	42	66	901	162	350	735	131
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	19	81	81	32	11	17	232	42	90	189	34
Total Analysis Volume [veh/h]	105	75	325	325	129	43	68	929	167	361	758	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	35	35	31	31	7	45	25	62
g / C, Green / Cycle	0.23	0.23	0.20	0.20	0.05	0.29	0.16	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.18	0.10	0.04	0.60	0.20	0.49
s, saturation flow rate [veh/h]	1781	1635	1781	1791	1781	1821	1781	1821
c, Capacity [veh/h]	407	374	359	361	88	535	291	735
d1, Uniform Delay [s]	48.39	59.04	59.67	53.96	71.94	54.04	64.04	45.65
k, delay calibration	0.13	0.50	0.25	0.13	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	66.30	17.22	1.22	5.44	477.68	134.26	108.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	1.07	0.90	0.48	0.78	2.05	1.24	1.21
d, Delay for Lane Group [s/veh]	48.81	125.34	76.88	55.18	77.38	531.71	198.30	154.61
Lane Group LOS	D	F	E	E	E	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.38	21.38	14.07	6.03	2.79	91.61	22.21	49.91
50th-Percentile Queue Length [ft/ln]	84.58	534.59	351.64	150.80	69.68	2290.25	555.21	1247.85
95th-Percentile Queue Length [veh/ln]	6.09	30.12	20.22	10.06	5.02	143.54	33.09	70.23
95th-Percentile Queue Length [ft/ln]	152.25	753.06	505.41	251.50	125.43	3588.62	827.37	1755.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.81	125.34	125.34	76.88	55.18	55.18	77.38	531.71	531.71	198.30	154.61	154.61
Movement LOS	D	F	F	E	E	E	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	109.43			69.37			505.17			167.18		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	259.48											
Intersection LOS	F											
Intersection V/C	1.375											

Emissions

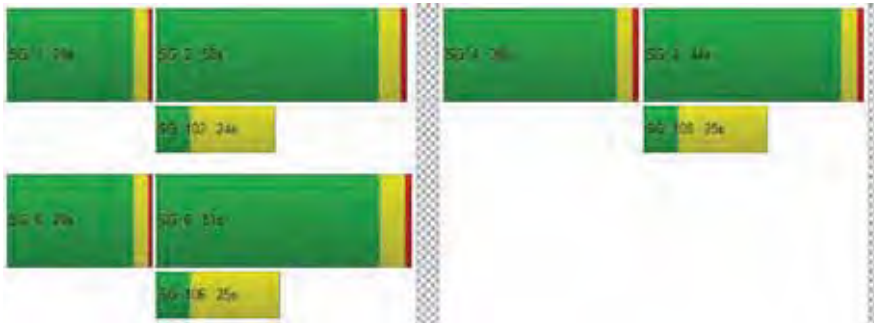
Vehicle Miles Traveled [mph]	180.67	688.26	65.89	34.87	23.81	383.77	162.89	402.94
Stops [stops/h]	79.59	503.03	330.89	141.90	65.57	2155.06	522.44	1174.19
Fuel consumption [US gal/h]	8.92	41.31	9.62	4.15	2.41	146.27	24.16	51.17
CO [g/h]	623.50	2887.78	672.77	290.12	168.68	10224.02	1688.57	3576.44
NOx [g/h]	121.31	561.86	130.90	56.45	32.82	1989.22	328.53	695.85
VOC [g/h]	144.50	669.27	155.92	67.24	39.09	2369.52	391.34	828.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.91	65.91	65.91	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.601	2.267	2.765	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	455	520	584	588
d_b, Bicycle Delay [s]	45.67	41.89	38.34	38.13
l_b,int, Bicycle LOS Score for Intersection	2.616	2.409	3.594	3.721
Bicycle LOS	B	B	D	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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Page 481
GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	37.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.901

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	1666	1	0	937	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-9	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1657	1	0	938	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	432	0	0	244	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	1726	1	0	977	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	86	86	86	86	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	44	44	0	42	42
g / C, Green / Cycle	0.00	0.00	0.23	0.23	0.01	0.51	0.51	0.00	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.46	0.46	0.00	0.27	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	8	7	414	370	22	948	948	0	1761	786
d1, Uniform Delay [s]	0.00	42.69	26.85	32.97	42.13	19.40	19.41	0.00	15.13	11.00
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.28	0.28	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	41.72	0.31	96.82	13.39	8.94	8.95	0.00	0.27	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.45	0.25	1.16	0.45	0.91	0.91	0.00	0.55	0.00
d, Delay for Lane Group [s/veh]	0.00	84.41	27.16	129.79	55.52	28.34	28.35	0.00	15.40	11.00
Lane Group LOS	A	F	C	F	E	C	C	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.14	1.72	17.38	0.29	16.60	16.61	0.00	6.25	0.03
50th-Percentile Queue Length [ft/ln]	0.00	3.48	43.02	434.50	7.27	415.08	415.16	0.00	156.14	0.70
95th-Percentile Queue Length [veh/ln]	0.00	0.25	3.10	26.17	0.52	23.29	23.29	0.00	10.34	0.05
95th-Percentile Queue Length [ft/ln]	0.00	6.27	77.43	654.34	13.09	582.15	582.24	0.00	258.61	1.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	84.41	27.16	27.16	129.79	55.52	28.35	28.35	0.00	15.40	11.00
Movement LOS	A	A	F	C	C	F	E	C	C	A	B	B
d_A, Approach Delay [s/veh]	84.41			109.88			28.50			15.39		
Approach LOS	F			F			C			B		
d_I, Intersection Delay [s/veh]	37.89											
Intersection LOS	D											
Intersection V/C	0.901											

Emissions

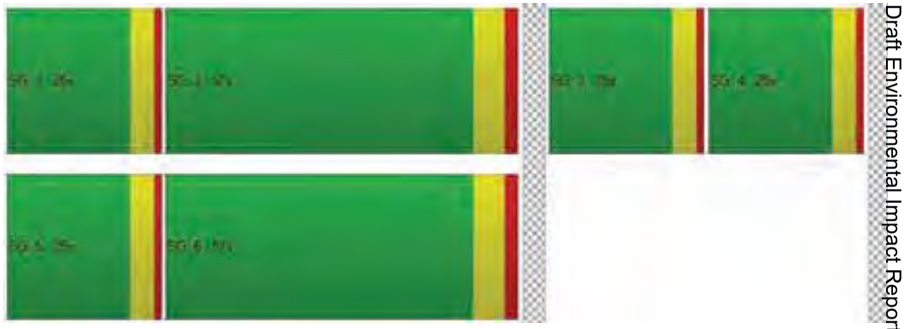
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	389.65	389.62	0.00	170.43	0.52
Stops [stops/h]	0.00	5.84	72.14	728.64	12.20	696.08	696.22	0.00	523.70	1.17
Fuel consumption [US gal/h]	0.00	0.09	2.98	23.69	0.37	24.87	24.87	0.00	12.97	0.03
CO [g/h]	0.00	6.29	208.25	1655.70	25.59	1738.16	1738.28	0.00	906.75	2.43
NOx [g/h]	0.00	1.22	40.52	322.14	4.98	338.18	338.21	0.00	176.42	0.47
VOC [g/h]	0.00	1.46	48.26	383.72	5.93	402.84	402.86	0.00	210.15	0.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	466	466	1165	1165
d_b, Bicycle Delay [s]	25.26	25.26	7.49	7.49
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	2.993	2.368
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	49.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	995	753	861	261	511	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-7	-2	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	988	751	862	261	511	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	247	188	216	65	128	17
Total Analysis Volume [veh/h]	988	751	862	261	511	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	22	63	37	37	15	15	15
g / C, Green / Cycle	0.24	0.70	0.41	0.41	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.29	0.21	0.24	0.16	0.14	0.14	0.04
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	838	2476	1447	646	293	293	262
d1, Uniform Delay [s]	34.10	5.29	20.92	18.97	36.66	36.66	32.76
k, delay calibration	0.07	0.50	0.50	0.50	0.17	0.17	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	82.72	0.32	1.81	1.88	11.98	11.98	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	0.30	0.60	0.40	0.87	0.87	0.25
d, Delay for Lane Group [s/veh]	116.82	5.61	22.73	20.84	48.64	48.64	32.95
Lane Group LOS	F	A	C	C	D	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	18.50	2.36	7.16	4.07	6.35	6.35	1.25
50th-Percentile Queue Length [ft/ln]	462.56	58.98	179.03	101.72	158.65	158.65	31.33
95th-Percentile Queue Length [veh/ln]	27.92	4.25	11.55	7.32	10.48	10.48	2.26
95th-Percentile Queue Length [ft/ln]	697.92	106.16	288.75	183.09	261.94	261.94	56.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	116.82	5.61	22.73	20.84	48.64	32.95
Movement LOS	F	A	C	C	D	C
d_A, Approach Delay [s/veh]	68.79		22.29		46.85	
Approach LOS	E		C		D	
d_I, Intersection Delay [s/veh]	49.93					
Intersection LOS	D					
Intersection V/C	0.775					

Emissions

Vehicle Miles Traveled [mph]	172.35	131.01	152.75	46.25	15.47	15.47	4.00
Stops [stops/h]	1480.19	188.74	572.89	162.75	253.85	253.85	50.13
Fuel consumption [US gal/h]	38.76	7.29	13.44	3.91	4.57	4.57	0.88
CO [g/h]	2709.12	509.80	939.53	273.33	319.34	319.34	61.79
NOx [g/h]	527.10	99.19	182.80	53.18	62.13	62.13	12.02
VOC [g/h]	627.86	118.15	217.74	63.35	74.01	74.01	14.32

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.994	2.486	2.531
Bicycle LOS	C	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

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Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	1	152	1111	0	0	559	236	562	1	263	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-2	0	0	0	0	1	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	1	152	1109	0	0	559	189	563	1	233	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	351	0	0	177	60	178	0	74	0	0	0
Total Analysis Volume [veh/h]	1	192	1404	0	0	708	239	713	1	295	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	12	57	42	42	20	20	20	
g / C, Green / Cycle	0.13	0.64	0.46	0.46	0.22	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.39	0.20	0.15	0.20	0.20	0.19	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	231	2274	1646	735	394	394	352	
d1, Uniform Delay [s]	38.24	9.70	16.24	15.31	34.12	34.12	33.50	
k, delay calibration	0.04	0.50	0.50	0.50	0.13	0.13	0.09	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.07	1.27	0.82	1.18	9.52	9.50	4.60	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.62	0.43	0.33	0.91	0.91	0.84	
d, Delay for Lane Group [s/veh]	41.30	10.97	17.06	16.49	43.63	43.62	38.10	
Lane Group LOS	D	B	B	B	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.28	7.53	4.85	3.21	8.45	8.44	6.46	
50th-Percentile Queue Length [ft/ln]	107.12	188.20	121.19	80.16	211.16	211.12	161.41	
95th-Percentile Queue Length [veh/ln]	7.68	12.03	8.46	5.77	13.21	13.21	10.62	
95th-Percentile Queue Length [ft/ln]	191.99	300.69	211.47	144.29	330.32	330.26	265.58	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.30	41.30	10.97	0.00	0.00	17.06	16.49	43.63	43.62	38.10	0.00	0.00	0.00
Movement LOS	D	D	B			B	B	D	D	D			
d_A, Approach Delay [s/veh]	14.64				16.92			42.01			0.00		
Approach LOS	B				B			D			A		
d_I, Intersection Delay [s/veh]	23.02												
Intersection LOS	C												
Intersection V/C	0.686												

Emissions

Vehicle Miles Traveled [mph]	34.20	248.80	96.81	32.68	12.37	12.37	10.22	
Stops [stops/h]	171.39	602.24	387.82	128.26	337.85	337.78	258.25	
Fuel consumption [US gal/h]	3.98	16.71	8.59	2.86	5.55	5.54	4.13	
CO [g/h]	277.99	1167.68	600.17	199.63	387.63	387.52	288.99	
NOx [g/h]	54.09	227.19	116.77	38.84	75.42	75.40	56.23	
VOC [g/h]	64.43	270.62	139.10	46.27	89.84	89.81	66.98	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.876	2.380	3.274	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	413	549	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	-3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	414	546	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	104	137	0	0	0
Total Analysis Volume [veh/h]	0	414	546	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.70
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		11.70	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.074

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	306	465	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	-3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	307	462	20	27	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	77	116	5	7	0
Total Analysis Volume [veh/h]	0	307	462	20	27	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	8.33	0.00	0.00	0.00	15.67	11.87
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.24	0.24
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.97	5.97
d_A, Approach Delay [s/veh]	0.00		0.00		15.67	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.52					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.147

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	66	45	288	40	10	37	2	47	20	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	186	66	45	285	40	10	37	2	47	20	84
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	17	12	73	10	3	10	1	12	5	22
Total Analysis Volume [veh/h]	0	192	68	46	294	41	10	38	2	48	21	87
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.03	0.10	0.00	0.15	0.06	0.11
d_M, Delay for Movement [s/veh]	7.94	0.00	0.00	7.81	0.00	0.00	19.01	16.58	11.63	19.22	17.93	12.62
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.08	0.08	0.08	0.49	0.49	0.49	1.31	1.31	1.31
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.02	2.02	2.02	12.22	12.22	12.22	32.81	32.81	32.81
d_A, Approach Delay [s/veh]		0.00			0.94			16.87			15.37	
Approach LOS		A			A			C			C	
d_I, Intersection Delay [s/veh]	4.25											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	414	569	51	0
2	402	552	49	0
3	393	541	48	0
4	368	506	45	0
5	327	450	40	0
6	323	444	40	0
7	319	438	39	0
8	290	398	36	0
9	286	393	35	0
10	282	387	35	0
11	244	336	30	0
12	228	313	28	0
13	224	307	28	0
14	166	228	20	0
15	166	228	20	0
16	116	159	14	0
17	66	91	8	0
18	66	91	8	0
19	37	51	5	0
20	21	28	3	0
21	12	17	2	0
22	4	6	1	0
23	4	6	1	0
24	4	6	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	983	1	51	No	No	No	No	No	No	No	Yes	No	No
2	1	954	1	49	No	No	No	No	No	No	No	Yes	No	No
3	1	934	1	48	No	No	No	No	No	No	No	Yes	No	No
4	1	874	1	45	No	No	No	No	No	No	No	Yes	No	No
5	1	777	1	40	No	No	No	No	No	No	No	No	No	No
6	1	767	1	40	No	No	No	No	No	No	No	No	No	No
7	1	757	1	39	No	No	No	No	No	No	No	No	No	No
8	1	688	1	36	No	No	No	No	No	No	No	No	No	No
9	1	679	1	35	No	No	No	No	No	No	No	No	No	No
10	1	669	1	35	No	No	No	No	No	No	No	No	No	No
11	1	580	1	30	No	No	No	No	No	No	No	No	No	No
12	1	541	1	28	No	No	No	No	No	No	No	No	No	No
13	1	531	1	28	No	No	No	No	No	No	No	No	No	No
14	1	394	1	20	No	No	No	No	No	No	No	No	No	No
15	1	394	1	20	No	No	No	No	No	No	No	No	No	No
16	1	275	1	14	No	No	No	No	No	No	No	No	No	No
17	1	157	1	8	No	No	No	No	No	No	No	No	No	No
18	1	157	1	8	No	No	No	No	No	No	No	No	No	No
19	1	88	1	5	No	No	No	No	No	No	No	No	No	No
20	1	49	1	3	No	No	No	No	No	No	No	No	No	No
21	1	29	1	2	No	No	No	No	No	No	No	No	No	No
22	1	10	1	1	No	No	No	No	No	No	No	No	No	No
23	1	10	1	1	No	No	No	No	No	No	No	No	No	No
24	1	10	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.9	20.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	51	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1034	1034
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	334	546	158	0
2	324	530	153	0
3	317	519	150	0
4	297	486	141	0
5	264	431	125	0
6	261	426	123	0
7	257	420	122	0
8	234	382	111	0
9	230	377	109	0
10	227	371	107	0
11	197	322	93	0
12	184	300	87	0
13	180	295	85	0
14	134	218	63	0
15	134	218	63	0
16	94	153	44	0
17	53	87	25	0
18	53	87	25	0
19	30	49	14	0
20	17	27	8	0
21	10	16	5	0
22	3	5	2	0
23	3	5	2	0
24	3	5	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	880	1	158	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	854	1	153	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	836	1	150	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	2	783	1	141	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	2	695	1	125	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
6	2	687	1	123	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
7	2	677	1	122	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
8	2	616	1	111	No	No	Yes	Yes	No	No	No	Yes	No	No
9	2	607	1	109	No	No	Yes	Yes	No	No	No	Yes	No	No
10	2	598	1	107	No	No	Yes	Yes	No	No	No	Yes	No	No
11	2	519	1	93	No	No	No	Yes	No	No	No	Yes	No	No
12	2	484	1	87	No	No	No	Yes	No	No	No	No	No	No
13	2	475	1	85	No	No	No	Yes	No	No	No	No	No	No
14	2	352	1	63	No	No	No	No	No	No	No	No	No	No
15	2	352	1	63	No	No	No	No	No	No	No	No	No	No
16	2	247	1	44	No	No	No	No	No	No	No	No	No	No
17	2	140	1	25	No	No	No	No	No	No	No	No	No	No
18	2	140	1	25	No	No	No	No	No	No	No	No	No	No
19	2	79	1	14	No	No	No	No	No	No	No	No	No	No
20	2	44	1	8	No	No	No	No	No	No	No	No	No	No
21	2	26	1	5	No	No	No	No	No	No	No	No	No	No
22	2	8	1	2	No	No	No	No	No	No	No	No	No	No
23	2	8	1	2	No	No	No	No	No	No	No	No	No	No
24	2	8	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	4	7	11	7	2

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	26.5	21.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:09	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	158	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1038	1038
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1072	225	869
2	1040	218	843
3	1018	214	826
4	954	200	773
5	847	178	687
6	836	176	678
7	825	173	669
8	750	158	608
9	740	155	600
10	729	153	591
11	632	133	513
12	590	124	478
13	579	122	469
14	429	90	348
15	429	90	348
16	300	63	243
17	172	36	139
18	172	36	139
19	96	20	78
20	54	11	43
21	32	7	26
22	11	2	9
23	11	2	9
24	11	2	9

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1297	1	869	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1258	1	843	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1232	1	826	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1154	1	773	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1025	1	687	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1012	1	678	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	998	1	669	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	908	1	608	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	895	1	600	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	882	1	591	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	765	1	513	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	714	1	478	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
13	1	701	1	469	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
14	1	519	1	348	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
15	1	519	1	348	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
16	1	363	1	243	No	No	Yes	Yes	No	No	No	No	No	No
17	1	208	1	139	No	No	No	No	No	No	No	No	No	No
18	1	208	1	139	No	No	No	No	No	No	No	No	No	No
19	1	116	1	78	No	No	No	No	No	No	No	No	No	No
20	1	65	1	43	No	No	No	No	No	No	No	No	No	No
21	1	39	1	26	No	No	No	No	No	No	No	No	No	No
22	1	13	1	9	No	No	No	No	No	No	No	No	No	No
23	1	13	1	9	No	No	No	No	No	No	No	No	No	No
24	1	13	1	9	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	11	13	13	15	15	13

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2413:53
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	869
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2166
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	602	548	305	42
2	584	532	296	41
3	572	521	290	40
4	536	488	271	37
5	476	433	241	33
6	470	427	238	33
7	464	422	235	32
8	421	384	214	29
9	415	378	210	29
10	409	373	207	29
11	355	323	180	25
12	331	301	168	23
13	325	296	165	23
14	241	219	122	17
15	241	219	122	17
16	169	153	85	12
17	96	88	49	7
18	96	88	49	7
19	54	49	27	4
20	30	27	15	2
21	18	16	9	1
22	6	5	3	0
23	6	5	3	0
24	6	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1150	1	305	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1116	1	296	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1093	1	290	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1024	1	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	909	1	241	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	897	1	238	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	886	1	235	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	805	1	214	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	793	1	210	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	782	1	207	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	678	1	180	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	632	1	168	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
13	1	621	1	165	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
14	1	460	1	122	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	460	1	122	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	322	1	85	No	No	No	Yes	No	No	No	No	No	No
17	1	184	1	49	No	No	No	No	No	No	No	No	No	No
18	1	184	1	49	No	No	No	No	No	No	No	No	No	No
19	1	103	1	27	No	No	No	No	No	No	No	No	No	No
20	1	57	1	15	No	No	No	No	No	No	No	No	No	No
21	1	34	1	9	No	No	No	No	No	No	No	No	No	No
22	1	11	1	3	No	No	No	No	No	No	No	No	No	No
23	1	11	1	3	No	No	No	No	No	No	No	No	No	No
24	1	11	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	10	3

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	29.8	12.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:31	0:08
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	305	42
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1497	1497
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	292	323	191
2	283	313	185
3	277	307	181
4	260	287	170
5	231	255	151
6	228	252	149
7	225	249	147
8	204	226	134
9	201	223	132
10	199	220	130
11	172	191	113
12	161	178	105
13	158	174	103
14	117	129	76
15	117	129	76
16	82	90	53
17	47	52	31
18	47	52	31
19	26	29	17
20	15	16	10
21	9	10	6
22	3	3	2
23	3	3	2
24	3	3	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	615	2	191	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	596	2	185	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	584	2	181	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	547	2	170	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	486	2	151	No	No	Yes	Yes	No	No	No	No	No	No
6	2	480	2	149	No	No	Yes	Yes	No	No	No	No	No	No
7	2	474	2	147	No	No	Yes	Yes	No	No	No	No	No	No
8	2	430	2	134	No	No	No	Yes	No	No	No	No	No	No
9	2	424	2	132	No	No	No	Yes	No	No	No	No	No	No
10	2	419	2	130	No	No	No	Yes	No	No	No	No	No	No
11	2	363	2	113	No	No	No	Yes	No	No	No	No	No	No
12	2	339	2	105	No	No	No	No	No	No	No	No	No	No
13	2	332	2	103	No	No	No	No	No	No	No	No	No	No
14	2	246	2	76	No	No	No	No	No	No	No	No	No	No
15	2	246	2	76	No	No	No	No	No	No	No	No	No	No
16	2	172	2	53	No	No	No	No	No	No	No	No	No	No
17	2	99	2	31	No	No	No	No	No	No	No	No	No	No
18	2	99	2	31	No	No	No	No	No	No	No	No	No	No
19	2	55	2	17	No	No	No	No	No	No	No	No	No	No
20	2	31	2	10	No	No	No	No	No	No	No	No	No	No
21	2	19	2	6	No	No	No	No	No	No	No	No	No	No
22	2	6	2	2	No	No	No	No	No	No	No	No	No	No
23	2	6	2	2	No	No	No	No	No	No	No	No	No	No
24	2	6	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.7
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:53
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	191
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	806
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	331	241	265
2	321	234	257
3	314	229	252
4	295	214	236
5	261	190	209
6	258	188	207
7	255	186	204
8	232	169	186
9	228	166	183
10	225	164	180
11	195	142	156
12	182	133	146
13	179	130	143
14	132	96	106
15	132	96	106
16	93	67	74
17	53	39	42
18	53	39	42
19	30	22	24
20	17	12	13
21	10	7	8
22	3	2	3
23	3	2	3
24	3	2	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	572	1	265	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	555	1	257	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	543	1	252	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	509	1	236	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	451	1	209	No	No	Yes	Yes	No	No	No	No	No	No
6	2	446	1	207	No	No	Yes	Yes	No	No	No	No	No	No
7	2	441	1	204	No	No	Yes	Yes	No	No	No	No	No	No
8	2	401	1	186	No	No	No	Yes	No	No	No	No	No	No
9	2	394	1	183	No	No	No	Yes	No	No	No	No	No	No
10	2	389	1	180	No	No	No	Yes	No	No	No	No	No	No
11	2	337	1	156	No	No	No	Yes	No	No	No	No	No	No
12	2	315	1	146	No	No	No	No	No	No	No	No	No	No
13	2	309	1	143	No	No	No	No	No	No	No	No	No	No
14	2	228	1	106	No	No	No	No	No	No	No	No	No	No
15	2	228	1	106	No	No	No	No	No	No	No	No	No	No
16	2	160	1	74	No	No	No	No	No	No	No	No	No	No
17	2	92	1	42	No	No	No	No	No	No	No	No	No	No
18	2	92	1	42	No	No	No	No	No	No	No	No	No	No
19	2	52	1	24	No	No	No	No	No	No	No	No	No	No
20	2	29	1	13	No	No	No	No	No	No	No	No	No	No
21	2	17	1	8	No	No	No	No	No	No	No	No	No	No
22	2	5	1	3	No	No	No	No	No	No	No	No	No	No
23	2	5	1	3	No	No	No	No	No	No	No	No	No	No
24	2	5	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	265
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	837
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	198	200	3
2	192	194	3
3	188	190	3
4	176	178	3
5	156	158	2
6	154	156	2
7	152	154	2
8	139	140	2
9	137	138	2
10	135	136	2
11	117	118	2
12	109	110	2
13	107	108	2
14	79	80	1
15	79	80	1
16	55	56	1
17	32	32	0
18	32	32	0
19	18	18	0
20	10	10	0
21	6	6	0
22	2	2	0
23	2	2	0
24	2	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	398	1	3	No	No	No	No	No	No	No	No	No	No
2	3	386	1	3	No	No	No	No	No	No	No	No	No	No
3	3	378	1	3	No	No	No	No	No	No	No	No	No	No
4	3	354	1	3	No	No	No	No	No	No	No	No	No	No
5	3	314	1	2	No	No	No	No	No	No	No	No	No	No
6	3	310	1	2	No	No	No	No	No	No	No	No	No	No
7	3	306	1	2	No	No	No	No	No	No	No	No	No	No
8	3	279	1	2	No	No	No	No	No	No	No	No	No	No
9	3	275	1	2	No	No	No	No	No	No	No	No	No	No
10	3	271	1	2	No	No	No	No	No	No	No	No	No	No
11	3	235	1	2	No	No	No	No	No	No	No	No	No	No
12	3	219	1	2	No	No	No	No	No	No	No	No	No	No
13	3	215	1	2	No	No	No	No	No	No	No	No	No	No
14	3	159	1	1	No	No	No	No	No	No	No	No	No	No
15	3	159	1	1	No	No	No	No	No	No	No	No	No	No
16	3	111	1	1	No	No	No	No	No	No	No	No	No	No
17	3	64	1	0	No	No	No	No	No	No	No	No	No	No
18	3	64	1	0	No	No	No	No	No	No	No	No	No	No
19	3	36	1	0	No	No	No	No	No	No	No	No	No	No
20	3	20	1	0	No	No	No	No	No	No	No	No	No	No
21	3	12	1	0	No	No	No	No	No	No	No	No	No	No
22	3	4	1	0	No	No	No	No	No	No	No	No	No	No
23	3	4	1	0	No	No	No	No	No	No	No	No	No	No
24	3	4	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	401
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	628	700	188	29
2	609	679	182	28
3	597	665	179	28
4	559	623	167	26
5	496	553	149	23
6	490	546	147	23
7	484	539	145	22
8	440	490	132	20
9	433	483	130	20
10	427	476	128	20
11	371	413	111	17
12	345	385	103	16
13	339	378	102	16
14	251	280	75	12
15	251	280	75	12
16	176	196	53	8
17	100	112	30	5
18	100	112	30	5
19	57	63	17	3
20	31	35	9	1
21	19	21	6	1
22	6	7	2	0
23	6	7	2	0
24	6	7	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1328	2	188	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	2	1288	2	182	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	2	1262	2	179	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	2	1182	2	167	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	2	1049	2	149	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
6	2	1036	2	147	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
7	2	1023	2	145	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
8	2	930	2	132	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
9	2	916	2	130	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
10	2	903	2	128	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
11	2	784	2	111	No	No	No	No	No	Yes	Yes	Yes	No	No
12	2	730	2	103	No	No	No	No	No	Yes	Yes	Yes	No	No
13	2	717	2	102	No	No	No	No	No	No	Yes	Yes	No	No
14	2	531	2	75	No	No	No	No	No	No	No	Yes	No	No
15	2	531	2	75	No	No	No	No	No	No	No	Yes	No	No
16	2	372	2	53	No	No	No	No	No	No	No	No	No	No
17	2	212	2	30	No	No	No	No	No	No	No	No	No	No
18	2	212	2	30	No	No	No	No	No	No	No	No	No	No
19	2	120	2	17	No	No	No	No	No	No	No	No	No	No
20	2	66	2	9	No	No	No	No	No	No	No	No	No	No
21	2	40	2	6	No	No	No	No	No	No	No	No	No	No
22	2	13	2	2	No	No	No	No	No	No	No	No	No	No
23	2	13	2	2	No	No	No	No	No	No	No	No	No	No
24	2	13	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	10	12	13	15	4	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	348.2	21.5
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	18:11	0:10
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	188	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1545	1545
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	No
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	414	546	0
2	402	530	0
3	393	519	0
4	368	486	0
5	327	431	0
6	323	426	0
7	319	420	0
8	290	382	0
9	286	377	0
10	282	371	0
11	244	322	0
12	228	300	0
13	224	295	0
14	166	218	0
15	166	218	0
16	116	153	0
17	66	87	0
18	66	87	0
19	37	49	0
20	21	27	0
21	12	16	0
22	4	5	0
23	4	5	0
24	4	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	960	1	0	No	No	No	No	No	No	No	No	No	No
2	1	932	1	0	No	No	No	No	No	No	No	No	No	No
3	1	912	1	0	No	No	No	No	No	No	No	No	No	No
4	1	854	1	0	No	No	No	No	No	No	No	No	No	No
5	1	758	1	0	No	No	No	No	No	No	No	No	No	No
6	1	749	1	0	No	No	No	No	No	No	No	No	No	No
7	1	739	1	0	No	No	No	No	No	No	No	No	No	No
8	1	672	1	0	No	No	No	No	No	No	No	No	No	No
9	1	663	1	0	No	No	No	No	No	No	No	No	No	No
10	1	653	1	0	No	No	No	No	No	No	No	No	No	No
11	1	566	1	0	No	No	No	No	No	No	No	No	No	No
12	1	528	1	0	No	No	No	No	No	No	No	No	No	No
13	1	519	1	0	No	No	No	No	No	No	No	No	No	No
14	1	384	1	0	No	No	No	No	No	No	No	No	No	No
15	1	384	1	0	No	No	No	No	No	No	No	No	No	No
16	1	269	1	0	No	No	No	No	No	No	No	No	No	No
17	1	153	1	0	No	No	No	No	No	No	No	No	No	No
18	1	153	1	0	No	No	No	No	No	No	No	No	No	No
19	1	86	1	0	No	No	No	No	No	No	No	No	No	No
20	1	48	1	0	No	No	No	No	No	No	No	No	No	No
21	1	28	1	0	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	960
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	307	482	27
2	298	468	26
3	292	458	26
4	273	429	24
5	243	381	21
6	239	376	21
7	236	371	21
8	215	337	19
9	212	333	19
10	209	328	18
11	181	284	16
12	169	265	15
13	166	260	15
14	123	193	11
15	123	193	11
16	86	135	8
17	49	77	4
18	49	77	4
19	28	43	2
20	15	24	1
21	9	14	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	789	1	27	No	No	No	No	No	No	No	No	No	No
2	1	766	1	26	No	No	No	No	No	No	No	No	No	No
3	1	750	1	26	No	No	No	No	No	No	No	No	No	No
4	1	702	1	24	No	No	No	No	No	No	No	No	No	No
5	1	624	1	21	No	No	No	No	No	No	No	No	No	No
6	1	615	1	21	No	No	No	No	No	No	No	No	No	No
7	1	607	1	21	No	No	No	No	No	No	No	No	No	No
8	1	552	1	19	No	No	No	No	No	No	No	No	No	No
9	1	545	1	19	No	No	No	No	No	No	No	No	No	No
10	1	537	1	18	No	No	No	No	No	No	No	No	No	No
11	1	465	1	16	No	No	No	No	No	No	No	No	No	No
12	1	434	1	15	No	No	No	No	No	No	No	No	No	No
13	1	426	1	15	No	No	No	No	No	No	No	No	No	No
14	1	316	1	11	No	No	No	No	No	No	No	No	No	No
15	1	316	1	11	No	No	No	No	No	No	No	No	No	No
16	1	221	1	8	No	No	No	No	No	No	No	No	No	No
17	1	126	1	4	No	No	No	No	No	No	No	No	No	No
18	1	126	1	4	No	No	No	No	No	No	No	No	No	No
19	1	71	1	2	No	No	No	No	No	No	No	No	No	No
20	1	39	1	1	No	No	No	No	No	No	No	No	No	No
21	1	23	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	27
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	816
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

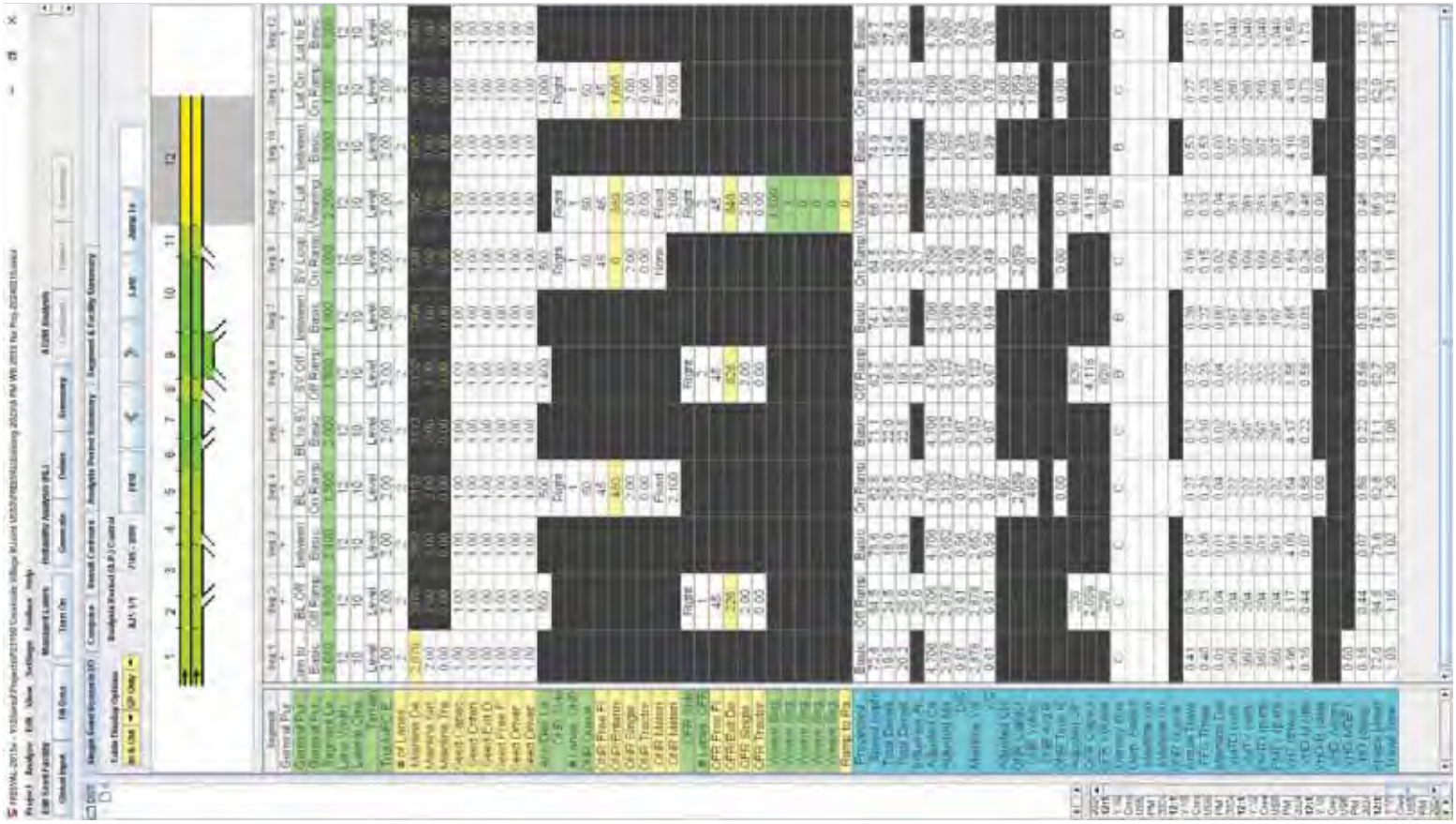
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	252	370	151	49
2	244	359	146	48
3	239	352	143	47
4	224	329	134	44
5	199	292	119	39
6	197	289	118	38
7	194	285	116	38
8	176	259	106	34
9	174	255	104	34
10	171	252	103	33
11	149	218	89	29
12	139	204	83	27
13	136	200	82	26
14	101	148	60	20
15	101	148	60	20
16	71	104	42	14
17	40	59	24	8
18	40	59	24	8
19	23	33	14	4
20	13	19	8	2
21	8	11	5	1
22	3	4	2	0
23	3	4	2	0
24	3	4	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	622	1	151	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	603	1	146	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	591	1	143	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	553	1	134	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	491	1	119	No	No	Yes	Yes	No	No	No	Yes	No	No
6	1	486	1	118	No	No	Yes	Yes	No	No	No	Yes	No	No
7	1	479	1	116	No	No	Yes	Yes	No	No	No	Yes	No	No
8	1	435	1	106	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	429	1	104	No	No	No	Yes	No	No	No	Yes	No	No
10	1	423	1	103	No	No	No	Yes	No	No	No	Yes	No	No
11	1	367	1	89	No	No	No	Yes	No	No	No	No	No	No
12	1	343	1	83	No	No	No	No	No	No	No	No	No	No
13	1	336	1	82	No	No	No	No	No	No	No	No	No	No
14	1	249	1	60	No	No	No	No	No	No	No	No	No	No
15	1	249	1	60	No	No	No	No	No	No	No	No	No	No
16	1	175	1	42	No	No	No	No	No	No	No	No	No	No
17	1	99	1	24	No	No	No	No	No	No	No	No	No	No
18	1	99	1	24	No	No	No	No	No	No	No	No	No	No
19	1	56	1	14	No	No	No	No	No	No	No	No	No	No
20	1	32	1	8	No	No	No	No	No	No	No	No	No	No
21	1	19	1	5	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					1	4	8	11	0	2	4	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.4	16.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:38	0:13
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	151	49
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	822	822
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	



EPAP AM plus Project

Vistro File: C:\...\AM 918 DU 20240213.vistro Scenario 4 2033 AM with CCSP, + Project
Report File: C:\...\9 2033 AM plus Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.153	174.6	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.408	164.3	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.130	104.4	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	1.082	38.2	D
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	1.017	42.2	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.761	43.4	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	1.018	79.0	E
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	EB Left	0.899	15.4	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	NB Right	1.152	127.5	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.970	22.4	C
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	1.082	291.1	F
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	7.295	3,003.3	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	0.425	287.6	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	1.070	52.8	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.282	17.2	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.208	16.0	C
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.118	8.2	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.755	64.3	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.585	29.2	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.617	39.0	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	1.331	260.6	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.855	35.1	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.706	22.5	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	1.019	68.8	E
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.011	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.069	15.1	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.197	24.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	174.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.153

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	232	792	301	70	1655	46	23	14	260	467	64	111
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	48	0	0	-14	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	14	0	0	78	0	0	33
Total Hourly Volume [veh/h]	5	232	840	301	70	1641	32	23	14	182	467	64	78
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	67	241	86	20	472	9	7	4	52	134	18	22
Total Analysis Volume [veh/h]	5	267	966	346	80	1886	37	26	16	209	537	74	90
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	128	128	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	54	54	7	40	40	20	20	29	29
g / C, Green / Cycle	0.17	0.42	0.42	0.06	0.31	0.31	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.15	0.27	0.22	0.04	0.51	0.52	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1857	1781	1607	1781	1744
c, Capacity [veh/h]	299	1499	669	103	581	577	279	252	405	396
d1, Uniform Delay [s]	52.59	29.59	27.56	59.83	44.34	44.34	46.44	53.21	47.95	47.99
k, delay calibration	0.25	0.04	0.17	0.04	0.50	0.50	0.04	0.04	0.29	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.28	0.17	0.97	4.78	301.97	307.00	0.05	4.43	14.10	14.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.64	0.52	0.78	1.65	1.67	0.09	0.89	0.87	0.88
d, Delay for Lane Group [s/veh]	72.87	29.76	28.53	64.61	346.31	351.34	46.49	57.65	62.05	62.73
Lane Group LOS	E	C	C	E	F	F	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.07	11.35	7.73	2.65	66.47	66.83	0.72	7.43	12.48	12.34
50th-Percentile Queue Length [ft/ln]	251.84	283.74	193.24	66.36	1661.78	1670.74	18.05	185.75	311.90	308.49
95th-Percentile Queue Length [veh/ln]	15.28	16.87	12.29	4.78	102.14	102.84	1.30	11.90	18.27	18.10
95th-Percentile Queue Length [ft/ln]	381.96	421.87	307.23	119.44	2553.54	2571.03	32.50	297.51	456.72	452.52

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.87	72.87	29.76	28.53	64.61	348.77	351.34	46.49	57.65	57.65	62.28	62.73	62.73
Movement LOS	E	E	C	C	E	F	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	36.90				337.47			56.49			62.39		
Approach LOS	D				F			E			E		
d_I, Intersection Delay [s/veh]	174.56												
Intersection LOS	F												
Intersection V/C	1.153												

Emissions

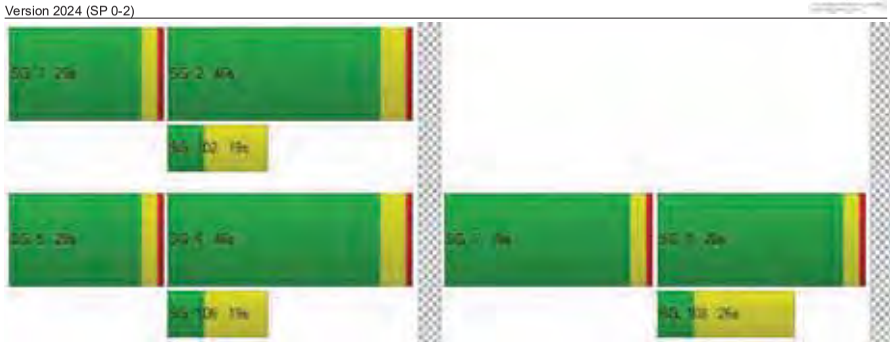
Vehicle Miles Traveled [mph]	64.96	230.71	82.64	11.76	141.36	141.36	1.11	9.61	18.50	18.18
Stops [stops/h]	282.37	636.28	216.67	74.40	1863.24	1873.29	20.24	208.27	349.71	345.89
Fuel consumption [US gal/h]	9.77	21.67	7.54	2.38	95.76	96.87	0.40	4.19	7.16	7.10
CO [g/h]	682.96	1514.74	526.73	166.36	6693.44	6770.99	28.21	292.56	500.23	495.95
NOx [g/h]	132.88	294.71	102.48	32.37	1302.30	1317.39	5.49	56.92	97.33	96.49
VOC [g/h]	158.28	351.05	122.07	38.56	1551.27	1569.24	6.54	67.80	115.93	114.94

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	53.69	53.69	53.69
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.253	2.303	2.386
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	628	628	545	545
d_b, Bicycle Delay [s]	30.24	30.24	33.98	33.98
l_b,int, Bicycle LOS Score for Intersection	2.862	3.224	2.102	2.771
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	164.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.408

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	413	988	150	1	218	1727	441	150	61	708	33	34	191
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	25	48	0	0	0	-14	0	0	0	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	132	0	0	211	0	0	57
Total Hourly Volume [veh/h]	1	438	1036	105	1	218	1713	309	150	61	491	33	34	134
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	118	278	28	0	59	460	83	40	16	132	9	9	36
Total Analysis Volume [veh/h]	1	471	1114	113	1	234	1842	332	161	66	528	35	37	144
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	123	123	123	123	123	123	123	123	123	123	123
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	52	52	18	50	50	20	20	20	16	16
g / C, Green / Cycle	0.16	0.42	0.42	0.15	0.41	0.41	0.16	0.16	0.16	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.27	0.23	0.23	0.13	0.52	0.21	0.06	0.06	0.33	0.02	0.11
s, saturation flow rate [veh/h]	1781	3560	1783	1781	3560	1589	1781	1831	1589	1781	1640
c, Capacity [veh/h]	289	1497	750	262	1444	644	289	297	258	225	208
d1, Uniform Delay [s]	51.66	26.87	26.88	51.66	36.66	27.55	46.19	46.17	51.66	47.98	52.87
k, delay calibration	0.50	0.13	0.15	0.26	0.20	0.13	0.04	0.04	0.50	0.04	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	300.58	0.38	0.87	21.29	126.42	0.77	0.32	0.31	484.92	0.12	14.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.63	0.55	0.55	0.90	1.28	0.52	0.39	0.39	2.05	0.16	0.87
d, Delay for Lane Group [s/veh]	352.23	27.25	27.75	72.95	163.08	28.32	46.51	46.47	536.58	48.09	67.01
Lane Group LOS	F	C	C	E	F	C	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	32.78	8.70	8.83	8.49	45.72	7.18	3.12	3.18	42.66	0.97	6.32
50th-Percentile Queue Length [ft/ln]	819.38	217.41	220.69	212.30	1143.05	179.49	77.99	79.47	1066.56	24.31	157.89
95th-Percentile Queue Length [veh/ln]	50.90	13.53	13.70	13.27	66.54	11.57	5.62	5.72	67.25	1.75	10.44
95th-Percentile Queue Length [ft/ln]	1272.42	338.31	342.51	331.78	1663.49	289.35	140.39	143.04	1681.20	43.76	260.93

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	352.2	352.2	27.38	27.75	72.95	72.95	163.0	28.32	46.51	46.47	536.58	48.09	67.01	67.01
Movement LOS	F	F	C	C	E	E	F	C	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	117.65				135.72				389.23			63.95		
Approach LOS	F				F				F			E		
d_I, Intersection Delay [s/veh]	164.31													
Intersection LOS	F													
Intersection V/C	1.408													

Emissions

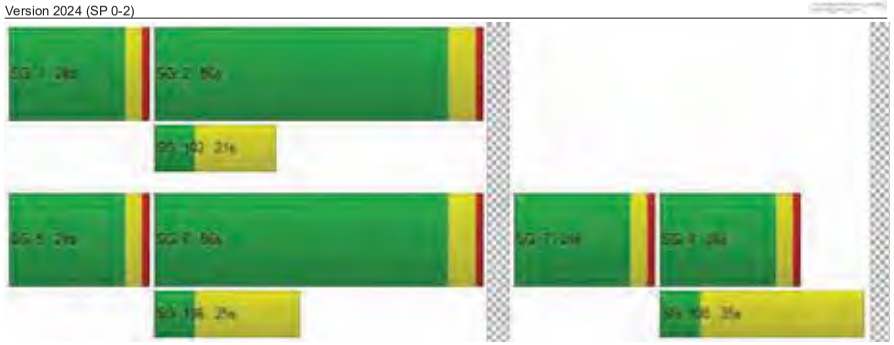
Vehicle Miles Traveled [mph]	88.83	153.79	77.12	56.13	439.93	79.29	7.01	7.15	32.93	1.71	8.83
Stops [stops/h]	957.40	508.06	257.87	248.06	2671.19	209.73	91.13	92.85	1246.22	28.41	184.49
Fuel consumption [US gal/h]	48.77	16.12	8.16	8.50	109.41	7.24	1.86	1.89	65.88	0.57	3.85
CO [g/h]	3409.27	1126.79	570.67	593.91	7647.81	505.99	129.71	132.18	4605.08	39.82	269.16
NOx [g/h]	663.32	219.23	111.03	115.55	1487.99	98.45	25.24	25.72	895.98	7.75	52.37
VOC [g/h]	790.13	261.14	132.26	137.64	1772.45	117.27	30.06	30.63	1067.27	9.23	62.38

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.11	51.11	51.11
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.636	2.919	2.274
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	816	816	325	325
d_b, Bicycle Delay [s]	21.59	21.59	43.24	43.24
l_b,int, Bicycle LOS Score for Intersection	2.518	3.463	3.154	2.010
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	104.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.130

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1417	1188	141	3	69	1353	1044	256	92	816	171	99	105
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	88	73	16	0	0	-20	0	0	0	-13	-4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	47	0	0	0	313	0	0	241	0	0	32
Total Hourly Volume [veh/h]	1	1505	1261	110	3	69	1333	731	256	92	562	167	99	73
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	376	315	28	1	17	333	183	64	23	141	42	25	18
Total Analysis Volume [veh/h]	1	1505	1261	110	3	69	1333	731	256	92	562	167	99	73
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	71	71	8	41	73	27	27	11	11	11
g / C, Green / Cycle	0.28	0.52	0.52	0.06	0.30	0.53	0.20	0.20	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.44	0.25	0.26	0.04	0.26	0.46	0.10	0.10	0.06	0.06	0.07
s, saturation flow rate [veh/h]	3459	3560	1796	1781	5094	1589	1781	1826	1781	1828	1673
c, Capacity [veh/h]	951	1846	931	99	1522	848	351	360	145	148	136
d1, Uniform Delay [s]	36.83	4.99	5.03	63.24	45.28	27.40	48.52	48.51	61.32	61.28	61.43
k, delay calibration	0.26	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	265.19	0.92	1.96	3.85	7.35	11.23	0.79	0.76	3.55	3.31	4.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.58	0.49	0.51	0.73	0.88	0.86	0.49	0.49	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	302.03	5.92	6.99	67.09	52.63	38.63	49.31	49.27	64.87	64.58	65.66
Lane Group LOS	F	A	A	E	D	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	48.78	2.32	2.69	2.52	14.83	21.67	5.30	5.42	4.01	4.06	3.90
50th-Percentile Queue Length [ft/ln]	1219.42	57.92	67.36	62.90	370.69	541.70	132.55	135.59	100.30	101.55	97.38
95th-Percentile Queue Length [veh/ln]	75.05	4.17	4.85	4.53	21.14	29.30	9.08	9.24	7.22	7.31	7.01
95th-Percentile Queue Length [ft/ln]	1876.31	104.25	121.24	113.23	528.57	732.55	226.96	231.07	180.55	182.79	175.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	302.0	302.0	6.22	6.99	67.09	67.09	52.63	38.63	49.30	49.27	0.00	64.78	64.98	65.66
Movement LOS	F	F	A	A	E	E	D	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	161.10				48.33				18.85			65.03		
Approach LOS	F				D				B			E		
d_I, Intersection Delay [s/veh]	104.44													
Intersection LOS	F													
Intersection V/C	1.130													

Emissions

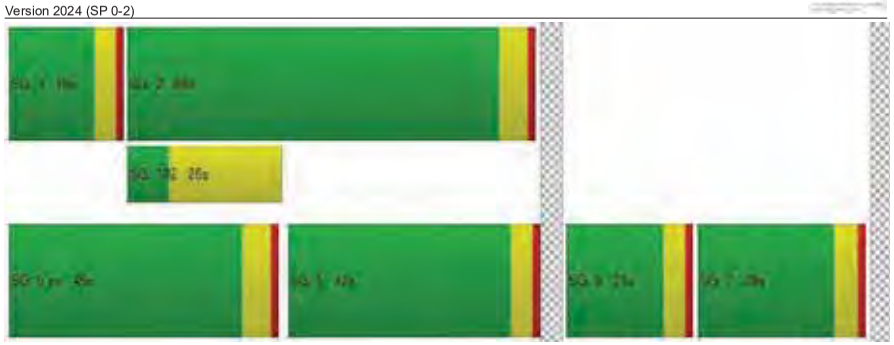
Vehicle Miles Traveled [mph]	257.93	154.08	80.73	13.55	250.86	137.57	7.95	8.14	3.62	3.67	3.49
Stops [stops/h]	2582.29	122.64	71.32	66.60	1177.49	573.57	140.35	143.56	106.20	107.53	103.10
Fuel consumption [US gal/h]	117.43	8.10	4.39	2.28	37.51	17.59	2.83	2.89	2.24	2.26	2.18
CO [g/h]	8208.09	566.42	306.75	159.05	2622.26	1229.80	197.70	202.23	156.43	158.22	152.26
NOx [g/h]	1597.00	110.20	59.68	30.95	510.20	239.27	38.47	39.35	30.43	30.78	29.62
VOC [g/h]	1902.30	131.27	71.09	36.86	607.73	285.02	45.82	46.87	36.25	36.67	35.29

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.364	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
I_b,int, Bicycle LOS Score for Intersection	3.167		2.869		2.134		1.866	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	38.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.082

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2219	463	0	520	1821	0	0	0	1266	0	0	528
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	177	27	0	0	-37	0	0	0	-25	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	147	0	0	0	0	0	0	372	0	0	158
Total Hourly Volume [veh/h]	0	2396	343	0	520	1784	0	0	0	869	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	713	102	0	155	531	0	0	0	259	0	0	110
Total Analysis Volume [veh/h]	0	2852	408	0	619	2124	0	0	0	1035	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	25	35	22	
g / C, Green / Cycle	0.47	0.47	0.37	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.48	0.47	0.35	0.31	0.37	
s, saturation flow rate [veh/h]	5094	1718	1781	6792	2813	
c, Capacity [veh/h]	2395	808	661	3476	927	
d1, Uniform Delay [s]	18.02	18.02	20.61	11.79	22.80	
k, delay calibration	0.50	0.50	0.14	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	23.92	33.91	8.51	0.81	54.00	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	1.02	1.01	0.94	0.61	1.12	
d, Delay for Lane Group [s/veh]	41.94	51.93	29.13	12.60	76.80	
Lane Group LOS	F	F	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	14.98	17.40	9.47	4.57	13.71	
50th-Percentile Queue Length [ft/ln]	374.55	435.04	236.75	114.16	342.77	
95th-Percentile Queue Length [veh/ln]	21.66	24.41	14.52	8.07	21.12	
95th-Percentile Queue Length [ft/ln]	541.39	610.18	362.92	201.77	528.02	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	43.37	51.93	29.13	29.13	12.60	0.00	0.00	0.00	76.80	0.00	0.00	0.00
Movement LOS		D	D	C	C	B				F			
d_A, Approach Delay [s/veh]	44.44			16.33			76.80				0.00		
Approach LOS	D			B			E				A		
d_I, Intersection Delay [s/veh]	38.24												
Intersection LOS	D												
Intersection V/C	1.082												

Emissions

Vehicle Miles Traveled [mph]	353.78	117.93	106.02	363.78	74.07	
Stops [stops/h]	2379.48	921.25	501.35	966.99	1451.73	
Fuel consumption [US gal/h]	62.58	24.11	13.54	29.94	27.24	
CO [g/h]	4374.32	1685.21	946.20	2092.83	1904.38	
NOx [g/h]	851.08	327.88	184.10	407.19	370.52	
VOC [g/h]	1013.79	390.56	219.29	485.03	441.36	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.272
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
I_b,int, Bicycle LOS Score for Intersection	2.965	2.436	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	42.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.017

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	68	1965	251	4	537	2174	372	156	9	24	1	72	32	557
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	204	19	0	0	-62	0	0	0	0	0	-2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	81	0	0	0	112	0	0	7	0	0	0	167
Total Hourly Volume [veh/h]	1	74	2169	189	4	537	2112	260	156	9	17	1	70	32	390
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	19	553	48	1	137	539	66	40	2	4	0	18	8	99
Total Analysis Volume [veh/h]	1	76	2213	193	4	548	2155	265	159	9	17	1	71	33	398
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	50	50	15	61	61	8	8	8	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.14	0.59	0.59	0.07	0.07	0.07	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.48	0.13	0.18	0.47	0.19	0.05	0.01	0.01	0.04	0.15	0.15
s, saturation flow rate [veh/h]	3113	4584	1431	3113	4584	1431	3113	1683	1431	1603	1464	1431
c, Capacity [veh/h]	127	2214	691	451	2691	840	227	123	104	232	212	207
d1, Uniform Delay [s]	48.86	26.77	16.01	44.30	16.68	10.85	46.91	44.75	45.05	39.67	44.30	44.30
k, delay calibration	0.04	0.04	0.04	0.09	0.04	0.04	0.08	0.08	0.08	0.08	0.45	0.45
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.72	5.29	0.08	105.05	0.22	0.08	2.89	0.19	0.54	0.56	65.94	66.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	1.00	0.28	1.22	0.80	0.32	0.70	0.07	0.16	0.31	1.03	1.03
d, Delay for Lane Group [s/veh]	50.59	32.06	16.09	149.36	16.90	10.93	49.80	44.94	45.58	40.23	110.24	110.93
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.01	18.17	2.69	12.29	12.21	2.94	2.08	0.22	0.42	1.67	9.26	9.09
50th-Percentile Queue Length [ft/ln]	25.15	454.22	67.20	307.37	305.31	73.40	52.11	5.54	10.62	41.81	231.53	227.26
95th-Percentile Queue Length [veh/ln]	1.81	25.16	4.84	19.64	17.94	5.28	3.75	0.40	0.76	3.01	14.44	14.22
95th-Percentile Queue Length [ft/ln]	45.28	628.98	120.97	490.90	448.60	132.12	93.79	9.97	19.12	75.26	360.88	355.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.59	50.59	32.06	16.09	149.3	149.3	16.90	10.93	49.80	44.94	45.58	40.23	40.23	110.2	110.6
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	31.40				40.97				49.18			100.51			
Approach LOS	C				D				D			F			
d_I, Intersection Delay [s/veh]	42.22														
Intersection LOS	D														
Intersection V/C	1.017														

Emissions

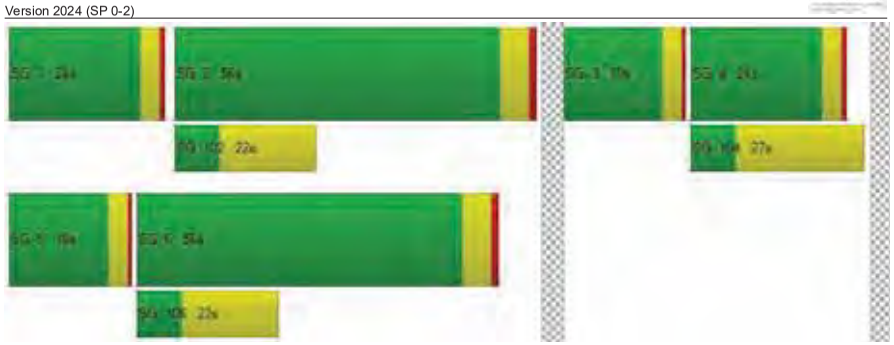
Vehicle Miles Traveled [mph]	17.18	493.89	43.07	79.87	311.82	38.34	20.28	1.15	2.17	25.27	76.50	74.77
Stops [stops/h]	69.98	1895.34	93.47	855.07	1274.01	102.09	144.96	7.70	14.77	58.15	322.04	316.10
Fuel consumption [US gal/h]	1.89	45.24	2.92	24.79	27.29	2.73	3.25	0.17	0.33	1.95	9.82	9.63
CO [g/h]	131.88	3162.47	204.21	1732.59	1907.29	190.97	226.97	12.03	22.97	136.37	686.27	673.31
NOx [g/h]	25.66	615.30	39.73	337.10	371.09	37.16	44.16	2.34	4.47	26.53	133.52	131.00
VOC [g/h]	30.56	732.93	47.33	401.54	442.03	44.26	52.60	2.79	5.32	31.61	159.05	156.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.35	0.00	41.35	41.35
l_p,int, Pedestrian LOS Score for Intersectio	3.493	0.000	2.580	2.837
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	976	976	396	299
d_b, Bicycle Delay [s]	13.58	13.58	33.29	37.42
l_b,int, Bicycle LOS Score for Intersection	2.969	2.954	1.718	2.548
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	121	1681	388	1	95	1737	444	2	355	391	78	425	318	248
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	229	57	0	0	-64	0	0	0	0	0	-17	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	134	0	0	0	133	0	0	0	23	0	0	74
Total Hourly Volume [veh/h]	2	121	1910	311	1	95	1673	311	2	355	391	55	408	318	174
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	508	83	0	25	445	83	1	94	104	15	109	85	46
Total Analysis Volume [veh/h]	2	129	2032	331	1	101	1780	331	2	378	416	59	434	338	185
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	13	82	82	10	79	79	20	23	23	20	23	23
g / C, Green / Cycle	0.09	0.52	0.52	0.06	0.50	0.50	0.12	0.14	0.14	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.30	0.21	0.03	0.35	0.21	0.11	0.13	0.13	0.13	0.10	0.12
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1775	3431	3532	1577
c, Capacity [veh/h]	151	3520	824	218	2529	789	427	267	255	437	518	231
d1, Uniform Delay [s]	70.87	25.63	22.65	70.93	30.25	24.80	67.65	66.21	66.22	68.43	63.22	64.77
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.04	0.23	0.23	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.03	0.70	1.46	0.58	1.67	1.64	2.57	20.82	21.61	10.67	0.52	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.58	0.40	0.47	0.70	0.42	0.89	0.91	0.91	0.99	0.65	0.80
d, Delay for Lane Group [s/veh]	90.91	26.32	24.11	71.51	31.92	26.43	70.22	87.03	87.83	79.10	63.74	67.21
Lane Group LOS	F	C	C	E	C	C	E	F	F	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.08	13.20	7.84	1.98	17.07	7.99	7.69	11.16	10.75	9.38	6.46	7.35
50th-Percentile Queue Length [ft/ln]	151.91	330.00	195.97	49.43	426.80	199.70	192.37	279.09	268.70	234.62	161.38	183.85
95th-Percentile Queue Length [veh/ln]	10.12	19.16	12.43	3.56	23.85	12.62	12.24	16.64	16.12	14.41	10.62	11.80
95th-Percentile Queue Length [ft/ln]	252.98	478.97	310.76	88.98	596.21	315.58	306.10	416.08	403.12	360.23	265.55	295.03

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.91	90.91	26.32	24.11	71.51	71.51	31.92	26.43	70.22	70.22	87.36	87.83	79.10	63.74	67.21
Movement LOS	F	F	C	C	E	E	C	C	E	E	F	F	E	E	E
d_A, Approach Delay [s/veh]	29.42				32.92				79.78				71.38		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	43.37														
Intersection LOS	D														
Intersection V/C	0.761														

Emissions

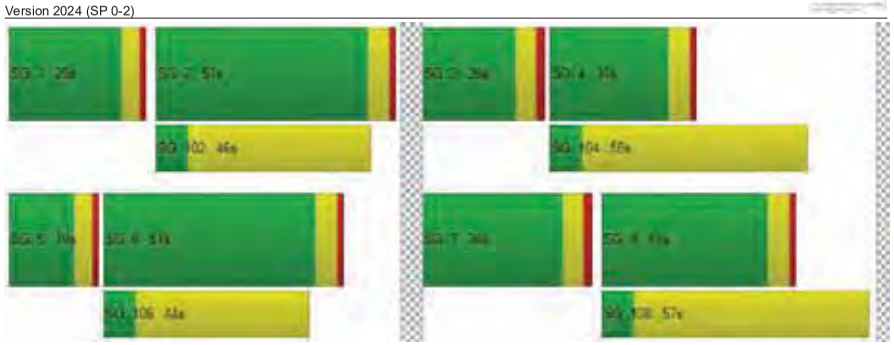
Vehicle Miles Traveled [mph]	52.16	809.00	131.78	22.76	397.26	73.87	94.70	60.47	57.91	45.50	35.44	19.40
Stops [stops/h]	139.33	1210.71	179.75	90.68	1174.39	183.17	352.88	255.98	246.45	430.39	296.03	168.62
Fuel consumption [US gal/h]	5.34	50.88	8.04	3.39	39.78	6.59	11.28	8.20	7.90	11.24	7.48	4.26
CO [g/h]	373.26	3556.32	562.15	237.09	2780.57	460.65	788.30	573.16	552.08	785.37	522.72	297.77
NOx [g/h]	72.62	691.93	109.37	46.13	541.00	89.62	153.37	111.52	107.41	152.80	101.70	57.94
VOC [g/h]	86.51	824.21	130.28	54.95	644.42	106.76	182.70	132.84	127.95	182.02	121.15	69.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.600	3.916	2.806	3.006
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.643	2.794	1.972	2.410
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	79.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.018

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	57	1777	2	2	18	1704	532	257	5	15	4	9	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	286	0	0	0	-81	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	160	0	0	5	0	0	5
Total Hourly Volume [veh/h]	1	57	2063	1	2	18	1623	372	257	5	10	4	9	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	16	593	0	1	5	466	107	74	1	3	1	3	3
Total Analysis Volume [veh/h]	1	66	2371	1	2	21	1866	428	295	6	11	5	10	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	73	73	73	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	43	43	1	40	40	9	9	2
g / C, Green / Cycle	0.05	0.59	0.59	0.02	0.55	0.55	0.12	0.12	0.03
(v / s)_i Volume / Saturation Flow Rate	0.04	0.63	0.63	0.01	0.61	0.65	0.09	0.09	0.02
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1870	1754	1781	1769	1725
c, Capacity [veh/h]	92	1093	1093	29	1026	963	219	217	51
d1, Uniform Delay [s]	34.04	15.14	15.14	35.73	16.44	16.44	30.75	30.75	34.86
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.98	53.36	53.42	16.03	66.19	96.37	4.33	4.37	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	1.09	1.09	0.79	1.12	1.19	0.72	0.72	0.51
d, Delay for Lane Group [s/veh]	38.02	68.50	68.56	51.76	82.63	112.81	35.08	35.12	37.79
Lane Group LOS	D	F	F	D	F	F	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.24	30.63	30.64	0.50	30.41	36.60	2.81	2.80	0.48
50th-Percentile Queue Length [ft/ln]	30.89	765.78	766.12	12.48	760.17	915.07	70.26	69.91	12.08
95th-Percentile Queue Length [veh/ln]	2.22	42.42	42.44	0.90	42.98	52.97	5.06	5.03	0.87
95th-Percentile Queue Length [ft/ln]	55.59	1060.55	1061.10	22.46	1074.54	1324.31	126.47	125.84	21.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.02	38.02	68.53	68.56	51.76	51.76	94.26	112.8	35.10	35.12	35.12	37.79	37.79	37.79
Movement LOS	D	D	F	E	D	D	F	F	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	67.70				97.26				35.10			37.79		
Approach LOS	E				F				D			D		
d_I, Intersection Delay [s/veh]	79.00													
Intersection LOS	E													
Intersection V/C	1.018													

Emissions

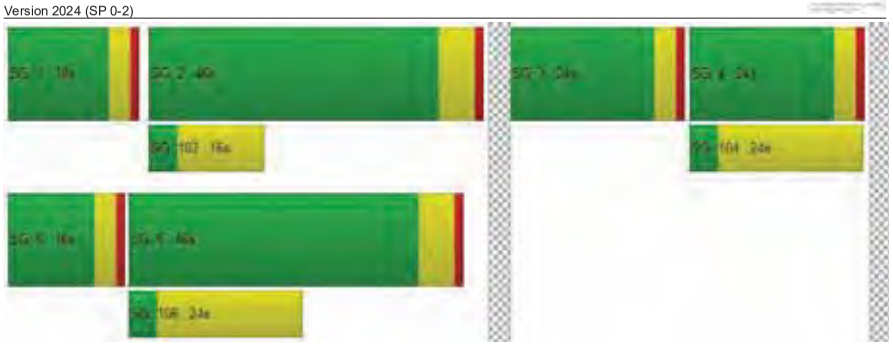
Vehicle Miles Traveled [mph]	23.71	419.68	419.68	9.16	456.66	456.66	37.68	37.46	0.49
Stops [stops/h]	61.15	1516.12	1516.80	24.71	1505.02	1811.70	139.11	138.42	23.92
Fuel consumption [US gal/h]	1.83	42.19	42.20	1.01	62.52	75.26	3.44	3.42	0.35
CO [g/h]	128.07	2948.74	2950.02	70.42	4369.82	5260.38	240.21	238.95	24.64
NOx [g/h]	24.92	573.72	573.97	13.70	850.21	1023.48	46.74	46.49	4.79
VOC [g/h]	29.68	683.40	683.70	16.32	1012.75	1219.14	55.67	55.38	5.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.81	0.00	28.81	28.81
l_p,int, Pedestrian LOS Score for Intersectio	3.137	0.000	2.258	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	1100	550	550
d_b, Bicycle Delay [s]	7.37	7.37	19.12	19.12
l_b,int, Bicycle LOS Score for Intersection	3.572	3.586	2.083	1.611
Bicycle LOS	D	D	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.899

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	92	1693	1327	397	153	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	66	0	0	0
Site-Generated Trips [veh/h]	0	12	286	-81	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	119	0	17
Total Hourly Volume [veh/h]	1	104	1979	1312	278	153	41
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	30	569	377	80	44	12
Total Analysis Volume [veh/h]	1	120	2275	1508	320	176	47
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	6	48	38	38	9	9
g / C, Green / Cycle	0.09	0.72	0.57	0.57	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.07	0.64	0.49	0.52	0.10	0.03
s, saturation flow rate [veh/h]	1781	3560	1870	1761	1781	1589
c, Capacity [veh/h]	157	2564	1071	1009	233	208
d1, Uniform Delay [s]	29.97	7.28	12.00	12.75	28.15	26.14
k, delay calibration	0.04	0.15	0.32	0.36	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.03	1.65	5.84	9.95	4.91	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.89	0.85	0.91	0.75	0.23
d, Delay for Lane Group [s/veh]	33.00	8.93	17.84	22.70	33.06	26.68
Lane Group LOS	C	A	B	C	C	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.96	7.91	10.80	12.42	2.92	0.68
50th-Percentile Queue Length [ft/ln]	49.06	197.79	269.94	310.43	72.89	16.89
95th-Percentile Queue Length [veh/ln]	3.53	12.52	16.19	18.20	5.25	1.22
95th-Percentile Queue Length [ft/ln]	88.30	313.11	404.66	454.91	131.20	30.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.00	33.00	8.93	19.75	22.70	33.06	26.68
Movement LOS	C	C	A	B	C	C	C
d_A, Approach Delay [s/veh]	10.15			20.27		31.72	
Approach LOS	B			C		C	
d_I, Intersection Delay [s/veh]	15.39						
Intersection LOS	B						
Intersection V/C	0.899						

Emissions

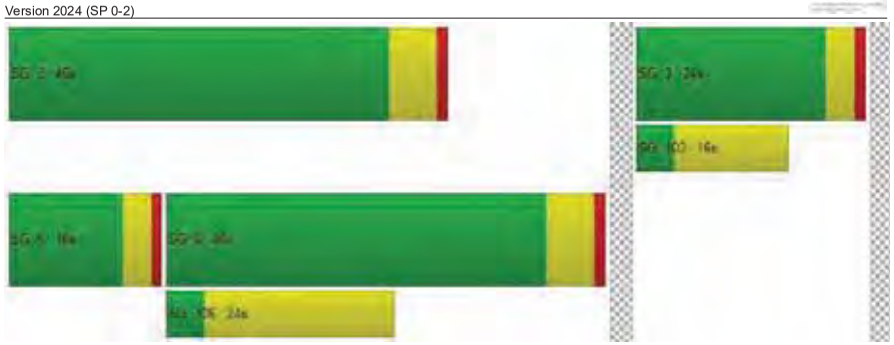
Vehicle Miles Traveled [mph]	84.42	1587.29	323.43	323.43	59.38	15.86
Stops [stops/h]	105.42	850.06	580.07	667.09	156.63	36.29
Fuel consumption [US gal/h]	4.87	74.17	19.84	21.22	4.49	1.11
CO [g/h]	340.44	5184.80	1386.60	1483.46	314.13	77.48
NOx [g/h]	66.24	1008.77	269.78	288.63	61.12	15.08
VOC [g/h]	78.90	1201.63	321.36	343.81	72.80	17.96

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.98	0.00	25.98
l_p,int, Pedestrian LOS Score for Intersectio	3.062	0.000	2.212
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1194	1194	597
d_b, Bicycle Delay [s]	5.44	5.44	16.49
l_b,int, Bicycle LOS Score for Intersection	3.535	3.166	1.560
Bicycle LOS	D	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	127.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.152

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	53	773	21	249	386	750	514	69	78	136	241	520
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	4	0	100	0	0	0	0	17	0	0
Site-Generated Trips [veh/h]	91	333	38	0	64	-145	-35	-6	16	2	-25	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	19	0	0	182	0	0	28	0	0	156
Total Hourly Volume [veh/h]	144	1106	44	249	550	423	479	63	66	155	216	364
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	311	12	70	154	119	135	18	19	44	61	102
Total Analysis Volume [veh/h]	162	1243	49	280	618	475	538	71	74	174	243	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	91	91	91	91	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	10	25	25	12	27	27	15	15	20	20
g / C, Green / Cycle	0.11	0.28	0.28	0.13	0.30	0.30	0.17	0.17	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.35	0.35	0.16	0.31	0.32	0.19	0.19	0.23	0.25
s, saturation flow rate [veh/h]	1781	1870	1845	1781	1870	1607	1781	1752	1824	1589
c, Capacity [veh/h]	197	515	508	235	556	477	294	289	402	350
d1, Uniform Delay [s]	39.53	32.90	32.90	39.40	31.91	31.91	37.90	37.90	35.40	35.40
k, delay calibration	0.12	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.43	0.49
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.42	132.45	134.34	119.58	50.74	61.74	106.20	107.68	60.35	89.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	1.26	1.27	1.19	1.05	1.07	1.17	1.17	1.07	1.14
d, Delay for Lane Group [s/veh]	48.95	165.35	167.24	158.98	82.65	93.65	144.10	145.58	95.75	125.23
Lane Group LOS	D	F	F	F	F	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.00	29.88	29.75	12.66	18.66	17.49	15.08	14.96	15.39	16.27
50th-Percentile Queue Length [ft/ln]	100.04	746.99	743.72	316.59	466.40	437.24	377.08	373.99	384.66	406.79
95th-Percentile Queue Length [veh/ln]	7.20	44.21	44.10	19.88	26.49	25.41	23.06	22.92	22.60	24.48
95th-Percentile Queue Length [ft/ln]	180.07	1105.22	1102.47	497.12	662.15	635.17	576.58	573.10	564.91	611.92

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.95	166.25	167.24	158.98	83.30	93.65	144.64	145.58	145.58	95.75	95.75	125.23
Movement LOS	D	F	F	F	F	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	153.21			102.31			144.83			109.95		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	127.53											
Intersection LOS	F											
Intersection V/C	1.152											

Emissions

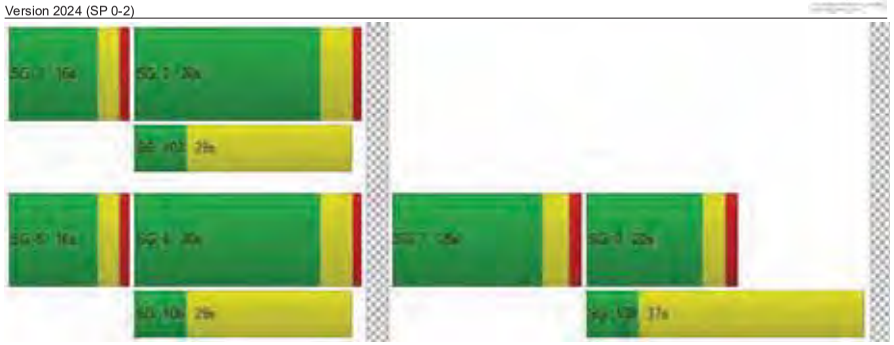
Vehicle Miles Traveled [mph]	93.56	374.97	371.19	195.36	405.60	357.00	25.87	25.52	47.36	43.99
Stops [stops/h]	158.65	1184.65	1179.47	502.09	739.66	693.41	598.02	593.12	610.03	645.13
Fuel consumption [US gal/h]	6.34	43.82	43.67	24.92	37.08	34.57	14.45	14.37	13.66	15.51
CO [g/h]	443.28	3063.33	3052.33	1741.77	2592.08	2416.61	1010.05	1004.70	955.11	1084.13
NOx [g/h]	86.25	596.01	593.87	338.89	504.32	470.18	196.52	195.48	185.83	210.93
VOC [g/h]	102.73	709.96	707.41	403.67	600.74	560.07	234.09	232.85	221.36	251.26

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		0.0		11.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	35.07		0.00		35.07		35.07	
l_p,int, Pedestrian LOS Score for Intersectio	2.788		0.000		2.556		2.617	
Crosswalk LOS	C		F		B		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	544		544		341		441	
d_b, Bicycle Delay [s]	24.06		24.06		31.22		27.60	
l_b,int, Bicycle LOS Score for Intersection	2.775		2.842		2.733		3.180	
Bicycle LOS	C		C		B		C	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.970

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	575	254	291	262	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	27	0	1	130	0	0
Site-Generated Trips [veh/h]	-14	498	229	-148	-36	-4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	1073	484	273	226	84
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	298	134	76	63	23
Total Analysis Volume [veh/h]	150	1192	538	303	251	93
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	7	40	29	29	11	11
g / C, Green / Cycle	0.11	0.66	0.48	0.48	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.64	0.29	0.19	0.14	0.06
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	193	1225	900	765	322	287
d1, Uniform Delay [s]	26.43	9.98	11.51	10.13	23.80	21.71
k, delay calibration	0.04	0.42	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.54	17.89	0.91	0.47	4.13	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.97	0.60	0.40	0.78	0.32
d, Delay for Lane Group [s/veh]	28.96	27.87	12.42	10.60	27.93	22.36
Lane Group LOS	C	C	B	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.94	11.98	3.80	1.87	3.57	1.13
50th-Percentile Queue Length [ft/ln]	48.56	299.60	94.91	46.74	89.19	28.33
95th-Percentile Queue Length [veh/ln]	3.50	17.66	6.83	3.37	6.42	2.04
95th-Percentile Queue Length [ft/ln]	87.41	441.53	170.83	84.13	160.54	50.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.96	27.87	12.42	10.60	27.93	22.36
Movement LOS	C	C	B	B	C	C
d_A, Approach Delay [s/veh]	27.99		11.77		26.42	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.38					
Intersection LOS	C					
Intersection V/C	0.970					

Emissions

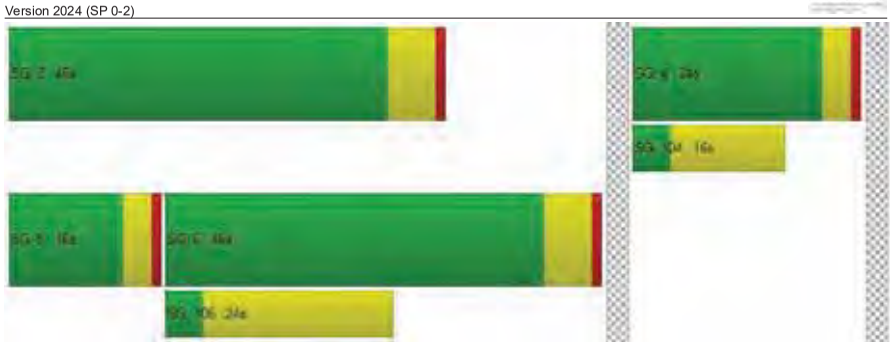
Vehicle Miles Traveled [mph]	18.51	147.07	310.71	174.99	58.95	21.84
Stops [stops/h]	115.15	710.43	225.05	110.83	211.49	67.17
Fuel consumption [US gal/h]	3.64	24.88	15.93	8.57	5.02	1.69
CO [g/h]	254.59	1738.83	1113.78	598.77	351.02	118.38
NOx [g/h]	49.53	338.31	216.70	116.50	68.30	23.03
VOC [g/h]	59.00	402.99	258.13	138.77	81.35	27.44

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.89	0.00	22.89
l_p,int, Pedestrian LOS Score for Intersectio	3.099	0.000	2.182
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1317	1317	659
d_b, Bicycle Delay [s]	3.54	3.54	13.66
l_b,int, Bicycle LOS Score for Intersection	3.774	2.947	1.560
Bicycle LOS	D	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	291.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.082

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	328	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	3	7	0	0	0	0	0
Site-Generated Trips [veh/h]	2	446	0	0	213	13	38	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1104	0	14	541	16	45	0	5	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	300	0	4	147	4	12	0	1	0	0	10
Total Analysis Volume [veh/h]	2	1200	0	14	588	17	49	0	5	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	1.08	0.00	0.01	0.00	0.00	0.17
d_M, Delay for Movement [s/veh]	8.70	0.00	0.00	11.21	0.00	0.00	291.08	260.68	218.77	72.88	57.97	24.27
Movement LOS	A	A	A	B	A	A	F	F	F	F	F	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	4.76	4.76	4.76	0.61	0.61	0.61
95th-Percentile Queue Length [ft/ln]	0.08	0.08	0.08	0.59	0.59	0.59	119.05	119.05	119.05	15.28	15.28	15.28
d_A, Approach Delay [s/veh]	0.01			0.25			284.39			24.27		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	8.61											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	3,003.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	7.295

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	408	41	74	254	0	0	0	0	11	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	4	0	0	9	141	445	6	51	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	412	41	74	268	141	482	6	69	11	2	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	111	11	20	72	38	130	2	19	3	1	67
Total Analysis Volume [veh/h]	63	443	44	80	288	152	518	6	74	12	2	269
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.07	0.00	0.00	7.29	0.03	0.11	0.09	0.01	0.45
d_M, Delay for Movement [s/veh]	8.41	0.00	0.00	8.61	0.00	0.00	3003.32	2973.05	2957.91	40.81	35.39	19.42
Movement LOS	A	A	A	A	A	A	F	F	F	E	E	C
95th-Percentile Queue Length [veh/ln]	0.18	0.00	0.00	0.24	0.00	0.00	68.00	68.00	68.00	3.33	3.33	3.33
95th-Percentile Queue Length [ft/ln]	4.46	0.00	0.00	6.01	0.00	0.00	1699.93	1699.93	1699.93	83.36	83.36	83.36
d_A, Approach Delay [s/veh]	0.96			1.33			2997.40			20.44		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	922.32											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	287.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.425

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	460	201	51	0	862	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-13	-41	16	-52	0	-170	91
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	6	0	0	37	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	6	419	217	36	0	692	273
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	116	60	10	0	191	75
Total Analysis Volume [veh/h]	0	7	462	240	40	0	764	301
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.42	0.59	0.00	0.00	0.00	0.60	0.00
d_M, Delay for Movement [s/veh]	287.57	287.57	73.70	0.00	0.00	18.13	9.27	0.00
Movement LOS	F	F	F	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	13.80	13.80	13.80	0.00	0.00	2.18	2.18	2.18
95th-Percentile Queue Length [ft/ln]	344.90	344.90	344.90	0.00	0.00	54.39	54.39	54.39
d_A, Approach Delay [s/veh]	76.89			0.00		6.65		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	23.79							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	52.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.070

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	9	149	80	2	30	779	37	11	17	0	240	45	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-76	-59	0	4	-194	-36	20	15	0	-148	-26	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	73	21	2	34	585	1	31	32	0	92	19	75
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	22	6	1	10	176	0	9	10	0	28	6	23
Total Analysis Volume [veh/h]	11	88	25	2	41	705	1	37	39	0	111	23	90
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	617	749	537	589
Degree of Utilization, x	0.20	1.07	0.14	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.75	20.10	0.49	1.77
95th-Percentile Queue Length [ft]	18.65	502.49	12.27	44.35
Approach Delay [s/veh]	10.30	76.09	10.81	12.82
Approach LOS	B	F	B	B
Intersection Delay [s/veh]	52.83			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	17.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.282

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	110	126	1	106	95	0	67	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-31	0	-5	0	0	80	-1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	95	1	101	95	0	147	127
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	25	0	27	25	0	39	33
Total Analysis Volume [veh/h]	116	100	1	106	100	0	155	134
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.28	0.11	0.00	0.00	0.00	0.00	0.11	0.00
d_M, Delay for Movement [s/veh]	17.18	9.56	8.81	0.00	0.00	10.12	7.97	0.00
Movement LOS	C	A	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.15	0.38	0.00	0.00	0.00	0.38	0.38	0.00
95th-Percentile Queue Length [ft/ln]	28.63	9.46	0.05	0.05	0.05	9.58	9.58	0.00
d_A, Approach Delay [s/veh]	13.65		0.04			4.28		
Approach LOS	B		A			A		
d_I, Intersection Delay [s/veh]	5.89							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.208

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	83	80	145	57	121	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-31	0	0	80
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	80	114	57	121	175
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	22	31	15	33	48
Total Analysis Volume [veh/h]	90	87	124	62	132	190
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.09	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	15.96	11.52	0.00	0.00	7.86	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.27	1.27	0.00	0.00	0.31	0.00
95th-Percentile Queue Length [ft/ln]	31.67	31.67	0.00	0.00	7.86	0.00
d_A, Approach Delay [s/veh]	13.78		0.00		3.22	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.08					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.118

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	11	165	19	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	80	0	0	-31	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	10	11	134	19	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	3	3	36	5	5
Total Analysis Volume [veh/h]	160	11	12	146	21	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	727	740	681	753	753	712
Degree of Utilization, x	0.12	0.12	0.02	0.10	0.10	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.40	0.39	0.05	0.32	0.32	0.18
95th-Percentile Queue Length [ft]	9.96	9.76	1.34	8.02	8.02	4.57
Approach Delay [s/veh]	8.26		8.00			8.37
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.16					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	64.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	296	125	50	536	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	80	0	0	0	0	0	0	0	-31	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	0	18	66	1	8	4	296	94	50	536	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	0	5	17	0	2	1	76	24	13	138	4
Total Analysis Volume [veh/h]	149	0	19	68	1	8	4	305	97	52	553	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.76	0.00	0.03	0.35	0.00	0.02	0.00	0.00	0.00	0.04	0.01	0.00
d_M, Delay for Movement [s/veh]	64.30	21.44	10.36	32.77	31.72	21.32	8.60	0.00	0.00	8.26	0.00	0.00
Movement LOS	F	C	B	D	D	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.04	0.08	0.08	1.58	1.58	1.58	0.01	0.00	0.00	0.14	0.00	0.00
95th-Percentile Queue Length [ft/ln]	126.12	2.12	2.12	39.41	39.41	39.41	0.30	0.00	0.00	3.53	0.00	0.00
d_A, Approach Delay [s/veh]	58.20			31.56			0.08			0.69		
Approach LOS	F			D			A			A		
d_I, Intersection Delay [s/veh]	9.97											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

Intersection Setup

Name	Windfield Way				White Rock Rd				White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	72	5	189	5	5	5	5	632	184	0	378	502	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	57	0	0	2	0	0	55	0	0	0	2
Total Hourly Volume [veh/h]	72	5	132	5	5	3	5	632	129	0	378	502	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	1	34	1	1	1	1	163	33	0	97	129	1
Total Analysis Volume [veh/h]	74	5	136	5	5	3	5	652	133	0	390	518	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	6	12	1	7	1	57	57	28	84	84
g / C, Green / Cycle	0.05	0.10	0.01	0.06	0.01	0.47	0.47	0.23	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.00	0.00	0.00	0.22	0.22	0.22	0.14	0.14
s, saturation flow rate [veh/h]	1781	1598	1781	1754	1781	1870	1762	1781	1870	1866
c, Capacity [veh/h]	96	165	12	99	12	885	834	415	1308	1305
d1, Uniform Delay [s]	56.04	52.90	59.33	53.65	59.34	21.23	21.24	45.20	6.30	6.30
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.83	4.72	19.50	0.13	19.95	1.69	1.81	8.64	0.34	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.85	0.40	0.08	0.40	0.46	0.46	0.94	0.20	0.20
d, Delay for Lane Group [s/veh]	60.87	57.61	78.83	53.78	79.29	22.92	23.05	53.84	6.65	6.65
Lane Group LOS	E	E	E	D	E	C	C	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	4.39	0.22	0.23	0.22	7.96	7.55	12.32	2.28	2.28
50th-Percentile Queue Length [ft/ln]	58.56	109.83	5.48	5.83	5.50	199.09	188.65	308.10	57.00	56.89
95th-Percentile Queue Length [veh/ln]	4.22	7.83	0.39	0.42	0.40	12.59	12.05	18.08	4.10	4.10
95th-Percentile Queue Length [ft/ln]	105.40	195.77	9.86	10.49	9.90	314.79	301.28	452.04	102.59	102.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.87	57.61	57.61	78.83	53.78	53.78	79.29	22.97	23.05	53.84	53.84	6.65	6.65
Movement LOS	E	E	E	E	D	D	E	C	C	D	D	A	A
d_A, Approach Delay [s/veh]	58.73			63.41			23.34			26.85			
Approach LOS	E			E			C			C			
d_I, Intersection Delay [s/veh]	29.21												
Intersection LOS	C												
Intersection V/C	0.585												

Emissions

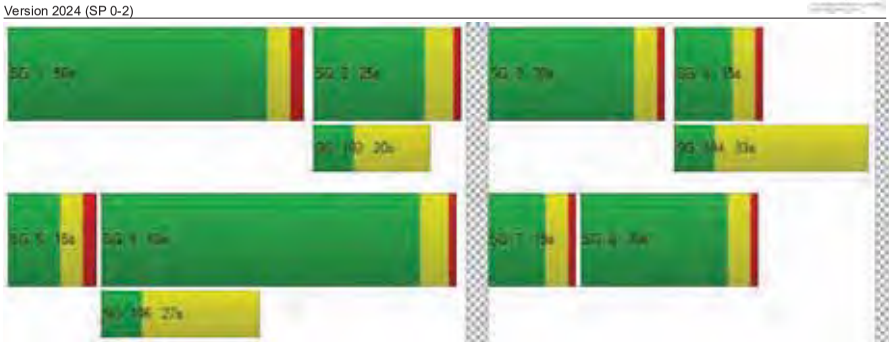
Vehicle Miles Traveled [mph]	28.51	54.33	0.17	0.28	4.21	339.83	320.77	97.19	64.98	64.85
Stops [stops/h]	70.27	131.80	6.57	6.99	6.60	238.91	226.38	369.72	68.40	68.27
Fuel consumption [US gal/h]	2.48	4.62	0.12	0.14	0.29	17.19	16.24	10.32	3.41	3.40
CO [g/h]	173.25	322.77	8.65	9.62	20.30	1201.81	1135.42	721.11	238.07	237.59
NOx [g/h]	33.71	62.80	1.68	1.87	3.95	233.83	220.91	140.30	46.32	46.23
VOC [g/h]	40.15	74.80	2.00	2.23	4.70	278.53	263.15	167.12	55.18	55.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		0.0						
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00						
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00						
d_p, Pedestrian Delay [s]	49.50		49.50		49.50		0.00						
l_p,int, Pedestrian LOS Score for Intersectio	2.313		1.967		2.673		0.000						
Crosswalk LOS	B		A		B		F						
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000						
c_b, Capacity of the bicycle lane [bicycles/h]	417		167		317		900						
d_b, Bicycle Delay [s]	37.60		50.42		42.50		18.15						
l_b,int, Bicycle LOS Score for Intersection	2.008		1.584		2.257		1.991						
Bicycle LOS	B		A		B		A						

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	59	7	20	114	11	203	0	243	569	62	55	729	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-12	0	-2	60	0	0	-6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	57	0	0	0	19	0	0	62
Total Hourly Volume [veh/h]	59	7	14	114	11	134	0	241	629	43	55	723	143
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	4	31	3	37	0	66	173	12	15	199	39
Total Analysis Volume [veh/h]	65	8	15	125	12	147	0	265	691	47	60	795	157
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	7	15	9	16	23	91	91	6	73	73
g / C, Green / Cycle	0.05	0.11	0.06	0.12	0.16	0.65	0.65	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.10	0.15	0.19	0.03	0.03	0.26	0.26
s, saturation flow rate [veh/h]	1781	1677	1781	1608	1781	3560	1589	1781	1870	1764
c, Capacity [veh/h]	83	179	108	187	286	2301	1027	77	982	927
d1, Uniform Delay [s]	66.05	56.61	65.75	60.70	57.92	10.86	9.02	66.32	21.38	21.38
k, delay calibration	0.04	0.13	0.40	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.95	0.40	125.62	12.62	5.37	0.34	0.08	6.24	1.81	1.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.13	1.16	0.85	0.93	0.30	0.05	0.78	0.50	0.50
d, Delay for Lane Group [s/veh]	72.00	57.01	191.37	73.32	63.29	11.20	9.10	72.56	23.19	23.30
Lane Group LOS	E	E	F	E	E	B	A	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.44	0.76	7.65	6.21	9.69	4.76	0.55	2.26	10.84	10.26
50th-Percentile Queue Length [ft/ln]	61.10	19.07	191.15	155.27	242.13	119.12	13.75	56.62	271.06	256.45
95th-Percentile Queue Length [veh/ln]	4.40	1.37	12.73	10.30	14.79	8.34	0.99	4.08	16.24	15.51
95th-Percentile Queue Length [ft/ln]	109.98	34.32	318.26	257.45	369.72	208.61	24.76	101.91	406.06	387.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.00	57.01	57.01	191.37	73.32	73.32	63.29	63.29	11.20	9.10	72.56	23.23	23.30
Movement LOS	E	E	E	F	E	E	E	E	B	A	E	C	C
d_A, Approach Delay [s/veh]	68.08			125.28			24.86				26.17		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	38.96												
Intersection LOS	D												
Intersection V/C	0.617												

Emissions

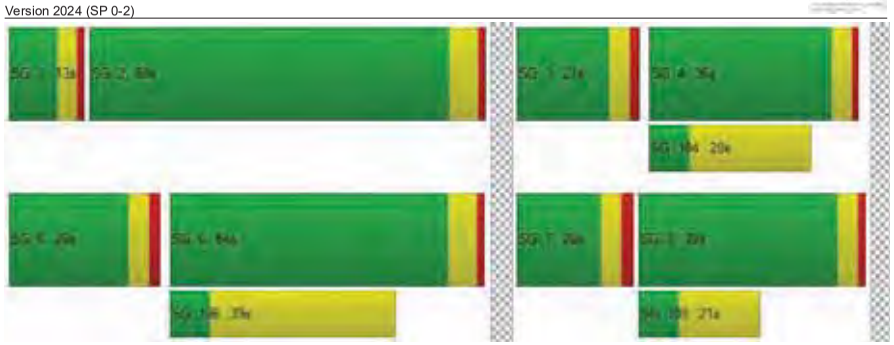
Vehicle Miles Traveled [mph]	3.25	1.15	5.81	7.39	27.78	72.44	4.93	21.01	171.52	161.83
Stops [stops/h]	62.85	19.61	196.61	159.71	249.04	245.04	14.15	58.24	278.80	263.78
Fuel consumption [US gal/h]	1.43	0.42	6.19	3.56	5.93	5.91	0.37	2.07	10.91	10.31
CO [g/h]	100.19	29.54	432.86	248.74	414.66	413.16	25.73	144.86	762.80	720.72
NOx [g/h]	19.49	5.75	84.22	48.40	80.68	80.39	5.01	28.18	148.41	140.23
VOC [g/h]	23.22	6.85	100.32	57.65	96.10	95.75	5.96	33.57	176.79	167.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
d_p, Pedestrian Delay [s]	59.43		59.43		59.43			0.00		
l_p,int, Pedestrian LOS Score for Intersectio	2.045		2.313		2.840			0.000		
Crosswalk LOS	B		B		C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	886		686		450			493		
d_b, Bicycle Delay [s]	21.73		30.23		42.04			39.75		
l_b,int, Bicycle LOS Score for Intersection	1.715		2.122		2.184			2.446		
Bicycle LOS	A		B		B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	260.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.331

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	115	53	383	193	45	46	218	278	224	320	839	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	30	0	-6	10	21	39	0	0	-15	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	124	0	0	17	0	0	67	0	0	92
Total Hourly Volume [veh/h]	115	52	289	193	39	39	239	317	157	320	824	215
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	15	83	55	11	11	69	91	45	92	237	62
Total Analysis Volume [veh/h]	132	60	332	222	45	45	275	364	180	368	947	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	163
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	143	143	143	143	143	143	143	143
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	35	35	21	21	24	45	25	45
g / C, Green / Cycle	0.25	0.25	0.14	0.14	0.17	0.32	0.18	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.24	0.12	0.05	0.15	0.31	0.21	0.66
s, saturation flow rate [veh/h]	1781	1627	1781	1718	1781	1767	1781	1804
c, Capacity [veh/h]	436	398	258	249	298	557	311	573
d1, Uniform Delay [s]	44.01	53.69	59.70	55.15	58.60	48.45	58.97	48.76
k, delay calibration	0.13	0.45	0.13	0.13	0.35	0.43	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	38.80	10.01	1.10	27.81	30.26	109.65	493.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.98	0.86	0.36	0.92	0.98	1.18	2.08
d, Delay for Lane Group [s/veh]	44.50	92.49	69.72	56.25	86.41	78.71	168.61	542.02
Lane Group LOS	D	F	E	E	F	E	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.92	18.27	8.60	3.03	12.11	23.77	20.76	98.85
50th-Percentile Queue Length [ft/ln]	97.94	456.83	214.90	75.66	302.81	594.22	518.89	2471.18
95th-Percentile Queue Length [veh/ln]	7.05	25.28	13.40	5.45	17.82	31.76	30.63	155.68
95th-Percentile Queue Length [ft/ln]	176.30	632.09	335.10	136.19	445.50	794.11	765.69	3891.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.50	92.49	92.49	69.72	56.25	56.25	86.41	78.71	78.71	168.61	542.02	542.02
Movement LOS	D	F	F	E	E	E	F	E	E	F	F	F
d_A, Approach Delay [s/veh]	80.40			65.83			81.29			454.05		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	260.64											
Intersection LOS	F											
Intersection V/C	1.331											

Emissions

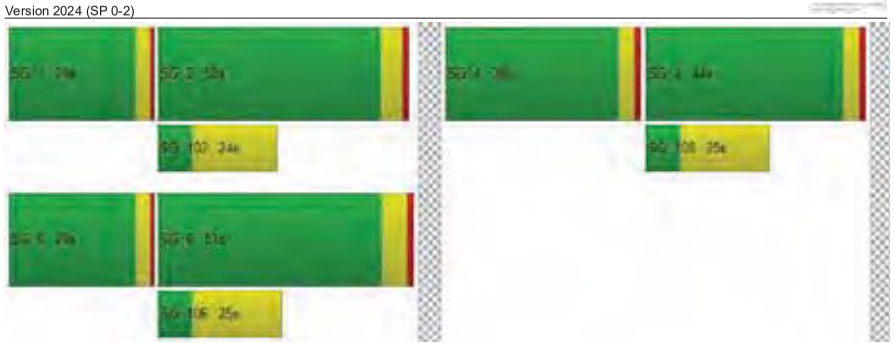
Vehicle Miles Traveled [mph]	227.13	674.49	45.01	18.25	96.29	190.49	166.05	538.76
Stops [stops/h]	98.74	460.56	216.65	76.28	305.28	599.07	523.13	2491.35
Fuel consumption [US gal/h]	11.09	37.69	6.20	2.20	10.49	19.86	22.35	167.61
CO [g/h]	775.23	2634.38	433.31	153.97	732.96	1388.43	1562.30	11715.95
NOx [g/h]	150.83	512.55	84.31	29.96	142.61	270.14	303.97	2279.50
VOC [g/h]	179.67	610.54	100.42	35.68	169.87	321.78	362.08	2715.29

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.84	60.84	60.84	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.564	2.312	2.716	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	487	557	626	630
d_b, Bicycle Delay [s]	40.86	37.16	33.71	33.51
l_b,int, Bicycle LOS Score for Intersection	2.629	2.102	3.022	4.289
Bicycle LOS	B	B	C	E

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	35.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.855

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	5	4	0	354	3	851	0	4	1112	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	69	0	0	-15	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	5	4	0	354	3	920	0	4	1097	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	1	0	113	1	295	0	1	352	10
Total Analysis Volume [veh/h]	0	0	6	5	0	454	4	1179	0	5	1406	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	81	81	81	81	81	81	81	81	81	81
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	1	1	20	20	0	38	38	1	38	38
g / C, Green / Cycle	0.01	0.01	0.25	0.25	0.01	0.47	0.47	0.01	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.32	0.32	0.00	0.39	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	15	13	438	391	10	876	876	12	1673	747
d1, Uniform Delay [s]	0.00	40.15	23.17	30.64	40.29	16.76	16.76	40.21	18.88	11.72
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	24.98	0.01	97.16	25.35	0.91	0.91	21.42	1.20	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.47	0.01	1.16	0.41	0.67	0.67	0.42	0.84	0.05
d, Delay for Lane Group [s/veh]	0.00	65.13	23.18	127.81	65.65	17.67	17.67	61.63	20.08	11.75
Lane Group LOS	A	E	C	F	E	B	B	E	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.21	0.07	17.88	0.15	8.06	8.06	0.17	10.83	0.38
50th-Percentile Queue Length [ft/ln]	0.00	5.13	1.80	446.98	3.68	201.60	201.60	4.23	270.78	9.47
95th-Percentile Queue Length [veh/ln]	0.00	0.37	0.13	26.91	0.26	12.72	12.72	0.30	16.23	0.68
95th-Percentile Queue Length [ft/ln]	0.00	9.24	3.24	672.68	6.62	318.03	318.03	7.62	405.72	17.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	65.13	23.18	23.18	127.81	65.65	17.67	17.67	61.63	20.08	11.75
Movement LOS	A	A	E	C	C	F	E	B	B	E	C	B
d_A, Approach Delay [s/veh]	65.13			126.67			17.83			19.99		
Approach LOS	E			F			B			B		
d_I, Intersection Delay [s/veh]	35.05											
Intersection LOS	D											
Intersection V/C	0.855											

Emissions

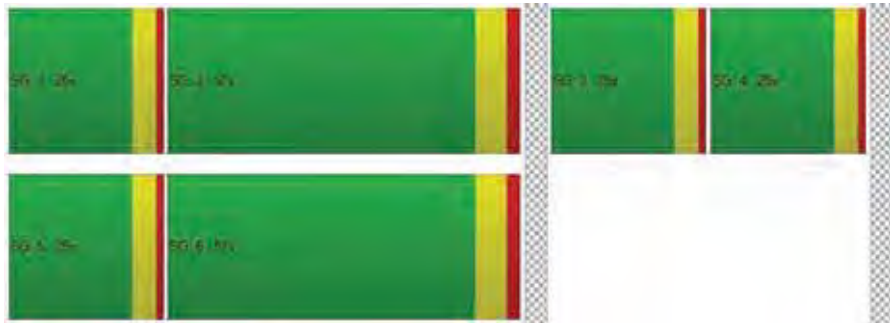
Vehicle Miles Traveled [mph]	0.00	0.30	2.37	215.36	1.80	266.00	266.00	0.87	245.27	6.98
Stops [stops/h]	0.00	9.10	3.19	792.49	6.52	357.43	357.43	7.50	960.19	16.79
Fuel consumption [US gal/h]	0.00	0.14	0.14	25.05	0.16	15.04	15.04	0.14	21.15	0.48
CO [g/h]	0.00	9.93	9.71	1751.03	11.45	1051.60	1051.60	9.79	1478.21	33.25
NOx [g/h]	0.00	1.93	1.89	340.69	2.23	204.60	204.60	1.90	287.61	6.47
VOC [g/h]	0.00	2.30	2.25	405.82	2.65	243.72	243.72	2.27	342.59	7.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	492	492	1231	1231
d_b, Bicycle Delay [s]	23.07	23.07	6.00	6.00
l_b,int, Bicycle LOS Score for Intersection	1.570	2.317	2.536	2.757
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.706

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	481	379	1054	278	213	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	58	11	-15	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	539	390	1039	278	213	81
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	162	117	313	84	64	24
Total Analysis Volume [veh/h]	649	470	1252	335	257	98
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	19	69	46	46	9	9	9
g / C, Green / Cycle	0.21	0.76	0.51	0.51	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.19	0.13	0.35	0.21	0.07	0.07	0.06
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	729	2716	1800	804	173	173	154
d1, Uniform Delay [s]	34.51	2.91	16.96	13.94	39.54	39.54	39.10
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	0.14	2.25	1.59	2.37	2.37	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.17	0.70	0.42	0.74	0.74	0.64
d, Delay for Lane Group [s/veh]	36.08	3.05	19.21	15.53	41.92	41.92	40.72
Lane Group LOS	D	A	B	B	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.89	0.87	9.70	4.37	2.84	2.84	2.13
50th-Percentile Queue Length [ft/ln]	172.23	21.82	242.46	109.30	71.06	71.06	53.17
95th-Percentile Queue Length [veh/ln]	11.19	1.57	14.81	7.80	5.12	5.12	3.83
95th-Percentile Queue Length [ft/ln]	279.85	39.28	370.14	195.02	127.91	127.91	95.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.08	3.05	19.21	15.53	41.92	40.72
Movement LOS	D	A	B	B	D	D
d_A, Approach Delay [s/veh]	22.20		18.43		41.59	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	22.50					
Intersection LOS	C					
Intersection V/C	0.706					

Emissions

Vehicle Miles Traveled [mph]	113.21	81.99	221.86	59.36	7.78	7.78	5.93
Stops [stops/h]	551.14	69.83	775.87	174.88	113.70	113.70	85.07
Fuel consumption [US gal/h]	12.47	4.05	18.32	4.47	2.04	2.04	1.53
CO [g/h]	871.64	283.29	1280.22	312.36	142.92	142.92	106.69
NOx [g/h]	169.59	55.12	249.08	60.77	27.81	27.81	20.76
VOC [g/h]	202.01	65.66	296.70	72.39	33.12	33.12	24.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		
l_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		
Crosswalk LOS	F		F		F		
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1360		716		360		
d_b, Bicycle Delay [s]	4.61		18.56		30.26		
l_b,int, Bicycle LOS Score for Intersection	2.483		2.869		2.165		
Bicycle LOS	B		C		B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	68.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.019

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	78	514	0	0	391	671	941	0	298	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	11	0	0	-4	0	-11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	78	525	0	0	387	624	930	0	268	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	166	0	0	122	197	294	0	85	0	0	0
Total Analysis Volume [veh/h]	0	99	665	0	0	490	790	1177	0	339	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0	
Auxiliary Signal Groups														
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0	
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Rest In Walk			No			No			No					
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0	
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	7	51	40	40	26	26	26	
g / C, Green / Cycle	0.08	0.57	0.44	0.44	0.29	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.14	0.50	0.33	0.33	0.21	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	147	2027	1567	699	518	518	462	
d1, Uniform Delay [s]	40.10	10.27	16.37	25.20	31.91	31.91	28.77	
k, delay calibration	0.04	0.50	0.50	0.50	0.49	0.49	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.00	0.43	0.52	75.64	82.57	82.57	3.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.33	0.31	1.13	1.14	1.14	0.73	
d, Delay for Lane Group [s/veh]	42.10	10.70	16.89	100.84	114.48	114.48	32.28	
Lane Group LOS	D	B	B	F	F	F	C	
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	2.18	3.35	3.27	28.56	22.71	22.71	6.85	
50th-Percentile Queue Length [ft/ln]	54.62	83.69	81.72	714.05	567.87	567.87	171.16	
95th-Percentile Queue Length [veh/ln]	3.93	6.03	5.88	40.69	32.97	32.97	11.14	
95th-Percentile Queue Length [ft/ln]	98.32	150.64	147.10	1017.24	824.23	824.23	278.44	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	42.10	10.70	0.00	0.00	16.89	100.84	114.48	114.48	32.28	0.00	0.00	0.00
Movement LOS	D	D	B			B	F	F	F	C			
d_A, Approach Delay [s/veh]	14.77				68.70			96.10			0.00		
Approach LOS	B				E			F			A		
d_I, Intersection Delay [s/veh]	68.80												
Intersection LOS	E												
Intersection V/C	1.019												

Emissions

Vehicle Miles Traveled [mph]	17.54	117.84	67.00	108.02	20.39	20.39	11.74	
Stops [stops/h]	87.40	267.81	261.50	1142.49	908.59	908.59	273.86	
Fuel consumption [US gal/h]	2.05	7.78	5.89	26.97	19.57	19.57	4.22	
CO [g/h]	143.52	543.77	411.50	1885.09	1367.76	1367.76	295.22	
NOx [g/h]	27.92	105.80	80.06	366.77	266.12	266.12	57.44	
VOC [g/h]	33.26	126.02	95.37	436.89	316.99	316.99	68.42	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.190	2.654	4.111	4.132
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	658	328	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	448	149	68	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	18	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1106	477	86	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	277	119	22	0	0
Total Analysis Volume [veh/h]	0	1106	477	86	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.47
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		11.47	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	445	227	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	51	9	22	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	449	278	47	26	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	112	70	12	7	1
Total Analysis Volume [veh/h]	0	449	278	47	26	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	7.92	0.00	0.00	0.00	15.14	10.51
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.22	0.22
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.51	5.51
d_A, Approach Delay [s/veh]	0.00		0.00		14.66	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.53					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.197

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	238	41	52	127	9	47	81	0	37	73	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-16	0	23	8	23	10	0	0	0	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	222	41	75	135	32	57	81	0	37	73	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	56	10	19	34	8	14	20	0	9	18	13
Total Analysis Volume [veh/h]	6	222	41	75	135	32	57	81	0	37	73	53
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.06	0.00	0.00	0.20	0.20	0.00	0.12	0.18	0.07
d_M, Delay for Movement [s/veh]	7.56	0.00	0.00	7.86	0.00	0.00	24.26	20.84	15.83	21.14	18.60	14.14
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.14	0.14	0.14	1.87	1.87	1.87	1.66	1.66	1.66
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	3.39	3.39	3.39	46.71	46.71	46.71	41.51	41.51	41.51
d_A, Approach Delay [s/veh]	0.17			2.44			22.25			17.73		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.12											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	1106	571	39	50
2	1073	554	38	49
3	1051	542	37	48
4	984	508	35	45
5	874	451	31	40
6	863	445	30	39
7	852	440	30	39
8	774	400	27	35
9	763	394	27	35
10	752	388	27	34
11	653	337	23	30
12	608	314	21	28
13	597	308	21	27
14	442	228	16	20
15	442	228	16	20
16	310	160	11	14
17	177	91	6	8
18	177	91	6	8
19	100	51	4	5
20	55	29	2	3
21	33	17	1	2
22	11	6	0	1
23	11	6	0	1
24	11	6	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1677	1	50	No	No	No	No	No	No	No	Yes	No	No
2	1	1627	1	49	No	No	No	No	No	No	No	Yes	No	No
3	1	1593	1	48	No	No	No	No	No	No	No	Yes	No	No
4	1	1492	1	45	No	No	No	No	No	No	No	Yes	No	No
5	1	1325	1	40	No	No	No	No	No	No	No	No	No	No
6	1	1308	1	39	No	No	No	No	No	No	No	No	No	No
7	1	1292	1	39	No	No	No	No	No	No	No	No	No	No
8	1	1174	1	35	No	No	No	No	No	No	No	No	No	No
9	1	1157	1	35	No	No	No	No	No	No	No	No	No	No
10	1	1140	1	34	No	No	No	No	No	No	No	No	No	No
11	1	990	1	30	No	No	No	No	No	No	No	No	No	No
12	1	922	1	28	No	No	No	No	No	No	No	No	No	No
13	1	905	1	27	No	No	No	No	No	No	No	No	No	No
14	1	670	1	20	No	No	No	No	No	No	No	No	No	No
15	1	670	1	20	No	No	No	No	No	No	No	No	No	No
16	1	470	1	14	No	No	No	No	No	No	No	No	No	No
17	1	268	1	8	No	No	No	No	No	No	No	No	No	No
18	1	268	1	8	No	No	No	No	No	No	No	No	No	No
19	1	151	1	5	No	No	No	No	No	No	No	No	No	No
20	1	84	1	3	No	No	No	No	No	No	No	No	No	No
21	1	50	1	2	No	No	No	No	No	No	No	No	No	No
22	1	17	1	1	No	No	No	No	No	No	No	No	No	No
23	1	17	1	1	No	No	No	No	No	No	No	No	No	No
24	1	17	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	24.3	284.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15	3:56
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	50
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1766	1766
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	512	483	263	557
2	497	469	255	540
3	486	459	250	529
4	456	430	234	496
5	404	382	208	440
6	399	377	205	434
7	394	372	203	429
8	358	338	184	390
9	353	333	181	384
10	348	328	179	379
11	302	285	155	329
12	282	266	145	306
13	276	261	142	301
14	205	193	105	223
15	205	193	105	223
16	143	135	74	156
17	82	77	42	89
18	82	77	42	89
19	46	43	24	50
20	26	24	13	28
21	15	14	8	17
22	5	5	3	6
23	5	5	3	6
24	5	5	3	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	995	1	557	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	966	1	540	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	945	1	529	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	886	1	496	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
5	2	786	1	440	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
6	2	776	1	434	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
7	2	766	1	429	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
8	2	696	1	390	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
9	2	686	1	384	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
10	2	676	1	379	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
11	2	587	1	329	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
12	2	548	1	306	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
13	2	537	1	301	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
14	2	398	1	223	No	No	No	Yes	No	No	No	No	Yes	No
15	2	398	1	223	No	No	No	Yes	No	No	No	No	Yes	No
16	2	278	1	156	No	No	No	No	No	No	No	No	No	No
17	2	159	1	89	No	No	No	No	No	No	No	No	No	No
18	2	159	1	89	No	No	No	No	No	No	No	No	No	No
19	2	89	1	50	No	No	No	No	No	No	No	No	No	No
20	2	50	1	28	No	No	No	No	No	No	No	No	No	No
21	2	29	1	17	No	No	No	No	No	No	No	No	No	No
22	2	10	1	6	No	No	No	No	No	No	No	No	No	No
23	2	10	1	6	No	No	No	No	No	No	No	No	No	No
24	2	10	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	3	7	10	13	15	13

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	20.4	2997.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:29	463:45
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	263	557
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1815	1815
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	965	253	425
2	936	245	412
3	917	240	404
4	859	225	378
5	762	200	336
6	753	197	332
7	743	195	327
8	676	177	298
9	666	175	293
10	656	172	289
11	569	149	251
12	531	139	234
13	521	137	230
14	386	101	170
15	386	101	170
16	270	71	119
17	154	40	68
18	154	40	68
19	87	23	38
20	48	13	21
21	29	8	13
22	10	3	4
23	10	3	4
24	10	3	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1218	1	425	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1181	1	412	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1157	1	404	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1084	1	378	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	962	1	336	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	950	1	332	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	938	1	327	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	853	1	298	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	841	1	293	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	828	1	289	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	718	1	251	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	670	1	234	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	658	1	230	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	487	1	170	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	487	1	170	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	341	1	119	No	No	No	Yes	No	No	No	No	No	No
17	1	194	1	68	No	No	No	No	No	No	No	No	No	No
18	1	194	1	68	No	No	No	No	No	No	No	No	No	No
19	1	110	1	38	No	No	No	No	No	No	No	No	No	No
20	1	61	1	21	No	No	No	No	No	No	No	No	No	No
21	1	37	1	13	No	No	No	No	No	No	No	No	No	No
22	1	13	1	4	No	No	No	No	No	No	No	No	No	No
23	1	13	1	4	No	No	No	No	No	No	No	No	No	No
24	1	13	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	13	7

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	76.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	9:04
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	425
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1643
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	103	622	186	63
2	100	603	180	61
3	98	591	177	60
4	92	554	166	56
5	81	491	147	50
6	80	485	145	49
7	79	479	143	49
8	72	435	130	44
9	71	429	128	43
10	70	423	126	43
11	61	367	110	37
12	57	342	102	35
13	56	336	100	34
14	41	249	74	25
15	41	249	74	25
16	29	174	52	18
17	16	100	30	10
18	16	100	30	10
19	9	56	17	6
20	5	31	9	3
21	3	19	6	2
22	1	6	2	1
23	1	6	2	1
24	1	6	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	725	1	186	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	703	1	180	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	689	1	177	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	1	646	1	166	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
5	1	572	1	147	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
6	1	565	1	145	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
7	1	558	1	143	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
8	1	507	1	130	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	500	1	128	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	493	1	126	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	428	1	110	No	No	Yes	Yes	No	No	No	Yes	No	No
12	1	399	1	102	No	No	No	Yes	No	No	No	No	No	No
13	1	392	1	100	No	No	No	Yes	No	No	No	No	No	No
14	1	290	1	74	No	No	No	No	No	No	No	No	No	No
15	1	290	1	74	No	No	No	No	No	No	No	No	No	No
16	1	203	1	52	No	No	No	No	No	No	No	No	No	No
17	1	116	1	30	No	No	No	No	No	No	No	No	No	No
18	1	116	1	30	No	No	No	No	No	No	No	No	No	No
19	1	65	1	17	No	No	No	No	No	No	No	No	No	No
20	1	36	1	9	No	No	No	No	No	No	No	No	No	No
21	1	22	1	6	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	0	4	7	11	2	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.8	10.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:39	0:11
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	186	63
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	974	974
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	274	197	205
2	266	191	199
3	260	187	195
4	244	175	182
5	216	156	162
6	214	154	160
7	211	152	158
8	192	138	144
9	189	136	141
10	186	134	139
11	162	116	121
12	151	108	113
13	148	106	111
14	110	79	82
15	110	79	82
16	77	55	57
17	44	32	33
18	44	32	33
19	25	18	18
20	14	10	10
21	8	6	6
22	3	2	2
23	3	2	2
24	3	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	471	2	205	No	No	Yes	Yes	No	No	No	No	No	No
2	2	457	2	199	No	No	Yes	Yes	No	No	No	No	No	No
3	2	447	2	195	No	No	Yes	Yes	No	No	No	No	No	No
4	2	419	2	182	No	No	No	Yes	No	No	No	No	No	No
5	2	372	2	162	No	No	No	Yes	No	No	No	No	No	No
6	2	368	2	160	No	No	No	Yes	No	No	No	No	No	No
7	2	363	2	158	No	No	No	Yes	No	No	No	No	No	No
8	2	330	2	144	No	No	No	No	No	No	No	No	No	No
9	2	325	2	141	No	No	No	No	No	No	No	No	No	No
10	2	320	2	139	No	No	No	No	No	No	No	No	No	No
11	2	278	2	121	No	No	No	No	No	No	No	No	No	No
12	2	259	2	113	No	No	No	No	No	No	No	No	No	No
13	2	254	2	111	No	No	No	No	No	No	No	No	No	No
14	2	189	2	82	No	No	No	No	No	No	No	No	No	No
15	2	189	2	82	No	No	No	No	No	No	No	No	No	No
16	2	132	2	57	No	No	No	No	No	No	No	No	No	No
17	2	76	2	33	No	No	No	No	No	No	No	No	No	No
18	2	76	2	33	No	No	No	No	No	No	No	No	No	No
19	2	43	2	18	No	No	No	No	No	No	No	No	No	No
20	2	24	2	10	No	No	No	No	No	No	No	No	No	No
21	2	14	2	6	No	No	No	No	No	No	No	No	No	No
22	2	5	2	2	No	No	No	No	No	No	No	No	No	No
23	2	5	2	2	No	No	No	No	No	No	No	No	No	No
24	2	5	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	7	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.7
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:46
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	205
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	676
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	296	171	163
2	287	166	158
3	281	162	155
4	263	152	145
5	234	135	129
6	231	133	127
7	228	132	126
8	207	120	114
9	204	118	112
10	201	116	111
11	175	101	96
12	163	94	90
13	160	92	88
14	118	68	65
15	118	68	65
16	83	48	46
17	47	27	26
18	47	27	26
19	27	15	15
20	15	9	8
21	9	5	5
22	3	2	2
23	3	2	2
24	3	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	467	1	163	No	No	Yes	Yes	No	No	No	No	No	No
2	2	453	1	158	No	No	Yes	Yes	No	No	No	No	No	No
3	2	443	1	155	No	No	Yes	Yes	No	No	No	No	No	No
4	2	415	1	145	No	No	No	Yes	No	No	No	No	No	No
5	2	369	1	129	No	No	No	Yes	No	No	No	No	No	No
6	2	364	1	127	No	No	No	Yes	No	No	No	No	No	No
7	2	360	1	126	No	No	No	Yes	No	No	No	No	No	No
8	2	327	1	114	No	No	No	No	No	No	No	No	No	No
9	2	322	1	112	No	No	No	No	No	No	No	No	No	No
10	2	317	1	111	No	No	No	No	No	No	No	No	No	No
11	2	276	1	96	No	No	No	No	No	No	No	No	No	No
12	2	257	1	90	No	No	No	No	No	No	No	No	No	No
13	2	252	1	88	No	No	No	No	No	No	No	No	No	No
14	2	186	1	65	No	No	No	No	No	No	No	No	No	No
15	2	186	1	65	No	No	No	No	No	No	No	No	No	No
16	2	131	1	46	No	No	No	No	No	No	No	No	No	No
17	2	74	1	26	No	No	No	No	No	No	No	No	No	No
18	2	74	1	26	No	No	No	No	No	No	No	No	No	No
19	2	42	1	15	No	No	No	No	No	No	No	No	No	No
20	2	24	1	8	No	No	No	No	No	No	No	No	No	No
21	2	14	1	5	No	No	No	No	No	No	No	No	No	No
22	2	5	1	2	No	No	No	No	No	No	No	No	No	No
23	2	5	1	2	No	No	No	No	No	No	No	No	No	No
24	2	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	7	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:37
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	163
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	630
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	157	145	37
2	152	141	36
3	149	138	35
4	140	129	33
5	124	115	29
6	122	113	29
7	121	112	28
8	110	102	26
9	108	100	26
10	107	99	25
11	93	86	22
12	86	80	20
13	85	78	20
14	63	58	15
15	63	58	15
16	44	41	10
17	25	23	6
18	25	23	6
19	14	13	3
20	8	7	2
21	5	4	1
22	2	1	0
23	2	1	0
24	2	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	302	1	37	No	No	No	No	No	No	No	No	No	No
2	3	293	1	36	No	No	No	No	No	No	No	No	No	No
3	3	287	1	35	No	No	No	No	No	No	No	No	No	No
4	3	269	1	33	No	No	No	No	No	No	No	No	No	No
5	3	239	1	29	No	No	No	No	No	No	No	No	No	No
6	3	235	1	29	No	No	No	No	No	No	No	No	No	No
7	3	233	1	28	No	No	No	No	No	No	No	No	No	No
8	3	212	1	26	No	No	No	No	No	No	No	No	No	No
9	3	208	1	26	No	No	No	No	No	No	No	No	No	No
10	3	206	1	25	No	No	No	No	No	No	No	No	No	No
11	3	179	1	22	No	No	No	No	No	No	No	No	No	No
12	3	166	1	20	No	No	No	No	No	No	No	No	No	No
13	3	163	1	20	No	No	No	No	No	No	No	No	No	No
14	3	121	1	15	No	No	No	No	No	No	No	No	No	No
15	3	121	1	15	No	No	No	No	No	No	No	No	No	No
16	3	85	1	10	No	No	No	No	No	No	No	No	No	No
17	3	48	1	6	No	No	No	No	No	No	No	No	No	No
18	3	48	1	6	No	No	No	No	No	No	No	No	No	No
19	3	27	1	3	No	No	No	No	No	No	No	No	No	No
20	3	15	1	2	No	No	No	No	No	No	No	No	No	No
21	3	9	1	1	No	No	No	No	No	No	No	No	No	No
22	3	3	1	0	No	No	No	No	No	No	No	No	No	No
23	3	3	1	0	No	No	No	No	No	No	No	No	No	No
24	3	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	37
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	339
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	601	394	163	75
2	583	382	158	73
3	571	374	155	71
4	535	351	145	67
5	475	311	129	59
6	469	307	127	59
7	463	303	126	58
8	421	276	114	53
9	415	272	112	52
10	409	268	111	51
11	355	232	96	44
12	331	217	90	41
13	325	213	88	41
14	240	158	65	30
15	240	158	65	30
16	168	110	46	21
17	96	63	26	12
18	96	63	26	12
19	54	35	15	7
20	30	20	8	4
21	18	12	5	2
22	6	4	2	1
23	6	4	2	1
24	6	4	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	995	2	163	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2	2	965	2	158	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
3	2	945	2	155	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
4	2	886	2	145	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
5	2	786	2	129	No	No	No	Yes	No	Yes	Yes	Yes	No	No
6	2	776	2	127	No	No	No	Yes	No	Yes	Yes	Yes	No	No
7	2	766	2	126	No	No	No	Yes	No	Yes	Yes	Yes	No	No
8	2	697	2	114	No	No	No	Yes	No	No	Yes	Yes	No	No
9	2	687	2	112	No	No	No	Yes	No	No	Yes	Yes	No	No
10	2	677	2	111	No	No	No	No	No	No	Yes	Yes	No	No
11	2	587	2	96	No	No	No	No	No	No	No	Yes	No	No
12	2	548	2	90	No	No	No	No	No	No	No	Yes	No	No
13	2	538	2	88	No	No	No	No	No	No	No	Yes	No	No
14	2	398	2	65	No	No	No	No	No	No	No	No	No	No
15	2	398	2	65	No	No	No	No	No	No	No	No	No	No
16	2	278	2	46	No	No	No	No	No	No	No	No	No	No
17	2	159	2	26	No	No	No	No	No	No	No	No	No	No
18	2	159	2	26	No	No	No	No	No	No	No	No	No	No
19	2	89	2	15	No	No	No	No	No	No	No	No	No	No
20	2	50	2	8	No	No	No	No	No	No	No	No	No	No
21	2	30	2	5	No	No	No	No	No	No	No	No	No	No
22	2	10	2	2	No	No	No	No	No	No	No	No	No	No
23	2	10	2	2	No	No	No	No	No	No	No	No	No	No
24	2	10	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	1	4	9	3	7	10	13	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	58.2	31.6
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:38	0:39
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	163	75
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1233	1233
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	1106	563	0
2	1073	546	0
3	1051	535	0
4	984	501	0
5	874	445	0
6	863	439	0
7	852	434	0
8	774	394	0
9	763	388	0
10	752	383	0
11	653	332	0
12	608	310	0
13	597	304	0
14	442	225	0
15	442	225	0
16	310	158	0
17	177	90	0
18	177	90	0
19	100	51	0
20	55	28	0
21	33	17	0
22	11	6	0
23	11	6	0
24	11	6	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1669	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1619	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1586	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1485	1	0	No	No	No	No	No	No	No	No	No	No
5	1	1319	1	0	No	No	No	No	No	No	No	No	No	No
6	1	1302	1	0	No	No	No	No	No	No	No	No	No	No
7	1	1286	1	0	No	No	No	No	No	No	No	No	No	No
8	1	1168	1	0	No	No	No	No	No	No	No	No	No	No
9	1	1151	1	0	No	No	No	No	No	No	No	No	No	No
10	1	1135	1	0	No	No	No	No	No	No	No	No	No	No
11	1	985	1	0	No	No	No	No	No	No	No	No	No	No
12	1	918	1	0	No	No	No	No	No	No	No	No	No	No
13	1	901	1	0	No	No	No	No	No	No	No	No	No	No
14	1	667	1	0	No	No	No	No	No	No	No	No	No	No
15	1	667	1	0	No	No	No	No	No	No	No	No	No	No
16	1	468	1	0	No	No	No	No	No	No	No	No	No	No
17	1	267	1	0	No	No	No	No	No	No	No	No	No	No
18	1	267	1	0	No	No	No	No	No	No	No	No	No	No
19	1	151	1	0	No	No	No	No	No	No	No	No	No	No
20	1	83	1	0	No	No	No	No	No	No	No	No	No	No
21	1	50	1	0	No	No	No	No	No	No	No	No	No	No
22	1	17	1	0	No	No	No	No	No	No	No	No	No	No
23	1	17	1	0	No	No	No	No	No	No	No	No	No	No
24	1	17	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1669
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	449	325	29
2	436	315	28
3	427	309	28
4	400	289	26
5	355	257	23
6	350	254	23
7	346	250	22
8	314	227	20
9	310	224	20
10	305	221	20
11	265	192	17
12	247	179	16
13	242	176	16
14	180	130	12
15	180	130	12
16	126	91	8
17	72	52	5
18	72	52	5
19	40	29	3
20	22	16	1
21	13	10	1
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	774	1	29	No	No	No	No	No	No	No	No	No	No
2	1	751	1	28	No	No	No	No	No	No	No	No	No	No
3	1	736	1	28	No	No	No	No	No	No	No	No	No	No
4	1	689	1	26	No	No	No	No	No	No	No	No	No	No
5	1	612	1	23	No	No	No	No	No	No	No	No	No	No
6	1	604	1	23	No	No	No	No	No	No	No	No	No	No
7	1	596	1	22	No	No	No	No	No	No	No	No	No	No
8	1	541	1	20	No	No	No	No	No	No	No	No	No	No
9	1	534	1	20	No	No	No	No	No	No	No	No	No	No
10	1	526	1	20	No	No	No	No	No	No	No	No	No	No
11	1	457	1	17	No	No	No	No	No	No	No	No	No	No
12	1	426	1	16	No	No	No	No	No	No	No	No	No	No
13	1	418	1	16	No	No	No	No	No	No	No	No	No	No
14	1	310	1	12	No	No	No	No	No	No	No	No	No	No
15	1	310	1	12	No	No	No	No	No	No	No	No	No	No
16	1	217	1	8	No	No	No	No	No	No	No	No	No	No
17	1	124	1	5	No	No	No	No	No	No	No	No	No	No
18	1	124	1	5	No	No	No	No	No	No	No	No	No	No
19	1	69	1	3	No	No	No	No	No	No	No	No	No	No
20	1	38	1	1	No	No	No	No	No	No	No	No	No	No
21	1	23	1	1	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	29
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	803
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	269	242	163	138
2	261	235	158	134
3	256	230	155	131
4	239	215	145	123
5	213	191	129	109
6	210	189	127	108
7	207	186	126	106
8	188	169	114	97
9	186	167	112	95
10	183	165	111	94
11	159	143	96	81
12	148	133	90	76
13	145	131	88	75
14	108	97	65	55
15	108	97	65	55
16	75	68	46	39
17	43	39	26	22
18	43	39	26	22
19	24	22	15	12
20	13	12	8	7
21	8	7	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1

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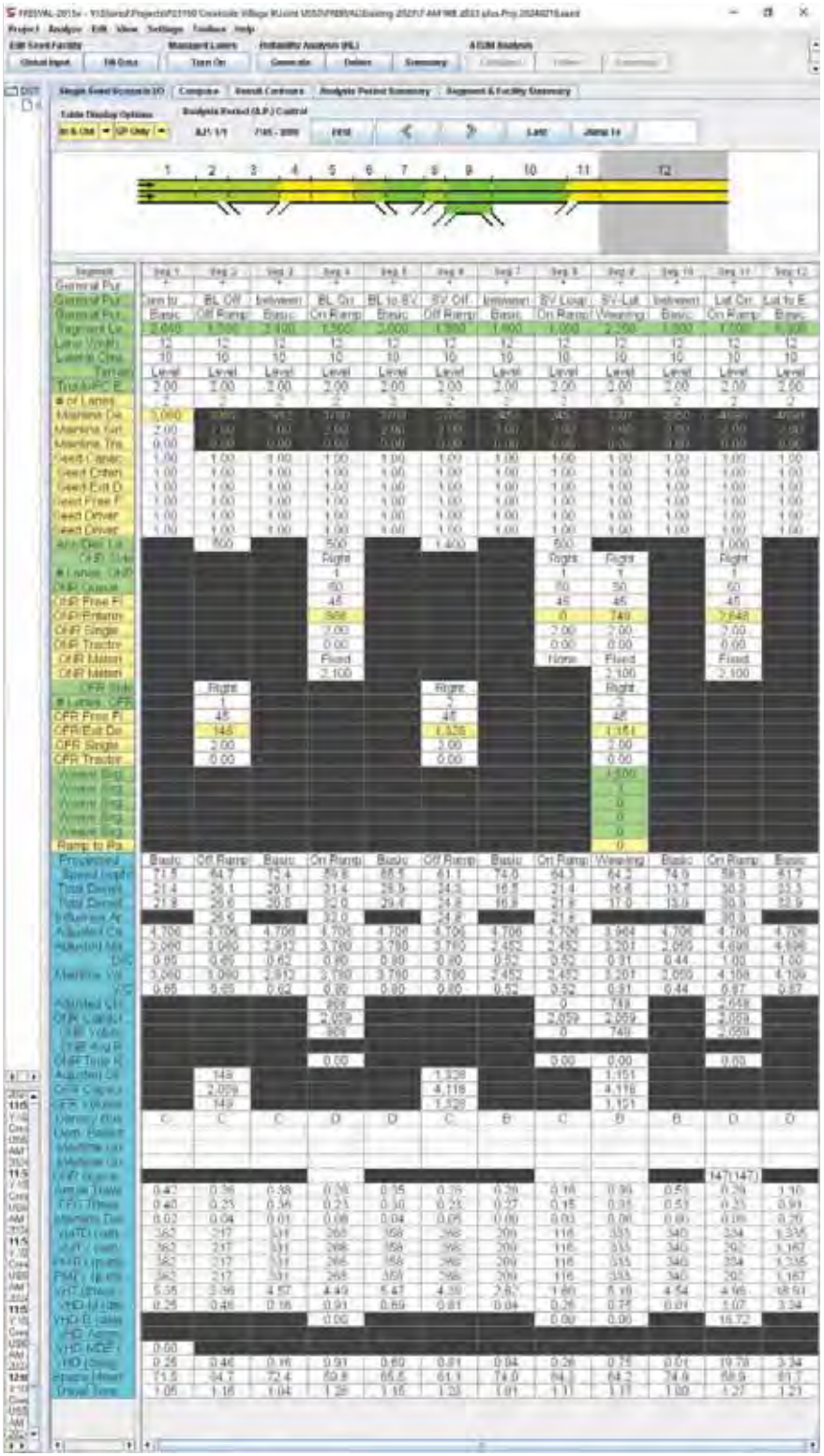
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	511	1	163	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	496	1	158	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	486	1	155	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	454	1	145	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
5	1	404	1	129	No	Yes	Yes	Yes	No	No	No	No	No	No
6	1	399	1	127	No	No	Yes	Yes	No	No	No	No	No	No
7	1	393	1	126	No	No	Yes	Yes	No	No	No	No	No	No
8	1	357	1	114	No	No	Yes	Yes	No	No	No	No	No	No
9	1	353	1	112	No	No	Yes	Yes	No	No	No	No	No	No
10	1	348	1	111	No	No	No	Yes	No	No	No	No	No	No
11	1	302	1	96	No	No	No	Yes	No	No	No	No	No	No
12	1	281	1	90	No	No	No	Yes	No	No	No	No	No	No
13	1	276	1	88	No	No	No	No	No	No	No	No	No	No
14	1	205	1	65	No	No	No	No	No	No	No	No	No	No
15	1	205	1	65	No	No	No	No	No	No	No	No	No	No
16	1	143	1	46	No	No	No	No	No	No	No	No	No	No
17	1	82	1	26	No	No	No	No	No	No	No	No	No	No
18	1	82	1	26	No	No	No	No	No	No	No	No	No	No
19	1	46	1	15	No	No	No	No	No	No	No	No	No	No
20	1	25	1	8	No	No	No	No	No	No	No	No	No	No
21	1	15	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					1	5	9	12	0	0	0	4	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.7	22.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:48	0:51
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	163	138
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	812	812
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	



EPAP PM plus Project

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Scenario 4 2033 PM with CCSP, + Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.974	56.5	E
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.268	117.2	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	SB Thru	1.000	54.2	D
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.973	66.0	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.994	63.7	E
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	WB Left	0.848	87.0	F
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	1.160	112.5	F
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	SB Right	0.963	41.4	D
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	1.184	171.9	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	SB Thru	1.059	80.2	F
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.848	251.6	F
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	6.113	2,529.2	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	30.323	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.873	25.7	D
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.367	20.9	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.343	23.2	C
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.170	8.4	A
18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	1.734	448.9	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.581	32.9	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.604	66.0	E
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	1.393	268.6	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.902	37.8	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	NB Left	0.796	50.5	D
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.707	24.3	C
25	New Intersection	Two-way stop	HCM 6th Edition	SB Thru	0.010	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.127	17.6	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.135	22.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	56.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	113	1766	404	35	1126	67	53	25	85	339	61	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-5	0	0	43	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	20	0	0	26	0	0	7
Total Hourly Volume [veh/h]	3	113	1761	404	35	1169	47	53	25	59	339	61	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	506	116	10	336	14	15	7	17	97	18	4
Total Analysis Volume [veh/h]	3	130	2024	464	40	1344	54	61	29	68	390	70	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	81	81	81	81	81	81	81	81	81	81
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	40	40	2	35	35	7	7	15	15
g / C, Green / Cycle	0.10	0.49	0.49	0.03	0.43	0.43	0.08	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.07	0.57	0.29	0.02	0.38	0.38	0.03	0.06	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1845	1781	1664	1781	1791
c, Capacity [veh/h]	171	1749	781	51	794	783	147	138	321	323
d1, Uniform Delay [s]	36.07	20.77	14.92	39.38	21.67	21.71	35.57	36.47	31.65	31.65
k, delay calibration	0.04	0.07	0.08	0.04	0.23	0.23	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.92	71.75	0.55	9.06	6.98	7.28	0.69	2.46	4.73	4.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	1.16	0.59	0.78	0.89	0.89	0.41	0.70	0.74	0.74
d, Delay for Lane Group [s/veh]	38.99	92.51	15.47	48.44	28.65	28.99	36.26	38.93	36.38	36.35
Lane Group LOS	D	F	B	D	C	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.57	31.05	5.31	0.88	12.15	12.11	1.16	1.93	4.72	4.75
50th-Percentile Queue Length [ft/ln]	64.17	776.25	132.79	22.06	303.84	302.65	28.92	48.37	118.06	118.64
95th-Percentile Queue Length [veh/ln]	4.62	44.67	9.09	1.59	17.87	17.81	2.08	3.48	8.29	8.32
95th-Percentile Queue Length [ft/ln]	115.50	1116.64	227.28	39.71	446.77	445.30	52.06	87.06	207.16	207.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.99	38.99	92.51	15.47	48.44	28.81	28.99	36.26	38.93	38.93	36.37	36.35	36.35
Movement LOS	D	D	F	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	76.16				29.36			37.90			36.37		
Approach LOS	E				C			D			D		
d_I, Intersection Delay [s/veh]	56.49												
Intersection LOS	E												
Intersection V/C	0.974												

Emissions

Vehicle Miles Traveled [mph]	31.76	483.40	110.82	5.88	103.31	102.23	2.61	4.14	12.45	12.51
Stops [stops/h]	113.50	2746.05	234.87	39.02	537.43	535.32	51.16	85.55	208.82	209.85
Fuel consumption [US gal/h]	3.56	88.81	8.18	1.08	14.32	14.26	0.84	1.41	3.43	3.44
CO [g/h]	248.51	6208.03	571.77	75.56	1000.97	996.88	58.72	98.68	239.54	240.71
NOx [g/h]	48.35	1207.86	111.25	14.70	194.75	193.96	11.42	19.20	46.61	46.83
VOC [g/h]	57.60	1438.77	132.51	17.51	231.98	231.04	13.61	22.87	55.51	55.79

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	30.45	30.45	30.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.366	2.120	2.275
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	990	990	860	860
d_b, Bicycle Delay [s]	10.38	10.38	13.23	13.23
l_b,int, Bicycle LOS Score for Intersection	3.719	2.762	1.863	2.358
Bicycle LOS	D	C	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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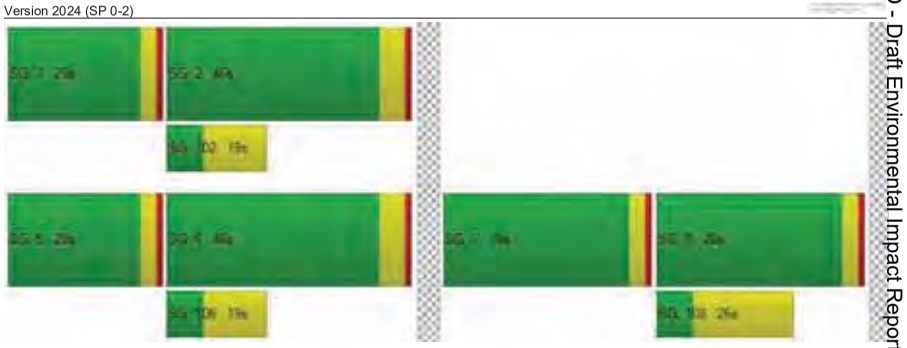

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Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	117.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.268

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	173	4	218	1133	198	380	48	581	63	107	286
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-5	0	0	0	43	0	0	0	22	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	52	0	0	0	59	0	0	181	0	0	86
Total Hourly Volume [veh/h]	5	441	1611	121	4	218	1176	139	380	48	422	63	107	200
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	119	433	33	1	59	316	37	102	13	113	17	29	54
Total Analysis Volume [veh/h]	5	474	1732	130	4	234	1265	149	409	52	454	68	115	215
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	50	50	19	48	48	20	20	20	20	20
g / C, Green / Cycle	0.16	0.39	0.39	0.15	0.38	0.38	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.27	0.35	0.35	0.13	0.36	0.09	0.13	0.13	0.29	0.04	0.20
s, saturation flow rate [veh/h]	1781	3560	1804	1781	3560	1589	1781	1800	1589	1781	1677
c, Capacity [veh/h]	283	1402	710	264	1365	609	283	286	252	283	266
d1, Uniform Delay [s]	53.00	35.39	35.63	52.74	37.16	26.43	51.21	51.15	53.00	46.36	53.00
k, delay calibration	0.50	0.13	0.37	0.28	0.13	0.13	0.26	0.26	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	327.35	2.31	12.05	23.13	3.90	0.25	12.67	11.89	375.18	0.16	135.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.69	0.88	0.89	0.90	0.93	0.24	0.81	0.81	1.80	0.24	1.24
d, Delay for Lane Group [s/veh]	380.36	37.70	47.68	75.87	41.05	26.68	63.88	63.03	428.18	46.52	188.64
Lane Group LOS	F	D	D	E	D	C	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	34.40	17.03	19.52	8.91	18.42	3.00	8.01	7.97	34.25	1.89	18.43
50th-Percentile Queue Length [ft/ln]	859.89	425.84	488.05	222.66	460.39	75.11	200.33	199.27	856.34	47.24	460.76
95th-Percentile Queue Length [veh/ln]	53.52	23.80	26.77	13.80	25.45	5.41	12.66	12.60	53.91	3.40	28.05
95th-Percentile Queue Length [ft/ln]	1337.96	595.06	669.20	345.01	636.33	135.21	316.40	315.03	1347.82	85.03	701.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	380.3	380.3	40.59	47.68	75.87	75.87	41.05	26.68	63.51	63.03	428.18	46.52	188.64	188.64
Movement LOS	F	F	D	D	E	E	D	C	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	110.50				44.77				244.42			164.36		
Approach LOS	F				D				F			F		
d_I, Intersection Delay [s/veh]	117.17													
Intersection LOS	F													
Intersection V/C	1.268													

Emissions

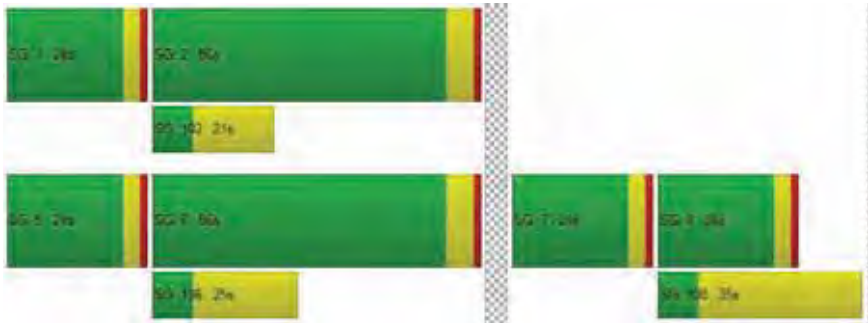
Vehicle Miles Traveled [mph]	89.83	230.73	118.45	56.84	302.12	35.59	14.36	14.39	28.31	3.32	16.09
Stops [stops/h]	983.14	973.76	558.00	254.57	1052.76	85.88	229.05	227.84	979.08	54.01	526.80
Fuel consumption [US gal/h]	52.37	29.45	17.13	8.79	34.01	3.10	4.85	4.81	46.12	1.08	16.24
CO [g/h]	3660.69	2058.86	1197.11	614.25	2377.53	216.46	338.93	336.31	3224.10	75.39	1135.10
NOx [g/h]	712.24	400.58	232.91	119.51	462.58	42.11	65.94	65.43	627.29	14.67	220.85
VOC [g/h]	848.40	477.16	277.44	142.36	551.02	50.17	78.55	77.94	747.22	17.47	263.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	52.45	52.45	52.45
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.562	2.866	2.388
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	799	799	318	318
d_b, Bicycle Delay [s]	22.72	22.72	44.56	44.56
l_b,int, Bicycle LOS Score for Intersection	2.873	2.778	3.368	2.358
Bicycle LOS	C	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	54.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.000

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1224	1679	414	0	37	1252	493	306	130	404	236	88	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	-6	-2	0	0	65	0	0	0	22	14	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	124	0	0	0	148	0	0	128	0	0	75
Total Hourly Volume [veh/h]	1	1218	1673	288	0	37	1317	345	306	130	298	250	88	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	305	418	72	0	9	329	86	77	33	75	63	22	44
Total Analysis Volume [veh/h]	1	1218	1673	288	0	37	1317	345	306	130	298	250	88	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.35	0.36	0.39	0.02	0.26	0.22	0.12	0.12	0.09	0.09	0.11
s, saturation flow rate [veh/h]	3459	3532	1725	1781	5053	1589	1781	1832	1781	1826	1589
c, Capacity [veh/h]	1155	1914	935	81	1279	685	249	257	223	228	199
d1, Uniform Delay [s]	45.28	22.44	23.45	63.30	50.79	28.15	57.19	57.19	57.46	57.43	58.55
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.14	0.14	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.99	1.90	4.82	1.51	33.07	2.64	12.23	11.91	6.44	6.04	23.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.67	0.72	0.46	1.03	0.50	0.86	0.86	0.75	0.75	0.89
d, Delay for Lane Group [s/veh]	72.28	24.34	28.27	64.81	83.86	30.79	69.42	69.09	63.90	63.47	81.69
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	23.66	15.06	17.23	1.26	17.98	8.41	8.08	8.29	5.97	6.06	7.25
50th-Percentile Queue Length [ft/ln]	591.41	376.46	430.68	31.57	449.56	210.16	202.11	207.30	149.28	151.56	181.22
95th-Percentile Queue Length [veh/ln]	32.79	21.42	24.03	2.27	25.38	13.16	12.75	13.01	9.98	10.10	11.66
95th-Percentile Queue Length [ft/ln]	819.85	535.56	600.86	56.82	634.56	329.04	318.69	325.36	249.47	252.51	291.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.28	72.28	25.25	28.27	64.81	64.81	83.86	30.79	69.32	69.09	0.00	63.76	63.47	81.69
Movement LOS	E	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	43.55				72.67				41.14			69.85		
Approach LOS	D				E				D			E		
d_I, Intersection Delay [s/veh]	54.18													
Intersection LOS	D													
Intersection V/C	1.000													

Emissions

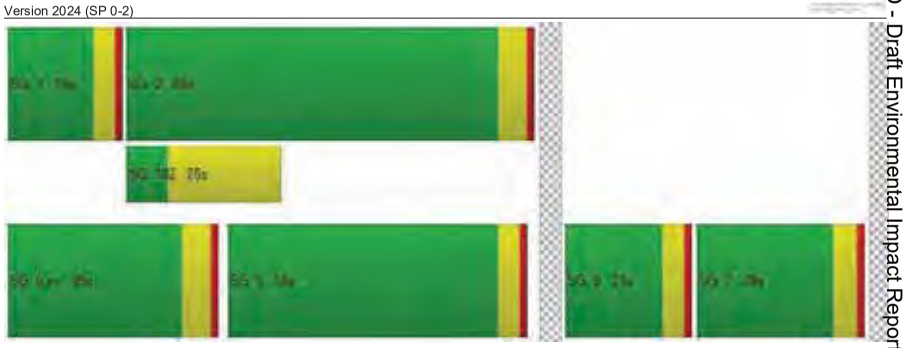
Vehicle Miles Traveled [mph]	209.67	221.15	116.15	6.94	246.97	64.70	9.94	10.23	5.32	5.43	5.60
Stops [stops/h]	1252.39	797.20	456.02	33.42	1428.03	222.52	214.00	219.49	158.06	160.48	191.88
Fuel consumption [US gal/h]	33.48	19.88	11.19	1.14	48.69	7.15	4.63	4.74	3.27	3.31	4.22
CO [g/h]	2340.08	1389.30	781.85	79.78	3403.66	499.52	323.47	331.43	228.46	231.64	294.70
NOx [g/h]	455.29	270.31	152.12	15.52	662.23	97.19	62.93	64.48	44.45	45.07	57.34
VOC [g/h]	542.34	321.98	181.20	18.49	788.83	115.77	74.97	76.81	52.95	53.68	68.30

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.542
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.376	2.555	2.279	2.046
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	66.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.973

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2456	609	1	388	1504	0	0	0	1591	0	0	861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-14	-8	0	0	101	0	0	0	82	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	180	0	0	0	0	0	0	502	0	0	258
Total Hourly Volume [veh/h]	0	2442	421	1	388	1605	0	0	0	1171	0	0	603
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	643	125	0	115	422	0	0	0	349	0	0	179
Total Analysis Volume [veh/h]	0	2571	501	1	462	1689	0	0	0	1394	0	0	718
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.45	0.46	0.26	0.25	0.50	
s, saturation flow rate [veh/h]	5094	1677	1781	6792	2813	
c, Capacity [veh/h]	2809	925	516	3476	927	
d1, Uniform Delay [s]	12.49	12.62	23.17	10.79	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.20	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.83	8.58	8.80	0.49	229.17	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.82	0.83	0.90	0.49	1.50	
d, Delay for Lane Group [s/veh]	15.32	21.21	31.97	11.28	251.97	
Lane Group LOS	B	C	C	B	F	
Critical Lane Group	No	No	No	Yes	Yes	
50th-Percentile Queue Length [veh/ln]	7.60	9.14	7.43	3.30	36.26	
50th-Percentile Queue Length [ft/ln]	189.94	228.44	185.84	82.43	906.44	
95th-Percentile Queue Length [veh/ln]	12.12	14.10	11.90	5.94	56.92	
95th-Percentile Queue Length [ft/ln]	302.95	352.38	297.62	148.38	1422.96	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.93	21.21	31.97	31.97	11.28	0.00	0.00	0.00	251.97	0.00	0.00	0.00
Movement LOS		B	C	C	C	B				F			
d_A, Approach Delay [s/veh]	16.79			15.73				251.97			0.00		
Approach LOS	B			B				F			A		
d_I, Intersection Delay [s/veh]	65.98												
Intersection LOS	E												
Intersection V/C	0.973												

Emissions

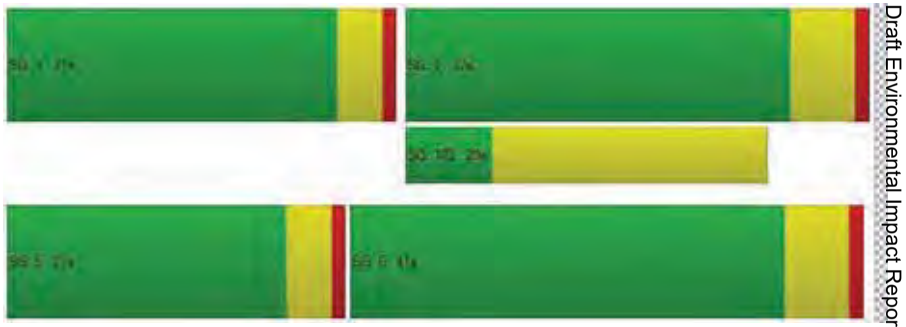
Vehicle Miles Traveled [mph]	333.38	111.13	79.64	290.52	99.76	
Stops [stops/h]	1206.66	483.76	393.53	698.25	3839.02	
Fuel consumption [US gal/h]	33.61	13.14	10.64	22.52	96.78	
CO [g/h]	2349.68	918.36	743.40	1573.87	6765.07	
NOx [g/h]	457.16	178.68	144.64	306.22	1316.24	
VOC [g/h]	544.56	212.84	172.29	364.76	1567.87	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.257
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.901	2.257	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	63.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.994

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1987	233	3	570	1937	585	460	37	83	1	92	6	615
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-22	0	0	0	183	0	0	0	4	0	16	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	70	0	0	0	176	0	0	26	0	0	0	185
Total Hourly Volume [veh/h]	1	24	1965	163	3	570	2120	409	460	37	61	1	108	6	430
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	512	42	1	148	552	107	120	10	16	0	28	2	112
Total Analysis Volume [veh/h]	1	25	2047	170	3	594	2208	426	479	39	64	1	113	6	448
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	54	54	12	64	64	18	18	18	15	15	15
g / C, Green / Cycle	0.02	0.47	0.47	0.10	0.55	0.55	0.16	0.16	0.16	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.11	0.17	0.43	0.27	0.14	0.02	0.04	0.06	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	73	2387	745	360	2811	877	547	296	251	232	208	207
d1, Uniform Delay [s]	55.62	27.19	18.21	51.59	20.42	15.80	47.39	41.69	42.54	46.55	50.09	50.09
k, delay calibration	0.04	0.04	0.04	0.26	0.04	0.04	0.08	0.08	0.08	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	0.36	0.06	301.96	0.19	0.16	3.51	0.15	0.39	1.20	89.67	89.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.86	0.23	1.66	0.79	0.49	0.88	0.13	0.25	0.49	1.09	1.09
d, Delay for Lane Group [s/veh]	56.73	27.55	18.27	353.55	20.61	15.96	50.90	41.84	42.93	47.75	139.76	139.92
Lane Group LOS	E	C	B	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.38	16.16	2.70	20.28	14.87	6.68	6.94	0.97	1.63	3.11	11.12	11.09
50th-Percentile Queue Length [ft/ln]	9.58	403.98	67.38	507.07	371.84	166.97	173.58	24.22	40.72	77.70	278.04	277.18
95th-Percentile Queue Length [veh/ln]	0.69	22.75	4.85	32.42	21.20	10.92	11.26	1.74	2.93	5.59	17.25	17.21
95th-Percentile Queue Length [ft/ln]	17.24	568.80	121.28	810.56	529.96	272.93	281.62	43.59	73.30	139.86	431.29	430.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.73	56.73	27.55	18.27	353.5	353.5	20.61	15.96	50.90	41.84	42.93	47.75	47.75	139.7	139.8
Movement LOS	E	E	C	B	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	27.18				81.51				49.42			121.36			
Approach LOS	C				F				D			F			
d_I, Intersection Delay [s/veh]	63.71														
Intersection LOS	E														
Intersection V/C	0.994														

Emissions

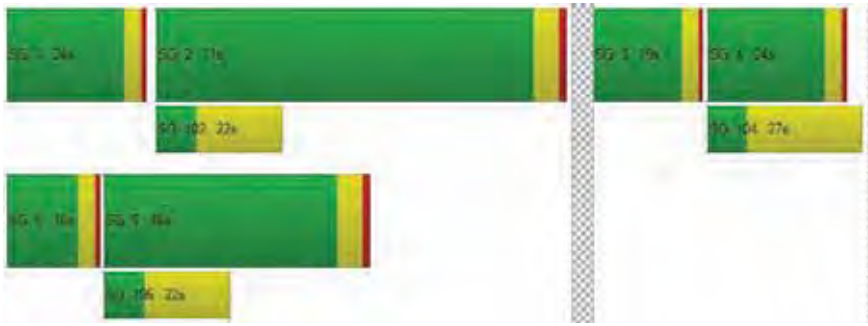
Vehicle Miles Traveled [mph]	5.80	456.97	37.95	86.38	319.49	61.64	61.10	4.97	8.16	40.01	79.82	79.52
Stops [stops/h]	24.00	1518.01	84.39	1270.26	1397.23	209.14	434.83	30.33	51.01	97.32	348.26	347.17
Fuel consumption [US gal/h]	0.67	38.67	2.66	53.52	30.13	5.08	9.88	0.70	1.18	3.29	11.68	11.64
CO [g/h]	46.95	2703.37	185.97	3740.83	2106.20	354.86	690.51	49.24	82.27	230.13	816.28	813.75
NOx [g/h]	9.13	525.98	36.18	727.83	409.79	69.04	134.35	9.58	16.01	44.78	158.82	158.33
VOC [g/h]	10.88	626.53	43.10	866.97	488.13	82.24	160.03	11.41	19.07	53.34	189.18	188.59

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.01	0.00	47.01	47.01
l_p,int, Pedestrian LOS Score for Intersectio	3.472	0.000	2.703	2.892
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	705	1139	357	270
d_b, Bicycle Delay [s]	24.12	10.64	38.81	43.03
l_b,int, Bicycle LOS Score for Intersection	2.831	3.107	2.061	2.616
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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Page 594
GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	87.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	125	1673	518	2	253	1422	436	2	376	472	124	516	223	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-22	-7	0	0	204	0	0	0	0	0	48	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	153	0	0	0	131	0	0	0	37	0	0	58
Total Hourly Volume [veh/h]	6	125	1651	358	2	253	1626	305	2	376	472	87	564	223	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	444	96	1	68	437	82	1	101	127	23	152	60	37
Total Analysis Volume [veh/h]	6	134	1775	385	2	272	1748	328	2	404	508	94	606	240	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	25	50	0	0	35	50	0	0	25	15	0	15	25	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	40	56	0	0	31	21	0	21	31	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	158	158	158	158	158	158	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	14	84	84	15	84	84	21	22	22	15	17	17
g / C, Green / Cycle	0.09	0.53	0.53	0.09	0.53	0.53	0.13	0.14	0.14	0.09	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.24	0.08	0.34	0.21	0.12	0.17	0.17	0.18	0.07	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1770	3459	3560	1589
c, Capacity [veh/h]	162	3588	840	321	2702	843	453	266	252	328	378	169
d1, Uniform Delay [s]	70.88	23.80	23.20	70.60	26.53	21.95	67.60	67.77	67.77	71.50	67.68	69.50
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.50	0.50	0.25	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	0.49	1.80	2.50	1.21	1.35	2.61	106.79	108.24	386.42	0.66	5.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.49	0.46	0.85	0.65	0.39	0.90	1.16	1.16	1.85	0.64	0.87
d, Delay for Lane Group [s/veh]	76.17	24.29	25.00	73.10	27.74	23.31	70.21	174.56	176.01	457.92	68.34	74.58
Lane Group LOS	E	C	C	E	C	C	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.86	10.82	9.46	5.51	15.41	7.36	8.27	18.66	17.76	24.30	4.71	6.08
50th-Percentile Queue Length [ft/ln]	146.59	270.41	236.61	137.66	385.32	183.91	206.85	466.50	444.01	607.61	117.80	152.05
95th-Percentile Queue Length [veh/ln]	9.84	16.21	14.51	9.35	21.85	11.80	12.99	27.59	26.43	38.55	8.27	10.13
95th-Percentile Queue Length [ft/ln]	245.88	405.25	362.74	233.87	546.28	295.11	324.78	689.78	660.77	963.71	206.80	253.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.17	76.17	24.29	25.00	73.10	73.10	27.74	23.31	70.21	70.21	175.1	176.0	457.92	68.34	74.58
Movement LOS	E	E	C	C	E	E	C	C	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	27.57				32.41				132.95				307.25		
Approach LOS	C				C				F				F		
d_I, Intersection Delay [s/veh]	86.97														
Intersection LOS	F														
Intersection V/C	0.848														

Emissions

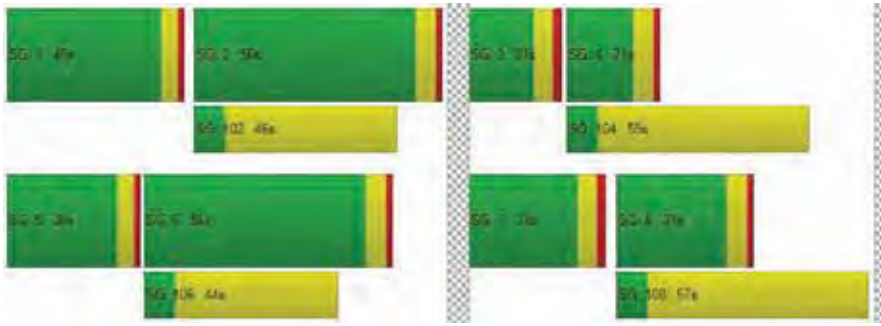
Vehicle Miles Traveled [mph]	55.73	706.61	153.26	61.17	390.22	73.22	101.33	77.19	73.05	63.32	25.08	15.25
Stops [stops/h]	133.60	985.78	215.64	250.93	1053.53	167.61	377.04	425.16	404.67	1107.55	214.73	138.58
Fuel consumption [US gal/h]	5.20	43.31	9.46	9.29	36.34	6.15	12.05	16.51	15.73	65.18	5.56	3.61
CO [g/h]	363.64	3027.31	661.23	649.50	2540.27	429.85	842.60	1154.14	1099.23	4556.32	388.37	252.27
NOx [g/h]	70.75	589.00	128.65	126.37	494.24	83.63	163.94	224.55	213.87	886.49	75.56	49.08
VOC [g/h]	84.28	701.61	153.25	150.53	588.73	99.62	195.28	267.48	254.76	1055.97	90.01	58.47

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.38	68.38	68.38	68.38
l_p,int, Pedestrian LOS Score for Intersectio	3.629	3.891	2.837	3.033
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	637	637	194	320
d_b, Bicycle Delay [s]	36.71	36.71	64.44	55.73
l_b,int, Bicycle LOS Score for Intersection	2.569	2.775	2.088	2.426
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	112.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.160

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	11	1588	30	0	34	1590	454	703	9	27	1	6	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-29	0	0	0	252	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	9	0	0	0	136	0	0	8	0	0	6
Total Hourly Volume [veh/h]	1	11	1559	21	0	34	1842	318	703	9	19	1	6	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	438	6	0	10	517	89	197	3	5	0	2	4
Total Analysis Volume [veh/h]	1	12	1752	24	0	39	2070	357	790	10	21	1	7	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	40	40	2	41	41	20	20	2
g / C, Green / Cycle	0.02	0.49	0.49	0.03	0.50	0.50	0.24	0.24	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.48	0.48	0.02	0.65	0.68	0.23	0.23	0.01
s, saturation flow rate [veh/h]	1781	1870	1861	1781	1870	1778	1781	1772	1674
c, Capacity [veh/h]	30	905	901	52	928	882	431	429	45
d1, Uniform Delay [s]	40.22	20.94	21.00	39.82	20.81	20.81	30.85	30.87	39.66
k, delay calibration	0.04	0.43	0.43	0.04	0.50	0.50	0.40	0.40	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.61	23.47	24.29	8.10	146.24	176.15	28.58	29.15	3.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.98	0.98	0.76	1.31	1.38	0.95	0.96	0.51
d, Delay for Lane Group [s/veh]	43.83	44.41	45.29	47.92	167.04	196.96	59.43	60.02	42.97
Lane Group LOS	D	D	D	D	F	F	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.29	20.99	21.19	0.84	51.52	56.30	11.15	11.19	0.49
50th-Percentile Queue Length [ft/ln]	7.19	524.75	529.76	21.08	1287.89	1407.60	278.83	279.72	12.36
95th-Percentile Queue Length [veh/ln]	0.52	28.50	28.74	1.52	75.98	84.56	16.63	16.67	0.89
95th-Percentile Queue Length [ft/ln]	12.94	712.60	718.50	37.95	1899.62	2114.02	415.76	416.86	22.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.83	43.83	44.85	45.29	47.92	47.92	179.4	196.9	59.71	60.02	60.02	42.97	42.97	42.97
Movement LOS	D	D	D	D	D	D	F	F	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	44.84				179.88				59.72			42.97		
Approach LOS	D				F				E			D		
d_I, Intersection Delay [s/veh]	112.54													
Intersection LOS	F													
Intersection V/C	1.160													

Emissions

Vehicle Miles Traveled [mph]	4.60	314.45	314.01	15.53	483.08	483.08	98.99	98.73	0.44
Stops [stops/h]	12.55	916.40	925.15	36.82	2249.11	2458.16	486.94	488.48	21.59
Fuel consumption [US gal/h]	0.37	26.04	26.22	1.58	99.18	110.45	11.74	11.77	0.34
CO [g/h]	26.19	1820.12	1832.51	110.68	6932.72	7720.39	820.36	822.70	23.65
NOx [g/h]	5.10	354.13	356.54	21.54	1348.86	1502.11	159.61	160.07	4.60
VOC [g/h]	6.07	421.83	424.70	25.65	1606.73	1789.27	190.13	190.67	5.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.62	0.00	33.62	33.62
l_p,int, Pedestrian LOS Score for Intersectio	3.071	0.000	2.386	1.776
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	970	970	485	485
d_b, Bicycle Delay [s]	10.93	10.93	23.65	23.65
l_b,int, Bicycle LOS Score for Intersection	3.042	3.674	2.927	1.607
Bicycle LOS	C	D	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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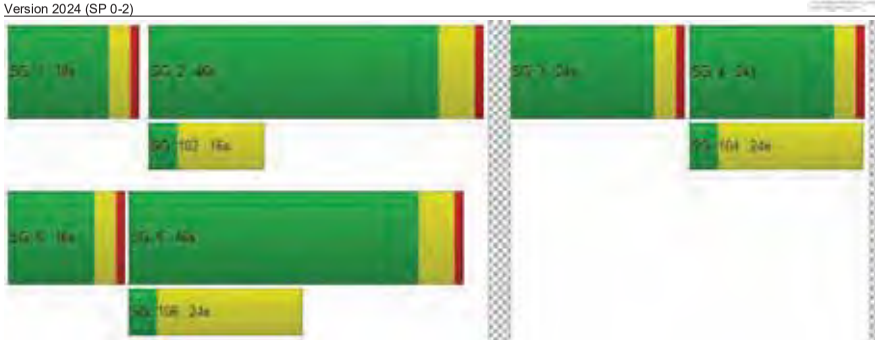

Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	41.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	90	1321	1429	190	309	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	46	0	0	0	0
Site-Generated Trips [veh/h]	0	4	-29	252	0	0	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	57	0	57
Total Hourly Volume [veh/h]	0	94	1338	1681	133	309	132
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	26	376	472	37	87	37
Total Analysis Volume [veh/h]	0	106	1503	1889	149	347	148
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	6	50	40	40	17	17
g / C, Green / Cycle	0.08	0.65	0.52	0.52	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.42	0.54	0.56	0.19	0.09
s, saturation flow rate [veh/h]	1781	3560	1870	1823	1781	1589
c, Capacity [veh/h]	139	2305	968	944	398	355
d1, Uniform Delay [s]	34.93	8.32	18.64	18.64	28.95	25.70
k, delay calibration	0.04	0.15	0.47	0.49	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.27	0.45	43.02	53.02	12.79	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.65	1.05	1.08	0.87	0.42
d, Delay for Lane Group [s/veh]	38.20	8.77	61.65	71.66	41.74	26.48
Lane Group LOS	D	A	F	F	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	6.21	26.47	28.43	7.35	2.32
50th-Percentile Queue Length [ft/ln]	50.73	155.29	661.84	710.74	183.68	58.10
95th-Percentile Queue Length [veh/ln]	3.65	10.30	36.35	39.46	11.79	4.18
95th-Percentile Queue Length [ft/ln]	91.32	257.47	908.86	986.49	294.81	104.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.20	38.20	8.77	66.26	71.66	41.74	26.48
Movement LOS	D	D	A	E	E	D	C
d_A, Approach Delay [s/veh]	10.71			66.66		37.18	
Approach LOS	B			E		D	
d_I, Intersection Delay [s/veh]	41.40						
Intersection LOS	D						
Intersection V/C	0.963						

Emissions

Vehicle Miles Traveled [mph]	73.73	1045.41	360.59	360.59	117.08	49.93
Stops [stops/h]	94.72	579.83	1235.62	1326.92	342.92	108.47
Fuel consumption [US gal/h]	4.38	48.92	34.45	37.03	9.66	3.45
CO [g/h]	306.33	3419.64	2408.38	2588.62	675.33	241.33
NOx [g/h]	59.60	665.34	468.58	503.65	131.40	46.95
VOC [g/h]	71.00	792.53	558.17	599.94	156.52	55.93

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.98	0.00	30.98
l_p,int, Pedestrian LOS Score for Intersectio	3.017	0.000	2.297
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1037	1037	519
d_b, Bicycle Delay [s]	8.94	8.94	21.16
l_b,int, Bicycle LOS Score for Intersection	2.887	3.288	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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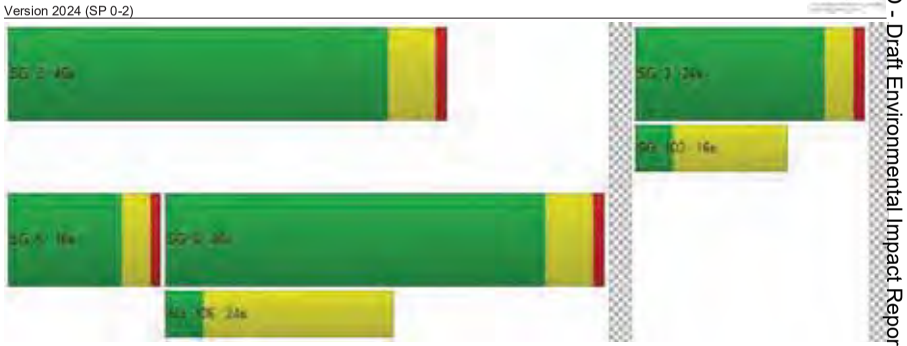

Scenario 4: 4 2033 PM with CCSP, + Project
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Report File: C:\...\10 2033 PM plus Proj.pdf
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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	171.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.184

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	108	575	28	352	446	809	686	216	57	68	155	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	21	98	10	0	46	0	0	0	0	0	12	0
Site-Generated Trips [veh/h]	30	117	12	0	331	-67	-142	-25	91	36	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	223	0	0	44	0	0	45
Total Hourly Volume [veh/h]	159	790	35	352	823	519	544	191	104	104	155	105
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	217	10	97	226	143	149	52	29	29	43	29
Total Analysis Volume [veh/h]	175	868	38	387	904	570	598	210	114	114	170	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	83	83	83	83	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	10	23	23	12	25	25	15	15	15	15
g / C, Green / Cycle	0.12	0.27	0.27	0.14	0.30	0.30	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.24	0.22	0.40	0.44	0.26	0.26	0.15	0.07
s, saturation flow rate [veh/h]	1781	1870	1843	1781	1870	1643	1781	1767	1833	1589
c, Capacity [veh/h]	212	514	506	256	559	491	320	317	325	282
d1, Uniform Delay [s]	35.97	29.09	29.09	35.80	29.30	29.30	34.30	34.30	33.46	30.48
k, delay calibration	0.12	0.24	0.24	0.50	0.50	0.50	0.50	0.50	0.10	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.63	11.12	11.28	250.33	161.70	227.90	216.58	220.67	6.68	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.89	0.89	1.51	1.33	1.48	1.44	1.45	0.87	0.41
d, Delay for Lane Group [s/veh]	44.60	40.21	40.37	286.12	190.99	257.20	250.87	254.97	40.14	30.83
Lane Group LOS	D	D	D	F	F	F	F	F	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.91	10.00	9.88	22.50	34.87	39.68	25.51	25.67	6.05	2.04
50th-Percentile Queue Length [ft/ln]	97.87	250.01	246.94	562.62	871.84	992.02	637.77	641.67	151.21	50.90
95th-Percentile Queue Length [veh/ln]	7.05	15.19	15.03	35.43	52.25	61.16	39.55	39.84	10.08	3.66
95th-Percentile Queue Length [ft/ln]	176.17	379.67	375.80	885.80	1306.28	1529.03	988.73	995.99	252.04	91.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.60	40.28	40.37	286.12	202.61	257.20	251.81	254.97	254.97	40.14	40.14	30.83
Movement LOS	D	D	D	F	F	F	F	F	F	D	D	C
d_A, Approach Delay [s/veh]	40.98			236.70			252.92			37.46		
Approach LOS	D			F			F			D		
d_I, Intersection Delay [s/veh]	171.93											
Intersection LOS	F											
Intersection V/C	1.184											

Emissions

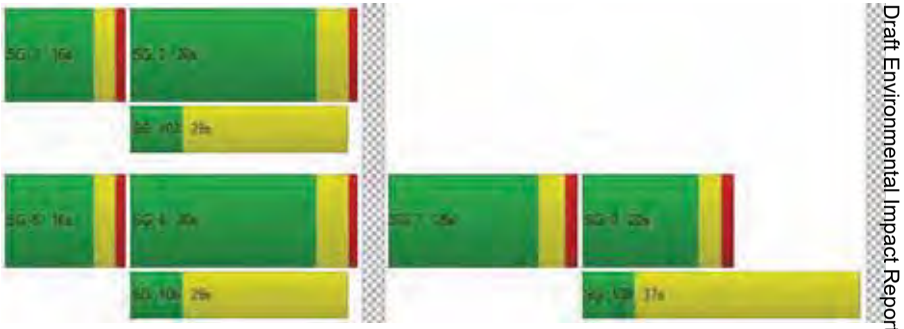
Vehicle Miles Traveled [mph]	101.07	263.53	259.71	269.18	518.46	506.78	34.71	34.65	31.41	12.72
Stops [stops/h]	168.83	431.26	425.97	970.50	1503.90	1711.20	1100.14	1106.86	260.83	87.80
Fuel consumption [US gal/h]	6.68	16.96	16.74	49.56	74.24	86.87	31.06	31.44	5.05	1.73
CO [g/h]	467.04	1185.83	1170.01	3464.27	5189.68	6071.88	2170.91	2197.42	353.25	120.95
NOx [g/h]	90.87	230.72	227.64	674.02	1009.72	1181.37	422.38	427.54	68.73	23.53
VOC [g/h]	108.24	274.83	271.16	802.88	1202.76	1407.22	503.13	509.27	81.87	28.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	31.46
l_p,int, Pedestrian LOS Score for Intersectio	2.760	0.000	2.682	2.355
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	592	592	371	479
d_b, Bicycle Delay [s]	20.69	20.69	27.68	24.14
l_b,int, Bicycle LOS Score for Intersection	2.464	3.279	3.154	2.292
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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Page 606
GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	80.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.059

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	148	314	452	119	397	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	129	0
Site-Generated Trips [veh/h]	-5	305	526	-68	-146	-14
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	15	0	0
Total Hourly Volume [veh/h]	143	619	978	36	380	106
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	172	272	11	120	29
Total Analysis Volume [veh/h]	159	688	1087	46	481	118
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	107	107	107	107	107	107
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	11	65	50	50	32	32
g / C, Green / Cycle	0.11	0.61	0.47	0.47	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.09	0.37	0.58	0.03	0.27	0.07
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	191	1141	871	740	528	471
d1, Uniform Delay [s]	46.97	12.90	28.69	15.79	36.39	28.70
k, delay calibration	0.04	0.31	0.50	0.15	0.15	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.56	1.49	121.34	0.05	8.74	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.60	1.25	0.06	0.91	0.25
d, Delay for Lane Group [s/veh]	50.53	14.39	150.03	15.84	45.14	28.97
Lane Group LOS	D	B	F	B	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.13	8.73	48.72	0.57	13.20	2.34
50th-Percentile Queue Length [ft/ln]	103.30	218.26	1218.12	14.34	330.06	58.54
95th-Percentile Queue Length [veh/ln]	7.44	13.58	70.19	1.03	19.16	4.21
95th-Percentile Queue Length [ft/ln]	185.95	339.41	1754.75	25.81	479.03	105.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.53	14.39	150.03	15.84	45.14	28.97
Movement LOS	D	B	F	B	D	C
d_A, Approach Delay [s/veh]	21.18		144.58		41.95	
Approach LOS	C		F		D	
d_I, Intersection Delay [s/veh]	80.21					
Intersection LOS	F					
Intersection V/C	1.059					

Emissions

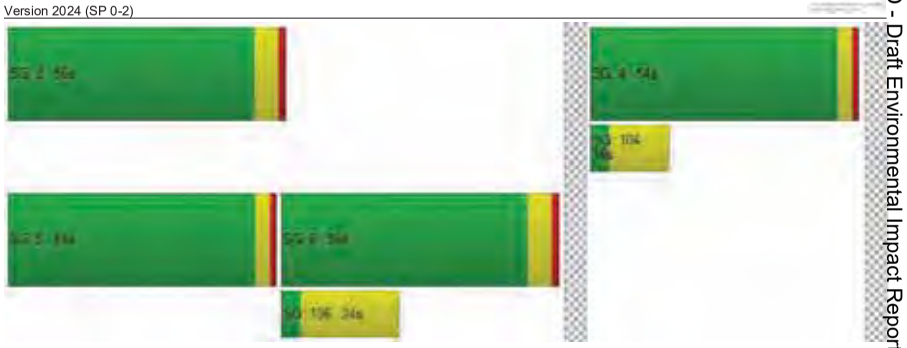
Vehicle Miles Traveled [mph]	19.62	84.89	627.77	26.57	112.97	27.71
Stops [stops/h]	138.66	292.96	1635.00	19.24	443.02	78.57
Fuel consumption [US gal/h]	4.87	10.30	84.55	1.39	11.52	2.27
CO [g/h]	340.16	719.72	5910.03	97.47	804.99	158.72
NOx [g/h]	66.18	140.03	1149.88	18.96	156.62	30.88
VOC [g/h]	78.84	166.80	1369.71	22.59	186.56	36.78

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0		8.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	45.94		0.00		45.94	
l_p,int, Pedestrian LOS Score for Intersectio	3.174		0.000		2.217	
Crosswalk LOS	C		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	932		932		932	
d_b, Bicycle Delay [s]	15.29		15.29		15.29	
l_b,int, Bicycle LOS Score for Intersection	2.957		3.454		1.560	
Bicycle LOS	C		C		A	

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	251.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	413	0	25	547	0	0	0	0	2	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	7	4	0	0	0	0	0
Site-Generated Trips [veh/h]	5	275	0	0	467	45	25	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	688	0	25	1014	52	29	0	3	2	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	187	0	6	276	14	8	0	1	1	0	12
Total Analysis Volume [veh/h]	5	748	0	25	1102	57	32	0	3	2	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.03	0.01	0.00	0.85	0.00	0.01	0.05	0.00	0.12
d_M, Delay for Movement [s/veh]	10.98	0.00	0.00	9.21	0.00	0.00	251.60	217.13	170.79	88.21	69.73	15.04
Movement LOS	B	A	A	A	A	A	F	F	F	F	F	C
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.04	0.04	0.04	3.25	3.25	3.25	0.43	0.43	0.43
95th-Percentile Queue Length [ft/ln]	0.21	0.21	0.21	1.07	1.07	1.07	81.27	81.27	81.27	10.83	10.83	10.83
d_A, Approach Delay [s/veh]	0.07			0.19			244.68			17.90		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	4.83											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	2,529.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.113

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	314	19	123	426	0	0	0	0	59	0	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	6	0	0	1	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	10	0	0	8	434	270	0	31	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	55	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	330	19	123	435	434	307	0	86	59	5	99
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	89	5	33	117	117	83	0	23	16	1	27
Total Analysis Volume [veh/h]	97	355	20	132	468	467	330	0	92	63	5	106
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.00	0.00	0.11	0.00	0.00	6.11	0.00	0.21	1.15	0.08	0.16
d_M, Delay for Movement [s/veh]	10.66	0.00	0.00	8.42	0.00	0.00	2529.21	2502.70	2470.73	317.43	306.61	256.78
Movement LOS	B	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.46	0.00	0.00	0.38	0.00	0.00	47.72	47.72	47.72	11.66	11.66	11.66
95th-Percentile Queue Length [ft/ln]	11.38	0.00	0.00	9.39	0.00	0.00	1193.07	1193.07	1193.07	291.47	291.47	291.47
d_A, Approach Delay [s/veh]	2.19			1.04			2516.46			280.17		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	521.24											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	30.323

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	114	790	168	55	1	886	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-52	-167	91	-24	0	-79	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	37	0	0	23	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	99	623	259	54	1	807	215
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	28	177	74	15	0	229	61
Total Analysis Volume [veh/h]	0	113	708	294	61	1	917	244
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	30.32	0.99	0.00	0.00	0.12	0.76	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	454.82	13.85	0.00
Movement LOS	F	F	F	A	A	F	B	A
95th-Percentile Queue Length [veh/ln]	102.36	102.36	102.36	0.00	0.00	6.04	6.04	6.04
95th-Percentile Queue Length [ft/ln]	2558.88	2558.88	2558.88	0.00	0.00	150.89	150.89	150.89
d_A, Approach Delay [s/veh]	10000.00			0.00		11.32		
Approach LOS	F			A		B		
d_I, Intersection Delay [s/veh]	3517.18							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	25.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	49	466	87	0	33	476	32	39	34	32	218	16	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-191	-146	0	13	-113	7	-37	-26	0	-87	5	8
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	275	0	0	46	363	39	2	8	32	131	21	74
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	83	0	0	15	109	12	1	2	10	39	6	23
Total Analysis Volume [veh/h]	59	331	0	0	58	437	47	2	10	39	158	25	94
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	590	621	508	544
Degree of Utilization, x	0.66	0.87	0.10	0.51

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.90	10.16	0.33	2.87
95th-Percentile Queue Length [ft]	122.38	253.92	8.33	71.84
Approach Delay [s/veh]	20.21	35.85	10.88	16.32
Approach LOS	C	E	B	C
Intersection Delay [s/veh]	25.71			
Intersection LOS	D			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	20.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.367

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	109	80	0	143	180	2	109	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	69	0	-2	0	0	-16	-5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	149	0	141	180	2	93	190
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	44	0	42	54	1	28	57
Total Analysis Volume [veh/h]	130	177	0	168	214	2	111	226
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.23	0.00	0.00	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	20.91	11.13	9.37	0.00	0.00	12.54	8.40	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.64	0.89	0.00	0.00	0.00	0.33	0.33	0.00
95th-Percentile Queue Length [ft/ln]	41.02	22.35	0.00	0.00	0.00	8.16	8.16	0.00
d_A, Approach Delay [s/veh]	15.27			0.00			2.82	
Approach LOS	C			A			A	
d_I, Intersection Delay [s/veh]	5.49							
Intersection LOS	C							

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Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	23.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.343

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	107	158	87	152	170	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	69	0	0	-16
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	158	156	152	170	158
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	43	42	41	46	43
Total Analysis Volume [veh/h]	116	172	170	165	185	172
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.20	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	23.24	16.73	0.00	0.00	8.46	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.18	3.18	0.00	0.00	0.53	0.00
95th-Percentile Queue Length [ft/ln]	79.57	79.57	0.00	0.00	13.30	0.00
d_A, Approach Delay [s/veh]	19.36		0.00		4.39	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	7.29					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.170

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	199	12	27	171	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-16	0	0	69	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	12	27	240	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	3	7	65	0	1
Total Analysis Volume [veh/h]	199	13	29	261	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	713	725	692	765	765	724
Degree of Utilization, x	0.15	0.15	0.04	0.17	0.17	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.52	0.51	0.13	0.61	0.61	0.01
95th-Percentile Queue Length [ft]	13.01	12.76	3.28	15.30	15.30	0.31
Approach Delay [s/veh]	8.57		8.34			7.99
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.44					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	448.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.734

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	172	0	29	7	1	21	5	578	115	81	536	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-16	0	0	0	0	0	0	0	69	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	156	0	29	7	1	21	5	578	184	81	536	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	0	8	2	0	5	1	149	47	22	138	3
Total Analysis Volume [veh/h]	161	0	31	7	1	22	5	596	190	87	553	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.73	0.00	0.07	0.08	0.01	0.04	0.00	0.01	0.00	0.10	0.01	0.00
d_M, Delay for Movement [s/veh]	448.88	36.01	13.70	46.08	41.66	14.00	8.59	0.00	0.00	9.83	0.00	0.00
Movement LOS	F	E	B	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	13.12	0.22	0.22	0.43	0.43	0.43	0.01	0.00	0.00	0.35	0.00	0.00
95th-Percentile Queue Length [ft/ln]	328.04	5.60	5.60	10.71	10.71	10.71	0.37	0.00	0.00	8.72	0.00	0.00
d_A, Approach Delay [s/veh]	378.62			22.41			0.05			1.31		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	44.63											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	278	5	310	5	5	5	5	663	84	14	225	542	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	93	0	0	0	0	0	25	0	0	0	0
Total Hourly Volume [veh/h]	278	5	217	5	5	5	5	663	59	14	225	542	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	74	1	58	1	1	1	1	176	16	4	60	144	1
Total Analysis Volume [veh/h]	296	5	231	5	5	5	5	705	63	14	239	577	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	22	22	1	1	1	57	57	19	75	75
g / C, Green / Cycle	0.18	0.18	0.01	0.01	0.01	0.47	0.47	0.16	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.17	0.15	0.00	0.01	0.00	0.21	0.21	0.14	0.16	0.16
s, saturation flow rate [veh/h]	1781	1595	1781	1718	1781	1870	1817	1781	1870	1864
c, Capacity [veh/h]	321	289	12	13	12	881	856	280	1162	1159
d1, Uniform Delay [s]	48.33	47.22	59.33	59.43	59.34	21.19	21.20	49.66	10.18	10.18
k, delay calibration	0.24	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.74	2.17	19.50	27.26	19.95	1.61	1.66	4.34	0.52	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.82	0.40	0.76	0.40	0.44	0.44	0.90	0.25	0.25
d, Delay for Lane Group [s/veh]	68.07	49.39	78.83	86.69	79.29	22.80	22.86	53.99	10.70	10.70
Lane Group LOS	E	D	E	F	E	C	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.44	6.94	0.22	0.40	0.22	7.63	7.44	7.77	3.52	3.51
50th-Percentile Queue Length [ft/ln]	260.93	173.40	5.48	10.09	5.50	190.84	185.96	194.31	87.98	87.74
95th-Percentile Queue Length [veh/ln]	15.74	11.25	0.39	0.73	0.40	12.16	11.91	12.34	6.33	6.32
95th-Percentile Queue Length [ft/ln]	393.38	281.37	9.86	18.17	9.90	304.11	297.78	308.62	158.37	157.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.07	49.39	49.39	78.83	86.69	86.69	79.29	22.83	22.86	53.99	53.99	10.70	10.70
Movement LOS	E	D	D	E	F	F	E	C	C	D	D	B	B
d_A, Approach Delay [s/veh]	59.78			84.07			23.20			23.81			
Approach LOS	E			F			C			C			
d_I, Intersection Delay [s/veh]	32.89												
Intersection LOS	C												
Intersection V/C	0.581												

Emissions

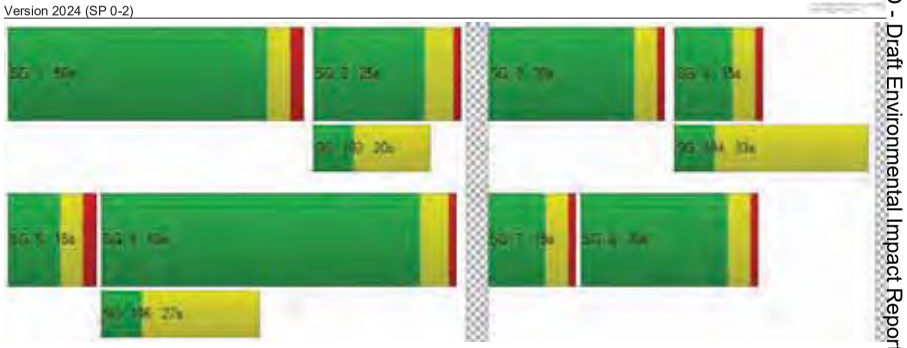
Vehicle Miles Traveled [mph]	114.05	90.93	0.23	0.46	4.21	327.63	318.66	63.14	72.73	72.52
Stops [stops/h]	313.11	208.08	6.57	12.11	6.60	229.00	223.15	233.18	105.58	105.28
Fuel consumption [US gal/h]	10.53	7.26	0.13	0.26	0.29	16.56	16.11	6.67	4.21	4.20
CO [g/h]	735.70	507.80	8.80	18.32	20.29	1157.47	1126.28	466.03	294.41	293.55
NOx [g/h]	143.14	98.80	1.71	3.56	3.95	225.20	219.13	90.67	57.28	57.11
VOC [g/h]	170.51	117.69	2.04	4.25	4.70	268.25	261.03	108.01	68.23	68.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.397	1.964	2.676	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.591	1.584	2.218	2.051
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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Page 820
GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	66.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	69	16	29	189	15	238	3	218	967	55	86	623	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-5	0	-12	5	0	0	54	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	70	0	0	0	17	0	0	53
Total Hourly Volume [veh/h]	69	16	20	189	15	163	3	206	972	38	86	677	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	4	5	52	4	45	1	57	283	10	24	186	34
Total Analysis Volume [veh/h]	76	18	22	208	16	179	3	226	1130	42	95	744	137
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	8	19	9	19	20	83	83	9	72	72
g / C, Green / Cycle	0.05	0.14	0.06	0.14	0.14	0.59	0.59	0.07	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.12	0.12	0.13	0.32	0.03	0.05	0.24	0.24
s, saturation flow rate [veh/h]	1781	1705	1781	1609	1781	3560	1589	1781	1870	1770
c, Capacity [veh/h]	96	234	108	224	251	2113	943	117	962	910
d1, Uniform Delay [s]	65.45	53.33	65.75	59.01	59.26	16.96	11.89	64.56	21.78	21.78
k, delay calibration	0.04	0.13	0.50	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.43	447.82	12.03	5.22	0.98	0.09	5.05	1.65	1.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.17	1.92	0.87	0.91	0.53	0.04	0.81	0.47	0.47
d, Delay for Lane Group [s/veh]	70.84	53.76	513.57	71.05	64.48	17.93	11.98	69.61	23.43	23.53
Lane Group LOS	E	D	F	E	E	B	B	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.84	1.28	17.32	7.54	8.38	10.98	0.58	3.52	10.00	9.48
50th-Percentile Queue Length [ft/ln]	70.90	32.10	433.09	188.44	209.54	274.41	14.51	88.04	249.89	237.12
95th-Percentile Queue Length [veh/ln]	5.11	2.31	28.06	12.04	13.13	16.41	1.04	6.34	15.18	14.54
95th-Percentile Queue Length [ft/ln]	127.63	57.78	701.52	301.00	328.24	410.24	26.12	158.46	379.51	363.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.84	53.76	53.76	513.57	71.05	71.05	64.48	64.48	17.93	11.98	69.61	23.47	23.53
Movement LOS	E	D	D	F	E	E	E	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	64.95			299.44			25.36				27.97		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	65.97												
Intersection LOS	E												
Intersection V/C	0.604												

Emissions

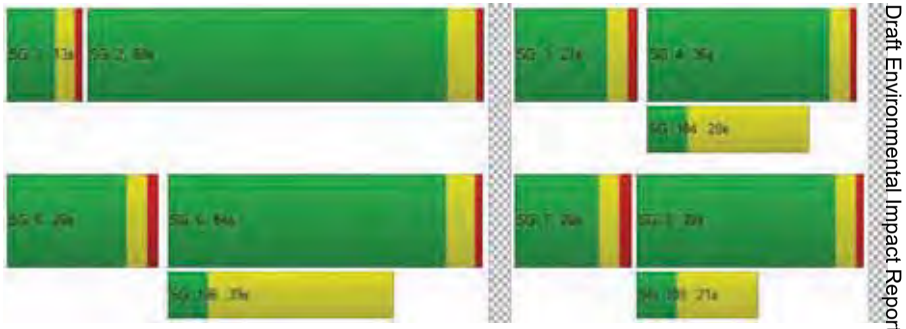
Vehicle Miles Traveled [mph]	3.80	2.00	9.67	9.07	23.93	118.06	4.39	33.26	158.48	150.01
Stops [stops/h]	72.93	33.02	445.46	193.82	215.53	564.50	14.93	90.55	257.03	243.90
Fuel consumption [US gal/h]	1.65	0.70	24.59	4.26	5.18	12.10	0.37	3.22	10.10	9.57
CO [g/h]	115.68	49.10	1719.00	297.98	362.09	845.95	25.55	224.75	706.15	669.22
NOx [g/h]	22.51	9.55	334.45	57.98	70.45	164.59	4.97	43.73	137.39	130.21
VOC [g/h]	26.81	11.38	398.39	69.06	83.92	196.06	5.92	52.09	163.66	155.10

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.070	2.356	2.902	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.766	2.340	2.543	2.409
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	268.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.393

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	102	74	453	315	125	60	66	907	231	350	734	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	4	0	-3	22	12	-7	0	28	32	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	137	0	0	25	0	0	69	0	0	56
Total Hourly Volume [veh/h]	102	68	320	315	122	57	78	900	162	378	766	131
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	18	82	81	31	15	20	232	42	97	197	34
Total Analysis Volume [veh/h]	105	70	330	325	126	59	80	928	167	390	790	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	35	35	31	31	9	45	25	61
g / C, Green / Cycle	0.23	0.23	0.20	0.20	0.06	0.29	0.16	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.25	0.18	0.10	0.04	0.60	0.22	0.51
s, saturation flow rate [veh/h]	1781	1632	1781	1770	1781	1821	1781	1823
c, Capacity [veh/h]	407	373	360	357	101	535	291	722
d1, Uniform Delay [s]	48.42	59.06	59.65	54.45	71.33	54.06	64.06	46.25
k, delay calibration	0.13	0.50	0.25	0.13	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	67.12	17.07	1.45	5.17	477.17	174.94	137.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	1.07	0.90	0.52	0.79	2.05	1.34	1.28
d, Delay for Lane Group [s/veh]	48.83	126.18	76.72	55.90	76.50	531.23	239.01	183.47
Lane Group LOS	D	F	E	E	E	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.38	21.43	14.05	6.56	3.26	91.51	25.49	54.73
50th-Percentile Queue Length [ft/ln]	84.62	535.64	351.34	164.01	81.61	2287.74	637.28	1368.25
95th-Percentile Queue Length [veh/ln]	6.09	30.21	20.20	10.76	5.88	143.38	38.46	78.60
95th-Percentile Queue Length [ft/ln]	152.32	755.28	505.04	269.03	146.90	3584.51	961.41	1964.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.83	126.18	126.18	76.72	55.90	55.90	76.50	531.23	531.23	239.01	183.47	183.47
Movement LOS	D	F	F	E	E	E	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	110.10			69.17			500.27			199.94		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	268.65											
Intersection LOS	F											
Intersection V/C	1.393											

Emissions

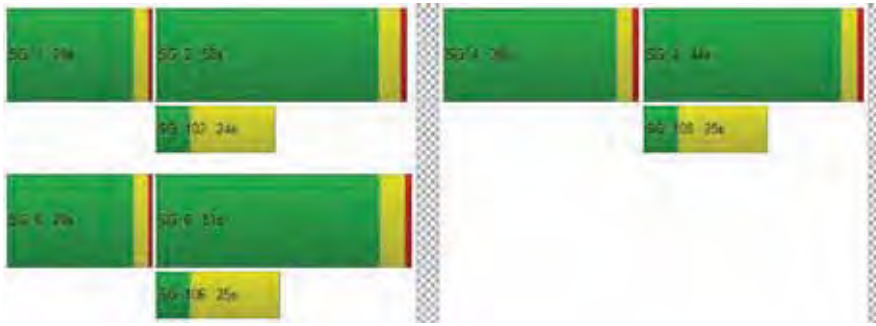
Vehicle Miles Traveled [mph]	180.67	688.26	65.89	37.51	28.01	383.42	175.98	417.38
Stops [stops/h]	79.60	503.85	330.49	154.28	76.77	2151.99	599.46	1287.06
Fuel consumption [US gal/h]	8.92	41.39	9.61	4.50	2.82	146.02	29.52	58.82
CO [g/h]	623.54	2892.89	671.86	314.59	197.29	10206.71	2063.51	4111.65
NOx [g/h]	121.32	562.85	130.72	61.21	38.39	1985.85	401.48	799.98
VOC [g/h]	144.51	670.46	155.71	72.91	45.72	2365.50	478.24	952.92

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.94	65.94	65.94	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.613	2.286	2.786	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	455	520	584	588
d_b, Bicycle Delay [s]	45.70	41.92	38.37	38.16
l_b,int, Bicycle LOS Score for Intersection	2.619	2.442	3.612	3.822
Bicycle LOS	B	B	D	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.902

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	1666	1	0	937	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-3	0	0	61	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1663	1	0	998	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	433	0	0	260	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	1732	1	0	1040	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	86	86	86	86	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	44	44	0	43	43
g / C, Green / Cycle	0.00	0.00	0.23	0.23	0.01	0.51	0.51	0.00	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.46	0.46	0.00	0.29	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	8	7	413	369	22	950	950	0	1765	788
d1, Uniform Delay [s]	0.00	42.79	26.95	33.07	42.23	19.42	19.42	0.00	15.47	10.97
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.29	0.29	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	41.74	0.31	97.89	13.40	9.09	9.11	0.00	0.32	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.45	0.25	1.16	0.45	0.91	0.91	0.00	0.59	0.00
d, Delay for Lane Group [s/veh]	0.00	84.54	27.26	130.97	55.63	28.51	28.52	0.00	15.79	10.98
Lane Group LOS	A	F	C	F	E	C	C	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.14	1.73	17.47	0.29	16.74	16.75	0.00	6.82	0.03
50th-Percentile Queue Length [ft/ln]	0.00	3.49	43.17	436.76	7.29	418.56	418.65	0.00	170.48	0.70
95th-Percentile Queue Length [veh/ln]	0.00	0.25	3.11	26.32	0.52	23.45	23.46	0.00	11.10	0.05
95th-Percentile Queue Length [ft/ln]	0.00	6.28	77.71	657.99	13.12	586.33	586.43	0.00	277.55	1.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	84.54	27.26	27.26	130.97	55.63	28.52	28.52	0.00	15.79	10.98
Movement LOS	A	A	F	C	C	F	E	C	C	A	B	B
d_A, Approach Delay [s/veh]	84.54			110.85			28.67			15.77		
Approach LOS	F			F			C			B		
d_I, Intersection Delay [s/veh]	37.81											
Intersection LOS	D											
Intersection V/C	0.902											

Emissions

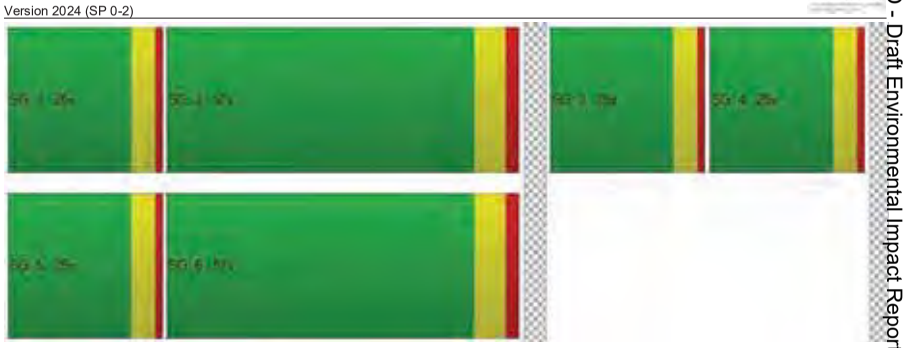
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	391.00	390.97	0.00	181.42	0.52
Stops [stops/h]	0.00	5.84	72.23	730.70	12.19	700.26	700.40	0.00	570.43	1.17
Fuel consumption [US gal/h]	0.00	0.09	2.98	23.80	0.37	24.99	24.99	0.00	13.96	0.03
CO [g/h]	0.00	6.29	208.43	1663.63	25.61	1746.96	1747.09	0.00	975.91	2.43
NOx [g/h]	0.00	1.22	40.55	323.68	4.98	339.90	339.92	0.00	189.88	0.47
VOC [g/h]	0.00	1.46	48.31	385.56	5.93	404.88	404.90	0.00	226.18	0.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	465	465	1162	1162
d_b, Bicycle Delay [s]	25.36	25.36	7.56	7.56
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	2.998	2.420
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	50.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	995	753	861	261	511	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-2	-1	61	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	993	752	922	261	511	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	248	188	231	65	128	17
Total Analysis Volume [veh/h]	993	752	922	261	511	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	22	63	37	37	15	15	15
g / C, Green / Cycle	0.24	0.70	0.41	0.41	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.29	0.21	0.26	0.16	0.14	0.14	0.04
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	838	2476	1447	646	293	293	262
d1, Uniform Delay [s]	34.10	5.30	21.39	18.97	36.66	36.66	32.76
k, delay calibration	0.08	0.50	0.50	0.50	0.17	0.17	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	85.42	0.32	2.16	1.88	11.98	11.98	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.19	0.30	0.64	0.40	0.87	0.87	0.25
d, Delay for Lane Group [s/veh]	119.52	5.61	23.55	20.84	48.64	48.64	32.95
Lane Group LOS	F	A	C	C	D	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	18.82	2.36	7.87	4.07	6.35	6.35	1.25
50th-Percentile Queue Length [ft/ln]	470.41	59.08	196.70	101.72	158.65	158.65	31.33
95th-Percentile Queue Length [veh/ln]	28.40	4.25	12.47	7.32	10.48	10.48	2.26
95th-Percentile Queue Length [ft/ln]	709.91	106.34	311.71	183.09	261.94	261.94	56.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	119.52	5.61	23.55	20.84	48.64	32.95
Movement LOS	F	A	C	C	D	C
d_A, Approach Delay [s/veh]	70.43		22.95		46.85	
Approach LOS	E		C		D	
d_I, Intersection Delay [s/veh]	50.52					
Intersection LOS	D					
Intersection V/C	0.796					

Emissions

Vehicle Miles Traveled [mph]	173.22	131.18	163.39	46.25	15.47	15.47	4.00
Stops [stops/h]	1505.31	189.06	629.45	162.75	253.85	253.85	50.13
Fuel consumption [US gal/h]	39.60	7.30	14.62	3.91	4.57	4.57	0.88
CO [g/h]	2767.76	510.53	1022.08	273.33	319.34	319.34	61.79
NOx [g/h]	538.50	99.33	198.86	53.18	62.13	62.13	12.02
VOC [g/h]	641.45	118.32	236.88	63.35	74.01	74.01	14.32

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.999	2.536	2.531
Bicycle LOS	C	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	1	152	1111	0	0	559	236	562	1	263	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-1	0	0	9	0	52	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	1	152	1110	0	0	568	189	614	1	233	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	351	0	0	180	60	194	0	74	0	0	0
Total Analysis Volume [veh/h]	1	192	1405	0	0	719	239	777	1	295	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	12	56	40	40	21	21	21	
g / C, Green / Cycle	0.13	0.62	0.45	0.45	0.24	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.39	0.20	0.15	0.22	0.22	0.19	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	231	2212	1584	707	425	425	380	
d1, Uniform Delay [s]	38.24	10.67	17.37	16.32	33.36	33.36	32.02	
k, delay calibration	0.04	0.50	0.50	0.50	0.18	0.18	0.09	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.07	1.41	0.94	1.29	12.52	12.50	2.96	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.64	0.45	0.34	0.91	0.91	0.78	
d, Delay for Lane Group [s/veh]	41.30	12.07	18.31	17.61	45.88	45.86	34.98	
Lane Group LOS	D	B	B	B	D	D	C	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.28	8.07	5.15	3.34	9.51	9.51	6.16	
50th-Percentile Queue Length [ft/ln]	107.12	201.83	128.84	83.58	237.87	237.82	154.03	
95th-Percentile Queue Length [veh/ln]	7.68	12.73	8.88	6.02	14.57	14.57	10.23	
95th-Percentile Queue Length [ft/ln]	191.99	318.32	221.92	150.44	364.34	364.28	255.80	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.30	41.30	12.07	0.00	0.00	18.31	17.61	45.87	45.86	34.98	0.00	0.00	0.00
Movement LOS	D	D	B			B	B	D	D	C			
d_A, Approach Delay [s/veh]	15.60				18.14			42.88			0.00		
Approach LOS	B				B			D			A		
d_I, Intersection Delay [s/veh]	24.34												
Intersection LOS	C												
Intersection V/C	0.707												

Emissions

Vehicle Miles Traveled [mph]	34.20	248.98	98.32	32.68	13.47	13.47	10.22	
Stops [stops/h]	171.39	645.84	412.29	133.72	380.60	380.52	246.45	
Fuel consumption [US gal/h]	3.98	17.27	9.00	2.94	6.29	6.29	3.88	
CO [g/h]	277.99	1207.13	629.43	205.56	439.60	439.47	271.37	
NOx [g/h]	54.09	234.86	122.46	39.99	85.53	85.50	52.80	
VOC [g/h]	64.43	279.76	145.88	47.64	101.88	101.85	62.89	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.877	2.389	3.380	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	413	549	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	280	442	28	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	55	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	693	991	83	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	173	248	21	0	0
Total Analysis Volume [veh/h]	0	693	991	83	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	17.74
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		17.74	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.127

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	306	465	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	49	14	25	14	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	355	479	45	41	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	89	120	11	10	1
Total Analysis Volume [veh/h]	3	355	479	45	41	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	8.46	0.00	0.00	0.00	17.64	12.85
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.43	0.43
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.00	0.00	10.74	10.74
d_A, Approach Delay [s/veh]	0.07		0.00		17.41	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.84					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.135

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	66	45	288	40	10	37	2	47	20	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	14	-12	14	24	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	189	66	59	276	54	34	37	2	47	20	108
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	49	17	15	71	14	9	10	1	12	5	28
Total Analysis Volume [veh/h]	0	195	68	61	285	56	35	38	2	48	21	111
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.14	0.11	0.00	0.16	0.06	0.14
d_M, Delay for Movement [s/veh]	7.96	0.00	0.00	7.84	0.00	0.00	22.82	19.40	13.86	20.67	19.27	13.30
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.11	0.11	0.11	0.96	0.96	0.96	1.59	1.59	1.59
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.72	2.72	2.72	24.02	24.02	24.02	39.76	39.76	39.76
d_A, Approach Delay [s/veh]	0.00			1.19			20.85			15.96		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	5.34											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	693	1091	51	32
2	672	1058	49	31
3	658	1036	48	30
4	617	971	45	28
5	547	862	40	25
6	541	851	40	25
7	534	840	39	25
8	485	764	36	22
9	478	753	35	22
10	471	742	35	22
11	409	644	30	19
12	381	600	28	18
13	374	589	28	17
14	277	436	20	13
15	277	436	20	13
16	194	305	14	9
17	111	175	8	5
18	111	175	8	5
19	62	98	5	3
20	35	55	3	2
21	21	33	2	1
22	7	11	1	0
23	7	11	1	0
24	7	11	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1784	1	51	No	No	No	No	No	No	No	Yes	No	No
2	1	1730	1	49	No	No	No	No	No	No	No	Yes	No	No
3	1	1694	1	48	No	No	No	No	No	No	No	Yes	No	No
4	1	1588	1	45	No	No	No	No	No	No	No	Yes	No	No
5	1	1409	1	40	No	No	No	No	No	No	No	No	No	No
6	1	1392	1	40	No	No	No	No	No	No	No	No	No	No
7	1	1374	1	39	No	No	No	No	No	No	No	No	No	No
8	1	1249	1	36	No	No	No	No	No	No	No	No	No	No
9	1	1231	1	35	No	No	No	No	No	No	No	No	No	No
10	1	1213	1	35	No	No	No	No	No	No	No	No	No	No
11	1	1053	1	30	No	No	No	No	No	No	No	No	No	No
12	1	981	1	28	No	No	No	No	No	No	No	No	No	No
13	1	963	1	28	No	No	No	No	No	No	No	No	No	No
14	1	713	1	20	No	No	No	No	No	No	No	No	No	No
15	1	713	1	20	No	No	No	No	No	No	No	No	No	No
16	1	499	1	14	No	No	No	No	No	No	No	No	No	No
17	1	286	1	8	No	No	No	No	No	No	No	No	No	No
18	1	286	1	8	No	No	No	No	No	No	No	No	No	No
19	1	160	1	5	No	No	No	No	No	No	No	No	No	No
20	1	90	1	3	No	No	No	No	No	No	No	No	No	No
21	1	54	1	2	No	No	No	No	No	No	No	No	No	No
22	1	18	1	1	No	No	No	No	No	No	No	No	No	No
23	1	18	1	1	No	No	No	No	No	No	No	No	No	No
24	1	18	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.9	244.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15	2:10
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	51	32
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1867	1867
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	439	992	163	393
2	426	962	158	381
3	417	942	155	373
4	391	883	145	350
5	347	784	129	310
6	342	774	127	307
7	338	764	126	303
8	307	694	114	275
9	303	684	112	271
10	299	675	111	267
11	259	585	96	232
12	241	546	90	216
13	237	536	88	212
14	176	397	65	157
15	176	397	65	157
16	123	278	46	110
17	70	159	26	63
18	70	159	26	63
19	40	89	15	35
20	22	50	8	20
21	13	30	5	12
22	4	10	2	4
23	4	10	2	4
24	4	10	2	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1431	1	393	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	1388	1	381	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	1359	1	373	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	1274	1	350	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2	1131	1	310	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	2	1116	1	307	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	2	1102	1	303	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	2	1001	1	275	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	2	987	1	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	2	974	1	267	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	2	844	1	232	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
12	2	787	1	216	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
13	2	773	1	212	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
14	2	573	1	157	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
15	2	573	1	157	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
16	2	401	1	110	No	No	No	Yes	No	No	No	No	No	No
17	2	229	1	63	No	No	No	No	No	No	No	No	No	No
18	2	229	1	63	No	No	No	No	No	No	No	No	No	No
19	2	129	1	35	No	No	No	No	No	No	No	No	No	No
20	2	72	1	20	No	No	No	No	No	No	No	No	No	No
21	2	43	1	12	No	No	No	No	No	No	No	No	No	No
22	2	14	1	4	No	No	No	No	No	No	No	No	No	No
23	2	14	1	4	No	No	No	No	No	No	No	No	No	No
24	2	14	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	15	13

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	280.2	2516.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	12:41	274:42
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	163	393
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1987	1987
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1023	313	722
2	992	304	700
3	972	297	686
4	910	279	643
5	808	247	570
6	798	244	563
7	788	241	556
8	716	219	505
9	706	216	498
10	696	213	491
11	604	185	426
12	563	172	397
13	552	169	390
14	409	125	289
15	409	125	289
16	286	88	202
17	164	50	116
18	164	50	116
19	92	28	65
20	51	16	36
21	31	9	22
22	10	3	7
23	10	3	7
24	10	3	7

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1336	1	722	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1296	1	700	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1269	1	686	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1189	1	643	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1055	1	570	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1042	1	563	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1029	1	556	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	935	1	505	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	922	1	498	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	909	1	491	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	789	1	426	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	735	1	397	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
13	1	721	1	390	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	534	1	289	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
15	1	534	1	289	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
16	1	374	1	202	No	No	Yes	Yes	No	No	No	No	No	No
17	1	214	1	116	No	No	No	No	No	No	No	No	No	No
18	1	214	1	116	No	No	No	No	No	No	No	No	No	No
19	1	120	1	65	No	No	No	No	No	No	No	No	No	No
20	1	67	1	36	No	No	No	No	No	No	No	No	No	No
21	1	40	1	22	No	No	No	No	No	No	No	No	No	No
22	1	13	1	7	No	No	No	No	No	No	No	No	No	No
23	1	13	1	7	No	No	No	No	No	No	No	No	No	No
24	1	13	1	7	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	11	13	15	15	15	12

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2005:33
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	722
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2058
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	324	448	226	42
2	314	435	219	41
3	308	426	215	40
4	288	399	201	37
5	256	354	179	33
6	253	349	176	33
7	249	345	174	32
8	227	314	158	29
9	224	309	156	29
10	220	305	154	29
11	191	264	133	25
12	178	246	124	23
13	175	242	122	23
14	130	179	90	17
15	130	179	90	17
16	91	125	63	12
17	52	72	36	7
18	52	72	36	7
19	29	40	20	4
20	16	22	11	2
21	10	13	7	1
22	3	4	2	0
23	3	4	2	0
24	3	4	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	772	1	226	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	749	1	219	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	734	1	215	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	687	1	201	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	1	610	1	179	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	602	1	176	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	594	1	174	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
8	1	541	1	158	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
9	1	533	1	156	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
10	1	525	1	154	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	455	1	133	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	424	1	124	No	Yes	Yes	Yes	No	No	No	Yes	No	No
13	1	417	1	122	No	Yes	Yes	Yes	No	No	No	No	No	No
14	1	309	1	90	No	No	No	Yes	No	No	No	No	No	No
15	1	309	1	90	No	No	No	Yes	No	No	No	No	No	No
16	1	216	1	63	No	No	No	No	No	No	No	No	No	No
17	1	124	1	36	No	No	No	No	No	No	No	No	No	No
18	1	124	1	36	No	No	No	No	No	No	No	No	No	No
19	1	69	1	20	No	No	No	No	No	No	No	No	No	No
20	1	38	1	11	No	No	No	No	No	No	No	No	No	No
21	1	23	1	7	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	1	6	10	12	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.3	10.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:01	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	226	42
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1040	1040
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	285	321	258
2	276	311	250
3	271	305	245
4	254	286	230
5	225	254	204
6	222	250	201
7	219	247	199
8	200	225	181
9	197	221	178
10	194	218	175
11	168	189	152
12	157	177	142
13	154	173	139
14	114	128	103
15	114	128	103
16	80	90	72
17	46	51	41
18	46	51	41
19	26	29	23
20	14	16	13
21	9	10	8
22	3	3	3
23	3	3	3
24	3	3	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	606	2	258	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	587	2	250	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	576	2	245	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	540	2	230	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	479	2	204	No	No	Yes	Yes	No	No	No	No	No	No
6	2	472	2	201	No	No	Yes	Yes	No	No	No	No	No	No
7	2	466	2	199	No	No	Yes	Yes	No	No	No	No	No	No
8	2	425	2	181	No	No	Yes	Yes	No	No	No	No	No	No
9	2	418	2	178	No	No	No	Yes	No	No	No	No	No	No
10	2	412	2	175	No	No	No	Yes	No	No	No	No	No	No
11	2	357	2	152	No	No	No	Yes	No	No	No	No	No	No
12	2	334	2	142	No	No	No	No	No	No	No	No	No	No
13	2	327	2	139	No	No	No	No	No	No	No	No	No	No
14	2	242	2	103	No	No	No	No	No	No	No	No	No	No
15	2	242	2	103	No	No	No	No	No	No	No	No	No	No
16	2	170	2	72	No	No	No	No	No	No	No	No	No	No
17	2	97	2	41	No	No	No	No	No	No	No	No	No	No
18	2	97	2	41	No	No	No	No	No	No	No	No	No	No
19	2	55	2	23	No	No	No	No	No	No	No	No	No	No
20	2	30	2	13	No	No	No	No	No	No	No	No	No	No
21	2	19	2	8	No	No	No	No	No	No	No	No	No	No
22	2	6	2	3	No	No	No	No	No	No	No	No	No	No
23	2	6	2	3	No	No	No	No	No	No	No	No	No	No
24	2	6	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					1	4	8	11	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.3
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	258
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	864
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	328	308	265
2	318	299	257
3	312	293	252
4	292	274	236
5	259	243	209
6	256	240	207
7	253	237	204
8	230	216	186
9	226	213	183
10	223	209	180
11	194	182	156
12	180	169	146
13	177	166	143
14	131	123	106
15	131	123	106
16	92	86	74
17	52	49	42
18	52	49	42
19	30	28	24
20	16	15	13
21	10	9	8
22	3	3	3
23	3	3	3
24	3	3	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	636	1	265	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	2	617	1	257	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	605	1	252	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	566	1	236	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	502	1	209	No	Yes	Yes	Yes	No	No	No	No	No	No
6	2	496	1	207	No	Yes	Yes	Yes	No	No	No	No	No	No
7	2	490	1	204	No	Yes	Yes	Yes	No	No	No	No	No	No
8	2	446	1	186	No	No	Yes	Yes	No	No	No	No	No	No
9	2	439	1	183	No	No	Yes	Yes	No	No	No	No	No	No
10	2	432	1	180	No	No	Yes	Yes	No	No	No	No	No	No
11	2	376	1	156	No	No	No	Yes	No	No	No	No	No	No
12	2	349	1	146	No	No	No	Yes	No	No	No	No	No	No
13	2	343	1	143	No	No	No	Yes	No	No	No	No	No	No
14	2	254	1	106	No	No	No	No	No	No	No	No	No	No
15	2	254	1	106	No	No	No	No	No	No	No	No	No	No
16	2	178	1	74	No	No	No	No	No	No	No	No	No	No
17	2	101	1	42	No	No	No	No	No	No	No	No	No	No
18	2	101	1	42	No	No	No	No	No	No	No	No	No	No
19	2	58	1	24	No	No	No	No	No	No	No	No	No	No
20	2	31	1	13	No	No	No	No	No	No	No	No	No	No
21	2	19	1	8	No	No	No	No	No	No	No	No	No	No
22	2	6	1	3	No	No	No	No	No	No	No	No	No	No
23	2	6	1	3	No	No	No	No	No	No	No	No	No	No
24	2	6	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	0	1	4	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:25
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	265
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	901
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	195	267	3
2	189	259	3
3	185	254	3
4	174	238	3
5	154	211	2
6	152	208	2
7	150	206	2
8	137	187	2
9	135	184	2
10	133	182	2
11	115	158	2
12	107	147	2
13	105	144	2
14	78	107	1
15	78	107	1
16	55	75	1
17	31	43	0
18	31	43	0
19	18	24	0
20	10	13	0
21	6	8	0
22	2	3	0
23	2	3	0
24	2	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	462	1	3	No	No	No	No	No	No	No	No	No	No
2	3	448	1	3	No	No	No	No	No	No	No	No	No	No
3	3	439	1	3	No	No	No	No	No	No	No	No	No	No
4	3	412	1	3	No	No	No	No	No	No	No	No	No	No
5	3	365	1	2	No	No	No	No	No	No	No	No	No	No
6	3	360	1	2	No	No	No	No	No	No	No	No	No	No
7	3	356	1	2	No	No	No	No	No	No	No	No	No	No
8	3	324	1	2	No	No	No	No	No	No	No	No	No	No
9	3	319	1	2	No	No	No	No	No	No	No	No	No	No
10	3	315	1	2	No	No	No	No	No	No	No	No	No	No
11	3	273	1	2	No	No	No	No	No	No	No	No	No	No
12	3	254	1	2	No	No	No	No	No	No	No	No	No	No
13	3	249	1	2	No	No	No	No	No	No	No	No	No	No
14	3	185	1	1	No	No	No	No	No	No	No	No	No	No
15	3	185	1	1	No	No	No	No	No	No	No	No	No	No
16	3	130	1	1	No	No	No	No	No	No	No	No	No	No
17	3	74	1	0	No	No	No	No	No	No	No	No	No	No
18	3	74	1	0	No	No	No	No	No	No	No	No	No	No
19	3	42	1	0	No	No	No	No	No	No	No	No	No	No
20	3	23	1	0	No	No	No	No	No	No	No	No	No	No
21	3	14	1	0	No	No	No	No	No	No	No	No	No	No
22	3	5	1	0	No	No	No	No	No	No	No	No	No	No
23	3	5	1	0	No	No	No	No	No	No	No	No	No	No
24	3	5	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	465
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	628	767	185	29
2	609	744	179	28
3	597	729	176	28
4	559	683	165	26
5	496	606	146	23
6	490	598	144	23
7	484	591	142	22
8	440	537	130	20
9	433	529	128	20
10	427	522	126	20
11	371	453	109	17
12	345	422	102	16
13	339	414	100	16
14	251	307	74	12
15	251	307	74	12
16	176	215	52	8
17	100	123	30	5
18	100	123	30	5
19	57	69	17	3
20	31	38	9	1
21	19	23	6	1
22	6	8	2	0
23	6	8	2	0
24	6	8	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1395	2	185	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	2	1353	2	179	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	2	1326	2	176	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	2	1242	2	165	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	2	1102	2	146	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
6	2	1088	2	144	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
7	2	1075	2	142	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
8	2	977	2	130	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
9	2	962	2	128	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
10	2	949	2	126	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
11	2	824	2	109	No	No	No	No	No	Yes	Yes	Yes	No	No
12	2	767	2	102	No	No	No	No	No	Yes	Yes	Yes	No	No
13	2	753	2	100	No	No	No	No	No	Yes	Yes	Yes	No	No
14	2	558	2	74	No	No	No	No	No	No	No	Yes	No	No
15	2	558	2	74	No	No	No	No	No	No	No	Yes	No	No
16	2	391	2	52	No	No	No	No	No	No	No	No	No	No
17	2	223	2	30	No	No	No	No	No	No	No	No	No	No
18	2	223	2	30	No	No	No	No	No	No	No	No	No	No
19	2	126	2	17	No	No	No	No	No	No	No	No	No	No
20	2	69	2	9	No	No	No	No	No	No	No	No	No	No
21	2	42	2	6	No	No	No	No	No	No	No	No	No	No
22	2	14	2	2	No	No	No	No	No	No	No	No	No	No
23	2	14	2	2	No	No	No	No	No	No	No	No	No	No
24	2	14	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	10	13	13	15	4	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	378.6	22.4
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	19:27	0:10
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	185	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1609	1609
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	No
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	693	1074	0
2	672	1042	0
3	658	1020	0
4	617	956	0
5	547	848	0
6	541	838	0
7	534	827	0
8	485	752	0
9	478	741	0
10	471	730	0
11	409	634	0
12	381	591	0
13	374	580	0
14	277	430	0
15	277	430	0
16	194	301	0
17	111	172	0
18	111	172	0
19	62	97	0
20	35	54	0
21	21	32	0
22	7	11	0
23	7	11	0
24	7	11	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1767	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1714	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1678	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1573	1	0	No	No	No	No	No	No	No	No	No	No
5	1	1395	1	0	No	No	No	No	No	No	No	No	No	No
6	1	1379	1	0	No	No	No	No	No	No	No	No	No	No
7	1	1361	1	0	No	No	No	No	No	No	No	No	No	No
8	1	1237	1	0	No	No	No	No	No	No	No	No	No	No
9	1	1219	1	0	No	No	No	No	No	No	No	No	No	No
10	1	1201	1	0	No	No	No	No	No	No	No	No	No	No
11	1	1043	1	0	No	No	No	No	No	No	No	No	No	No
12	1	972	1	0	No	No	No	No	No	No	No	No	No	No
13	1	954	1	0	No	No	No	No	No	No	No	No	No	No
14	1	707	1	0	No	No	No	No	No	No	No	No	No	No
15	1	707	1	0	No	No	No	No	No	No	No	No	No	No
16	1	495	1	0	No	No	No	No	No	No	No	No	No	No
17	1	283	1	0	No	No	No	No	No	No	No	No	No	No
18	1	283	1	0	No	No	No	No	No	No	No	No	No	No
19	1	159	1	0	No	No	No	No	No	No	No	No	No	No
20	1	89	1	0	No	No	No	No	No	No	No	No	No	No
21	1	53	1	0	No	No	No	No	No	No	No	No	No	No
22	1	18	1	0	No	No	No	No	No	No	No	No	No	No
23	1	18	1	0	No	No	No	No	No	No	No	No	No	No
24	1	18	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1767
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	358	524	43
2	347	508	42
3	340	498	41
4	319	466	38
5	283	414	34
6	279	409	34
7	276	403	33
8	251	367	30
9	247	362	30
10	243	356	29
11	211	309	25
12	197	288	24
13	193	283	23
14	143	210	17
15	143	210	17
16	100	147	12
17	57	84	7
18	57	84	7
19	32	47	4
20	18	26	2
21	11	16	1
22	4	5	0
23	4	5	0
24	4	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	882	1	43	No	No	No	No	No	No	No	Yes	No	No
2	1	855	1	42	No	No	No	No	No	No	No	Yes	No	No
3	1	838	1	41	No	No	No	No	No	No	No	No	No	No
4	1	785	1	38	No	No	No	No	No	No	No	No	No	No
5	1	697	1	34	No	No	No	No	No	No	No	No	No	No
6	1	688	1	34	No	No	No	No	No	No	No	No	No	No
7	1	679	1	33	No	No	No	No	No	No	No	No	No	No
8	1	618	1	30	No	No	No	No	No	No	No	No	No	No
9	1	609	1	30	No	No	No	No	No	No	No	No	No	No
10	1	599	1	29	No	No	No	No	No	No	No	No	No	No
11	1	520	1	25	No	No	No	No	No	No	No	No	No	No
12	1	485	1	24	No	No	No	No	No	No	No	No	No	No
13	1	476	1	23	No	No	No	No	No	No	No	No	No	No
14	1	353	1	17	No	No	No	No	No	No	No	No	No	No
15	1	353	1	17	No	No	No	No	No	No	No	No	No	No
16	1	247	1	12	No	No	No	No	No	No	No	No	No	No
17	1	141	1	7	No	No	No	No	No	No	No	No	No	No
18	1	141	1	7	No	No	No	No	No	No	No	No	No	No
19	1	79	1	4	No	No	No	No	No	No	No	No	No	No
20	1	44	1	2	No	No	No	No	No	No	No	No	No	No
21	1	27	1	1	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	2	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:12
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	43
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	925
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

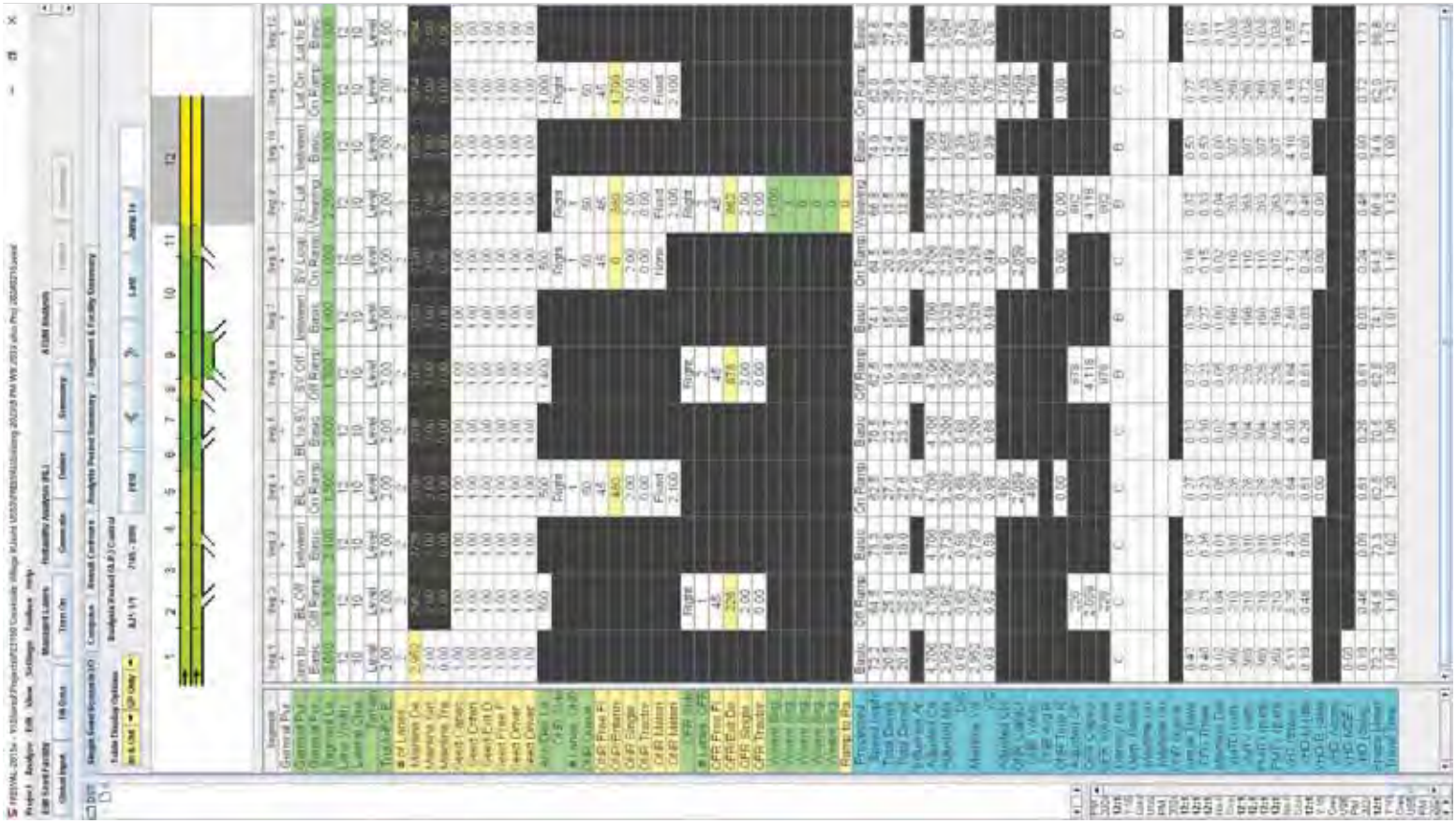
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	255	389	175	73
2	247	377	170	71
3	242	370	166	69
4	227	346	156	65
5	201	307	138	58
6	199	303	137	57
7	196	300	135	56
8	179	272	122	51
9	176	268	121	50
10	173	265	119	50
11	150	230	103	43
12	140	214	96	40
13	138	210	95	39
14	102	156	70	29
15	102	156	70	29
16	71	109	49	20
17	41	62	28	12
18	41	62	28	12
19	23	35	16	7
20	13	19	9	4
21	8	12	5	2
22	3	4	2	1
23	3	4	2	1
24	3	4	2	1

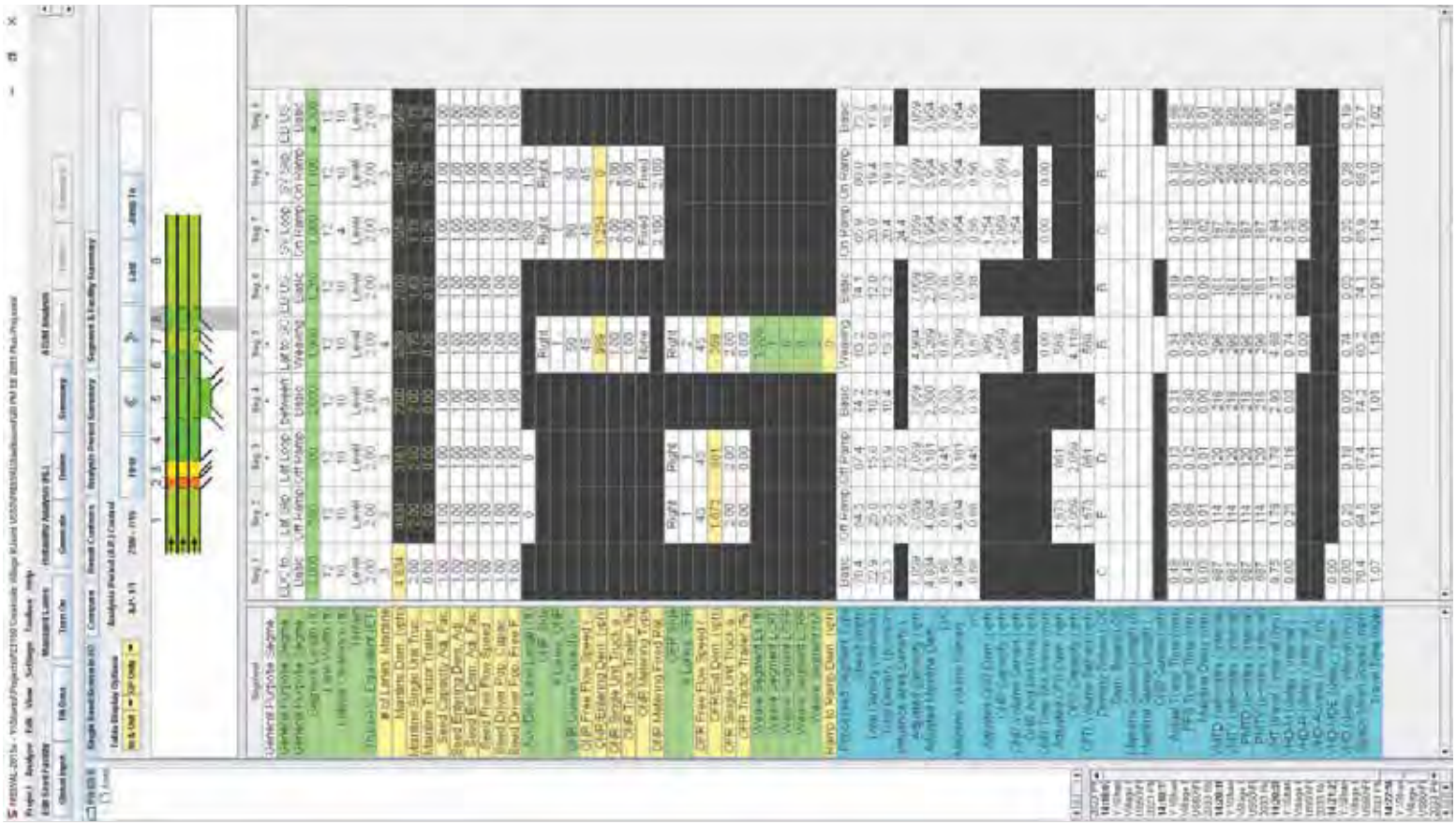
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	644	1	175	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	624	1	170	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	612	1	166	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	573	1	156	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	508	1	138	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	1	502	1	137	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	1	496	1	135	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	1	451	1	122	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	444	1	121	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	438	1	119	No	No	Yes	Yes	No	No	No	Yes	No	No
11	1	380	1	103	No	No	No	Yes	No	No	No	No	No	No
12	1	354	1	96	No	No	No	Yes	No	No	No	No	No	No
13	1	348	1	95	No	No	No	Yes	No	No	No	No	No	No
14	1	258	1	70	No	No	No	No	No	No	No	No	No	No
15	1	258	1	70	No	No	No	No	No	No	No	No	No	No
16	1	180	1	49	No	No	No	No	No	No	No	No	No	No
17	1	103	1	28	No	No	No	No	No	No	No	No	No	No
18	1	103	1	28	No	No	No	No	No	No	No	No	No	No
19	1	58	1	16	No	No	No	No	No	No	No	No	No	No
20	1	32	1	9	No	No	No	No	No	No	No	No	No	No
21	1	20	1	5	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	9	10	13	0	3	4	10	7	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16	20.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:46	0:25
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	175	73
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	892	892
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	





EPAP AM plus abated Project

Vistro File: C:\...\AM 918 DU 20240212 - ABATED.vistro Scenario 4 Abated 2033 AM with CCSP, + Project
Report File: C:\...\11 2033 AM plus abated Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	SB Thru	1.293	123.7	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.137	92.7	F
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	1.017	42.2	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.761	43.4	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	NB Right	0.962	43.4	D
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	WB Left	0.969	50.2	D
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.980	13.8	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.376	46.9	E
12	Latrobe Rd/Royal Oaks Dr	Signalized	HCM 6th Edition	SB Left	0.725	23.5	C
13	Golden Foothill/Robert J Mathews	Roundabout	HCM 6th Edition	EB Thru		8.3	A
18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 6th Edition	EB Left	0.687	16.0	B
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	1.178	166.3	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Option 1: Copy of Latrobe Rd/US 50 EB

Number	4												
Intersection	Latrobe Rd/US 50 EB												
Control Type	Signalized												
Analysis Method	HCM 7th Edition												
Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	2219	463	0	520	1821	0	0	0	1266	0	0	528
Total Analysis Volume [veh/h]	0	2852	408	0	619	2124	0	0	0	1035	0	0	440

Intersection Settings

Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

g / C, Green / Cycle	0.47	0.47	0.37	0.57	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.48	0.47	0.35	0.31	0.25	
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	
Arrival type	3		3		3	3
s, saturation flow rate [veh/h]	5004	1718	1781	6702	4220	

s, saturation flow rate [veh/h]	5094	1718	1781	6792	4220	
c, Capacity [veh/h]	2401	810	659	3858	1152	
X, volume / capacity	1.02	1.01	0.94	0.55	0.90	
d, Delay for Lane Group [s/veh]	41.06	51.13	29.55	9.80	24.88	
Lane Group LOS	F	F	C	A	C	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	14.85	17.29	9.53	3.69	5.08	
50th-Percentile Queue Length [ft/ln]	371.27	432.34	238.32	92.34	126.94	
95th-Percentile Queue Length [veh/ln]	21.45	24.23	14.60	6.65	8.77	
95th-Percentile Queue Length [ft/ln]	536.28	605.67	364.91	166.21	219.32	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	42.49	51.13	29.55	29.55	9.80	0.00	0.00	0.00	24.88	0.00	0.00	0.00
Movement LOS		D	D	C	C	A				C			
Critical Movement		No	Yes	No	No	No				No			No
d_A, Approach Delay [s/veh]	43.57			14.26				24.88			0.00		
Approach LOS	D			B				C			A		
d_I, Intersection Delay [s/veh]	29.40												
Intersection LOS	C												
Intersection V/C	1.082												

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	123.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.293

Intersection Setup

Name	El Dorado Hills Blvd			El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd			El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	414	988	150	1	218	1727	441	150	61	709	33	34	191
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	25	48	0	0	0	-14	0	0	0	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	45	0	0	0	132	0	0	211	0	0	57
Total Hourly Volume [veh/h]	439	1036	105	1	218	1713	309	150	61	492	33	34	134
Peak Hour Factor	0.9300	0.9300	0.9300	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	118	278	28	0	59	460	83	40	16	132	9	9	36
Total Analysis Volume [veh/h]	472	1114	113	1	234	1842	332	161	66	529	35	37	144
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permi	Prote	Permi	Overl	Split	Split	Overlap	Split	Split	Split
Signal Group	5	2	0	0	1	6	7	7	7	5	3	8	0
Auxiliary Signal Groups							6,7			5,7			
Maximum Green [s]	32	50	0	0	32	50	24	24	24	32	0	16	0
Amber [s]	3.0	4.7	0.0	0.0	3.0	4.7	3.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.7	0.0	0.0	2.0	3.7	2.0	2.0	2.0	2.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	0.0	245.0	245.0	245.0	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	36	54	0	0	36	54	28	28	28	36	0	20	0
Lead / Lag	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	5	0	0	4	4	5	5	5	4	0	5	0
Vehicle Extension [s]	2.0	3.5	0.0	0.0	2.0	3.5	2.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No			No	No	No		No	No		No	
Maximum Recall	No	No			No	No	No		No	No		No	
Pedestrian Recall	No	No			No	No	No		No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	32	62	62	20	50	80	24	24	80	16	16
g / C, Green / Cycle	0.23	0.44	0.44	0.15	0.36	0.57	0.17	0.17	0.57	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.27	0.23	0.23	0.13	0.52	0.21	0.06	0.06	0.33	0.04	0.11
s, saturation flow rate [veh/h]	1781	3560	1783	1781	3560	1589	1781	1831	1589	874	1640
c, Capacity [veh/h]	408	1567	785	262	1274	907	306	315	910	139	188
d1, Uniform Delay [s]	53.85	28.42	28.43	58.57	44.85	16.29	51.14	51.11	19.12	58.91	61.56
k, delay calibration	0.50	0.13	0.20	0.08	0.26	0.16	0.04	0.04	0.50	0.04	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	94.87	0.33	1.01	8.17	202.81	0.37	0.27	0.26	2.71	0.35	47.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.16	0.52	0.52	0.90	1.45	0.37	0.37	0.36	0.58	0.25	0.96
d, Delay for Lane Group [s/veh]	148.72	28.74	29.44	66.74	247.66	16.66	51.41	51.37	21.82	59.26	109.33
Lane Group LOS	F	C	C	E	F	B	D	D	C	E	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	24.69	9.69	9.87	8.60	57.08	5.59	3.53	3.60	11.55	1.18	8.90
50th-Percentile Queue Length [ft/ln]	617.37	242.22	246.75	214.95	1427.05	139.80	88.32	89.99	288.64	29.53	222.41
95th-Percentile Queue Length [veh/ln]	35.61	14.79	15.02	13.41	85.68	9.47	6.36	6.48	17.12	2.13	13.79
95th-Percentile Queue Length [ft/ln]	890.24	369.84	375.56	335.17	2141.91	236.75	158.98	161.98	427.96	53.16	344.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	148.72	28.93	29.44	66.74	66.74	247.6	16.66	51.41	51.37	21.82	59.26	109.33	109.33
Movement LOS	F	C	C	E	E	F	B	D	D	C	E	F	F
d_A, Approach Delay [s/veh]	62.24			198.17				30.70			101.22		
Approach LOS	E			F				C			F		
d_I, Intersection Delay [s/veh]	123.67												
Intersection LOS	F												
Intersection V/C	1.293												

Emissions

Vehicle Miles Traveled [mph]	88.83	153.79	77.12	56.13	439.93	79.29	7.01	7.15	32.99	1.71	8.83
Stops [stops/h]	636.38	499.35	254.34	221.57	2941.95	144.10	91.04	92.76	297.53	30.44	229.25
Fuel consumption [US gal/h]	25.24	16.26	8.26	7.87	144.47	5.64	1.97	2.00	5.35	0.66	5.66
CO [g/h]	1764.26	1136.57	577.43	550.11	10098.5	393.89	137.52	140.13	374.06	46.17	395.38
NOx [g/h]	343.26	221.13	112.35	107.03	1964.81	76.64	26.76	27.26	72.78	8.98	76.93
VOC [g/h]	408.88	263.41	133.82	127.49	2340.44	91.29	31.87	32.48	86.69	10.70	91.63

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	59.28	59.28	59.28
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.642	2.925	2.280
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	691	691	344	229
d_b, Bicycle Delay [s]	29.90	29.90	47.91	54.77
l_b,int, Bicycle LOS Score for Intersection	2.519	3.463	3.155	2.010
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	92.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.137

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1417	1188	141	3	69	1353	1044	256	92	816	171	99	105
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	88	73	16	0	0	-20	0	0	0	-13	-4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	47	0	0	0	313	0	0	241	0	0	32
Total Hourly Volume [veh/h]	1	1505	1261	110	3	69	1333	731	256	92	562	167	99	73
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	376	315	28	1	17	333	183	64	23	141	42	25	18
Total Analysis Volume [veh/h]	1	1505	1261	110	3	69	1333	731	256	92	562	167	99	73
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	45	68	0	0	19	42	28	0	28	0	0	20	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	40	69	69	7	36	69	27	27	11	11	11
g / C, Green / Cycle	0.30	0.51	0.51	0.06	0.27	0.51	0.20	0.20	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.44	0.25	0.26	0.04	0.26	0.46	0.10	0.10	0.06	0.06	0.07
s, saturation flow rate [veh/h]	3459	3560	1796	1781	5094	1589	1781	1826	1781	1828	1673
c, Capacity [veh/h]	1035	1826	921	99	1372	808	359	368	144	148	136
d1, Uniform Delay [s]	33.83	5.40	5.44	62.73	48.82	30.19	47.64	47.63	60.88	60.84	60.99
k, delay calibration	0.21	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	207.07	0.95	2.03	3.75	18.44	15.49	0.74	0.72	3.58	3.33	4.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.46	0.49	0.51	0.73	0.97	0.90	0.48	0.48	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	240.91	6.35	7.47	66.48	67.26	45.68	48.38	48.35	64.46	64.17	65.26
Lane Group LOS	F	A	A	E	E	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	44.21	2.48	2.87	2.49	16.70	23.59	5.22	5.34	3.98	4.03	3.87
50th-Percentile Queue Length [ft/ln]	1105.27	62.04	71.85	62.33	417.49	589.81	130.52	133.50	99.56	100.80	96.66
95th-Percentile Queue Length [veh/ln]	67.10	4.47	5.17	4.49	23.40	31.56	8.97	9.13	7.17	7.26	6.96
95th-Percentile Queue Length [ft/ln]	1677.54	111.67	129.33	112.20	585.04	788.96	224.19	228.25	179.21	181.43	173.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	240.9	240.9	6.67	7.47	66.48	66.48	67.26	45.68	48.37	48.35	0.00	64.37	64.57	65.26
Movement LOS	F	F	A	A	E	E	E	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	129.32				59.85				18.50			64.62		
Approach LOS	F				E				B			E		
d_I, Intersection Delay [s/veh]	92.67													
Intersection LOS	F													
Intersection V/C	1.137													

Emissions

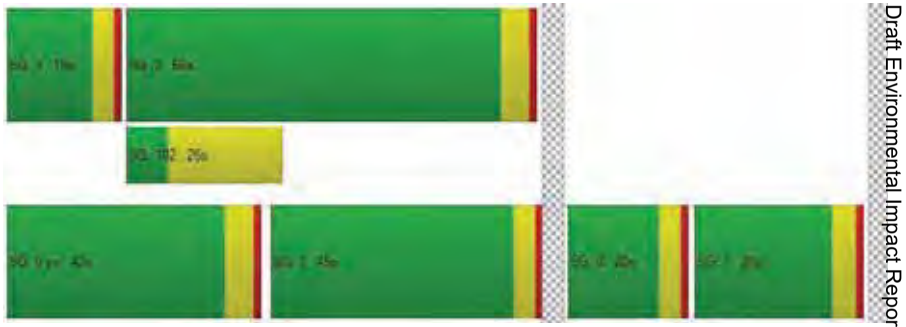
Vehicle Miles Traveled [mph]	257.93	154.08	80.73	13.55	250.86	137.57	7.95	8.14	3.62	3.67	3.49
Stops [stops/h]	2357.90	132.35	76.64	66.49	1335.98	629.13	139.22	142.40	106.20	107.51	103.11
Fuel consumption [US gal/h]	97.46	8.24	4.46	2.27	43.45	19.33	2.79	2.85	2.23	2.25	2.17
CO [g/h]	6812.47	575.74	312.00	158.33	3037.40	1351.32	194.99	199.47	155.76	157.54	151.63
NOx [g/h]	1325.46	112.02	60.70	30.80	590.97	262.92	37.94	38.81	30.30	30.65	29.50
VOC [g/h]	1578.86	133.43	72.31	36.69	703.95	313.18	45.19	46.23	36.10	36.51	35.14

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	56.95
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.364
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	921	536	339	228
d_b, Bicycle Delay [s]	19.63	36.15	46.54	52.98
l_b,int, Bicycle LOS Score for Intersection	3.167	2.869	2.134	1.866
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	42.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.017

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	68	1965	251	4	537	2174	372	156	9	24	1	72	32	557
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	204	19	0	0	-62	0	0	0	0	0	-2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	81	0	0	0	112	0	0	7	0	0	0	167
Total Hourly Volume [veh/h]	1	74	2169	189	4	537	2112	260	156	9	17	1	70	32	390
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	19	553	48	1	137	539	66	40	2	4	0	18	8	99
Total Analysis Volume [veh/h]	1	76	2213	193	4	548	2155	265	159	9	17	1	71	33	398
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	50	50	15	61	61	8	8	8	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.14	0.59	0.59	0.07	0.07	0.07	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.48	0.13	0.18	0.47	0.19	0.05	0.01	0.01	0.04	0.15	0.15
s, saturation flow rate [veh/h]	3113	4584	1431	3113	4584	1431	3113	1683	1431	1603	1464	1431
c, Capacity [veh/h]	127	2214	691	451	2691	840	227	123	104	232	212	207
d1, Uniform Delay [s]	48.86	26.77	16.01	44.30	16.68	10.85	46.91	44.75	45.05	39.67	44.30	44.30
k, delay calibration	0.04	0.04	0.04	0.09	0.04	0.04	0.08	0.08	0.08	0.08	0.45	0.45
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.72	5.29	0.08	105.05	0.22	0.08	2.89	0.19	0.54	0.56	65.94	66.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	1.00	0.28	1.22	0.80	0.32	0.70	0.07	0.16	0.31	1.03	1.03
d, Delay for Lane Group [s/veh]	50.59	32.06	16.09	149.36	16.90	10.93	49.80	44.94	45.58	40.23	110.24	110.93
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.01	18.17	2.69	12.29	12.21	2.94	2.08	0.22	0.42	1.67	9.26	9.09
50th-Percentile Queue Length [ft/ln]	25.15	454.22	67.20	307.37	305.31	73.40	52.11	5.54	10.62	41.81	231.53	227.26
95th-Percentile Queue Length [veh/ln]	1.81	25.16	4.84	19.64	17.94	5.28	3.75	0.40	0.76	3.01	14.44	14.22
95th-Percentile Queue Length [ft/ln]	45.28	628.98	120.97	490.90	448.60	132.12	93.79	9.97	19.12	75.26	360.88	355.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.59	50.59	32.06	16.09	149.3	149.3	16.90	10.93	49.80	44.94	45.58	40.23	40.23	110.2	110.6
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	31.40				40.97				49.18			100.51			
Approach LOS	C				D				D			F			
d_I, Intersection Delay [s/veh]	42.22														
Intersection LOS	D														
Intersection V/C	1.017														

Emissions

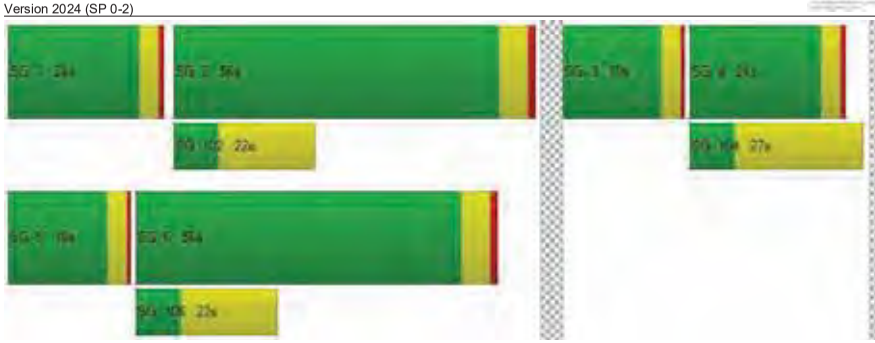
Vehicle Miles Traveled [mph]	17.18	493.89	43.07	79.87	311.82	38.34	20.28	1.15	2.17	25.27	76.50	74.77
Stops [stops/h]	69.98	1895.34	93.47	855.07	1274.01	102.09	144.96	7.70	14.77	58.15	322.04	316.10
Fuel consumption [US gal/h]	1.89	45.24	2.92	24.79	27.29	2.73	3.25	0.17	0.33	1.95	9.82	9.63
CO [g/h]	131.88	3162.47	204.21	1732.59	1907.29	190.97	226.97	12.03	22.97	136.37	686.27	673.31
NOx [g/h]	25.66	615.30	39.73	337.10	371.09	37.16	44.16	2.34	4.47	26.53	133.52	131.00
VOC [g/h]	30.56	732.93	47.33	401.54	442.03	44.26	52.60	2.79	5.32	31.61	159.05	156.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.35	0.00	41.35	41.35
l_p,int, Pedestrian LOS Score for Intersectio	3.493	0.000	2.580	2.837
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	976	976	396	299
d_b, Bicycle Delay [s]	13.58	13.58	33.29	37.42
l_b,int, Bicycle LOS Score for Intersection	2.969	2.954	1.718	2.548
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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Page 660
GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	121	1681	388	1	95	1737	444	2	355	391	78	425	318	248
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	229	57	0	0	-64	0	0	0	0	0	-17	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	134	0	0	0	133	0	0	0	23	0	0	74
Total Hourly Volume [veh/h]	2	121	1910	311	1	95	1673	311	2	355	391	55	408	318	174
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	508	83	0	25	445	83	1	94	104	15	109	85	46
Total Analysis Volume [veh/h]	2	129	2032	331	1	101	1780	331	2	378	416	59	434	338	185
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	13	82	82	10	79	79	20	23	23	20	23	23
g / C, Green / Cycle	0.09	0.52	0.52	0.06	0.50	0.50	0.12	0.14	0.14	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.30	0.21	0.03	0.35	0.21	0.11	0.13	0.13	0.13	0.10	0.12
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1775	3431	3532	1577
c, Capacity [veh/h]	151	3520	824	218	2529	789	427	267	255	437	518	231
d1, Uniform Delay [s]	70.87	25.63	22.65	70.93	30.25	24.80	67.65	66.21	66.22	68.43	63.22	64.77
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.04	0.23	0.23	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.03	0.70	1.46	0.58	1.67	1.64	2.57	20.82	21.61	10.67	0.52	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.58	0.40	0.47	0.70	0.42	0.89	0.91	0.91	0.99	0.65	0.80
d, Delay for Lane Group [s/veh]	90.91	26.32	24.11	71.51	31.92	26.43	70.22	87.03	87.83	79.10	63.74	67.21
Lane Group LOS	F	C	C	E	C	C	E	F	F	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.08	13.20	7.84	1.98	17.07	7.99	7.69	11.16	10.75	9.38	6.46	7.35
50th-Percentile Queue Length [ft/ln]	151.91	330.00	195.97	49.43	426.80	199.70	192.37	279.09	268.70	234.62	161.38	183.85
95th-Percentile Queue Length [veh/ln]	10.12	19.16	12.43	3.56	23.85	12.62	12.24	16.64	16.12	14.41	10.62	11.80
95th-Percentile Queue Length [ft/ln]	252.98	478.97	310.76	88.98	596.21	315.58	306.10	416.08	403.12	360.23	265.55	295.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.91	90.91	26.32	24.11	71.51	71.51	31.92	26.43	70.22	70.22	87.36	87.83	79.10	63.74	67.21
Movement LOS	F	F	C	C	E	E	C	C	E	E	F	F	E	E	E
d_A, Approach Delay [s/veh]	29.42				32.92				79.78				71.38		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	43.37														
Intersection LOS	D														
Intersection V/C	0.761														

Emissions

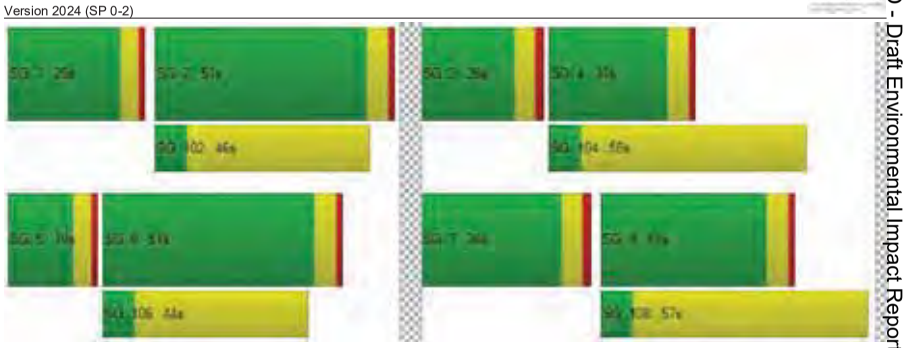
Vehicle Miles Traveled [mph]	52.16	809.00	131.78	22.76	397.26	73.87	94.70	60.47	57.91	45.50	35.44	19.40
Stops [stops/h]	139.33	1210.71	179.75	90.68	1174.39	183.17	352.88	255.98	246.45	430.39	296.03	168.62
Fuel consumption [US gal/h]	5.34	50.88	8.04	3.39	39.78	6.59	11.28	8.20	7.90	11.24	7.48	4.26
CO [g/h]	373.26	3556.32	562.15	237.09	2780.57	460.65	788.30	573.16	552.08	785.37	522.72	297.77
NOx [g/h]	72.62	691.93	109.37	46.13	541.00	89.62	153.37	111.52	107.41	152.80	101.70	57.94
VOC [g/h]	86.51	824.21	130.28	54.95	644.42	106.76	182.70	132.84	127.95	182.02	121.15	69.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.600	3.916	2.806	3.006
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.643	2.794	1.972	2.410
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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Page 663
GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.962

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	180.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	57	1777	2	2	18	1704	532	257	5	15	4	9	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	286	0	0	0	-81	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	160	0	0	5	0	0	5
Total Hourly Volume [veh/h]	1	57	2063	1	2	18	1623	372	257	5	10	4	9	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	16	593	0	1	5	466	107	74	1	3	1	3	3
Total Analysis Volume [veh/h]	1	66	2371	1	2	21	1866	428	295	6	11	5	10	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	73	73	73	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	43	43	1	40	40	9	9	2
g / C, Green / Cycle	0.05	0.59	0.59	0.02	0.55	0.55	0.12	0.12	0.03
(v / s)_i Volume / Saturation Flow Rate	0.04	0.63	0.63	0.01	0.52	0.27	0.09	0.09	0.02
s, saturation flow rate [veh/h]	1781	1870	1870	1781	3560	1589	1781	1769	1725
c, Capacity [veh/h]	93	1093	1093	29	1954	872	219	217	51
d1, Uniform Delay [s]	34.04	15.14	15.14	35.72	15.59	10.15	30.74	30.75	34.85
k, delay calibration	0.04	0.50	0.50	0.04	0.15	0.15	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.98	53.40	53.46	16.02	4.85	0.61	4.33	4.37	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	1.09	1.09	0.79	0.95	0.49	0.72	0.72	0.51
d, Delay for Lane Group [s/veh]	38.01	68.54	68.60	51.75	20.43	10.76	35.07	35.11	37.79
Lane Group LOS	D	F	F	D	C	B	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.24	30.64	30.65	0.50	11.26	3.12	2.81	2.80	0.48
50th-Percentile Queue Length [ft/ln]	30.88	765.93	766.27	12.47	281.38	77.93	70.24	69.89	12.08
95th-Percentile Queue Length [veh/ln]	2.22	42.43	42.45	0.90	16.76	5.61	5.06	5.03	0.87
95th-Percentile Queue Length [ft/ln]	55.58	1060.81	1061.35	22.45	418.92	140.28	126.43	125.81	21.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.01	38.01	68.57	68.60	51.75	51.75	20.43	10.76	35.09	35.11	35.11	37.79	37.79	37.79
Movement LOS	D	D	F	E	D	D	C	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	67.73				18.96				35.09			37.79		
Approach LOS	E				B				D			D		
d_I, Intersection Delay [s/veh]	43.40													
Intersection LOS	D													
Intersection V/C	0.962													

Emissions

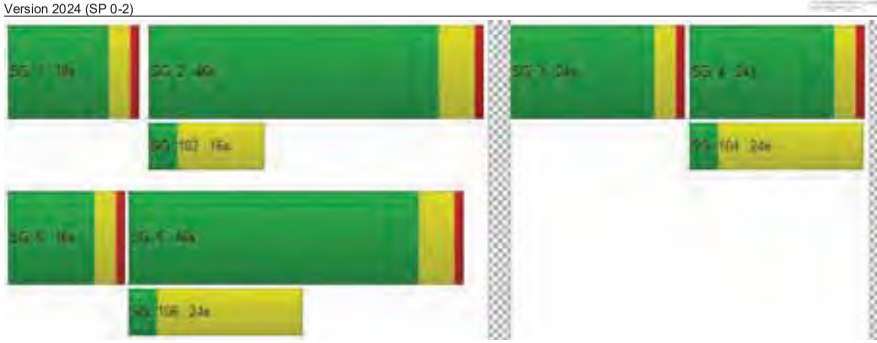
Vehicle Miles Traveled [mph]	23.71	419.68	419.68	9.16	742.91	170.40	37.68	37.46	0.49
Stops [stops/h]	61.15	1516.74	1517.42	24.70	1114.40	154.33	139.10	138.41	23.92
Fuel consumption [US gal/h]	1.83	42.20	42.22	1.01	53.31	9.50	3.44	3.42	0.35
CO [g/h]	128.06	2949.60	2950.88	70.41	3726.45	664.34	240.19	238.93	24.64
NOx [g/h]	24.92	573.88	574.13	13.70	725.03	129.26	46.73	46.49	4.79
VOC [g/h]	29.68	683.60	683.89	16.32	863.64	153.97	55.67	55.37	5.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.80	0.00	28.80	28.80
l_p,int, Pedestrian LOS Score for Intersectio	3.137	0.000	2.258	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	1100	550	550
d_b, Bicycle Delay [s]	7.36	7.36	19.11	19.11
l_b,int, Bicycle LOS Score for Intersection	3.572	3.586	2.083	1.611
Bicycle LOS	D	D	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	50.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.969

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	24.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	260.00	100.00	200.00	530.00	100.00	300.00	100.00	100.00	200.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	53	773	21	249	386	750	514	69	78	136	241	520
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	4	0	100	0	0	0	0	17	0	0
Site-Generated Trips [veh/h]	91	333	38	0	64	-145	-35	-6	16	2	-25	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	19	0	0	182	0	0	28	0	0	156
Total Hourly Volume [veh/h]	144	1106	44	249	550	423	479	63	66	155	216	364
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	311	12	70	154	119	135	18	19	44	61	102
Total Analysis Volume [veh/h]	162	1243	49	280	618	475	538	71	74	174	243	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Maximum Green [s]	30	45	0	25	40	25	25	31	0	20	26	25
Amber [s]	3.0	4.0	0.0	3.0	4.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	2.0	0.0	1.0	2.0	1.0	1.0	2.0	0.0	1.0	2.0	1.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	2.0	2.0	3.0	0.0	2.0	3.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	20.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	245.0	245.0	245.0	0.0	245.0	245.0	245.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	6.0	6.0	6.0	0.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	9	9	0	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	133	133	133	133	133	133	133	133	133	133	133
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	4.00	4.00	5.00	4.00	5.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	0.00	2.00	3.00	2.00	3.00	0.00
g_i, Effective Green Time [s]	14	45	45	25	56	85	23	29	15	20	50
g / C, Green / Cycle	0.11	0.34	0.34	0.19	0.42	0.64	0.18	0.22	0.11	0.15	0.38
(v / s)_i Volume / Saturation Flow Rate	0.09	0.35	0.03	0.16	0.17	0.30	0.16	0.08	0.10	0.13	0.26
s, saturation flow rate [veh/h]	1781	3560	1653	1781	3560	1589	3459	1715	1781	1870	1589
c, Capacity [veh/h]	191	1207	560	335	1495	1021	613	372	201	285	601
d1, Uniform Delay [s]	58.20	43.89	29.90	51.90	27.03	12.10	53.21	44.47	57.91	54.82	34.55
k, delay calibration	0.11	0.11	0.11	0.32	0.11	0.50	0.11	0.11	0.18	0.18	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.91	20.74	0.07	14.62	0.18	1.52	4.21	0.67	16.28	11.40	6.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	1.03	0.09	0.84	0.41	0.47	0.88	0.39	0.87	0.85	0.68
d, Delay for Lane Group [s/veh]	68.12	64.63	29.97	66.53	27.21	13.63	57.41	45.14	74.19	66.23	40.66
Lane Group LOS	E	F	C	E	C	B	E	D	E	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.88	23.07	1.09	10.34	6.94	7.40	9.10	4.19	6.66	8.82	12.05
50th-Percentile Queue Length [ft/ln]	146.91	576.74	27.36	258.51	173.59	184.96	227.55	104.63	166.45	220.57	301.19
95th-Percentile Queue Length [veh/ln]	9.85	31.58	1.97	15.61	11.27	11.86	14.05	7.53	10.89	13.69	17.74
95th-Percentile Queue Length [ft/ln]	246.30	789.59	49.25	390.35	281.63	296.48	351.25	188.34	272.25	342.35	443.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.12	64.63	29.97	66.53	27.21	13.63	57.41	45.14	45.14	74.19	66.23	40.66
Movement LOS	E	F	C	E	C	B	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	63.85			30.53			54.81			55.24		
Approach LOS	E			C			D			E		
d_I, Intersection Delay [s/veh]	50.24											
Intersection LOS	D											
Intersection V/C	0.969											

Emissions

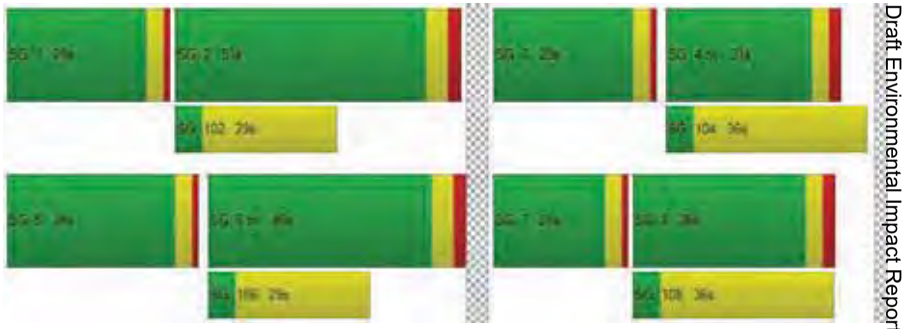
Vehicle Miles Traveled [mph]	93.40	716.64	28.25	195.70	431.94	331.99	40.44	10.90	19.40	27.09	45.60
Stops [stops/h]	159.46	1252.00	29.70	280.59	376.84	200.75	493.98	113.57	180.67	239.41	326.92
Fuel consumption [US gal/h]	6.97	52.77	1.63	13.40	23.29	16.09	10.68	2.41	4.42	5.71	7.07
CO [g/h]	487.28	3688.29	113.65	936.42	1627.66	1124.92	746.46	168.31	309.21	399.31	493.99
NOx [g/h]	94.81	717.61	22.11	182.19	316.68	218.87	145.23	32.75	60.16	77.69	96.11
VOC [g/h]	112.93	854.80	26.34	217.02	377.23	260.71	173.00	39.01	71.66	92.54	114.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	57.64	57.64	57.64	57.64
l_p,int, Pedestrian LOS Score for Intersectio	2.884	3.366	2.623	2.714
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	678	603	467	392
d_b, Bicycle Delay [s]	28.97	32.36	38.96	42.88
l_b,int, Bicycle LOS Score for Intersection	2.775	2.842	2.733	3.180
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.980

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	575	254	291	262	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	27	0	1	130	0	0
Site-Generated Trips [veh/h]	-14	498	229	-148	-36	-4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	1073	484	273	226	84
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	298	134	76	63	23
Total Analysis Volume [veh/h]	150	1192	538	303	251	93
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	16	54	34	0	56	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	14	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	60	40	0	60	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	1.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5	32	23	23	7	7
g / C, Green / Cycle	0.11	0.65	0.46	0.46	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.08	0.64	0.29	0.19	0.10	0.10
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1669
c, Capacity [veh/h]	193	1225	869	739	247	232
d1, Uniform Delay [s]	21.10	7.96	9.78	8.60	20.01	20.02
k, delay calibration	0.04	0.07	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.54	5.25	0.27	0.14	1.45	1.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.97	0.62	0.41	0.72	0.72
d, Delay for Lane Group [s/veh]	23.64	13.21	10.05	8.74	21.46	21.59
Lane Group LOS	C	B	B	A	C	C
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.45	3.85	2.48	1.22	1.81	1.72
50th-Percentile Queue Length [ft/ln]	36.15	96.18	61.94	30.59	45.36	42.94
95th-Percentile Queue Length [veh/ln]	2.60	6.93	4.46	2.20	3.27	3.09
95th-Percentile Queue Length [ft/ln]	65.06	173.13	111.49	55.07	81.65	77.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.64	13.21	10.05	8.74	21.50	21.59
Movement LOS	C	B	B	A	C	C
d_A, Approach Delay [s/veh]	14.38		9.58		21.52	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	13.75					
Intersection LOS	B					
Intersection V/C	0.980					

Emissions

Vehicle Miles Traveled [mph]	18.51	147.07	310.18	174.69	41.60	39.19
Stops [stops/h]	107.32	285.59	183.92	90.83	134.68	127.49
Fuel consumption [US gal/h]	3.33	13.43	14.89	8.07	3.23	3.05
CO [g/h]	233.07	938.68	1040.96	564.08	225.80	213.26
NOx [g/h]	45.35	182.63	202.53	109.75	43.93	41.49
VOC [g/h]	54.02	217.55	241.25	130.73	52.33	49.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.91	0.00	16.91
l_p,int, Pedestrian LOS Score for Intersectio	3.086	0.000	2.170
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2227	1402	2309
d_b, Bicycle Delay [s]	0.31	2.17	0.58
l_b,int, Bicycle LOS Score for Intersection	3.774	2.947	2.127
Bicycle LOS	D	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	46.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.376

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	328	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	3	7	0	0	0	0	0
Site-Generated Trips [veh/h]	2	446	0	0	213	13	38	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1104	0	14	541	16	45	0	5	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	300	0	4	147	4	12	0	1	0	0	10
Total Analysis Volume [veh/h]	2	1200	0	14	588	17	49	0	5	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					Yes		Yes	
Number of Storage Spaces in Median	0		0		1		1	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.38	0.00	0.01	0.00	0.00	0.17
d_M, Delay for Movement [s/veh]	8.71	0.00	0.00	11.34	0.00	0.00	46.92	39.86	26.49	30.90	28.25	24.27
Movement LOS	A	A	A	B	A	A	E	E	D	D	D	C
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.07	0.00	0.00	1.58	1.58	1.58	0.61	0.61	0.61
95th-Percentile Queue Length [ft/ln]	0.15	0.00	0.00	1.85	0.00	0.00	39.55	39.55	39.55	15.28	15.28	15.28
d_A, Approach Delay [s/veh]	0.01			0.26			45.03			24.27		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	1.86											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	23.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	408	41	74	254	0	0	0	0	11	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	4	0	0	9	141	445	6	51	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	12	0	0	42	0	0	21	0	0	75
Total Hourly Volume [veh/h]	59	412	29	74	268	99	482	6	48	11	2	175
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	111	8	20	72	27	130	2	13	3	1	47
Total Analysis Volume [veh/h]	63	443	31	80	288	106	518	6	52	12	2	188
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	C
C, Cycle Length [s]	58	58	58	58	58	58	58	58	58
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	17	4	18	18	12	12	12	9
g / C, Green / Cycle	0.06	0.30	0.06	0.31	0.31	0.20	0.20	0.20	0.16
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.04	0.15	0.07	0.15	0.15	0.03	0.13
s, saturation flow rate [veh/h]	1781	1849	1781	1870	1589	1781	1783	1589	1602
c, Capacity [veh/h]	99	552	112	572	486	359	359	320	258
d1, Uniform Delay [s]	26.82	19.19	26.66	16.51	14.96	21.68	21.68	19.11	23.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.64	4.03	8.10	0.69	0.22	2.85	2.85	0.24	5.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.86	0.71	0.50	0.22	0.73	0.73	0.16	0.78
d, Delay for Lane Group [s/veh]	33.46	23.22	34.77	17.20	15.19	24.53	24.53	19.35	28.53
Lane Group LOS	C	C	C	B	B	C	C	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.91	5.23	1.18	2.53	0.84	3.33	3.34	0.55	2.82
50th-Percentile Queue Length [ft/ln]	22.74	130.85	29.38	63.34	20.97	83.34	83.42	13.87	70.42
95th-Percentile Queue Length [veh/ln]	1.64	8.99	2.12	4.56	1.51	6.00	6.01	1.00	5.07
95th-Percentile Queue Length [ft/ln]	40.93	224.65	52.88	114.00	37.75	150.01	150.15	24.97	126.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.46	23.22	23.22	34.77	17.20	15.19	24.53	24.53	19.35	28.53	28.53	28.53
Movement LOS	C	C	C	C	B	B	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	24.42			19.71			24.06			28.53		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	23.52											
Intersection LOS	C											
Intersection V/C	0.725											

Emissions

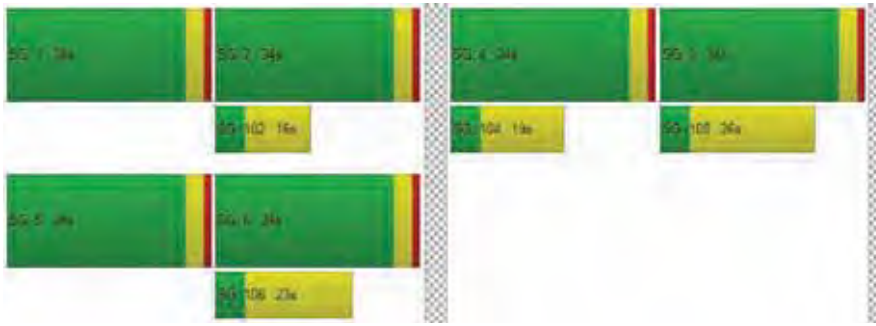
Vehicle Miles Traveled [mph]	21.37	160.78	8.11	29.20	10.75	17.43	17.45	3.46	170.53
Stops [stops/h]	56.69	326.20	73.24	157.89	52.28	207.75	207.95	34.58	175.54
Fuel consumption [US gal/h]	2.20	13.68	2.20	4.92	1.66	3.17	3.18	0.54	9.16
CO [g/h]	153.56	956.04	153.61	343.71	115.91	221.75	221.97	37.62	640.47
NOx [g/h]	29.88	186.01	29.89	66.87	22.55	43.15	43.19	7.32	124.61
VOC [g/h]	35.59	221.57	35.60	79.66	26.86	51.39	51.44	8.72	148.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.58	20.58	20.58	20.58
l_p,int, Pedestrian LOS Score for Intersectio	2.485	2.960	2.337	1.998
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1039	1039	1039	1039
d_b, Bicycle Delay [s]	6.67	6.67	6.67	6.67
l_b,int, Bicycle LOS Score for Intersection	2.465	2.411	2.545	2.017
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Roundabout	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	460	201	51	0	862	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-13	-41	16	-52	0	-170	91
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	6	0	0	37	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	6	419	217	36	0	692	273
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	116	60	10	0	191	75
Total Analysis Volume [veh/h]	0	7	462	240	40	0	764	301
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1		1		
Circulating Flow Rate [veh/h]	245			779		7		
Exiting Flow Rate [veh/h]	820			314		716		
Demand Flow Rate [veh/h]	0	6	419	217	36	0	692	273
Adjusted Demand Flow Rate [veh/h]	0	7	462	240	40	0	764	301

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1380.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00102	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	8	472	286	780	308
Capacity of Entry and Bypass Lanes [veh/h]	1137	1137	624	1411	1411
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1115	1115	612	1384	1384
X, volume / capacity	0.01	0.41	0.46	0.55	0.22

Movement, Approach, & Intersection Results

Lane LOS	A	A	B	A	A
95th-Percentile Queue Length [veh]	0.02	2.07	2.40	3.54	0.83
95th-Percentile Queue Length [ft]	0.47	51.82	59.96	88.50	20.73
Approach Delay [s/veh]	7.51		13.07	7.36	
Approach LOS	A		B	A	
Intersection Delay [s/veh]	8.28				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	296	125	50	536	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	80	0	0	0	0	0	0	0	-31	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	0	18	66	1	8	4	296	94	50	536	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	0	5	17	0	2	1	76	24	13	138	4
Total Analysis Volume [veh/h]	149	0	19	68	1	8	4	305	97	52	553	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	9	0	0	9	0	9	9	0	9	9	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C
C, Cycle Length [s]	40	40	40	40	40	40	40
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	3	0	14	2	16
g / C, Green / Cycle	0.13	0.13	0.07	0.01	0.35	0.06	0.40
(v / s)_i Volume / Saturation Flow Rate	0.09	0.01	0.05	0.00	0.25	0.03	0.34
s, saturation flow rate [veh/h]	1603	1431	1584	1603	1614	1603	1675
c, Capacity [veh/h]	206	184	115	9	564	89	669
d1, Uniform Delay [s]	16.99	15.62	18.36	20.12	11.44	18.72	11.08
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.73	0.24	6.63	31.16	1.69	5.96	3.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.10	0.67	0.45	0.71	0.58	0.85
d, Delay for Lane Group [s/veh]	21.73	15.86	24.99	51.28	13.13	24.68	14.21
Lane Group LOS	C	B	C	D	B	C	B
Critical Lane Group	Yes	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.41	0.15	0.82	0.11	2.64	0.56	3.91
50th-Percentile Queue Length [ft/ln]	35.16	3.64	20.53	2.77	65.92	14.07	97.74
95th-Percentile Queue Length [veh/ln]	2.53	0.26	1.48	0.20	4.75	1.01	7.04
95th-Percentile Queue Length [ft/ln]	63.29	6.55	36.96	4.98	118.65	25.32	175.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.73	15.86	15.86	24.99	24.99	24.99	51.28	13.13	13.13	24.68	14.21	14.21
Movement LOS	C	B	B	C	C	C	D	B	B	C	B	B
d_A, Approach Delay [s/veh]	21.06			24.99			13.51			15.09		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.98											
Intersection LOS	B											
Intersection V/C	0.687											

Emissions

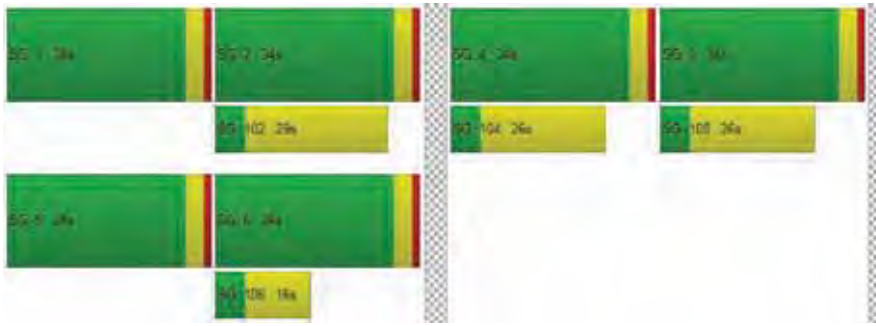
Vehicle Miles Traveled [mph]	44.23	5.64	1.72	0.57	57.56	43.76	477.99
Stops [stops/h]	125.20	12.95	73.10	9.86	234.71	50.09	348.01
Fuel consumption [US gal/h]	3.17	0.37	0.87	0.12	4.74	2.34	23.24
CO [g/h]	221.68	25.52	60.54	8.37	331.38	163.52	1624.69
NOx [g/h]	43.13	4.97	11.78	1.63	64.48	31.82	316.11
VOC [g/h]	51.38	5.91	14.03	1.94	76.80	37.90	376.54

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.22	12.22	12.22	12.22
l_p,int, Pedestrian LOS Score for Intersectio	2.166	1.719	2.261	2.227
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1484	1484	1484	1484
d_b, Bicycle Delay [s]	1.35	1.35	1.35	1.35
l_b,int, Bicycle LOS Score for Intersection	1.837	1.687	2.230	2.583
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	166.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.178

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	375.00	100.00	220.00	400.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	115	53	383	193	45	46	218	278	224	320	839	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	30	0	-6	10	21	39	0	0	-15	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	124	0	0	17	0	0	67	0	0	92
Total Hourly Volume [veh/h]	115	52	289	193	39	39	239	317	157	320	824	215
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	15	83	55	11	11	69	91	45	92	237	62
Total Analysis Volume [veh/h]	132	60	332	222	45	45	275	364	180	368	947	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	163
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	35	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	39	50	0	29	41	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	32	32	18	18	21	32	32	25	35	35
g / C, Green / Cycle	0.26	0.26	0.15	0.15	0.17	0.26	0.26	0.20	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.07	0.24	0.12	0.05	0.15	0.19	0.11	0.21	0.51	0.16
s, saturation flow rate [veh/h]	1781	1627	1781	1718	1781	1870	1589	1781	1870	1589
c, Capacity [veh/h]	462	422	263	253	302	478	406	356	524	446
d1, Uniform Delay [s]	37.02	45.15	51.85	47.89	50.90	42.98	39.03	49.95	44.94	38.30
k, delay calibration	0.13	0.36	0.13	0.13	0.25	0.11	0.11	0.48	0.50	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	23.42	8.95	1.05	20.02	2.60	0.76	55.06	370.61	1.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.93	0.85	0.36	0.91	0.76	0.44	1.03	1.81	0.55
d, Delay for Lane Group [s/veh]	37.44	68.57	60.79	48.95	70.92	45.58	39.79	105.01	415.55	39.69
Lane Group LOS	D	E	E	D	E	D	D	F	F	D
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.30	14.51	7.41	2.61	10.10	10.70	4.74	16.51	70.00	6.62
50th-Percentile Queue Length [ft/ln]	82.57	362.76	185.32	65.14	252.48	267.51	118.41	412.80	1750.07	165.40
95th-Percentile Queue Length [veh/ln]	5.94	20.76	11.88	4.69	15.31	16.07	8.31	23.59	108.63	10.83
95th-Percentile Queue Length [ft/ln]	148.62	518.95	296.94	117.25	382.78	401.63	207.63	589.66	2715.73	270.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.44	68.57	68.57	60.79	48.95	48.95	70.92	45.58	39.79	105.01	415.55	39.69
Movement LOS	D	E	E	E	D	D	E	D	D	F	F	D
d_A, Approach Delay [s/veh]	60.73			57.38			52.82			282.96		
Approach LOS	E			E			D			F		
d_I, Intersection Delay [s/veh]	166.29											
Intersection LOS	F											
Intersection V/C	1.178											

Emissions

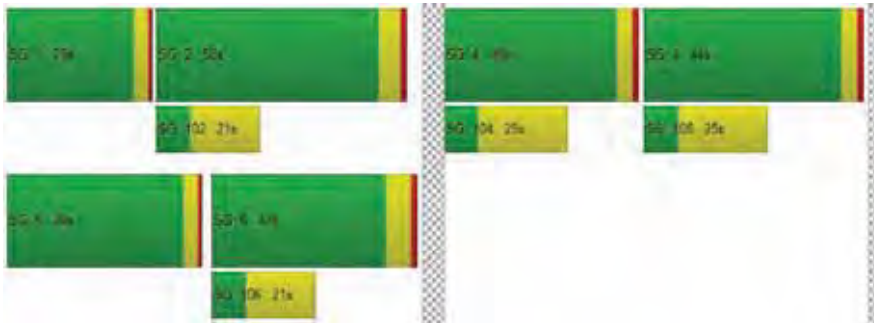
Vehicle Miles Traveled [mph]	227.13	674.49	45.01	18.25	96.29	127.46	63.03	166.05	427.31	111.45
Stops [stops/h]	95.34	418.88	213.98	75.21	291.54	308.90	136.72	476.66	2020.80	190.98
Fuel consumption [US gal/h]	10.88	35.55	5.78	2.06	9.54	10.33	4.81	17.33	108.82	7.64
CO [g/h]	760.67	2484.96	404.10	144.20	667.08	722.06	336.05	1211.50	7606.53	533.90
NOx [g/h]	148.00	483.48	78.62	28.06	129.79	140.49	65.38	235.71	1479.95	103.88
VOC [g/h]	176.29	575.91	93.66	33.42	154.60	167.34	77.88	280.78	1762.89	123.74

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.84	51.84	51.84	51.84
l_p,int, Pedestrian LOS Score for Intersectio	2.557	2.306	2.736	2.935
Crosswalk LOS	B	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	558	638	717	561
d_b, Bicycle Delay [s]	32.41	28.90	25.67	32.27
l_b,int, Bicycle LOS Score for Intersection	2.629	2.102	3.022	4.289
Bicycle LOS	B	B	C	E

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	1106	571	39	50
2	1073	554	38	49
3	1051	542	37	48
4	984	508	35	45
5	874	451	31	40
6	863	445	30	39
7	852	440	30	39
8	774	400	27	35
9	763	394	27	35
10	752	388	27	34
11	653	337	23	30
12	608	314	21	28
13	597	308	21	27
14	442	228	16	20
15	442	228	16	20
16	310	160	11	14
17	177	91	6	8
18	177	91	6	8
19	100	51	4	5
20	55	29	2	3
21	33	17	1	2
22	11	6	0	1
23	11	6	0	1
24	11	6	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1677	1	50	No	No	No	No	No	No	No	Yes	No	No
2	2	1627	1	49	No	No	No	No	No	No	No	Yes	No	No
3	2	1593	1	48	No	No	No	No	No	No	No	Yes	No	No
4	2	1492	1	45	No	No	No	No	No	No	No	Yes	No	No
5	2	1325	1	40	No	No	No	No	No	No	No	No	No	No
6	2	1308	1	39	No	No	No	No	No	No	No	No	No	No
7	2	1292	1	39	No	No	No	No	No	No	No	No	No	No
8	2	1174	1	35	No	No	No	No	No	No	No	No	No	No
9	2	1157	1	35	No	No	No	No	No	No	No	No	No	No
10	2	1140	1	34	No	No	No	No	No	No	No	No	No	No
11	2	990	1	30	No	No	No	No	No	No	No	No	No	No
12	2	922	1	28	No	No	No	No	No	No	No	No	No	No
13	2	905	1	27	No	No	No	No	No	No	No	No	No	No
14	2	670	1	20	No	No	No	No	No	No	No	No	No	No
15	2	670	1	20	No	No	No	No	No	No	No	No	No	No
16	2	470	1	14	No	No	No	No	No	No	No	No	No	No
17	2	268	1	8	No	No	No	No	No	No	No	No	No	No
18	2	268	1	8	No	No	No	No	No	No	No	No	No	No
19	2	151	1	5	No	No	No	No	No	No	No	No	No	No
20	2	84	1	3	No	No	No	No	No	No	No	No	No	No
21	2	50	1	2	No	No	No	No	No	No	No	No	No	No
22	2	17	1	1	No	No	No	No	No	No	No	No	No	No
23	2	17	1	1	No	No	No	No	No	No	No	No	No	No
24	2	17	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	24.3	45
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15	0:37
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	50
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1766	1766
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

EPAP PM plus abated Project

Vistro File: C:\...\PM 918 DU 20240212 - ABATED.vistro Scenario 4 Abated 2033 PM with CCSP, + Project
Report File: C:\...\12 2033 PM plus abated Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	WB Right	1.174	76.9	E
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	SB Thru	1.000	54.2	D
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	NB Thru	0.995	50.1	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.847	53.2	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Thru	1.031	64.9	E
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	0.845	40.1	D
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	SB Thru	1.018	59.8	E
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Left	0.063	119.7	F
12	Latrobe Rd/Royal Oaks Dr	Signalized	HCM 6th Edition	NB Left	0.647	19.1	B
13	Golden Foothill/Robert J Mathews	Roundabout	HCM 6th Edition	EB Thru		13.8	B
18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 6th Edition	EB Left	0.827	28.6	C
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	1.276	178.2	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Option 1: Copy of Latrobe Rd/US 50 EB

Number	4												
Intersection	Latrobe Rd/US 50 EB												
Control Type	Signalized												
Analysis Method	HCM 7th Edition												
Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	2456	609	1	388	1504	0	0	0	1591	0	0	861
Total Analysis Volume [veh/h]	0	2571	501	1	462	1689	0	0	0	1394	0	0	718

Intersection Settings

Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.45	0.46	0.26	0.25	0.33	
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	
Arrival type	3		3		3	3
c, saturation flow rate [veh/h]	5004	1677	1781	6702	4220	

s, saturation flow rate [veh/h]	5094	1677	1781	6792	4220	
c, Capacity [veh/h]	2809	925	516	3476	1390	
X, volume / capacity	0.82	0.83	0.90	0.49	1.00	
d, Delay for Lane Group [s/veh]	15.32	21.21	31.97	11.28	30.29	
Lane Group LOS	B	C	C	B	F	
Critical Lane Group	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	7.60	9.14	7.43	3.30	7.72	
50th-Percentile Queue Length [ft/ln]	189.94	228.44	185.84	82.43	193.09	
95th-Percentile Queue Length [veh/ln]	12.12	14.10	11.90	5.94	12.30	
95th-Percentile Queue Length [ft/ln]	302.95	352.38	297.62	148.38	307.54	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.93	21.21	31.97	31.97	11.28	0.00	0.00	0.00	30.29	0.00	0.00	0.00
Movement LOS		B	C	C	C	B				F			
Critical Movement		No	No	No	Yes	No				No			No
d_A, Approach Delay [s/veh]	16.79			15.73			30.29			0.00			
Approach LOS	B			B			C			A			
d_I, Intersection Delay [s/veh]	19.29												
Intersection LOS	B												
Intersection V/C	0.939												

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	76.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.174

Intersection Setup

Name	El Dorado Hills Blvd			El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd			El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	447	1616	173	4	218	1133	198	380	48	586	63	107	286
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-1	-5	0	0	0	43	0	0	0	22	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	52	0	0	0	59	0	0	182	0	0	86
Total Hourly Volume [veh/h]	446	1611	121	4	218	1176	139	380	48	426	63	107	200
Peak Hour Factor	0.9300	0.9300	0.9300	0.930	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	433	33	1	59	316	37	102	13	115	17	29	54
Total Analysis Volume [veh/h]	480	1732	130	4	234	1265	149	409	52	458	68	115	215
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permi	Prote	Permi	Overl	Split	Split	Overlap	Split	Split	Split
Signal Group	5	2	0	0	1	6	7	7	7	5	3	8	0
Auxiliary Signal Groups							6,7			5,7			
Maximum Green [s]	32	50	0	0	32	50	24	24	24	32	0	16	0
Amber [s]	3.0	4.7	0.0	0.0	3.0	4.7	3.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.7	0.0	0.0	2.0	3.7	2.0	2.0	2.0	2.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	0.0	245.0	245.0	245.0	100.0	100.0	100.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	36	54	0	0	36	54	28	28	28	36	0	20	0
Lead / Lag	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	5	0	0	4	4	5	5	5	4	0	5	0
Vehicle Extension [s]	2.0	3.5	0.0	0.0	2.0	3.5	2.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No			No	No	No		No	No		No	
Maximum Recall	No	No			No	No	No		No	No		No	
Pedestrian Recall	No	No			No	No	No		No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	32	61	61	21	50	80	24	24	80	16	16
g / C, Green / Cycle	0.23	0.44	0.44	0.15	0.36	0.57	0.17	0.17	0.57	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.27	0.35	0.35	0.13	0.36	0.09	0.13	0.13	0.29	0.07	0.20
s, saturation flow rate [veh/h]	1781	3560	1804	1781	3560	1589	1781	1800	1589	933	1677
c, Capacity [veh/h]	408	1561	791	264	1274	907	306	309	910	145	192
d1, Uniform Delay [s]	53.85	33.65	33.88	58.46	44.67	14.22	55.02	54.96	17.92	61.00	61.85
k, delay calibration	0.50	0.13	0.43	0.09	0.13	0.13	0.22	0.21	0.50	0.10	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	102.32	1.11	7.24	8.76	11.29	0.10	7.35	6.90	1.99	2.18	344.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	0.79	0.80	0.90	0.99	0.16	0.75	0.75	0.50	0.47	1.72
d, Delay for Lane Group [s/veh]	156.17	34.76	41.12	67.22	55.96	14.32	62.38	61.85	19.90	63.17	405.99
Lane Group LOS	F	C	D	E	E	B	E	E	B	E	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	25.54	17.35	19.28	8.75	22.95	2.18	8.36	8.34	9.32	2.44	25.19
50th-Percentile Queue Length [ft/ln]	638.46	433.69	481.94	218.70	573.63	54.49	209.00	208.41	232.89	60.93	629.77
95th-Percentile Queue Length [veh/ln]	36.98	24.18	26.48	13.60	30.80	3.92	13.10	13.07	14.32	4.39	39.77
95th-Percentile Queue Length [ft/ln]	924.59	604.46	661.96	339.97	770.03	98.09	327.55	326.78	358.03	109.67	994.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	156.17	36.60	41.12	67.22	67.22	55.96	14.32	62.15	61.85	19.90	63.17	405.99	405.99
Movement LOS	F	D	D	E	E	E	B	E	E	B	E	F	F
d_A, Approach Delay [s/veh]	61.36			53.82				41.08			347.42		
Approach LOS	E			D				D			F		
d_I, Intersection Delay [s/veh]	76.94												
Intersection LOS	E												
Intersection V/C	1.174												

Emissions

Vehicle Miles Traveled [mph]	90.01	230.73	118.45	56.84	302.12	35.59	14.36	14.39	28.56	3.32	16.09
Stops [stops/h]	658.11	894.08	496.78	225.43	1182.58	56.17	215.44	214.82	240.06	62.80	649.15
Fuel consumption [US gal/h]	26.52	27.73	15.52	8.01	39.46	2.35	4.70	4.68	4.36	1.36	31.51
CO [g/h]	1853.72	1938.11	1084.98	559.66	2758.46	164.43	328.77	327.39	304.58	94.89	2202.33
NOx [g/h]	360.67	377.09	211.10	108.89	536.70	31.99	63.97	63.70	59.26	18.46	428.49
VOC [g/h]	429.62	449.18	251.45	129.71	639.30	38.11	76.20	75.88	70.59	21.99	510.41

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	59.28	59.28	59.28
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.567	2.875	2.393
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	691	691	344	229
d_b, Bicycle Delay [s]	29.90	29.90	47.91	54.77
l_b,int, Bicycle LOS Score for Intersection	2.876	2.778	3.376	2.358
Bicycle LOS	C	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	54.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.000

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1224	1679	414	0	37	1252	493	306	130	404	236	88	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	-6	-2	0	0	65	0	0	0	22	14	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	124	0	0	0	148	0	0	128	0	0	75
Total Hourly Volume [veh/h]	1	1218	1673	288	0	37	1317	345	306	130	298	250	88	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	305	418	72	0	9	329	86	77	33	75	63	22	44
Total Analysis Volume [veh/h]	1	1218	1673	288	0	37	1317	345	306	130	298	250	88	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.35	0.36	0.39	0.02	0.26	0.22	0.12	0.12	0.09	0.09	0.11
s, saturation flow rate [veh/h]	3459	3532	1725	1781	5053	1589	1781	1832	1781	1826	1589
c, Capacity [veh/h]	1155	1914	935	81	1279	685	249	257	223	228	199
d1, Uniform Delay [s]	45.28	22.44	23.45	63.30	50.79	28.15	57.19	57.19	57.46	57.43	58.55
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.14	0.14	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.99	1.90	4.82	1.51	33.07	2.64	12.23	11.91	6.44	6.04	23.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.67	0.72	0.46	1.03	0.50	0.86	0.86	0.75	0.75	0.89
d, Delay for Lane Group [s/veh]	72.28	24.34	28.27	64.81	83.86	30.79	69.42	69.09	63.90	63.47	81.69
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	23.66	15.06	17.23	1.26	17.98	8.41	8.08	8.29	5.97	6.06	7.25
50th-Percentile Queue Length [ft/ln]	591.41	376.46	430.68	31.57	449.56	210.16	202.11	207.30	149.28	151.56	181.22
95th-Percentile Queue Length [veh/ln]	32.79	21.42	24.03	2.27	25.38	13.16	12.75	13.01	9.98	10.10	11.66
95th-Percentile Queue Length [ft/ln]	819.85	535.56	600.86	56.82	634.56	329.04	318.69	325.36	249.47	252.51	291.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.28	72.28	25.25	28.27	64.81	64.81	83.86	30.79	69.32	69.09	0.00	63.76	63.47	81.69
Movement LOS	E	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	43.55				72.67				41.14			69.85		
Approach LOS	D				E				D			E		
d_I, Intersection Delay [s/veh]	54.18													
Intersection LOS	D													
Intersection V/C	1.000													

Emissions

Vehicle Miles Traveled [mph]	209.67	221.15	116.15	6.94	246.97	64.70	9.94	10.23	5.32	5.43	5.60
Stops [stops/h]	1252.39	797.20	456.02	33.42	1428.03	222.52	214.00	219.49	158.06	160.48	191.88
Fuel consumption [US gal/h]	33.48	19.88	11.19	1.14	48.69	7.15	4.63	4.74	3.27	3.31	4.22
CO [g/h]	2340.08	1389.30	781.85	79.78	3403.66	499.52	323.47	331.43	228.46	231.64	294.70
NOx [g/h]	455.29	270.31	152.12	15.52	662.23	97.19	62.93	64.48	44.45	45.07	57.34
VOC [g/h]	542.34	321.98	181.20	18.49	788.83	115.77	74.97	76.81	52.95	53.68	68.30

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.542
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.376	2.555	2.279	2.046
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	50.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.995

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	160.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1987	233	3	570	1937	585	460	37	83	1	92	6	615
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-22	0	0	0	183	0	0	0	4	0	16	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	70	0	0	0	176	0	0	26	0	0	0	185
Total Hourly Volume [veh/h]	1	24	1965	163	3	570	2120	409	460	37	61	1	108	6	430
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	512	42	1	148	552	107	120	10	16	0	28	2	112
Total Analysis Volume [veh/h]	1	25	2047	170	3	594	2208	426	479	39	64	1	113	6	448
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	20	60	0	20	20	0	0	20	20	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	24	66	0	24	24	0	0	24	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	42	42	20	59	59	18	18	18	18	18	18
g / C, Green / Cycle	0.02	0.36	0.36	0.18	0.52	0.52	0.16	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.11	0.17	0.43	0.27	0.14	0.02	0.04	0.06	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	71	1859	580	607	2648	826	547	296	252	287	257	256
d1, Uniform Delay [s]	55.13	36.22	25.76	46.87	23.21	17.96	46.90	41.26	42.10	42.86	46.79	46.79
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.30	0.30
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.18	46.46	0.10	7.33	0.27	0.19	3.48	0.15	0.39	0.66	22.10	22.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	1.10	0.29	0.98	0.83	0.52	0.88	0.13	0.25	0.40	0.88	0.88
d, Delay for Lane Group [s/veh]	56.32	82.68	25.86	54.20	23.48	18.15	50.38	41.41	42.49	43.52	68.89	68.97
Lane Group LOS	E	F	C	D	C	B	D	D	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.38	24.77	3.29	8.98	16.02	7.19	6.86	0.96	1.61	2.93	7.85	7.83
50th-Percentile Queue Length [ft/ln]	9.49	619.26	82.26	224.51	400.45	179.71	171.62	23.94	40.26	73.32	196.30	195.69
95th-Percentile Queue Length [veh/ln]	0.68	35.13	5.92	13.90	22.58	11.59	11.16	1.72	2.90	5.28	12.45	12.42
95th-Percentile Queue Length [ft/ln]	17.09	878.37	148.07	347.38	564.54	289.63	279.04	43.10	72.47	131.98	311.19	310.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.32	56.32	82.68	25.86	54.20	54.20	23.48	18.15	50.38	41.41	42.49	43.52	43.52	68.89	68.93
Movement LOS	E	E	F	C	D	D	C	B	D	D	D	D	D	E	E
d_A, Approach Delay [s/veh]	78.06				28.46				48.91			63.83			
Approach LOS	E				C				D			E			
d_I, Intersection Delay [s/veh]	50.08														
Intersection LOS	D														
Intersection V/C	0.995														

Emissions

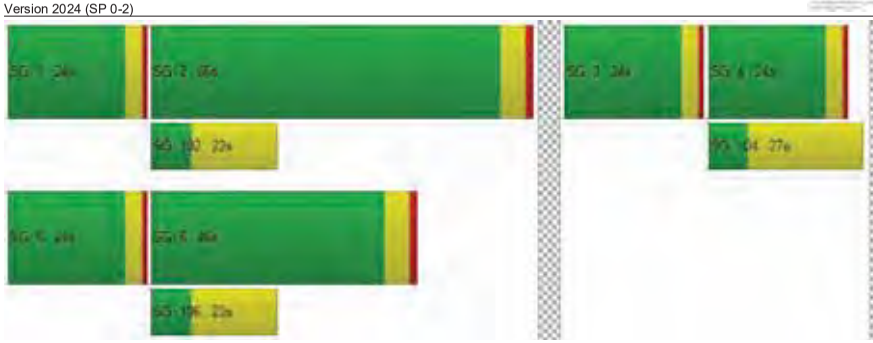
Vehicle Miles Traveled [mph]	5.80	456.97	37.95	86.38	319.49	61.64	61.10	4.97	8.16	40.01	79.82	79.52
Stops [stops/h]	24.02	2350.13	104.07	568.02	1519.74	227.34	434.20	30.29	50.93	92.75	248.33	247.55
Fuel consumption [US gal/h]	0.67	66.23	3.03	13.28	32.10	5.37	9.82	0.70	1.17	3.17	7.85	7.82
CO [g/h]	46.80	4629.51	211.93	928.16	2243.84	375.16	686.72	48.98	81.84	221.52	548.45	546.67
NOx [g/h]	9.11	900.74	41.23	180.59	436.57	72.99	133.61	9.53	15.92	43.10	106.71	106.36
VOC [g/h]	10.85	1072.93	49.12	215.11	520.03	86.95	159.16	11.35	18.97	51.34	127.11	126.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.45	0.00	46.45	46.45
l_p,int, Pedestrian LOS Score for Intersectio	3.472	0.000	2.703	2.891
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	712	1063	360	360
d_b, Bicycle Delay [s]	23.62	12.49	38.26	38.26
l_b,int, Bicycle LOS Score for Intersection	2.831	3.107	2.061	2.616
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	53.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	125	1673	518	2	253	1422	436	2	376	472	124	516	223	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-22	-7	0	0	204	0	0	0	0	0	48	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	153	0	0	0	131	0	0	0	37	0	0	58
Total Hourly Volume [veh/h]	6	125	1651	358	2	253	1626	305	2	376	472	87	564	223	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	444	96	1	68	437	82	1	101	127	23	152	60	37
Total Analysis Volume [veh/h]	6	134	1775	385	2	272	1748	328	2	404	508	94	606	240	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	36	0	20	50	0	0	23	31	0	36	44	0
Amber [s]	0.0	4.0	4.7	4.5	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	1.5	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	4.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	56	42	0	25	56	0	0	29	37	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	10	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	1.5	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	14	64	64	15	64	64	21	29	29	30	38	38
g / C, Green / Cycle	0.09	0.40	0.40	0.09	0.40	0.40	0.13	0.18	0.18	0.19	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.24	0.08	0.34	0.21	0.12	0.17	0.17	0.18	0.07	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1770	3459	3560	1589
c, Capacity [veh/h]	161	2721	637	318	2048	639	448	335	317	651	848	378
d1, Uniform Delay [s]	71.81	38.91	37.92	71.65	43.55	36.04	68.70	64.58	64.58	63.91	49.80	51.15
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.04	0.18	0.18	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.40	1.23	4.22	2.71	4.78	2.93	2.94	15.66	16.34	2.73	0.07	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.65	0.60	0.86	0.85	0.51	0.91	0.92	0.92	0.93	0.28	0.39
d, Delay for Lane Group [s/veh]	82.22	40.14	42.14	74.36	48.33	38.98	71.64	80.24	80.92	66.64	49.87	51.39
Lane Group LOS	F	D	D	E	D	D	E	F	F	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.17	14.50	12.81	5.60	21.31	10.03	8.42	13.91	13.22	12.44	3.99	5.01
50th-Percentile Queue Length [ft/ln]	154.26	362.38	320.22	139.88	532.69	250.64	210.48	347.69	330.57	311.06	99.87	125.16
95th-Percentile Queue Length [veh/ln]	10.24	20.74	18.68	9.47	28.88	15.22	13.18	20.02	19.19	18.23	7.19	8.68
95th-Percentile Queue Length [ft/ln]	256.11	518.48	466.95	236.86	721.95	380.45	329.45	500.59	479.66	455.68	179.76	216.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	82.22	82.22	40.14	42.14	74.36	74.36	48.33	38.98	71.64	71.64	80.51	80.92	66.64	49.87	51.39
Movement LOS	F	F	D	D	E	E	D	D	E	E	F	F	E	D	D
d_A, Approach Delay [s/veh]	43.03				50.06				76.97				60.34		
Approach LOS	D				D				E				E		
d_I, Intersection Delay [s/veh]	53.24														
Intersection LOS	D														
Intersection V/C	0.847														

Emissions

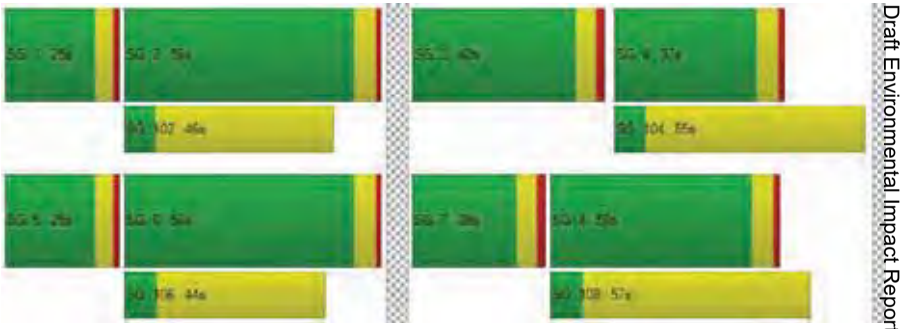
Vehicle Miles Traveled [mph]	55.73	706.61	153.26	61.17	390.22	73.22	101.33	77.19	73.05	63.32	25.08	15.25
Stops [stops/h]	138.84	1304.57	288.19	251.79	1438.27	225.57	378.86	312.92	297.51	559.90	179.76	112.64
Fuel consumption [US gal/h]	5.40	50.79	11.20	9.37	48.45	7.92	12.18	9.96	9.47	13.92	4.46	2.78
CO [g/h]	377.69	3550.39	783.10	655.15	3386.54	553.32	851.54	695.91	661.99	972.78	311.81	194.10
NOx [g/h]	73.48	690.78	152.36	127.47	658.90	107.66	165.68	135.40	128.80	189.27	60.67	37.76
VOC [g/h]	87.53	822.84	181.49	151.84	784.86	128.24	197.35	161.28	153.42	225.45	72.27	44.98

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0				11.0				11.0				11.0			
M_corner, Corner Circulation Area [ft²/ped]	0.00				0.00				0.00				0.00			
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00				0.00				0.00				0.00			
d_p, Pedestrian Delay [s]	69.38				69.38				69.38				69.38			
l_p,int, Pedestrian LOS Score for Intersectio	3.629				3.891				2.838				3.034			
Crosswalk LOS	D				D				C				C			
s_b, Saturation Flow Rate of the bicycle lane	2000				2000				2000				2000			
c_b, Capacity of the bicycle lane [bicycles/h]	629				629				391				554			
d_b, Bicycle Delay [s]	37.61				37.61				51.76				41.83			
l_b,int, Bicycle LOS Score for Intersection	2.569				2.775				2.088				2.426			
Bicycle LOS	B				C				B				B			

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	64.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.031

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	180.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	11	1588	30	0	34	1590	454	703	9	27	1	6	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-29	0	0	0	252	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	9	0	0	0	136	0	0	8	0	0	6
Total Hourly Volume [veh/h]	1	11	1559	21	0	34	1842	318	703	9	19	1	6	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	438	6	0	10	517	89	197	3	5	0	2	4
Total Analysis Volume [veh/h]	1	12	1752	24	0	39	2070	357	790	10	21	1	7	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	14	42	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	48	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	84	84	84	84	84	84	84	84	84
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	41	41	2	42	42	20	20	2
g / C, Green / Cycle	0.02	0.49	0.49	0.03	0.50	0.50	0.24	0.24	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.48	0.48	0.02	0.58	0.22	0.23	0.23	0.01
s, saturation flow rate [veh/h]	1781	1870	1861	1781	3560	1589	1781	1772	1674
c, Capacity [veh/h]	30	917	912	51	1788	798	426	424	45
d1, Uniform Delay [s]	40.72	20.72	20.78	40.33	20.82	13.37	31.48	31.50	40.17
k, delay calibration	0.04	0.43	0.44	0.04	0.17	0.15	0.40	0.41	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.65	21.23	21.97	8.30	73.50	0.56	31.48	32.10	3.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.97	0.97	0.76	1.16	0.45	0.97	0.97	0.51
d, Delay for Lane Group [s/veh]	44.37	41.95	42.75	48.63	94.32	13.93	62.96	63.60	43.53
Lane Group LOS	D	D	D	D	F	B	E	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.29	20.51	20.70	0.86	31.73	3.58	11.61	11.65	0.50
50th-Percentile Queue Length [ft/ln]	7.29	512.81	517.43	21.42	793.35	89.54	290.26	291.21	12.54
95th-Percentile Queue Length [veh/ln]	0.52	27.94	28.16	1.54	45.60	6.45	17.20	17.25	0.90
95th-Percentile Queue Length [ft/ln]	13.11	698.50	703.96	38.56	1139.96	161.17	429.96	431.15	22.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.37	44.37	42.34	42.75	48.63	48.63	94.32	13.93	63.27	63.60	63.60	43.53	43.53	43.53
Movement LOS	D	D	D	D	D	D	F	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	42.36				81.96				63.28			43.53		
Approach LOS	D				F				E			D		
d_I, Intersection Delay [s/veh]	64.89													
Intersection LOS	E													
Intersection V/C	1.031													

Emissions

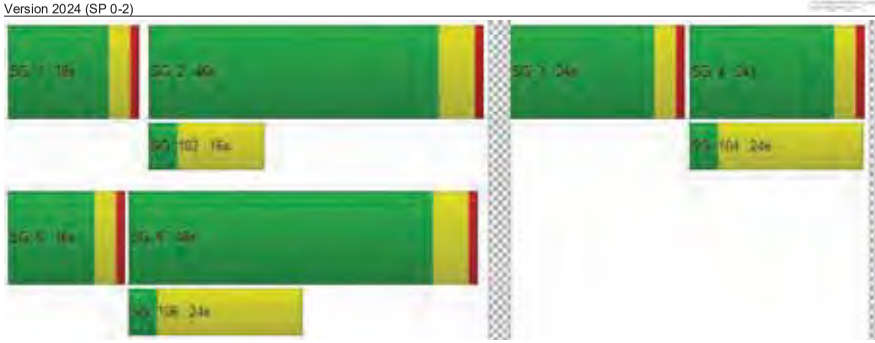
Vehicle Miles Traveled [mph]	4.60	314.45	314.01	15.53	824.04	142.12	98.99	98.73	0.44
Stops [stops/h]	12.56	884.28	892.25	36.94	2736.08	154.40	500.52	502.16	21.62
Fuel consumption [US gal/h]	0.38	25.42	25.58	1.59	118.11	8.63	12.11	12.14	0.34
CO [g/h]	26.29	1776.58	1787.70	111.24	8256.20	603.52	846.27	848.86	23.85
NOx [g/h]	5.12	345.66	347.82	21.64	1606.36	117.42	164.65	165.16	4.64
VOC [g/h]	6.09	411.74	414.32	25.78	1913.45	139.87	196.13	196.73	5.53

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.14	0.00	34.14	34.14
l_p,int, Pedestrian LOS Score for Intersectio	3.072	0.000	2.386	1.776
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	958	1006	479	479
d_b, Bicycle Delay [s]	11.33	10.32	24.15	24.15
l_b,int, Bicycle LOS Score for Intersection	3.042	3.674	2.927	1.607
Bicycle LOS	C	D	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	24.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	260.00	100.00	200.00	530.00	100.00	300.00	100.00	100.00	200.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	108	575	28	352	446	809	686	216	57	68	155	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	21	98	10	0	46	0	0	0	0	0	12	0
Site-Generated Trips [veh/h]	30	117	12	0	331	-67	-142	-25	91	36	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	223	0	0	44	0	0	45
Total Hourly Volume [veh/h]	159	790	35	352	823	519	544	191	104	104	155	105
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	217	10	97	226	143	149	52	29	29	43	29
Total Analysis Volume [veh/h]	175	868	38	387	904	570	598	210	114	114	170	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Maximum Green [s]	30	45	0	25	40	25	25	31	0	20	26	25
Amber [s]	3.0	4.0	0.0	3.0	4.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	2.0	0.0	1.0	2.0	1.0	1.0	2.0	0.0	1.0	2.0	1.0
Walk [s]	0	5	0	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	31	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	2.0	2.0	3.0	0.0	2.0	3.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	20.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	245.0	245.0	245.0	0.0	245.0	245.0	245.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	6.0	6.0	6.0	0.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	9	9	0	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	112	112	112	112	112	112	112	112	112	112	112
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	4.00	4.00	5.00	4.00	5.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	0.00	2.00	3.00	2.00	3.00	0.00
g_i, Effective Green Time [s]	13	31	31	25	43	73	25	28	9	13	43
g / C, Green / Cycle	0.12	0.28	0.28	0.22	0.38	0.65	0.22	0.25	0.08	0.11	0.38
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.02	0.22	0.25	0.36	0.17	0.18	0.06	0.09	0.07
s, saturation flow rate [veh/h]	1781	3560	1653	1781	3560	1589	3459	1761	1781	1870	1589
c, Capacity [veh/h]	210	989	459	395	1360	1039	755	442	143	211	603
d1, Uniform Delay [s]	48.59	38.82	30.05	43.54	28.81	10.53	41.60	38.73	50.85	48.72	23.37
k, delay calibration	0.11	0.11	0.11	0.43	0.11	0.50	0.11	0.19	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.38	2.68	0.08	36.85	0.56	2.08	1.92	4.21	9.50	6.99	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.88	0.08	0.98	0.66	0.55	0.79	0.73	0.79	0.80	0.19
d, Delay for Lane Group [s/veh]	56.98	41.50	30.12	80.39	29.37	12.61	43.52	42.94	60.35	55.70	23.52
Lane Group LOS	E	D	C	F	C	B	D	D	E	E	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.28	11.66	0.77	14.62	10.04	7.64	7.98	8.66	3.52	5.05	2.07
50th-Percentile Queue Length [ft/ln]	131.88	291.42	19.37	365.60	250.97	191.00	199.60	216.52	88.11	126.25	51.71
95th-Percentile Queue Length [veh/ln]	9.04	17.26	1.39	20.90	15.23	12.17	12.62	13.49	6.34	8.74	3.72
95th-Percentile Queue Length [ft/ln]	226.05	431.41	34.86	522.39	380.87	304.33	315.45	337.18	158.60	218.39	93.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.98	41.50	30.12	80.39	29.37	12.61	43.52	42.94	42.94	60.35	55.70	23.52
Movement LOS	E	D	C	F	C	B	D	D	D	E	E	C
d_A, Approach Delay [s/veh]	43.61			34.85			43.32			47.76		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	40.11											
Intersection LOS	D											
Intersection V/C	0.845											

Emissions

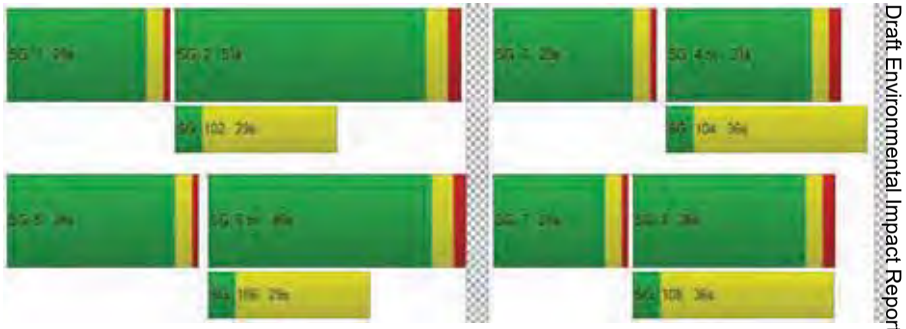
Vehicle Miles Traveled [mph]	101.07	501.29	21.95	269.18	628.78	396.46	44.99	24.37	12.61	18.80	12.72
Stops [stops/h]	168.98	746.77	24.82	468.43	643.11	244.72	511.48	277.42	112.89	161.76	66.25
Fuel consumption [US gal/h]	7.12	32.09	1.27	20.00	34.84	19.14	9.97	5.37	2.54	3.59	1.44
CO [g/h]	497.89	2243.26	89.02	1397.95	2435.40	1337.62	697.17	375.15	177.74	251.26	100.66
NOx [g/h]	96.87	436.46	17.32	271.99	473.84	260.25	135.64	72.99	34.58	48.89	19.58
VOC [g/h]	115.39	519.90	20.63	323.99	564.43	310.01	161.58	86.95	41.19	58.23	23.33

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.56	47.56	47.56	47.56
l_p,int, Pedestrian LOS Score for Intersectio	2.856	3.385	2.719	2.474
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	801	712	552	463
d_b, Bicycle Delay [s]	20.20	23.31	29.47	33.20
l_b,int, Bicycle LOS Score for Intersection	2.464	3.279	3.154	2.292
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	59.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.018

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	100.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	148	314	452	119	397	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	129	0
Site-Generated Trips [veh/h]	-5	305	526	-68	-146	-14
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	15	0	0
Total Hourly Volume [veh/h]	143	619	978	36	380	106
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	172	272	11	120	29
Total Analysis Volume [veh/h]	159	688	1087	46	481	118
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	16	54	34	0	56	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	14	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	60	40	0	60	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	1.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	46	34	34	14	14
g / C, Green / Cycle	0.11	0.66	0.49	0.49	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.09	0.37	0.58	0.03	0.17	0.17
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1698
c, Capacity [veh/h]	200	1227	910	774	357	341
d1, Uniform Delay [s]	30.22	6.53	17.93	9.48	26.96	26.97
k, delay calibration	0.04	0.04	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.71	0.15	98.29	0.01	2.34	2.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.56	1.19	0.06	0.86	0.86
d, Delay for Lane Group [s/veh]	32.93	6.68	116.22	9.49	29.30	29.46
Lane Group LOS	C	A	F	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.45	2.91	35.31	0.28	4.90	4.70
50th-Percentile Queue Length [ft/ln]	61.30	72.74	882.79	7.05	122.42	117.42
95th-Percentile Queue Length [veh/ln]	4.41	5.24	51.12	0.51	8.53	8.25
95th-Percentile Queue Length [ft/ln]	110.33	130.93	1278.01	12.69	213.15	206.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.93	6.68	116.22	9.49	29.36	29.46
Movement LOS	C	A	F	A	C	C
d_A, Approach Delay [s/veh]	11.61		111.89		29.37	
Approach LOS	B		F		C	
d_I, Intersection Delay [s/veh]	59.79					
Intersection LOS	E					
Intersection V/C	1.018					

Emissions

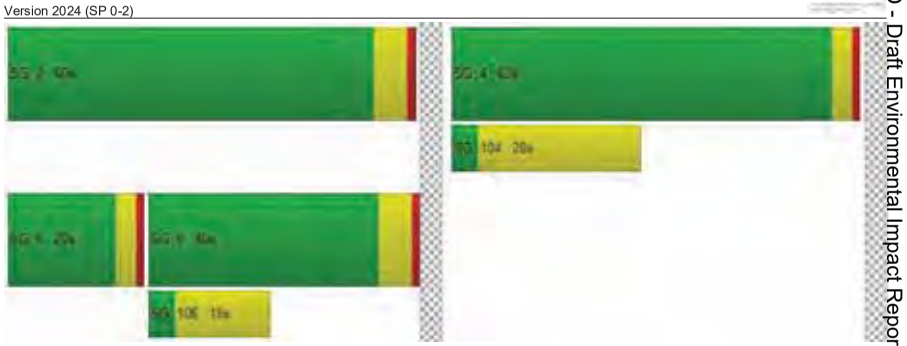
Vehicle Miles Traveled [mph]	19.62	84.89	627.77	26.57	71.93	68.76
Stops [stops/h]	126.60	150.23	1823.29	14.57	252.85	242.52
Fuel consumption [US gal/h]	4.07	6.57	80.57	1.25	6.18	5.93
CO [g/h]	284.71	458.91	5631.98	87.24	432.24	414.19
NOx [g/h]	55.40	89.29	1095.78	16.97	84.10	80.59
VOC [g/h]	65.99	106.36	1305.26	20.22	100.18	95.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.32	0.00	27.32
l_p,int, Pedestrian LOS Score for Intersectio	3.153	0.000	2.196
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1549	975	1606
d_b, Bicycle Delay [s]	1.77	9.15	1.35
l_b,int, Bicycle LOS Score for Intersection	2.957	3.454	2.548
Bicycle LOS	C	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	119.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.063

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	413	0	25	547	0	0	0	0	2	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	7	4	0	0	0	0	0
Site-Generated Trips [veh/h]	5	275	0	0	467	45	25	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	688	0	25	1014	52	29	0	3	2	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	187	0	6	276	14	8	0	1	1	0	12
Total Analysis Volume [veh/h]	5	748	0	25	1102	57	32	0	3	2	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					Yes		Yes	
Number of Storage Spaces in Median	0		0		1		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.03	0.01	0.00	0.23	0.00	0.01	0.06	0.00	0.12
d_M, Delay for Movement [s/veh]	11.02	0.00	0.00	9.31	0.00	0.00	37.73	33.37	26.45	119.71	94.16	15.20
Movement LOS	B	A	A	A	A	A	E	D	D	F	F	C
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.09	0.00	0.00	0.85	0.85	0.85	0.46	0.46	0.46
95th-Percentile Queue Length [ft/ln]	0.63	0.00	0.00	2.24	0.00	0.00	21.15	21.15	21.15	11.52	11.52	11.52
d_A, Approach Delay [s/veh]	0.07			0.20			36.76			19.30		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	1.26											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	314	19	123	426	0	0	0	0	59	0	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	6	0	0	1	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	10	0	0	8	434	270	0	31	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	55	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	130	0	0	26	0	0	30
Total Hourly Volume [veh/h]	90	330	13	123	435	304	307	0	60	59	5	69
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	89	3	33	117	82	83	0	16	16	1	19
Total Analysis Volume [veh/h]	97	355	14	132	468	327	330	0	65	63	5	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	4	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	30	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	14	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	9	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	5	0	5	0	0	5	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	C
C, Cycle Length [s]	47	47	47	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	14	5	15	15	7	7	7	5
g / C, Green / Cycle	0.08	0.29	0.10	0.32	0.32	0.15	0.15	0.15	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.20	0.07	0.25	0.21	0.09	0.09	0.04	0.08
s, saturation flow rate [veh/h]	1781	1858	1781	1870	1589	1781	1781	1589	1678
c, Capacity [veh/h]	137	548	180	596	507	271	271	242	191
d1, Uniform Delay [s]	21.31	14.67	20.65	14.64	13.82	18.72	18.72	17.71	20.30
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.53	1.45	5.71	2.33	1.38	2.19	2.19	0.59	5.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.67	0.73	0.79	0.65	0.61	0.61	0.27	0.75
d, Delay for Lane Group [s/veh]	27.83	16.12	26.36	16.97	15.20	20.92	20.92	18.30	25.99
Lane Group LOS	C	B	C	B	B	C	C	B	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.08	2.62	1.39	3.44	2.21	1.66	1.66	0.60	1.65
50th-Percentile Queue Length [ft/ln]	26.88	65.46	34.75	86.08	55.29	41.45	41.45	14.90	41.35
95th-Percentile Queue Length [veh/ln]	1.94	4.71	2.50	6.20	3.98	2.98	2.98	1.07	2.98
95th-Percentile Queue Length [ft/ln]	48.38	117.82	62.54	154.95	99.53	74.61	74.61	26.81	74.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.83	16.12	16.12	26.36	16.97	15.20	20.92	20.92	18.30	25.99	25.99	25.99
Movement LOS	C	B	B	C	B	B	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	18.56			17.68			20.49			25.99		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.08											
Intersection LOS	B											
Intersection V/C	0.647											

Emissions

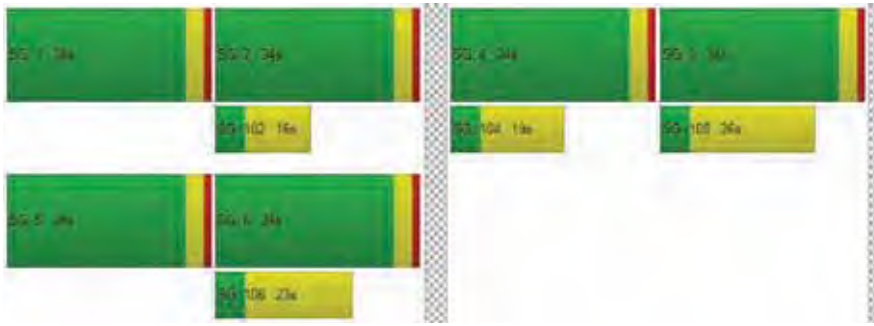
Vehicle Miles Traveled [mph]	32.89	125.13	13.39	47.48	33.18	8.98	8.98	3.54	119.88
Stops [stops/h]	82.18	200.12	106.23	263.19	169.06	126.73	126.73	45.54	126.42
Fuel consumption [US gal/h]	3.18	9.11	3.13	8.09	5.26	1.77	1.77	0.64	6.38
CO [g/h]	222.02	637.07	218.74	565.70	367.79	123.87	123.87	44.69	446.28
NOx [g/h]	43.20	123.95	42.56	110.06	71.56	24.10	24.10	8.69	86.83
VOC [g/h]	51.45	147.65	50.70	131.11	85.24	28.71	28.71	10.36	103.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	15.41	15.41	15.41	15.41
l_p,int, Pedestrian LOS Score for Intersectio	2.568	3.112	2.374	1.882
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1274	1274	1274	1274
d_b, Bicycle Delay [s]	3.10	3.10	3.10	3.10
l_b,int, Bicycle LOS Score for Intersection	2.338	3.304	2.254	1.843
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Roundabout	Delay (sec / veh):	13.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	114	790	168	55	1	886	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-52	-167	91	-24	0	-79	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	37	0	0	23	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	99	623	259	54	1	807	215
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	28	177	74	15	0	229	61
Total Analysis Volume [veh/h]	0	113	708	294	61	1	917	244
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1		1		
Circulating Flow Rate [veh/h]	301			936		115		
Exiting Flow Rate [veh/h]	998			364		1023		
Demand Flow Rate [veh/h]	0	99	623	259	54	1	807	215
Adjusted Demand Flow Rate [veh/h]	0	113	708	294	61	1	917	244

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1380.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00102	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	116	723	363	937	249
Capacity of Entry and Bypass Lanes [veh/h]	1080	1080	531	1279	1279
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1059	1059	521	1254	1254
X, volume / capacity	0.11	0.67	0.68	0.73	0.19

Movement, Approach, & Intersection Results

Lane LOS	A	B	C	B	A
95th-Percentile Queue Length [veh]	0.36	5.39	5.15	7.03	0.72
95th-Percentile Queue Length [ft]	8.93	134.83	128.76	175.74	18.02
Approach Delay [s/veh]	12.08		23.87	11.96	
Approach LOS	B		C	B	
Intersection Delay [s/veh]	13.81				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.827

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	172	0	29	7	1	21	5	578	115	81	536	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-16	0	0	0	0	0	0	0	69	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	156	0	29	7	1	21	5	578	184	81	536	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	0	8	2	0	5	1	149	47	22	138	3
Total Analysis Volume [veh/h]	161	0	31	7	1	22	5	596	190	87	553	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	9	0	0	9	0	9	9	0	9	9	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	2	0	30	4	34
g / C, Green / Cycle	0.13	0.13	0.03	0.01	0.50	0.07	0.56
(v / s)_i Volume / Saturation Flow Rate	0.10	0.02	0.02	0.00	0.49	0.05	0.34
s, saturation flow rate [veh/h]	1603	1431	1475	1603	1614	1603	1677
c, Capacity [veh/h]	215	192	50	12	802	113	939
d1, Uniform Delay [s]	25.16	23.13	28.78	29.85	14.90	27.59	8.81
k, delay calibration	0.11	0.11	0.11	0.11	0.44	0.11	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.14	0.39	11.22	23.02	25.27	10.57	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.16	0.60	0.43	0.98	0.77	0.60
d, Delay for Lane Group [s/veh]	30.30	23.52	40.00	52.86	40.17	38.17	10.04
Lane Group LOS	C	C	D	D	D	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.39	0.39	0.56	0.14	14.08	1.50	4.12
50th-Percentile Queue Length [ft/ln]	59.67	9.72	14.05	3.58	352.09	37.45	102.91
95th-Percentile Queue Length [veh/ln]	4.30	0.70	1.01	0.26	20.24	2.70	7.41
95th-Percentile Queue Length [ft/ln]	107.40	17.50	25.29	6.45	505.95	67.41	185.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.30	23.52	23.52	40.00	40.00	40.00	52.86	40.17	40.17	38.17	10.04	10.04
Movement LOS	C	C	C	D	D	D	D	D	D	D	B	B
d_A, Approach Delay [s/veh]	29.21			40.00			40.25			13.79		
Approach LOS	C			D			D			B		
d_I, Intersection Delay [s/veh]	28.62											
Intersection LOS	C											
Intersection V/C	0.827											

Emissions

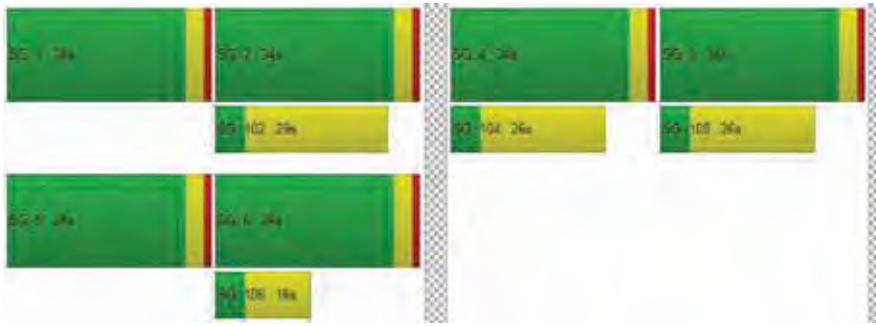
Vehicle Miles Traveled [mph]	47.71	9.19	0.67	0.72	112.54	73.23	474.73
Stops [stops/h]	142.61	23.24	33.58	8.57	841.53	89.51	245.95
Fuel consumption [US gal/h]	3.74	0.65	0.46	0.13	15.71	4.18	22.05
CO [g/h]	261.75	45.78	31.96	9.13	1098.00	292.52	1541.56
NOx [g/h]	50.93	8.91	6.22	1.78	213.63	56.91	299.93
VOC [g/h]	60.66	10.61	7.41	2.12	254.47	67.79	357.27

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.80	21.80	21.80	21.80
l_p,int, Pedestrian LOS Score for Intersectio	2.227	1.718	2.417	2.339
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	996	996	996	996
d_b, Bicycle Delay [s]	7.59	7.59	7.59	7.59
l_b,int, Bicycle LOS Score for Intersection	1.876	1.609	2.865	2.634
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	178.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.276

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	375.00	100.00	220.00	400.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	102	74	453	315	125	60	66	907	231	350	734	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	4	0	-3	22	12	-7	0	28	32	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	137	0	0	25	0	0	69	0	0	56
Total Hourly Volume [veh/h]	102	68	320	315	122	57	78	900	162	378	766	131
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	18	82	81	31	15	20	232	42	97	197	34
Total Analysis Volume [veh/h]	105	70	330	325	126	59	80	928	167	390	790	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	163
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	35	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	14	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	39	50	0	29	41	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	153	153	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	35	35	31	31	9	45	45	25	61	61
g / C, Green / Cycle	0.23	0.23	0.20	0.20	0.06	0.29	0.29	0.16	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.25	0.18	0.10	0.04	0.50	0.11	0.22	0.42	0.08
s, saturation flow rate [veh/h]	1781	1632	1781	1770	1781	1870	1589	1781	1870	1589
c, Capacity [veh/h]	407	373	360	357	101	550	467	291	740	629
d1, Uniform Delay [s]	48.41	59.06	59.65	54.45	71.33	54.06	42.65	64.06	46.25	30.53
k, delay calibration	0.13	0.50	0.25	0.13	0.04	0.50	0.11	0.50	0.50	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	67.09	17.09	1.45	5.18	317.68	0.46	174.90	52.43	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	1.07	0.90	0.52	0.79	1.69	0.36	1.34	1.07	0.21
d, Delay for Lane Group [s/veh]	48.83	126.15	76.74	55.90	76.51	371.74	43.11	238.95	98.67	30.75
Lane Group LOS	D	F	E	E	E	F	D	F	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.38	21.42	14.05	6.56	3.26	69.62	5.12	25.49	38.70	3.40
50th-Percentile Queue Length [ft/ln]	84.62	535.59	351.36	164.01	81.62	1740.49	128.10	637.22	967.62	84.98
95th-Percentile Queue Length [veh/ln]	6.09	30.21	20.20	10.76	5.88	106.78	8.84	38.45	51.33	6.12
95th-Percentile Queue Length [ft/ln]	152.31	755.19	505.07	269.02	146.91	2669.60	220.91	961.31	1283.13	152.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.83	126.15	126.15	76.74	55.90	55.90	76.51	371.74	43.11	238.95	98.67	30.75
Movement LOS	D	F	F	E	E	E	E	F	D	F	F	C
d_A, Approach Delay [s/veh]	110.07			69.18			304.93			133.30		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	178.16											
Intersection LOS	F											
Intersection V/C	1.276											

Emissions

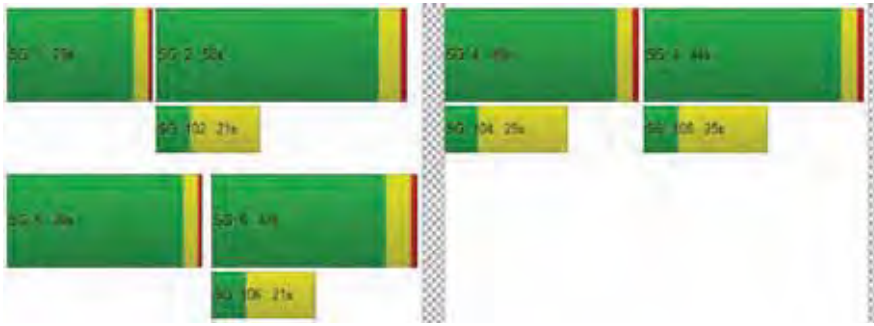
Vehicle Miles Traveled [mph]	180.67	688.26	65.89	37.51	28.01	324.95	58.48	175.98	356.47	60.92
Stops [stops/h]	79.60	503.83	330.53	154.28	76.78	1637.28	120.50	599.44	910.24	79.94
Fuel consumption [US gal/h]	8.92	41.38	9.61	4.50	2.82	92.61	4.54	29.52	35.56	3.79
CO [g/h]	623.53	2892.68	671.94	314.60	197.31	6473.27	317.21	2063.21	2485.93	265.19
NOx [g/h]	121.32	562.81	130.73	61.21	38.39	1259.46	61.72	401.43	483.67	51.60
VOC [g/h]	144.51	670.41	155.73	72.91	45.73	1500.24	73.52	478.17	576.14	61.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.93	65.93	65.93	65.93
l_p,int, Pedestrian LOS Score for Intersectio	2.613	2.286	2.796	2.989
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	455	520	584	457
d_b, Bicycle Delay [s]	45.69	41.91	38.36	45.54
l_b,int, Bicycle LOS Score for Intersection	2.619	2.442	3.612	3.822
Bicycle LOS	B	B	D	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	693	1091	51	32
2	672	1058	49	31
3	658	1036	48	30
4	617	971	45	28
5	547	862	40	25
6	541	851	40	25
7	534	840	39	25
8	485	764	36	22
9	478	753	35	22
10	471	742	35	22
11	409	644	30	19
12	381	600	28	18
13	374	589	28	17
14	277	436	20	13
15	277	436	20	13
16	194	305	14	9
17	111	175	8	5
18	111	175	8	5
19	62	98	5	3
20	35	55	3	2
21	21	33	2	1
22	7	11	1	0
23	7	11	1	0
24	7	11	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1784	1	51	No	No	No	No	No	No	No	Yes	No	No
2	2	1730	1	49	No	No	No	No	No	No	No	Yes	No	No
3	2	1694	1	48	No	No	No	No	No	No	No	Yes	No	No
4	2	1588	1	45	No	No	No	No	No	No	No	Yes	No	No
5	2	1409	1	40	No	No	No	No	No	No	No	No	No	No
6	2	1392	1	40	No	No	No	No	No	No	No	No	No	No
7	2	1374	1	39	No	No	No	No	No	No	No	No	No	No
8	2	1249	1	36	No	No	No	No	No	No	No	No	No	No
9	2	1231	1	35	No	No	No	No	No	No	No	No	No	No
10	2	1213	1	35	No	No	No	No	No	No	No	No	No	No
11	2	1053	1	30	No	No	No	No	No	No	No	No	No	No
12	2	981	1	28	No	No	No	No	No	No	No	No	No	No
13	2	963	1	28	No	No	No	No	No	No	No	No	No	No
14	2	713	1	20	No	No	No	No	No	No	No	No	No	No
15	2	713	1	20	No	No	No	No	No	No	No	No	No	No
16	2	499	1	14	No	No	No	No	No	No	No	No	No	No
17	2	286	1	8	No	No	No	No	No	No	No	No	No	No
18	2	286	1	8	No	No	No	No	No	No	No	No	No	No
19	2	160	1	5	No	No	No	No	No	No	No	No	No	No
20	2	90	1	3	No	No	No	No	No	No	No	No	No	No
21	2	54	1	2	No	No	No	No	No	No	No	No	No	No
22	2	18	1	1	No	No	No	No	No	No	No	No	No	No
23	2	18	1	1	No	No	No	No	No	No	No	No	No	No
24	2	18	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.3	36.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:16	0:19
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	51	32
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1867	1867
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Cumulative AM no Project

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Report File: C:\...\13 2040 AM no Proj.pdf

Scenario 5 2040 AM with CCSP, No Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.186	196.7	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	0.981	55.5	E
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.179	120.8	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	1.013	37.3	D
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.929	36.2	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.797	41.5	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.708	15.4	B
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	SB Right	0.930	28.5	C
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Thru	1.207	143.8	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.783	12.1	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Right	0.090	14.1	B
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.058	27.6	D
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Right	0.800	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	2.305	372.9	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.389	17.4	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.508	33.8	D
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.126	8.1	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 7th Edition	EB Left	0.443	16.6	B
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.656	35.0	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	NB Left	0.629	44.8	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	NB Left	0.770	26.9	C
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.948	43.1	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.575	11.1	B
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	1.026	52.2	D
25	New Intersection	Two-way stop	HCM 7th Edition	NB Thru	0.007	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.010	14.4	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.146	20.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	196.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.186

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	242	863	301	72	1684	51	27	16	270	494	70	114
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	-13	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	15	0	0	81	0	0	34
Total Hourly Volume [veh/h]	5	242	864	301	72	1671	36	27	16	189	494	70	80
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	70	248	86	21	480	10	8	5	54	142	20	23
Total Analysis Volume [veh/h]	5	278	993	346	83	1921	41	31	18	217	568	80	92
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	134	134	134	134	134	134	134	134	134	134
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	55	55	8	40	40	22	22	31	31
g / C, Green / Cycle	0.17	0.41	0.41	0.06	0.30	0.30	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.16	0.28	0.22	0.05	0.52	0.53	0.02	0.15	0.21	0.21
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1856	1781	1608	1781	1746
c, Capacity [veh/h]	308	1467	655	106	558	554	289	261	417	409
d1, Uniform Delay [s]	54.51	32.16	29.64	62.22	47.06	47.06	47.90	55.12	49.70	49.77
k, delay calibration	0.31	0.04	0.19	0.04	0.50	0.50	0.04	0.07	0.33	0.34
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.16	0.21	1.19	4.72	348.86	354.68	0.06	7.28	17.52	18.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.68	0.53	0.78	1.76	1.77	0.11	0.90	0.89	0.90
d, Delay for Lane Group [s/veh]	78.67	32.37	30.84	66.94	395.92	401.74	47.96	62.40	67.22	68.19
Lane Group LOS	E	C	C	E	F	F	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.22	12.62	8.30	2.87	71.93	72.30	0.90	8.31	14.09	14.00
50th-Percentile Queue Length [ft/ln]	280.41	315.61	207.48	71.84	1798.17	1807.40	22.42	207.73	352.26	349.91
95th-Percentile Queue Length [veh/ln]	16.71	18.45	13.02	5.17	111.31	112.03	1.61	13.04	20.25	20.13
95th-Percentile Queue Length [ft/ln]	417.72	461.28	325.59	129.31	2782.72	2800.70	40.36	325.92	506.16	503.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.67	78.67	32.37	30.84	66.94	398.77	401.74	47.96	62.40	62.40	67.56	68.19	68.19
Movement LOS	E	E	C	C	E	F	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	40.12				385.36			60.72			67.70		
Approach LOS	D				F			E			E		
d_I, Intersection Delay [s/veh]	196.74												
Intersection LOS	F												
Intersection V/C	1.186												

Emissions

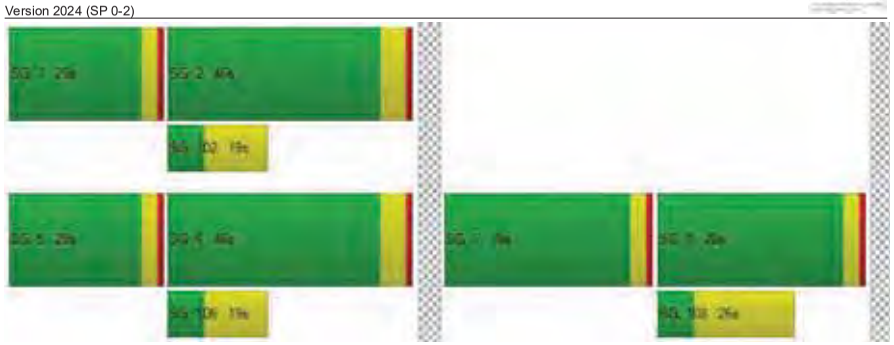
Vehicle Miles Traveled [mph]	67.59	237.16	82.64	12.20	144.23	144.23	1.32	10.04	19.50	19.22
Stops [stops/h]	301.70	679.15	223.24	77.29	1934.75	1944.68	24.12	223.51	379.02	376.49
Fuel consumption [US gal/h]	10.60	23.11	7.78	2.51	108.02	109.31	0.49	4.63	7.99	7.97
CO [g/h]	740.79	1615.64	543.77	175.44	7550.55	7640.43	34.27	323.78	558.80	556.96
NOx [g/h]	144.13	314.35	105.80	34.13	1469.06	1486.55	6.67	63.00	108.72	108.36
VOC [g/h]	171.69	374.44	126.02	40.66	1749.91	1770.74	7.94	75.04	129.51	129.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	56.37	56.37	56.37
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.279	2.322	2.404
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	602	602	523	523
d_b, Bicycle Delay [s]	32.68	32.68	36.49	36.49
l_b,int, Bicycle LOS Score for Intersection	2.894	3.259	2.132	2.837
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	55.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.981

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	420	988	150	1	218	1793	441	150	61	724	68	52	272
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	0	-13	0	0	0	-7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	132	0	0	215	0	0	82
Total Hourly Volume [veh/h]	1	420	989	105	1	218	1780	309	150	61	502	68	52	190
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	113	266	28	0	59	478	83	40	16	135	18	14	51
Total Analysis Volume [veh/h]	1	452	1063	113	1	234	1914	332	161	66	540	73	56	204
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	24	0	0	0	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	50	50	18	50	50	20	20	20	20	20
g / C, Green / Cycle	0.15	0.40	0.40	0.15	0.40	0.40	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.22	0.13	0.38	0.21	0.06	0.06	0.19	0.04	0.16
s, saturation flow rate [veh/h]	3459	3560	1779	1781	5094	1589	1781	1831	2813	1781	1643
c, Capacity [veh/h]	508	1410	705	261	2017	629	282	290	446	282	260
d1, Uniform Delay [s]	52.85	29.52	29.53	52.91	36.88	29.10	47.68	47.65	53.09	46.58	53.07
k, delay calibration	0.04	0.13	0.14	0.28	0.13	0.13	0.04	0.04	0.09	0.04	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.25	0.42	0.92	22.63	3.73	0.83	0.34	0.32	98.76	0.18	50.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.56	0.56	0.90	0.95	0.53	0.40	0.39	1.21	0.26	1.00
d, Delay for Lane Group [s/veh]	55.10	29.94	30.44	75.54	40.61	29.93	48.02	47.98	151.85	46.76	103.56
Lane Group LOS	E	C	C	E	D	C	D	D	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.02	8.92	9.03	8.77	18.68	7.53	3.22	3.28	13.16	2.04	11.87
50th-Percentile Queue Length [ft/ln]	175.59	223.10	225.64	219.33	466.91	188.20	80.45	81.90	329.09	50.96	296.64
95th-Percentile Queue Length [veh/ln]	11.37	13.82	13.95	13.63	25.76	12.03	5.79	5.90	20.78	3.67	17.52
95th-Percentile Queue Length [ft/ln]	284.25	345.58	348.81	340.77	644.10	300.69	144.81	147.43	519.51	91.72	437.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.10	55.10	30.07	30.44	75.54	75.54	40.61	29.93	48.02	47.98	151.85	46.76	103.56	103.56
Movement LOS	E	E	C	C	E	E	D	C	D	D	F	D	F	F
d_A, Approach Delay [s/veh]	37.06				42.49				121.11			91.11		
Approach LOS	D				D				F			F		
d_I, Intersection Delay [s/veh]	55.47													
Intersection LOS	E													
Intersection V/C	0.981													

Emissions

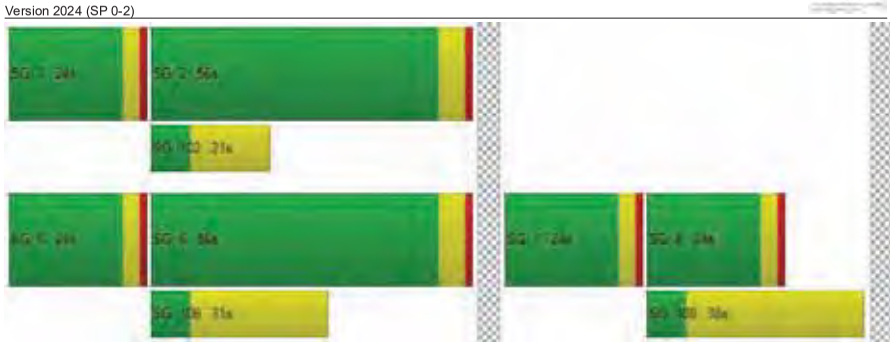
Vehicle Miles Traveled [mph]	85.25	147.53	73.78	56.13	457.13	79.29	7.01	7.14	33.68	3.56	12.68
Stops [stops/h]	400.97	509.46	257.63	250.43	1599.32	214.88	91.86	93.52	751.49	58.18	338.70
Fuel consumption [US gal/h]	12.99	16.17	8.16	8.65	51.37	7.41	1.89	1.93	22.22	1.16	7.87
CO [g/h]	907.79	1130.08	570.45	604.60	3590.75	518.07	132.45	134.85	1553.29	81.26	550.23
NOx [g/h]	176.62	219.87	110.99	117.63	698.63	100.80	25.77	26.24	302.21	15.81	107.06
VOC [g/h]	210.39	261.91	132.21	140.12	832.19	120.07	30.70	31.25	359.99	18.83	127.52

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	52.54	52.54	52.54
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.683	3.092	2.357
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	798	798	317	317
d_b, Bicycle Delay [s]	22.79	22.79	44.65	44.65
l_b,int, Bicycle LOS Score for Intersection	2.480	2.868	3.180	2.244
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	120.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.179

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1588	1190	150	3	70	1406	1107	260	92	837	171	104	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	1	1	0	0	-20	0	0	0	-9	-4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	332	0	0	248	0	0	32
Total Hourly Volume [veh/h]	1	1587	1191	106	3	70	1386	775	260	92	580	167	104	74
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	397	298	27	1	18	347	194	65	23	145	42	26	19
Total Analysis Volume [veh/h]	1	1587	1191	106	3	70	1386	775	260	92	580	167	104	74
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7						
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	69	69	8	39	72	28	28	11	11	11
g / C, Green / Cycle	0.28	0.51	0.51	0.06	0.29	0.53	0.21	0.21	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.46	0.24	0.25	0.04	0.27	0.49	0.10	0.10	0.07	0.06	0.07
s, saturation flow rate [veh/h]	3459	3560	1795	1781	5094	1589	1781	1826	1781	1830	1674
c, Capacity [veh/h]	951	1813	914	99	1475	846	366	375	147	151	138
d1, Uniform Delay [s]	36.83	5.68	5.72	63.26	47.14	29.02	47.60	47.59	61.25	61.20	61.36
k, delay calibration	0.30	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	304.12	0.88	1.86	4.00	12.87	16.21	0.71	0.69	3.57	3.31	4.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.67	0.47	0.49	0.74	0.94	0.92	0.48	0.47	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	340.96	6.55	7.58	67.25	60.01	45.22	48.31	48.28	64.82	64.51	65.60
Lane Group LOS	F	A	A	E	E	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	53.92	2.45	2.82	2.55	16.54	25.13	5.30	5.42	4.08	4.14	3.96
50th-Percentile Queue Length [ft/ln]	1347.98	61.28	70.49	63.87	413.58	628.21	132.49	135.51	102.05	103.40	99.04
95th-Percentile Queue Length [veh/ln]	83.52	4.41	5.08	4.60	23.21	33.35	9.08	9.24	7.35	7.44	7.13
95th-Percentile Queue Length [ft/ln]	2087.99	110.31	126.88	114.97	580.35	833.74	226.88	230.96	183.69	186.12	178.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	340.9	340.9	6.85	7.58	67.25	67.25	60.01	45.22	48.30	48.28	0.00	64.72	64.91	65.60
Movement LOS	F	F	A	A	E	E	E	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	190.78				55.12				18.24			64.97		
Approach LOS	F				E				B			E		
d_I, Intersection Delay [s/veh]	120.76													
Intersection LOS	F													
Intersection V/C	1.179													

Emissions

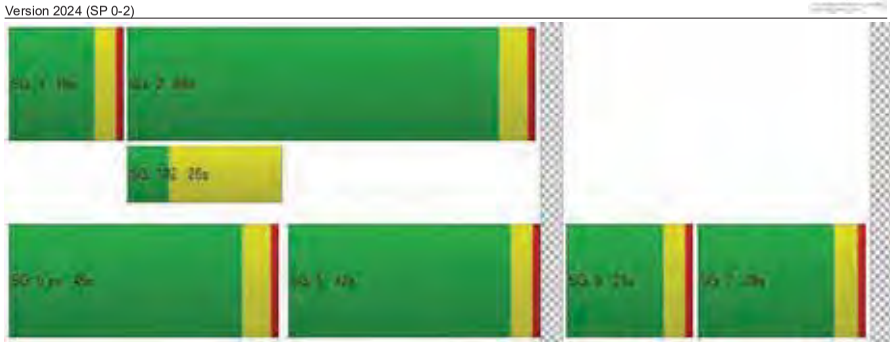
Vehicle Miles Traveled [mph]	271.98	145.74	76.40	13.74	260.84	145.85	8.05	8.23	3.68	3.74	3.55
Stops [stops/h]	2854.54	129.77	74.63	67.63	1313.74	665.17	140.28	143.48	108.05	109.48	104.86
Fuel consumption [US gal/h]	137.12	7.85	4.25	2.31	42.20	20.40	2.82	2.88	2.28	2.30	2.21
CO [g/h]	9585.00	548.78	296.76	161.52	2949.80	1426.05	196.87	201.36	159.06	161.02	154.78
NOx [g/h]	1864.89	106.77	57.74	31.43	573.92	277.46	38.30	39.18	30.95	31.33	30.11
VOC [g/h]	2221.42	127.18	68.78	37.43	683.64	330.50	45.63	46.67	36.86	37.32	35.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.365	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
I_b,int, Bicycle LOS Score for Intersection	3.171		2.932		2.140		1.871	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.013

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2400	463	0	529	1886	0	0	0	1410	0	0	529
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	1	0	0	-33	0	0	0	-25	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	139	0	0	0	0	0	0	416	0	0	159
Total Hourly Volume [veh/h]	0	2401	325	0	529	1853	0	0	0	969	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	715	97	0	157	551	0	0	0	288	0	0	110
Total Analysis Volume [veh/h]	0	2858	387	0	630	2206	0	0	0	1154	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	26	35	22	
g / C, Green / Cycle	0.47	0.47	0.38	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.42	0.24	0.35	0.32	0.41	
s, saturation flow rate [veh/h]	6792	1589	1781	6792	2813	
c, Capacity [veh/h]	3159	739	670	3476	927	
d1, Uniform Delay [s]	16.79	12.85	20.49	12.00	22.80	
k, delay calibration	0.50	0.50	0.15	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.85	2.64	9.26	0.89	111.12	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.90	0.52	0.94	0.63	1.25	
d, Delay for Lane Group [s/veh]	21.64	15.49	29.74	12.90	133.92	
Lane Group LOS	C	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	9.11	3.88	9.75	4.84	21.06	
50th-Percentile Queue Length [ft/ln]	227.79	96.98	243.76	120.92	526.57	
95th-Percentile Queue Length [veh/ln]	14.06	6.98	14.87	8.44	32.41	
95th-Percentile Queue Length [ft/ln]	351.54	174.56	371.78	211.09	810.33	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	21.64	15.49	29.74	29.74	12.90	0.00	0.00	0.00	133.92	0.00	0.00	0.00
Movement LOS		C	B	C	C	B				F			
d_A, Approach Delay [s/veh]	20.91			16.64			133.92				0.00		
Approach LOS	C			B			F				A		
d_I, Intersection Delay [s/veh]	37.26												
Intersection LOS	D												
Intersection V/C	1.013												

Emissions

Vehicle Miles Traveled [mph]	413.54	56.00	107.90	377.82	82.58	
Stops [stops/h]	1929.48	205.37	516.19	1024.25	2230.20	
Fuel consumption [US gal/h]	50.75	5.69	13.93	31.48	47.17	
CO [g/h]	3547.65	397.96	973.70	2200.22	3296.97	
NOx [g/h]	690.24	77.43	189.45	428.08	641.47	
VOC [g/h]	822.20	92.23	225.66	509.92	764.10	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.263
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
I_b,int, Bicycle LOS Score for Intersection	2.956	2.470	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.929

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	73	2071	262	4	570	2319	403	184	10	32	1	74	33	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	2	0	0	0	-58	0	0	0	-1	0	-4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	79	0	0	0	121	0	0	9	0	0	0	181
Total Hourly Volume [veh/h]	1	73	2073	183	4	570	2261	282	184	10	22	1	70	33	423
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	19	529	47	1	145	577	72	47	3	6	0	18	8	108
Total Analysis Volume [veh/h]	1	74	2115	187	4	582	2307	288	188	10	22	1	71	34	432
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	103	103	103	103	103	103	103	103	103	103	103	103
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	49	49	15	60	60	8	8	8	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.15	0.58	0.58	0.08	0.08	0.08	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.12	0.17	0.45	0.18	0.05	0.01	0.01	0.04	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1625	1589
c, Capacity [veh/h]	132	2420	755	505	2970	927	268	145	123	260	237	232
d1, Uniform Delay [s]	48.61	24.21	16.05	43.89	16.34	10.92	46.26	43.98	44.36	39.07	43.84	43.84
k, delay calibration	0.04	0.04	0.04	0.07	0.04	0.04	0.08	0.08	0.08	0.08	0.42	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	0.41	0.06	75.69	0.17	0.07	2.50	0.15	0.51	0.42	51.83	52.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.87	0.25	1.16	0.78	0.31	0.70	0.07	0.18	0.28	0.99	0.99
d, Delay for Lane Group [s/veh]	50.05	24.63	16.11	119.58	16.51	10.99	48.76	44.13	44.87	39.49	95.68	96.33
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.97	14.66	2.57	11.65	12.68	3.18	2.42	0.24	0.54	1.64	9.33	9.17
50th-Percentile Queue Length [ft/ln]	24.20	366.55	64.36	291.21	316.91	79.46	60.57	6.04	13.51	41.03	233.16	229.19
95th-Percentile Queue Length [veh/ln]	1.74	20.94	4.63	18.39	18.52	5.72	4.36	0.43	0.97	2.95	14.33	14.13
95th-Percentile Queue Length [ft/ln]	43.56	523.54	115.86	459.86	462.89	143.04	109.03	10.87	24.32	73.86	358.37	353.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.05	50.05	24.63	16.11	119.5	119.5	16.51	10.99	48.76	44.13	44.87	39.49	39.49	95.68	96.02
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	24.76				35.00				48.16			88.44			
Approach LOS	C				C				D			F			
d_I, Intersection Delay [s/veh]	36.15														
Intersection LOS	D														
Intersection V/C	0.929														

Emissions

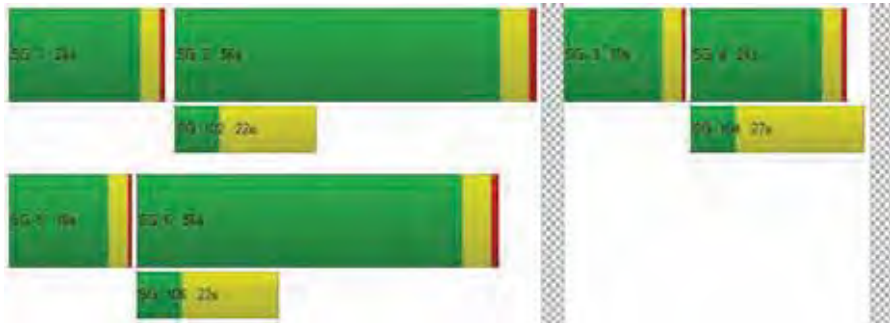
Vehicle Miles Traveled [mph]	16.74	472.02	41.73	84.79	333.82	41.67	23.98	1.28	2.81	25.27	82.66	80.89
Stops [stops/h]	67.89	1542.54	90.29	817.00	1333.66	111.47	169.93	8.47	18.95	57.56	327.07	321.50
Fuel consumption [US gal/h]	1.83	38.55	2.83	22.26	28.86	2.98	3.79	0.19	0.42	1.94	9.80	9.62
CO [g/h]	127.78	2694.83	197.82	1556.15	2017.32	207.97	265.01	13.22	29.43	135.38	684.67	672.68
NOx [g/h]	24.86	524.32	38.49	302.77	392.50	40.46	51.56	2.57	5.73	26.34	133.21	130.88
VOC [g/h]	29.61	624.55	45.85	360.65	467.53	48.20	61.42	3.06	6.82	31.38	158.68	155.90

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.92	0.00	40.92	40.92
l_p,int, Pedestrian LOS Score for Intersectio	3.495	0.000	2.593	2.871
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	984	984	399	302
d_b, Bicycle Delay [s]	13.25	13.25	32.87	37.00
l_b,int, Bicycle LOS Score for Intersection	2.910	3.056	1.749	2.629
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	41.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	2	0	0	1	2	0	0	1	1	0	2
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	300.0	400.00	100.00	300.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	157	1794	426	1	98	1858	469	2	355	447	90	517	381	257
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	2	2	0	0	-63	0	0	0	0	0	-15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	128	0	0	0	141	0	0	0	27	0	0	77
Total Hourly Volume [veh/h]	2	157	1796	300	1	98	1795	328	2	355	447	63	502	381	180
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	42	478	80	0	26	477	87	1	94	119	17	134	101	48
Total Analysis Volume [veh/h]	2	167	1911	319	1	104	1910	349	2	378	476	67	534	405	191
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Overl	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups				2,3											
Maximum Green [s]	0	15	45	36	0	25	45	0	0	21	25	0	36	35	0
Amber [s]	0.0	4.0	4.7	4.5	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	1.5	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	5	0	0	0	5	0	0	0	4	0	0	5	0
Pedestrian Clearance [s]	0	0	28	0	0	0	24	0	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.7	4.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	58	42	0	25	58	0	0	27	35	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	9	9	0	9	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	1.0	1.5	1.0	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No	Yes	No		No	Yes			No	No		No	No	
Maximum Recall		No	No	No		No	No			No	No		No	No	
Pedestrian Recall		No	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.70	6.00	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	0.00	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	78	111	9	77	77	20	24	24	27	31	31
g / C, Green / Cycle	0.06	0.49	0.69	0.06	0.48	0.48	0.12	0.15	0.15	0.17	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.20	0.03	0.38	0.22	0.11	0.13	0.04	0.16	0.11	0.12
s, saturation flow rate [veh/h]	3431	6737	1577	3431	5053	1577	3431	3532	1577	3431	3532	1577
c, Capacity [veh/h]	212	3298	1091	193	2445	763	419	521	232	572	678	303
d1, Uniform Delay [s]	74.05	29.10	9.51	73.50	34.25	27.36	69.31	67.22	60.74	52.45	44.34	44.68
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.58	0.75	0.68	0.89	2.56	1.97	3.09	2.76	0.25	3.17	0.31	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.58	0.29	0.54	0.78	0.46	0.91	0.91	0.29	0.93	0.60	0.63
d, Delay for Lane Group [s/veh]	76.63	29.85	10.20	74.39	36.81	29.33	72.40	69.98	60.99	55.62	44.66	45.49
Lane Group LOS	E	C	B	E	D	C	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.53	13.37	4.52	2.10	20.40	9.10	7.90	9.83	2.47	9.50	5.71	5.52
50th-Percentile Queue Length [ft/ln]	88.15	334.22	113.04	52.57	509.92	227.39	197.48	245.76	61.65	237.45	142.74	137.92
95th-Percentile Queue Length [veh/ln]	6.35	19.37	8.01	3.79	27.80	14.04	12.51	14.97	4.44	14.55	9.63	9.37
95th-Percentile Queue Length [ft/ln]	158.67	484.13	200.22	94.63	695.09	351.05	312.71	374.31	110.98	363.81	240.71	234.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.63	76.63	29.85	10.20	74.39	74.39	36.81	29.33	72.40	72.40	69.98	60.99	55.62	44.66	45.49
Movement LOS	E	E	C	B	E	E	D	C	E	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	30.53				37.38				70.32				49.98		
Approach LOS	C				D				E				D		
d_I, Intersection Delay [s/veh]	41.52														
Intersection LOS	D														
Intersection V/C	0.797														

Emissions

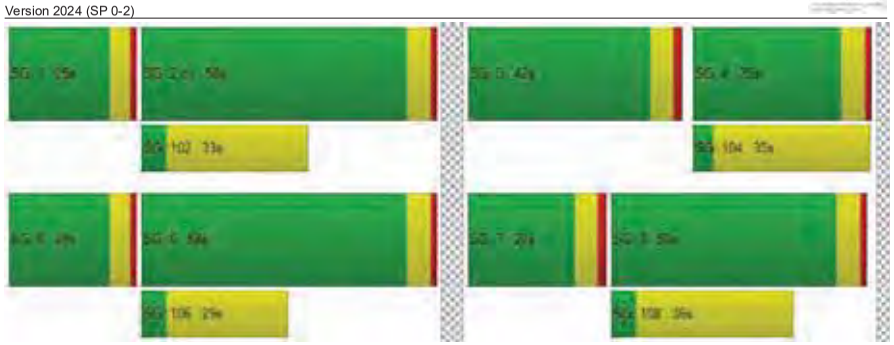
Vehicle Miles Traveled [mph]	67.35	761.60	127.13	23.43	426.27	77.89	94.70	118.62	16.70	55.98	42.46	20.02
Stops [stops/h]	158.67	1203.18	101.74	94.63	1376.78	204.65	355.46	442.37	55.49	427.41	256.93	124.13
Fuel consumption [US gal/h]	6.28	49.61	6.46	3.57	46.04	7.30	11.46	14.10	1.83	10.71	6.85	3.28
CO [g/h]	439.27	3467.47	451.38	249.48	3218.02	510.11	801.08	985.91	127.59	748.58	478.65	229.13
NOx [g/h]	85.47	674.64	87.82	48.54	626.11	99.25	155.86	191.82	24.82	145.65	93.13	44.58
VOC [g/h]	101.81	803.62	104.61	57.82	745.81	118.22	185.66	228.49	29.57	173.49	110.93	53.10

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	71.25	71.25	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.671	3.936	2.941	3.043
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	654	654	366	554
d_b, Bicycle Delay [s]	36.25	36.25	53.38	41.83
l_b,int, Bicycle LOS Score for Intersection	2.601	2.880	2.032	2.555
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	300.0	200.0	100.0	100.0	100.0	320.00	100.00	320.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	74	1954	3	2	19	1885	577	279	6	21	5	11	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	0	0	0	-78	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	173	0	0	6	0	0	5
Total Hourly Volume [veh/h]	1	74	1958	2	2	19	1807	404	279	6	15	5	11	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	21	563	1	1	5	519	116	80	2	4	1	3	3
Total Analysis Volume [veh/h]	1	85	2251	2	2	22	2077	464	321	7	17	6	13	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	ProtP	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	5	34	0	0	15	34	0	0	36	0	0	16	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	11	0	0	0	18	0	0	24	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	20	40	0	0	20	40	0	0	40	0	0	20	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		Yes	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	C
C, Cycle Length [s]	67	67	67	67	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	42	37	37	1	34	34	9	9	9	2
g / C, Green / Cycle	0.63	0.55	0.55	0.02	0.51	0.51	0.13	0.13	0.13	0.03
(v / s)_i Volume / Saturation Flow Rate	0.24	0.41	0.41	0.01	0.41	0.29	0.09	0.09	0.01	0.02
s, saturation flow rate [veh/h]	364	3560	1869	1781	5094	1589	1781	1785	1589	1740
c, Capacity [veh/h]	342	1951	1024	31	2574	803	239	239	213	58
d1, Uniform Delay [s]	13.01	11.75	11.75	32.95	13.91	11.63	27.81	27.80	25.52	32.01
k, delay calibration	0.15	0.15	0.32	0.04	0.15	0.17	0.11	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.88	3.37	14.47	0.89	1.01	3.49	3.48	0.16	2.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.76	0.76	0.78	0.81	0.58	0.69	0.69	0.08	0.52
d, Delay for Lane Group [s/veh]	13.55	12.63	15.12	47.42	14.80	12.65	31.29	31.28	25.68	34.65
Lane Group LOS	B	B	B	D	B	B	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	7.20	8.27	0.47	6.27	3.62	2.63	2.63	0.24	0.51
50th-Percentile Queue Length [ft/ln]	10.54	180.06	206.82	11.80	156.82	90.57	65.71	65.82	5.94	12.63
95th-Percentile Queue Length [veh/ln]	0.76	11.60	12.99	0.85	10.38	6.52	4.73	4.74	0.43	0.91
95th-Percentile Queue Length [ft/ln]	18.96	290.10	324.75	21.24	259.51	163.03	118.29	118.48	10.70	22.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.55	13.55	13.49	15.12	47.42	47.42	14.80	12.65	31.29	31.28	25.68	34.65	34.65	34.65
Movement LOS	B	B	B	B	D	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	13.49				14.72				31.01			34.65		
Approach LOS	B				B				C			C		
d_I, Intersection Delay [s/veh]	15.35													
Intersection LOS	B													
Intersection V/C	0.708													

Emissions

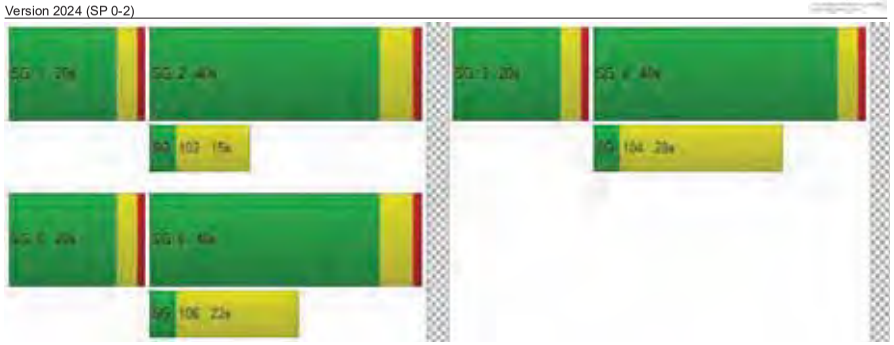
Vehicle Miles Traveled [mph]	30.40	522.18	274.18	9.56	827.75	184.92	39.45	39.52	4.09	0.57
Stops [stops/h]	22.60	772.40	443.59	25.31	1009.05	194.27	140.95	141.18	12.74	27.09
Fuel consumption [US gal/h]	1.61	29.56	16.12	1.02	52.69	10.99	3.45	3.45	0.33	0.38
CO [g/h]	112.78	2066.35	1127.13	71.42	3682.95	768.10	240.87	241.29	22.91	26.89
NOx [g/h]	21.94	402.04	219.30	13.90	716.57	149.44	46.87	46.95	4.46	5.23
VOC [g/h]	26.14	478.90	261.22	16.55	853.56	178.01	55.82	55.92	5.31	6.23

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.05	0.00	26.05	26.05
l_p,int, Pedestrian LOS Score for Intersectio	3.268	0.000	2.458	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1013	1013	1072	477
d_b, Bicycle Delay [s]	8.18	8.18	7.22	19.48
l_b,int, Bicycle LOS Score for Intersection	2.846	3.053	2.139	1.617
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.930

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	155	1839	1449	463	193	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	-78	0	0	-1
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	139	0	31
Total Hourly Volume [veh/h]	1	155	1843	1371	324	193	72
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	45	530	394	93	55	21
Total Analysis Volume [veh/h]	1	178	2118	1576	372	222	83
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	9	53	40	40	12	12
g / C, Green / Cycle	0.12	0.71	0.53	0.53	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.59	0.52	0.56	0.12	0.05
s, saturation flow rate [veh/h]	1781	3560	1870	1752	1781	1589
c, Capacity [veh/h]	221	2528	996	933	279	249
d1, Uniform Delay [s]	32.02	7.79	17.11	17.54	30.50	28.17
k, delay calibration	0.08	0.16	0.42	0.46	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.99	1.15	21.39	40.42	5.13	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.84	0.98	1.04	0.80	0.33
d, Delay for Lane Group [s/veh]	37.01	8.94	38.50	57.96	35.63	28.95
Lane Group LOS	D	A	D	F	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.36	8.60	19.78	24.10	4.12	1.34
50th-Percentile Queue Length [ft/ln]	84.07	215.08	494.43	602.41	103.05	33.50
95th-Percentile Queue Length [veh/ln]	6.05	13.41	27.07	33.25	7.42	2.41
95th-Percentile Queue Length [ft/ln]	151.32	335.33	676.77	831.29	185.50	60.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.01	37.01	8.94	45.93	57.96	35.63	28.95
Movement LOS	D	D	A	D	E	D	C
d_A, Approach Delay [s/veh]	11.13			48.23		33.81	
Approach LOS	B			D		C	
d_I, Intersection Delay [s/veh]	28.53						
Intersection LOS	C						
Intersection V/C	0.930						

Emissions

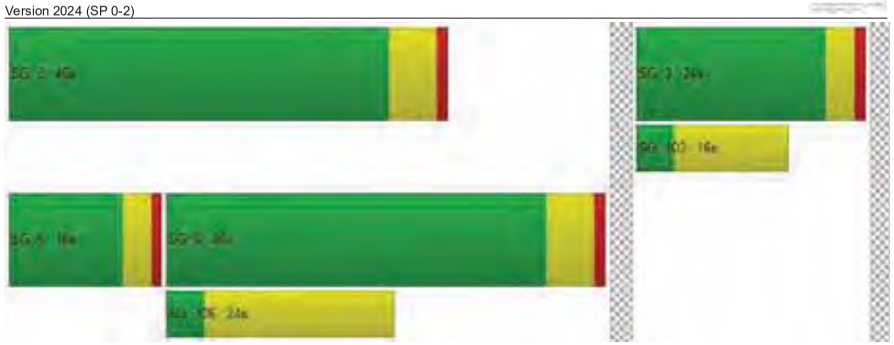
Vehicle Miles Traveled [mph]	124.50	1473.18	344.28	344.28	74.90	28.00
Stops [stops/h]	161.58	826.74	950.29	1157.81	198.07	64.38
Fuel consumption [US gal/h]	7.37	69.07	27.05	32.06	5.79	2.00
CO [g/h]	514.90	4827.77	1891.04	2240.82	404.54	139.62
NOx [g/h]	100.18	939.31	367.93	435.98	78.71	27.16
VOC [g/h]	119.33	1118.88	438.27	519.33	93.76	32.36

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.89	0.00	29.89
l_p,int, Pedestrian LOS Score for Intersectio	3.071	0.000	2.311
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1068	1068	534
d_b, Bicycle Delay [s]	8.14	8.14	20.13
l_b,int, Bicycle LOS Score for Intersection	3.454	3.281	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	143.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.207

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	60	778	21	276	401	877	613	90	86	136	351	604
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	2	0	0	-32	-47	3	0	-10	-6	-8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	249	0	0	23	0	0	181
Total Hourly Volume [veh/h]	61	780	15	276	369	581	616	90	53	130	343	423
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	219	4	78	104	163	173	25	15	37	96	119
Total Analysis Volume [veh/h]	69	876	17	310	415	653	692	101	60	146	385	475
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	89	89	89	89	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	4	23	23	12	30	30	15	15	20	20
g / C, Green / Cycle	0.05	0.26	0.26	0.14	0.34	0.34	0.17	0.17	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.17	0.22	0.41	0.24	0.24	0.29	0.30
s, saturation flow rate [veh/h]	1781	1870	1857	1781	1870	1589	1781	1771	1845	1589
c, Capacity [veh/h]	91	483	480	241	640	544	301	299	416	358
d1, Uniform Delay [s]	41.56	32.09	32.09	38.35	24.64	29.16	36.85	36.85	34.35	34.35
k, delay calibration	0.04	0.27	0.27	0.50	0.22	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.80	17.02	17.10	156.65	2.24	106.50	206.58	208.57	142.06	164.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.93	0.93	1.29	0.65	1.20	1.42	1.42	1.28	1.33
d, Delay for Lane Group [s/veh]	46.36	49.11	49.20	195.01	26.89	135.66	243.43	245.43	176.41	199.01
Lane Group LOS	D	D	D	F	C	F	F	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.59	11.35	11.29	15.30	6.89	26.18	23.65	23.69	25.11	23.88
50th-Percentile Queue Length [ft/ln]	39.83	283.79	282.18	382.46	172.19	654.48	591.36	592.16	627.70	597.11
95th-Percentile Queue Length [veh/ln]	2.87	16.88	16.80	24.04	11.19	38.66	36.67	36.75	37.74	36.62
95th-Percentile Queue Length [ft/ln]	71.70	421.93	419.92	601.11	279.80	966.44	916.70	918.67	943.42	915.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.36	49.15	49.20	195.01	26.89	135.66	244.20	245.43	245.43	176.41	176.41	199.01
Movement LOS	D	D	D	F	C	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	48.95			116.25			244.43			187.08		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]	143.84											
Intersection LOS	F											
Intersection V/C	1.207											

Emissions

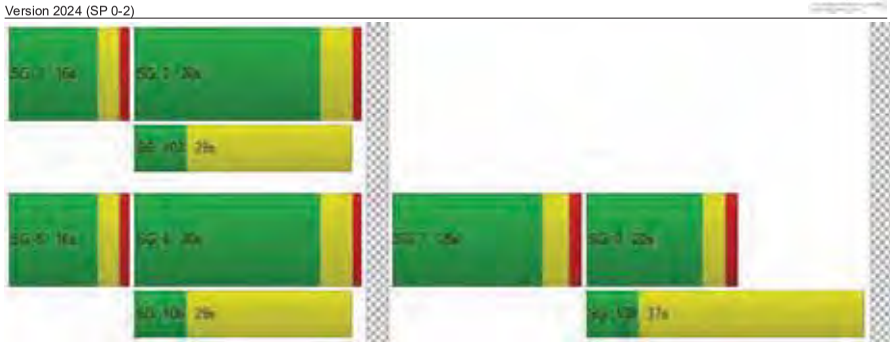
Vehicle Miles Traveled [mph]	39.85	258.73	257.00	215.62	288.65	454.19	32.13	32.04	58.73	52.53
Stops [stops/h]	64.68	460.78	458.15	620.97	279.58	1062.64	960.15	961.46	1019.15	969.49
Fuel consumption [US gal/h]	2.65	17.67	17.57	31.05	17.12	52.96	27.78	27.90	27.11	26.75
CO [g/h]	185.14	1235.39	1227.84	2170.20	1196.66	3701.66	1941.69	1950.31	1894.85	1869.98
NOx [g/h]	36.02	240.36	238.89	422.24	232.83	720.21	377.78	379.46	368.67	363.83
VOC [g/h]	42.91	286.31	284.56	502.96	277.34	857.89	450.01	452.00	439.15	433.39

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.03	0.00	34.03	34.03
l_p,int, Pedestrian LOS Score for Intersectio	2.621	0.000	2.697	2.723
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	557	557	350	451
d_b, Bicycle Delay [s]	23.08	23.08	30.20	26.60
l_b,int, Bicycle LOS Score for Intersection	2.358	2.902	3.005	3.518
Bicycle LOS	B	C	C	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	582	265	358	277	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-7	0	0	-48	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	93	0	33
Total Hourly Volume [veh/h]	115	582	265	217	280	76
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	162	74	60	78	21
Total Analysis Volume [veh/h]	128	647	294	241	311	84
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	36	36	36	36	36	36
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	17	10	10	9	9
g / C, Green / Cycle	0.10	0.48	0.27	0.27	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.07	0.35	0.16	0.15	0.17	0.05
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	182	898	500	425	430	384
d1, Uniform Delay [s]	15.62	7.42	11.46	11.38	12.53	10.92
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.87	1.57	1.57	1.70	2.32	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.72	0.59	0.57	0.72	0.22
d, Delay for Lane Group [s/veh]	17.50	8.99	13.03	13.08	14.85	11.20
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.77	1.53	1.36	1.13	2.03	0.44
50th-Percentile Queue Length [ft/ln]	19.29	38.19	33.97	28.23	50.86	11.10
95th-Percentile Queue Length [veh/ln]	1.39	2.75	2.45	2.03	3.66	0.80
95th-Percentile Queue Length [ft/ln]	34.72	68.75	61.15	50.81	91.55	19.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.50	8.99	13.03	13.08	14.85	11.20
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	10.40		13.05		14.07	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	12.08					
Intersection LOS	B					
Intersection V/C	0.783					

Emissions

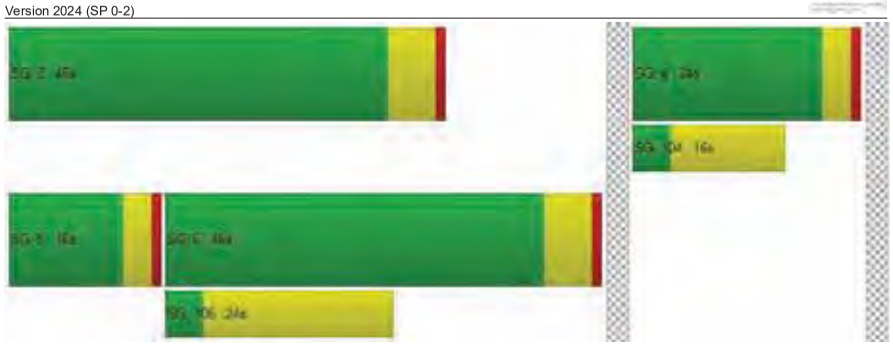
Vehicle Miles Traveled [mph]	15.79	79.83	169.79	139.18	73.04	19.73
Stops [stops/h]	77.62	153.69	136.71	113.59	204.68	44.66
Fuel consumption [US gal/h]	2.43	6.71	9.00	7.41	5.08	1.25
CO [g/h]	169.57	468.96	629.02	517.77	354.93	87.41
NOx [g/h]	32.99	91.24	122.38	100.74	69.06	17.01
VOC [g/h]	39.30	108.69	145.78	120.00	82.26	20.26

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	10.79	0.00	10.79
l_p,int, Pedestrian LOS Score for Intersectio	2.600	0.000	2.229
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2236	2236	1118
d_b, Bicycle Delay [s]	0.25	0.25	3.48
l_b,int, Bicycle LOS Score for Intersection	2.838	2.596	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.090

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	360	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	651	0	14	360	0	0	0	0	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	177	0	4	98	0	0	0	0	0	0	10
Total Analysis Volume [veh/h]	0	708	0	14	391	0	0	0	0	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free		Free		Stop	Stop
Flared Lane					Yes	Yes
Storage Area [veh]	0		0		1	1
Two-Stage Gap Acceptance					No	No
Number of Storage Spaces in Median	0		0		0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	8.08	0.00	0.00	9.06	0.00	0.00	27.90	22.96	10.47	26.03	23.78	14.10
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.29	0.29	0.29
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.59	0.59	0.59	0.00	0.00	0.00	7.35	7.35	7.35
d_A, Approach Delay [s/veh]	0.00			0.31			20.45			14.10		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.59											
Intersection LOS	B											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	27.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.058

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	422	48	74	286	0	0	0	0	12	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	415	48	74	286	0	0	0	0	12	0	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	112	13	20	77	0	0	0	0	3	0	67
Total Analysis Volume [veh/h]	0	446	52	80	308	0	0	0	0	13	0	269
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.45
d_M, Delay for Movement [s/veh]	7.87	0.00	0.00	8.65	0.00	0.00	41.14	20.29	9.92	27.63	26.42	17.74
Movement LOS	A	A	A	A	A	A	E	C	A	D	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	2.90	2.90	2.90
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.07	0.00	0.00	0.00	0.00	0.00	72.46	72.46	72.46
d_A, Approach Delay [s/veh]	0.00			1.78			23.78			18.20		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.99											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	560	229	53	0	1106	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	3	-10	-17	0	-55	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	15	563	219	36	0	1051	183
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	155	60	10	0	290	50
Total Analysis Volume [veh/h]	0	17	621	242	40	0	1160	202
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.80	0.00	0.00	0.00	0.91	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	36.54	15.61	0.00
Movement LOS	F	F	F	A	A	E	C	A
95th-Percentile Queue Length [veh/ln]	82.64	82.64	82.64	0.00	0.00	8.66	8.66	8.66
95th-Percentile Queue Length [ft/ln]	2066.12	2066.12	2066.12	0.00	0.00	216.40	216.40	216.40
d_A, Approach Delay [s/veh]	10000.00			0.00		13.30		
Approach LOS	F			A		B		
d_I, Intersection Delay [s/veh]	2803.73							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	372.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.305

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	16	229	88	2	30	1009	55	19	21	0	258	55	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	-75	6	3	0	0	-55	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	229	88	2	30	1009	0	25	24	0	258	0	70
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	69	27	1	9	304	0	8	7	0	78	0	21
Total Analysis Volume [veh/h]	19	276	106	2	36	1216	0	30	29	0	311	0	84
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	538	1254	422	512
Degree of Utilization, x	0.75	2.31	0.14	0.77

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.41	93.77	0.48	6.90
95th-Percentile Queue Length [ft]	160.28	2344.34	12.05	172.50
Approach Delay [s/veh]	26.83	608.53	12.90	30.00
Approach LOS	D	F	B	D
Intersection Delay [s/veh]	372.91			
Intersection LOS	F			

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Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	17.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.389

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	175	151	1	131	225	0	67	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-25	0	-2	0	0	2	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	126	1	129	225	0	69	129
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	33	0	34	59	0	18	34
Total Analysis Volume [veh/h]	184	133	1	136	237	0	73	136
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.39	0.17	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	17.36	10.53	8.82	0.00	0.00	11.77	8.24	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.82	0.61	0.00	0.00	0.00	0.20	0.20	0.00
95th-Percentile Queue Length [ft/ln]	45.41	15.21	0.05	0.05	0.05	4.91	4.91	0.00
d_A, Approach Delay [s/veh]	14.49		0.02			2.88		
Approach LOS	B		A			A		
d_I, Intersection Delay [s/veh]	5.78							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	33.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	134	128	233	92	194	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-25	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	128	208	92	194	154
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	35	57	25	53	42
Total Analysis Volume [veh/h]	146	139	226	100	211	167
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.51	0.17	0.00	0.00	0.17	0.00
d_M, Delay for Movement [s/veh]	33.77	25.68	0.00	0.00	8.52	0.00
Movement LOS	D	D	A	A	A	A
95th-Percentile Queue Length [veh/ln]	4.91	4.91	0.00	0.00	0.62	0.00
95th-Percentile Queue Length [ft/ln]	122.63	122.63	0.00	0.00	15.40	0.00
d_A, Approach Delay [s/veh]	29.83		0.00		4.76	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	10.41					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.126

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	12	202	20	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	-25	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	10	12	177	20	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	3	3	48	5	5
Total Analysis Volume [veh/h]	75	11	13	192	22	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	715	741	690	763	763	724
Degree of Utilization, x	0.06	0.06	0.02	0.13	0.13	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.19	0.18	0.06	0.43	0.43	0.18
95th-Percentile Queue Length [ft]	4.79	4.61	1.44	10.73	10.73	4.61
Approach Delay [s/veh]	7.96		8.09			8.28
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.08					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.443

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	343	152	60	603	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	0	0	0	0	0	-25	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	0	18	66	1	8	4	343	127	60	603	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	5	17	0	2	1	88	33	15	155	4
Total Analysis Volume [veh/h]	69	0	19	68	1	8	4	354	131	62	622	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	25	0	15	45	0	15	45	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	21	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	0	0	30	0	20	40	0	20	40	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	0	0	9	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	46	46	46	46	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	6	6	6	0	9	9	5	14	14
g / C, Green / Cycle	0.13	0.13	0.13	0.12	0.01	0.20	0.20	0.11	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.00	0.01	0.05	0.00	0.11	0.09	0.04	0.19	0.01
s, saturation flow rate [veh/h]	1603	1683	1431	1584	1603	3204	1431	1603	3204	1431
c, Capacity [veh/h]	216	227	193	198	17	629	281	175	947	423
d1, Uniform Delay [s]	18.01	0.00	17.47	18.52	22.60	16.71	16.37	18.99	14.18	11.55
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	0.00	0.22	1.24	7.24	0.79	1.20	1.21	0.78	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.00	0.10	0.39	0.24	0.56	0.47	0.35	0.66	0.04
d, Delay for Lane Group [s/veh]	18.86	0.00	17.69	19.76	29.84	17.50	17.57	20.20	14.96	11.58
Lane Group LOS	B	A	B	B	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.64	0.00	0.17	0.74	0.07	1.53	1.15	0.60	2.45	0.10
50th-Percentile Queue Length [ft/ln]	15.94	0.00	4.21	18.43	1.81	38.26	28.82	15.11	61.31	2.41
95th-Percentile Queue Length [veh/ln]	1.15	0.00	0.30	1.33	0.13	2.75	2.08	1.09	4.41	0.17
95th-Percentile Queue Length [ft/ln]	28.70	0.00	7.59	33.17	3.26	68.87	51.88	27.21	110.36	4.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.86	0.00	17.69	19.76	19.76	19.76	29.84	17.50	17.57	20.20	14.96	11.58
Movement LOS	B	A	B	B	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	18.61			19.76			17.62			15.35		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.64											
Intersection LOS	B											
Intersection V/C	0.443											

Emissions

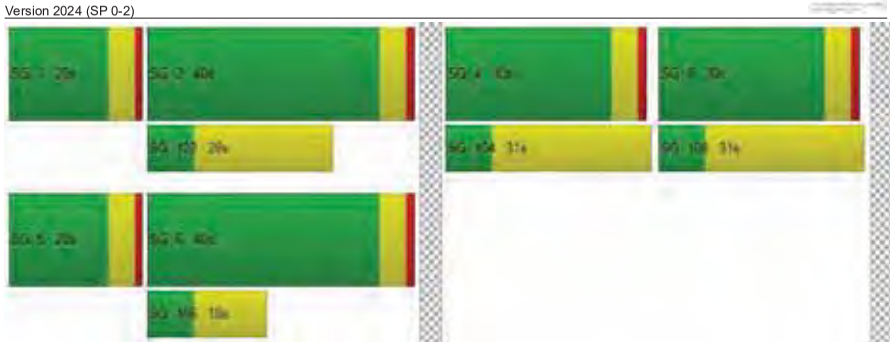
Vehicle Miles Traveled [mph]	20.48	0.00	5.64	1.72	0.57	50.69	18.76	52.17	523.43	12.62
Stops [stops/h]	50.09	0.00	13.24	57.90	5.69	240.43	90.56	47.49	385.28	7.56
Fuel consumption [US gal/h]	1.38	0.00	0.37	0.70	0.08	4.68	1.74	2.67	25.57	0.60
CO [g/h]	96.80	0.00	26.13	48.94	5.54	326.86	121.69	186.29	1787.38	41.71
NOx [g/h]	18.83	0.00	5.08	9.52	1.08	63.60	23.68	36.24	347.76	8.12
VOC [g/h]	22.43	0.00	6.05	11.34	1.28	75.75	28.20	43.17	414.24	9.67

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.24	13.24	13.24	13.24
l_p,int, Pedestrian LOS Score for Intersectio	2.316	1.723	2.607	2.599
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1091	1091	1527	1527
d_b, Bicycle Delay [s]	4.73	4.73	1.28	1.28
l_b,int, Bicycle LOS Score for Intersection	1.705	1.687	1.963	2.136
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	72	5	243	5	5	0	5	644	184	0	499	505	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	73	0	0	0	0	0	55	0	0	0	2
Total Hourly Volume [veh/h]	72	5	170	5	5	0	5	644	129	0	499	505	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	1	44	1	1	0	1	166	33	0	129	130	1
Total Analysis Volume [veh/h]	74	5	175	5	5	0	5	664	133	0	514	521	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	6	15	1	10	1	46	46	36	81	81
g / C, Green / Cycle	0.05	0.13	0.01	0.08	0.01	0.38	0.38	0.30	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.00	0.00	0.00	0.19	0.08	0.29	0.14	0.14
s, saturation flow rate [veh/h]	1781	1596	1781	1870	1781	3560	1589	1781	1870	1866
c, Capacity [veh/h]	96	204	12	152	12	1354	604	537	1262	1259
d1, Uniform Delay [s]	56.04	51.41	59.33	50.78	59.34	28.34	25.16	41.16	7.39	7.39
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.24	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	4.76	19.50	0.03	19.95	1.27	0.84	18.67	0.37	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.88	0.40	0.03	0.40	0.49	0.22	0.96	0.21	0.21
d, Delay for Lane Group [s/veh]	60.89	56.16	78.83	50.81	79.29	29.61	26.00	59.83	7.76	7.76
Lane Group LOS	E	E	E	D	E	C	C	E	A	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	5.58	0.22	0.14	0.22	7.49	2.72	17.53	2.55	2.55
50th-Percentile Queue Length [ft/ln]	58.57	139.55	5.48	3.51	5.50	187.21	67.97	438.14	63.82	63.70
95th-Percentile Queue Length [veh/ln]	4.22	9.46	0.39	0.25	0.40	11.98	4.89	24.39	4.59	4.59
95th-Percentile Queue Length [ft/ln]	105.43	236.42	9.86	6.32	9.90	299.40	122.35	609.78	114.87	114.65

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.89	56.16	56.16	78.83	50.81	0.00	79.29	29.61	26.00	59.83	59.83	7.76	7.76
Movement LOS	E	E	E	E	D		E	C	C	E	E	A	A
d_A, Approach Delay [s/veh]	57.54			64.82			29.32			33.55			
Approach LOS	E			E			C			C			
d_I, Intersection Delay [s/veh]	34.98												
Intersection LOS	C												
Intersection V/C	0.656												

Emissions

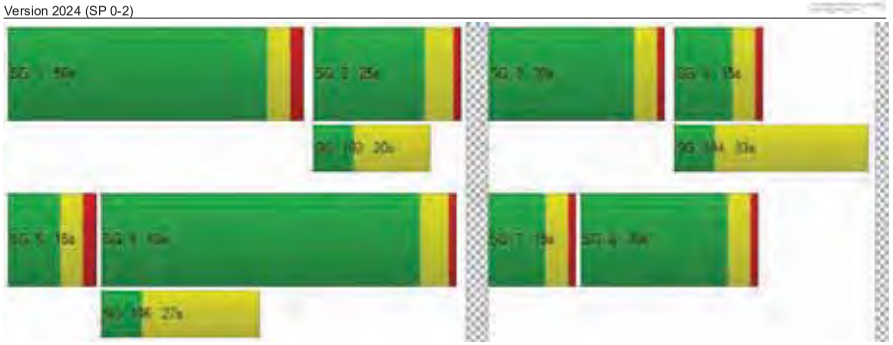
Vehicle Miles Traveled [mph]	28.51	69.36	0.17	0.17	4.21	558.77	111.92	128.09	65.36	65.23
Stops [stops/h]	70.28	167.46	6.57	4.21	6.60	449.30	81.57	525.77	76.58	76.43
Fuel consumption [US gal/h]	2.48	5.84	0.12	0.08	0.29	29.49	5.76	14.44	3.53	3.52
CO [g/h]	173.28	408.03	8.65	5.74	20.30	2061.06	402.74	1009.07	246.61	246.12
NOx [g/h]	33.71	79.39	1.68	1.12	3.95	401.01	78.36	196.33	47.98	47.89
VOC [g/h]	40.16	94.57	2.00	1.33	4.70	477.67	93.34	233.86	57.15	57.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.394	1.962	2.781	0.000
Crosswalk LOS	B	A	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.099	1.576	2.267	1.994
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	44.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.629

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.0	100.0	100.0	100.0	200.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			No				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	60	7	28	115	11	210	0	243	666	62	56	885	214
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-4	0	0	2	0	0	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	62	0	0	0	19	0	0	64
Total Hourly Volume [veh/h]	60	7	20	115	11	144	0	243	668	43	56	873	150
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	5	32	3	40	0	67	184	12	15	240	41
Total Analysis Volume [veh/h]	66	8	22	126	12	158	0	267	734	47	62	959	165
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	7	23	0	7	25	0	0	14	31	0	15	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	29	0	13	31	0	0	28	80	0	20	72	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	9	0	3	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No			No			No	Yes		No	No	
Maximum Recall		No			No			No	No		No	No	
Pedestrian Recall		No			No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	9	9	19	19	65	102	102	8	45	45
g / C, Green / Cycle	0.06	0.06	0.12	0.12	0.41	0.64	0.64	0.05	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.11	0.15	0.21	0.03	0.03	0.27	0.10
s, saturation flow rate [veh/h]	1790	1589	1781	1606	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	101	89	211	190	723	2272	1014	94	1005	449
d1, Uniform Delay [s]	74.34	72.27	66.91	69.53	33.23	13.20	10.80	74.33	56.42	46.00
k, delay calibration	0.04	0.04	0.04	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.87	0.53	1.01	5.68	1.45	0.38	0.09	2.87	2.66	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.25	0.60	0.89	0.37	0.32	0.05	0.66	0.95	0.37
d, Delay for Lane Group [s/veh]	78.21	72.80	67.91	75.21	34.69	13.58	10.89	77.20	59.08	46.18
Lane Group LOS	E	E	E	E	C	B	B	E	E	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.12	0.88	4.98	7.20	7.68	6.21	0.66	2.59	19.42	5.37
50th-Percentile Queue Length [ft/ln]	78.12	22.12	124.52	180.03	191.88	155.28	16.56	64.85	485.42	134.16
95th-Percentile Queue Length [veh/ln]	5.62	1.59	8.64	11.60	12.22	10.30	1.19	4.67	26.64	9.17
95th-Percentile Queue Length [ft/ln]	140.61	39.82	216.03	290.05	305.46	257.46	29.81	116.73	666.08	229.13

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Version 2024 (SP 0-2)

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.21	78.21	72.80	67.91	75.21	75.21	34.69	34.69	13.58	10.89	77.20	59.08	46.18
Movement LOS	E	E	E	E	E	E	C	C	B	B	E	E	D
d_A, Approach Delay [s/veh]	76.97			72.10			18.84				58.23		
Approach LOS	E			E			B				E		
d_I, Intersection Delay [s/veh]	44.76												
Intersection LOS	D												
Intersection V/C	0.629												

Emissions

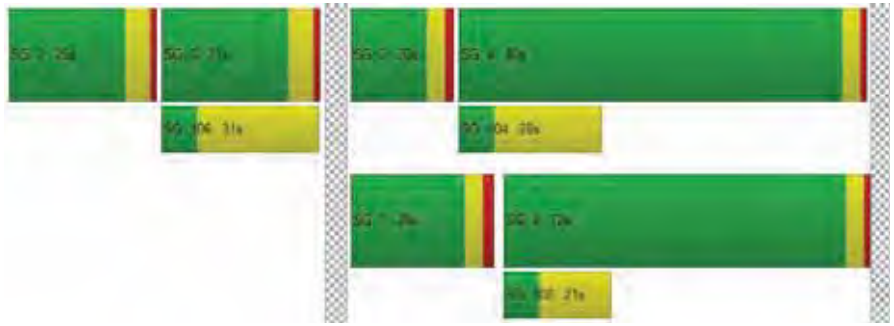
Vehicle Miles Traveled [mph]	3.70	1.10	5.86	7.90	27.99	76.95	4.93	21.71	335.80	57.78
Stops [stops/h]	70.31	19.91	112.07	162.03	172.69	279.50	14.91	58.37	873.75	120.74
Fuel consumption [US gal/h]	1.72	0.48	2.60	3.82	3.99	6.74	0.39	2.19	30.18	4.60
CO [g/h]	120.12	33.63	181.84	267.15	278.97	471.17	27.21	153.09	2109.56	321.26
NOx [g/h]	23.37	6.54	35.38	51.98	54.28	91.67	5.29	29.78	410.44	62.51
VOC [g/h]	27.84	7.80	42.14	61.91	64.65	109.20	6.31	35.48	488.91	74.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.058	2.336	2.883	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	288	313	944	844
d_b, Bicycle Delay [s]	58.65	56.95	22.31	26.74
l_b,int, Bicycle LOS Score for Intersection	1.731	2.150	2.220	2.591
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	2	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	300.00	100.00	300.00	200.00	100.00	200.00	300.00	100.00	200.00	500.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	300.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	129	55	474	219	51	48	223	336	271	414	989	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	-2	0	0	2	0	-5	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	143	0	0	14	0	0	81	0	0	101
Total Hourly Volume [veh/h]	129	55	332	219	49	34	223	338	190	409	977	234
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	16	95	63	14	10	64	97	55	118	281	67
Total Analysis Volume [veh/h]	148	63	382	252	56	39	256	389	218	470	1123	269
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	153
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Overlap	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	1	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,4									
Maximum Green [s]	0	35	25	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	3.0	0.0	3.2	0.0	3.0	5.0	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.5	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	28	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	1.5	0.0	2.2	0.0	1.5	4.0	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	150.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	29	0	45	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	2.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No	No		No		No	No		No	No	
Maximum Recall		No	No		No		No	No		No	No	
Pedestrian Recall		No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	87	87	87	87	87	87	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	4.20	4.20	3.50	4.20	4.20	4.20	3.50	6.00	6.00	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	0.00	2.20	2.20	2.20	1.50	4.00	4.00	1.50	4.00	4.00
g_i, Effective Green Time [s]	10	10	50	16	16	16	9	28	28	15	34	34
g / C, Green / Cycle	0.12	0.12	0.57	0.18	0.18	0.18	0.10	0.32	0.32	0.17	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.08	0.03	0.14	0.13	0.03	0.02	0.07	0.11	0.14	0.14	0.32	0.17
s, saturation flow rate [veh/h]	1781	1870	2813	1944	1870	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	211	221	1594	393	342	291	345	1156	516	585	1404	627
d1, Uniform Delay [s]	37.08	35.19	9.51	35.49	30.10	29.93	38.29	22.39	23.11	34.95	23.45	19.32
k, delay calibration	0.13	0.13	0.04	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.22	0.87	0.03	2.18	0.28	0.26	1.19	0.17	0.55	1.00	1.41	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.28	0.24	0.64	0.16	0.13	0.74	0.34	0.42	0.80	0.80	0.43
d, Delay for Lane Group [s/veh]	42.30	36.06	9.54	37.68	30.37	30.19	39.49	22.56	23.66	35.95	24.86	19.92
Lane Group LOS	D	D	A	D	C	C	D	C	C	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.30	1.26	1.69	2.65	1.00	0.70	2.68	2.98	3.49	4.79	9.98	3.94
50th-Percentile Queue Length [ft/ln]	82.40	31.53	42.34	66.32	25.10	17.45	67.02	74.46	87.33	119.63	249.47	98.39
95th-Percentile Queue Length [veh/ln]	5.93	2.27	3.05	4.78	1.81	1.26	4.83	5.36	6.29	8.37	15.16	7.08
95th-Percentile Queue Length [ft/ln]	148.31	56.76	76.22	119.38	45.18	31.41	120.64	134.02	157.20	209.32	378.98	177.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.30	36.06	9.54	37.68	30.37	30.19	39.49	22.56	23.66	35.95	24.86	19.92
Movement LOS	D	D	A	D	C	C	D	C	C	D	C	B
d_A, Approach Delay [s/veh]	20.53			35.66			27.86			26.94		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	26.95											
Intersection LOS	C											
Intersection V/C	0.770											

Emissions

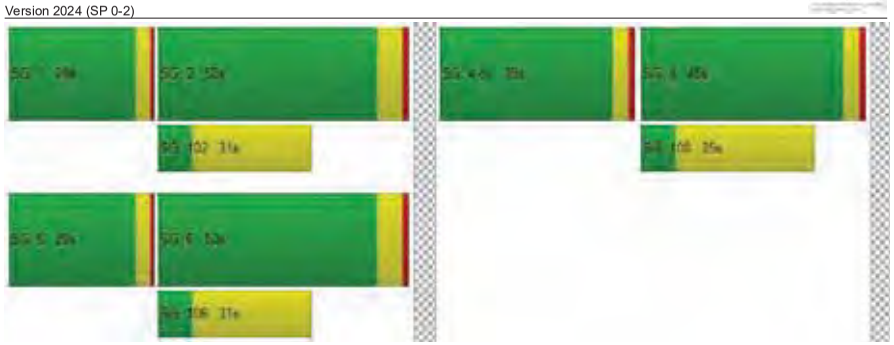
Vehicle Miles Traveled [mph]	253.80	108.03	655.07	51.09	11.35	7.91	89.64	136.21	76.33	212.08	506.72	121.38
Stops [stops/h]	135.75	51.95	139.52	218.54	41.35	28.75	220.84	245.34	143.88	394.18	822.01	162.10
Fuel consumption [US gal/h]	12.47	5.20	28.48	5.24	1.04	0.72	6.97	8.75	4.99	14.35	31.08	6.98
CO [g/h]	871.77	363.25	1990.68	366.46	72.83	50.60	487.01	611.53	348.60	1002.81	2172.65	488.11
NOx [g/h]	169.62	70.67	387.31	71.30	14.17	9.84	94.76	118.98	67.82	195.11	422.72	94.97
VOC [g/h]	202.04	84.19	461.36	84.93	16.88	11.73	112.87	141.73	80.79	232.41	503.53	113.13

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.39	33.39	33.39	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.908	2.641	3.023	0.000
Crosswalk LOS	C	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	796	934	1007	1007
d_b, Bicycle Delay [s]	15.83	12.42	10.78	10.78
l_b,int, Bicycle LOS Score for Intersection	2.774	2.155	2.338	3.179
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	5	4	0	354	3	1026	0	4	1384	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	2	0	0	-17	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	5	4	0	354	3	1028	0	4	1367	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	1	0	113	1	329	0	1	438	10
Total Analysis Volume [veh/h]	0	0	6	5	0	454	4	1318	0	5	1753	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	93	93	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	1	1	20	20	1	49	49	1	49	49
g / C, Green / Cycle	0.01	0.01	0.22	0.22	0.01	0.53	0.53	0.01	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.35	0.35	0.00	0.49	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	16	14	384	343	11	993	993	13	1894	846
d1, Uniform Delay [s]	0.00	45.72	28.58	36.34	45.88	15.75	15.75	45.79	19.99	10.41
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.18	0.18	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	20.35	0.01	164.65	18.97	1.29	1.29	16.88	2.38	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.44	0.01	1.32	0.36	0.66	0.66	0.38	0.93	0.05
d, Delay for Lane Group [s/veh]	0.00	66.07	28.59	200.99	64.84	17.04	17.04	62.67	22.37	10.43
Lane Group LOS	A	E	C	F	E	B	B	E	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.21	0.09	23.24	0.15	9.69	9.69	0.18	16.41	0.38
50th-Percentile Queue Length [ft/ln]	0.00	5.34	2.20	580.91	3.72	242.25	242.25	4.39	410.19	9.51
95th-Percentile Queue Length [veh/ln]	0.00	0.38	0.16	35.66	0.27	14.79	14.79	0.32	23.05	0.68
95th-Percentile Queue Length [ft/ln]	0.00	9.62	3.96	891.38	6.70	369.87	369.87	7.90	576.27	17.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	66.07	28.59	28.59	200.99	64.84	17.04	17.04	62.67	22.37	10.43
Movement LOS	A	A	E	C	C	F	E	B	B	E	C	B
d_A, Approach Delay [s/veh]	66.07			199.11			17.19			22.22		
Approach LOS	E			F			B			C		
d_I, Intersection Delay [s/veh]	43.08											
Intersection LOS	D											
Intersection V/C	0.948											

Emissions

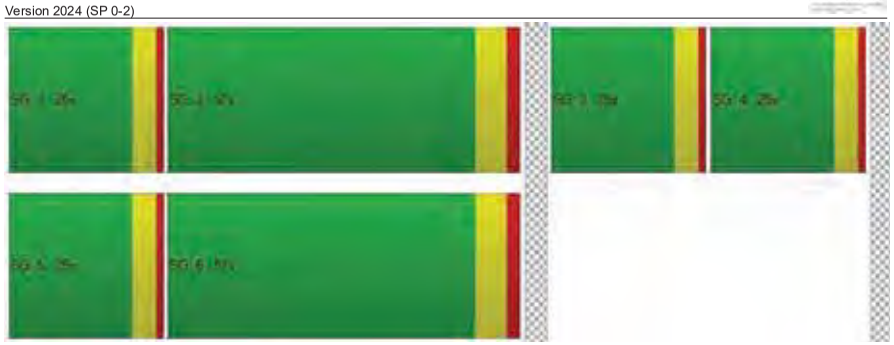
Vehicle Miles Traveled [mph]	0.00	0.30	2.37	215.36	1.80	297.36	297.36	0.87	305.80	6.98
Stops [stops/h]	0.00	8.32	3.42	904.02	5.79	376.99	376.99	6.83	1276.69	14.80
Fuel consumption [US gal/h]	0.00	0.14	0.15	32.43	0.16	16.61	16.61	0.14	27.62	0.45
CO [g/h]	0.00	9.71	10.18	2266.58	11.12	1161.03	1161.03	9.60	1930.81	31.73
NOx [g/h]	0.00	1.89	1.98	440.99	2.16	225.89	225.89	1.87	375.67	6.17
VOC [g/h]	0.00	2.25	2.36	525.30	2.58	269.08	269.08	2.23	447.48	7.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		0.00	
l_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		0.000	
Crosswalk LOS	F		F		F		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	432		432		1081		1081	
d_b, Bicycle Delay [s]	28.43		28.43		9.78		9.78	
l_b,int, Bicycle LOS Score for Intersection	1.570		2.317		2.650		3.043	
Bicycle LOS	A		B		B		C	

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	White Rock Rd			White Rock Rd			US 50 EB					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			White Rock Rd			US 50 EB					
Base Volume Input [veh/h]	0	425	610	0	1303	320	243	0	116	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	1	-1	0	-17	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	3	426	609	0	1286	320	243	0	104	0	0	0
Peak Hour Factor	0.8300	0.8300	1.0000	1.0000	0.8300	0.8300	0.8300	1.0000	0.8300	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	128	152	0	387	96	73	0	31	0	0	0
Total Analysis Volume [veh/h]	4	513	609	0	1549	386	293	0	125	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	62	0	0	62	0	45	0	0	0	0	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	5.0	0.0	0.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	69	0	0	69	0	51	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	8	0	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	6.00	6.00	6.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00	
g_i, Effective Green Time [s]	95	95	95	95	12	12	12	
g / C, Green / Cycle	0.79	0.79	0.79	0.79	0.10	0.10	0.10	
(v / s)_i Volume / Saturation Flow Rate	0.14	0.38	0.44	0.24	0.08	0.08	0.08	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2808	1254	2808	1254	183	183	164	
d1, Uniform Delay [s]	3.13	4.34	4.74	3.54	52.62	52.62	52.41	
k, delay calibration	0.50	0.50	0.50	0.50	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.14	1.35	0.79	0.64	3.04	3.04	2.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.18	0.49	0.55	0.31	0.80	0.80	0.76	
d, Delay for Lane Group [s/veh]	3.27	5.69	5.52	4.17	55.66	55.66	55.20	
Lane Group LOS	A	A	A	A	E	E	E	
Critical Lane Group	No	No	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	1.30	4.55	5.98	2.33	4.47	4.47	3.80	
50th-Percentile Queue Length [ft/ln]	32.39	113.83	149.43	58.27	111.78	111.78	94.88	
95th-Percentile Queue Length [veh/ln]	2.33	8.05	9.99	4.20	7.94	7.94	6.83	
95th-Percentile Queue Length [ft/ln]	58.29	201.32	249.66	104.88	198.47	198.47	170.79	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	3.27	5.69	0.00	5.52	4.17	55.66	0.00	55.20	0.00	0.00	0.00
Movement LOS		A	A		A	A	E		E			
d_A, Approach Delay [s/veh]	4.58			5.25			55.52			0.00		
Approach LOS	A			A			E			A		
d_I, Intersection Delay [s/veh]	11.08											
Intersection LOS	B											
Intersection V/C	0.575											

Emissions

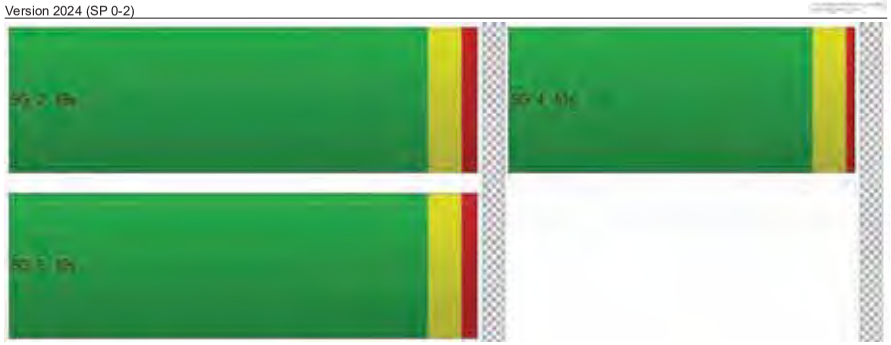
Vehicle Miles Traveled [mph]	89.49	106.24	274.50	68.40	8.87	8.87	7.57	
Stops [stops/h]	77.73	136.60	358.62	69.92	134.13	134.13	113.86	
Fuel consumption [US gal/h]	4.45	5.83	15.02	3.53	2.77	2.77	2.34	
CO [g/h]	311.40	407.73	1050.09	246.75	193.30	193.30	163.89	
NOx [g/h]	60.59	79.33	204.31	48.01	37.61	37.61	31.89	
VOC [g/h]	72.17	94.49	243.37	57.19	44.80	44.80	37.98	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	1033	750	0
d_b, Bicycle Delay [s]	14.02	14.02	23.44	60.00
l_b,int, Bicycle LOS Score for Intersection	2.485	3.156	2.269	4.132
Bicycle LOS	B	C	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	52.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.026

Intersection Setup

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	590	78	0	518	719	1105	0	398	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-3	0	-14	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	591	78	0	515	672	1091	0	368	0	0	0
Peak Hour Factor	0.7900	0.7900	1.0000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	187	20	0	163	213	345	0	116	0	0	0
Total Analysis Volume [veh/h]	0	748	78	0	652	851	1381	0	466	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	125	70	0	0	70	0	0	50	0	0	0	0
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	6.80	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.80	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	63	63	63	63	44	44	44	
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.37	0.37	0.37	
(v / s)_i Volume / Saturation Flow Rate	0.21	0.05	0.18	0.54	0.39	0.39	0.29	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	1875	837	1875	837	656	656	585	
d1, Uniform Delay [s]	17.02	14.14	16.46	28.40	37.90	37.90	33.87	
k, delay calibration	0.50	0.50	0.50	0.50	0.47	0.47	0.25	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.64	0.22	0.51	35.31	48.81	48.81	5.74	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.40	0.09	0.35	1.02	1.05	1.05	0.80	
d, Delay for Lane Group [s/veh]	17.65	14.36	16.97	63.71	86.71	86.71	39.61	
Lane Group LOS	B	B	B	F	F	F	D	
Critical Lane Group	No	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	6.27	1.11	5.28	31.01	27.76	27.76	12.91	
50th-Percentile Queue Length [ft/ln]	156.76	27.72	131.97	775.37	694.11	694.11	322.85	
95th-Percentile Queue Length [veh/ln]	10.38	2.00	9.05	40.70	37.75	37.75	18.81	
95th-Percentile Queue Length [ft/ln]	259.42	49.90	226.16	1017.52	943.84	943.84	470.18	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	17.65	14.36	0.00	16.97	63.71	86.71	86.71	39.61	0.00	0.00	0.00
Movement LOS		B	B		B	F	F	F	D			
d_A, Approach Delay [s/veh]	17.34			43.43			74.83			0.00		
Approach LOS	B			D			E			A		
d_I, Intersection Delay [s/veh]	52.16											
Intersection LOS	D											
Intersection V/C	1.026											

Emissions

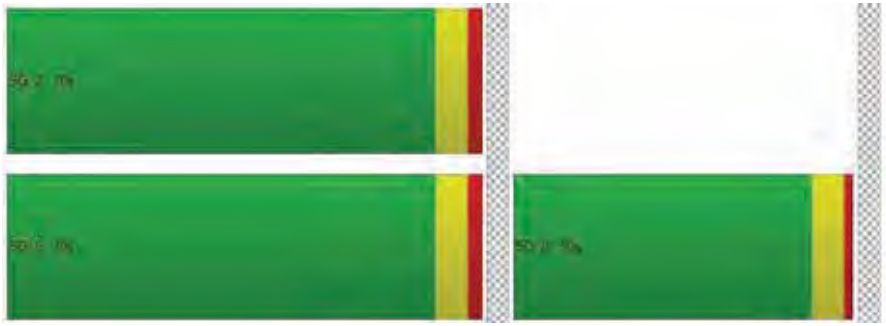
Vehicle Miles Traveled [mph]	132.55	13.82	89.15	116.36	45.34	45.34	30.60	
Stops [stops/h]	376.21	33.27	316.72	930.44	832.93	832.93	387.41	
Fuel consumption [US gal/h]	10.22	0.98	7.67	20.96	18.65	18.65	7.16	
CO [g/h]	714.55	68.55	536.22	1465.33	1303.69	1303.69	500.22	
NOx [g/h]	139.02	13.34	104.33	285.10	253.65	253.65	97.33	
VOC [g/h]	165.60	15.89	124.27	339.61	302.14	302.14	115.93	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1053	1053	737	0
d_b, Bicycle Delay [s]	13.44	13.44	23.94	60.00
I_b,int, Bicycle LOS Score for Intersection	2.241	2.838	4.657	4.132
Bicycle LOS	B	C	E	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	658	360	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	651	360	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	163	90	0	0	0
Total Analysis Volume [veh/h]	0	651	360	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.26
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.26	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	466	260	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	459	260	38	4	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	115	65	10	1	0
Total Analysis Volume [veh/h]	0	459	260	38	4	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.85	0.00	0.00	0.00	14.44	9.84
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.79	0.79
d_A, Approach Delay [s/veh]	0.00		0.00		14.44	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	20.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.146

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	241	41	52	127	9	48	87	0	37	75	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	234	41	52	127	9	48	87	0	37	75	47
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	59	10	13	32	2	12	22	0	9	19	12
Total Analysis Volume [veh/h]	6	234	41	52	127	9	48	87	0	37	75	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.15	0.20	0.00	0.11	0.17	0.06
d_M, Delay for Movement [s/veh]	7.49	0.00	0.00	7.86	0.00	0.00	20.77	18.03	13.71	19.20	16.85	13.37
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.09	0.09	0.09	1.51	1.51	1.51	1.46	1.46	1.46
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.26	2.26	2.26	37.82	37.82	37.82	36.47	36.47	36.47
d_A, Approach Delay [s/veh]	0.16			2.17			19.01			16.37		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.37											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	651	374	39	0
2	631	363	38	0
3	618	355	37	0
4	579	333	35	0
5	514	295	31	0
6	508	292	30	0
7	501	288	30	0
8	456	262	27	0
9	449	258	27	0
10	443	254	27	0
11	384	221	23	0
12	358	206	21	0
13	352	202	21	0
14	260	150	16	0
15	260	150	16	0
16	182	105	11	0
17	104	60	6	0
18	104	60	6	0
19	59	34	4	0
20	33	19	2	0
21	20	11	1	0
22	7	4	0	0
23	7	4	0	0
24	7	4	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1025	1	39	No	No	No	No	No	No	No	No	No	No
2	1	994	1	38	No	No	No	No	No	No	No	No	No	No
3	1	973	1	37	No	No	No	No	No	No	No	No	No	No
4	1	912	1	35	No	No	No	No	No	No	No	No	No	No
5	1	809	1	31	No	No	No	No	No	No	No	No	No	No
6	1	800	1	30	No	No	No	No	No	No	No	No	No	No
7	1	789	1	30	No	No	No	No	No	No	No	No	No	No
8	1	718	1	27	No	No	No	No	No	No	No	No	No	No
9	1	707	1	27	No	No	No	No	No	No	No	No	No	No
10	1	697	1	27	No	No	No	No	No	No	No	No	No	No
11	1	605	1	23	No	No	No	No	No	No	No	No	No	No
12	1	564	1	21	No	No	No	No	No	No	No	No	No	No
13	1	554	1	21	No	No	No	No	No	No	No	No	No	No
14	1	410	1	16	No	No	No	No	No	No	No	No	No	No
15	1	410	1	16	No	No	No	No	No	No	No	No	No	No
16	1	287	1	11	No	No	No	No	No	No	No	No	No	No
17	1	164	1	6	No	No	No	No	No	No	No	No	No	No
18	1	164	1	6	No	No	No	No	No	No	No	No	No	No
19	1	93	1	4	No	No	No	No	No	No	No	No	No	No
20	1	52	1	2	No	No	No	No	No	No	No	No	No	No
21	1	31	1	1	No	No	No	No	No	No	No	No	No	No
22	1	11	1	0	No	No	No	No	No	No	No	No	No	No
23	1	11	1	0	No	No	No	No	No	No	No	No	No	No
24	1	11	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.1	20.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1064	1064
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	463	360	262	0
2	449	349	254	0
3	440	342	249	0
4	412	320	233	0
5	366	284	207	0
6	361	281	204	0
7	357	277	202	0
8	324	252	183	0
9	319	248	181	0
10	315	245	178	0
11	273	212	155	0
12	255	198	144	0
13	250	194	141	0
14	185	144	105	0
15	185	144	105	0
16	130	101	73	0
17	74	58	42	0
18	74	58	42	0
19	42	32	24	0
20	23	18	13	0
21	14	11	8	0
22	5	4	3	0
23	5	4	3	0
24	5	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	823	1	262	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	798	1	254	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	782	1	249	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	732	1	233	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
5	2	650	1	207	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
6	2	642	1	204	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
7	2	634	1	202	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
8	2	576	1	183	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
9	2	567	1	181	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
10	2	560	1	178	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
11	2	485	1	155	No	Yes	Yes	Yes	No	No	No	No	No	No
12	2	453	1	144	No	No	Yes	Yes	No	No	No	No	No	No
13	2	444	1	141	No	No	Yes	Yes	No	No	No	No	No	No
14	2	329	1	105	No	No	No	No	No	No	No	No	No	No
15	2	329	1	105	No	No	No	No	No	No	No	No	No	No
16	2	231	1	73	No	No	No	No	No	No	No	No	No	No
17	2	132	1	42	No	No	No	No	No	No	No	No	No	No
18	2	132	1	42	No	No	No	No	No	No	No	No	No	No
19	2	74	1	24	No	No	No	No	No	No	No	No	No	No
20	2	41	1	13	No	No	No	No	No	No	No	No	No	No
21	2	25	1	8	No	No	No	No	No	No	No	No	No	No
22	2	9	1	3	No	No	No	No	No	No	No	No	No	No
23	2	9	1	3	No	No	No	No	No	No	No	No	No	No
24	2	9	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	0	4	7	10	10	4

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.2	23.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:19	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	262	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1085	1085
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1234	255	578
2	1197	247	561
3	1172	242	549
4	1098	227	514
5	975	201	457
6	963	199	451
7	950	196	445
8	864	179	405
9	851	176	399
10	839	173	393
11	728	150	341
12	679	140	318
13	666	138	312
14	494	102	231
15	494	102	231
16	346	71	162
17	197	41	92
18	197	41	92
19	111	23	52
20	62	13	29
21	37	8	17
22	12	3	6
23	12	3	6
24	12	3	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1489	1	578	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1444	1	561	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1414	1	549	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1325	1	514	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1176	1	457	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1162	1	451	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1146	1	445	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	1043	1	405	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	1027	1	399	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	1012	1	393	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	878	1	341	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	819	1	318	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	1	804	1	312	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
14	1	596	1	231	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
15	1	596	1	231	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
16	1	417	1	162	No	Yes	Yes	Yes	No	No	No	No	No	No
17	1	238	1	92	No	No	No	No	No	No	No	No	No	No
18	1	238	1	92	No	No	No	No	No	No	No	No	No	No
19	1	134	1	52	No	No	No	No	No	No	No	No	No	No
20	1	75	1	29	No	No	No	No	No	No	No	No	No	No
21	1	45	1	17	No	No	No	No	No	No	No	No	No	No
22	1	15	1	6	No	No	No	No	No	No	No	No	No	No
23	1	15	1	6	No	No	No	No	No	No	No	No	No	No
24	1	15	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					15	16	16	16	13	13	15	15	15	11

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1605:33
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	578
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2067
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	333	1041	328	49
2	323	1010	318	48
3	316	989	312	47
4	296	926	292	44
5	263	822	259	39
6	260	812	256	38
7	256	802	253	38
8	233	729	230	34
9	230	718	226	34
10	226	708	223	33
11	196	614	194	29
12	183	573	180	27
13	180	562	177	26
14	133	416	131	20
15	133	416	131	20
16	93	291	92	14
17	53	167	52	8
18	53	167	52	8
19	30	94	30	4
20	17	52	16	2
21	10	31	10	1
22	3	10	3	0
23	3	10	3	0
24	3	10	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1374	1	328	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1333	1	318	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1305	1	312	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1222	1	292	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1085	1	259	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1072	1	256	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	1058	1	253	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	962	1	230	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	948	1	226	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	934	1	223	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	810	1	194	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	1	756	1	180	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	1	742	1	177	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	549	1	131	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
15	1	549	1	131	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
16	1	384	1	92	No	No	No	Yes	No	No	No	No	No	No
17	1	220	1	52	No	No	No	No	No	No	No	No	No	No
18	1	220	1	52	No	No	No	No	No	No	No	No	No	No
19	1	124	1	30	No	No	No	No	No	No	No	No	No	No
20	1	69	1	16	No	No	No	No	No	No	No	No	No	No
21	1	41	1	10	No	No	No	No	No	No	No	No	No	No
22	1	13	1	3	No	No	No	No	No	No	No	No	No	No
23	1	13	1	3	No	No	No	No	No	No	No	No	No	No
24	1	13	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	12	13	15	15	13	5

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	30	12.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:44	0:10
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	328	49
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1751	1751
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	198	355	301
2	192	344	292
3	188	337	286
4	176	316	268
5	156	280	238
6	154	277	235
7	152	273	232
8	139	248	211
9	137	245	208
10	135	241	205
11	117	209	178
12	109	195	166
13	107	192	163
14	79	142	120
15	79	142	120
16	55	99	84
17	32	57	48
18	32	57	48
19	18	32	27
20	10	18	15
21	6	11	9
22	2	4	3
23	2	4	3
24	2	4	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	553	2	301	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	536	2	292	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	525	2	286	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	492	2	268	No	Yes	Yes	Yes	No	No	No	No	No	No
5	2	436	2	238	No	No	Yes	Yes	No	No	No	No	No	No
6	2	431	2	235	No	No	Yes	Yes	No	No	No	No	No	No
7	2	425	2	232	No	No	Yes	Yes	No	No	No	No	No	No
8	2	387	2	211	No	No	No	Yes	No	No	No	No	No	No
9	2	382	2	208	No	No	No	Yes	No	No	No	No	No	No
10	2	376	2	205	No	No	No	Yes	No	No	No	No	No	No
11	2	326	2	178	No	No	No	No	No	No	No	No	No	No
12	2	304	2	166	No	No	No	No	No	No	No	No	No	No
13	2	299	2	163	No	No	No	No	No	No	No	No	No	No
14	2	221	2	120	No	No	No	No	No	No	No	No	No	No
15	2	221	2	120	No	No	No	No	No	No	No	No	No	No
16	2	154	2	84	No	No	No	No	No	No	No	No	No	No
17	2	89	2	48	No	No	No	No	No	No	No	No	No	No
18	2	89	2	48	No	No	No	No	No	No	No	No	No	No
19	2	50	2	27	No	No	No	No	No	No	No	No	No	No
20	2	28	2	15	No	No	No	No	No	No	No	No	No	No
21	2	17	2	9	No	No	No	No	No	No	No	No	No	No
22	2	6	2	3	No	No	No	No	No	No	No	No	No	No
23	2	6	2	3	No	No	No	No	No	No	No	No	No	No
24	2	6	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.5
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:12
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	301
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	854
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	348	300	262
2	338	291	254
3	331	285	249
4	310	267	233
5	275	237	207
6	271	234	204
7	268	231	202
8	244	210	183
9	240	207	181
10	237	204	178
11	205	177	155
12	191	165	144
13	188	162	141
14	139	120	105
15	139	120	105
16	97	84	73
17	56	48	42
18	56	48	42
19	31	27	24
20	17	15	13
21	10	9	8
22	3	3	3
23	3	3	3
24	3	3	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	648	1	262	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	2	629	1	254	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	616	1	249	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	577	1	233	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	512	1	207	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	505	1	204	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	499	1	202	No	Yes	Yes	Yes	No	No	No	No	No	No
8	2	454	1	183	No	No	Yes	Yes	No	No	No	No	No	No
9	2	447	1	181	No	No	Yes	Yes	No	No	No	No	No	No
10	2	441	1	178	No	No	Yes	Yes	No	No	No	No	No	No
11	2	382	1	155	No	No	No	Yes	No	No	No	No	No	No
12	2	356	1	144	No	No	No	Yes	No	No	No	No	No	No
13	2	350	1	141	No	No	No	Yes	No	No	No	No	No	No
14	2	259	1	105	No	No	No	No	No	No	No	No	No	No
15	2	259	1	105	No	No	No	No	No	No	No	No	No	No
16	2	181	1	73	No	No	No	No	No	No	No	No	No	No
17	2	104	1	42	No	No	No	No	No	No	No	No	No	No
18	2	104	1	42	No	No	No	No	No	No	No	No	No	No
19	2	58	1	24	No	No	No	No	No	No	No	No	No	No
20	2	32	1	13	No	No	No	No	No	No	No	No	No	No
21	2	19	1	8	No	No	No	No	No	No	No	No	No	No
22	2	6	1	3	No	No	No	No	No	No	No	No	No	No
23	2	6	1	3	No	No	No	No	No	No	No	No	No	No
24	2	6	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	0	1	6	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	29.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	262
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	910
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	79	189	38
2	77	183	37
3	75	180	36
4	70	168	34
5	62	149	30
6	62	147	30
7	61	146	29
8	55	132	27
9	55	130	26
10	54	129	26
11	47	112	22
12	43	104	21
13	43	102	21
14	32	76	15
15	32	76	15
16	22	53	11
17	13	30	6
18	13	30	6
19	7	17	3
20	4	9	2
21	2	6	1
22	1	2	0
23	1	2	0
24	1	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	268	1	38	No	No	No	No	No	No	No	No	No	No
2	3	260	1	37	No	No	No	No	No	No	No	No	No	No
3	3	255	1	36	No	No	No	No	No	No	No	No	No	No
4	3	238	1	34	No	No	No	No	No	No	No	No	No	No
5	3	211	1	30	No	No	No	No	No	No	No	No	No	No
6	3	209	1	30	No	No	No	No	No	No	No	No	No	No
7	3	207	1	29	No	No	No	No	No	No	No	No	No	No
8	3	187	1	27	No	No	No	No	No	No	No	No	No	No
9	3	185	1	26	No	No	No	No	No	No	No	No	No	No
10	3	183	1	26	No	No	No	No	No	No	No	No	No	No
11	3	159	1	22	No	No	No	No	No	No	No	No	No	No
12	3	147	1	21	No	No	No	No	No	No	No	No	No	No
13	3	145	1	21	No	No	No	No	No	No	No	No	No	No
14	3	108	1	15	No	No	No	No	No	No	No	No	No	No
15	3	108	1	15	No	No	No	No	No	No	No	No	No	No
16	3	75	1	11	No	No	No	No	No	No	No	No	No	No
17	3	43	1	6	No	No	No	No	No	No	No	No	No	No
18	3	43	1	6	No	No	No	No	No	No	No	No	No	No
19	3	24	1	3	No	No	No	No	No	No	No	No	No	No
20	3	13	1	2	No	No	No	No	No	No	No	No	No	No
21	3	8	1	1	No	No	No	No	No	No	No	No	No	No
22	3	3	1	0	No	No	No	No	No	No	No	No	No	No
23	3	3	1	0	No	No	No	No	No	No	No	No	No	No
24	3	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	306
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	651	360	0
2	631	349	0
3	618	342	0
4	579	320	0
5	514	284	0
6	508	281	0
7	501	277	0
8	456	252	0
9	449	248	0
10	443	245	0
11	384	212	0
12	358	198	0
13	352	194	0
14	260	144	0
15	260	144	0
16	182	101	0
17	104	58	0
18	104	58	0
19	59	32	0
20	33	18	0
21	20	11	0
22	7	4	0
23	7	4	0
24	7	4	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1011	1	0	No	No	No	No	No	No	No	No	No	No
2	1	980	1	0	No	No	No	No	No	No	No	No	No	No
3	1	960	1	0	No	No	No	No	No	No	No	No	No	No
4	1	899	1	0	No	No	No	No	No	No	No	No	No	No
5	1	798	1	0	No	No	No	No	No	No	No	No	No	No
6	1	789	1	0	No	No	No	No	No	No	No	No	No	No
7	1	778	1	0	No	No	No	No	No	No	No	No	No	No
8	1	708	1	0	No	No	No	No	No	No	No	No	No	No
9	1	697	1	0	No	No	No	No	No	No	No	No	No	No
10	1	688	1	0	No	No	No	No	No	No	No	No	No	No
11	1	596	1	0	No	No	No	No	No	No	No	No	No	No
12	1	556	1	0	No	No	No	No	No	No	No	No	No	No
13	1	546	1	0	No	No	No	No	No	No	No	No	No	No
14	1	404	1	0	No	No	No	No	No	No	No	No	No	No
15	1	404	1	0	No	No	No	No	No	No	No	No	No	No
16	1	283	1	0	No	No	No	No	No	No	No	No	No	No
17	1	162	1	0	No	No	No	No	No	No	No	No	No	No
18	1	162	1	0	No	No	No	No	No	No	No	No	No	No
19	1	91	1	0	No	No	No	No	No	No	No	No	No	No
20	1	51	1	0	No	No	No	No	No	No	No	No	No	No
21	1	31	1	0	No	No	No	No	No	No	No	No	No	No
22	1	11	1	0	No	No	No	No	No	No	No	No	No	No
23	1	11	1	0	No	No	No	No	No	No	No	No	No	No
24	1	11	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1011
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	459	298	4
2	445	289	4
3	436	283	4
4	409	265	4
5	363	235	3
6	358	232	3
7	353	229	3
8	321	209	3
9	317	206	3
10	312	203	3
11	271	176	2
12	252	164	2
13	248	161	2
14	184	119	2
15	184	119	2
16	129	83	1
17	73	48	1
18	73	48	1
19	41	27	0
20	23	15	0
21	14	9	0
22	5	3	0
23	5	3	0
24	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	757	1	4	No	No	No	No	No	No	No	No	No	No
2	1	734	1	4	No	No	No	No	No	No	No	No	No	No
3	1	719	1	4	No	No	No	No	No	No	No	No	No	No
4	1	674	1	4	No	No	No	No	No	No	No	No	No	No
5	1	598	1	3	No	No	No	No	No	No	No	No	No	No
6	1	590	1	3	No	No	No	No	No	No	No	No	No	No
7	1	582	1	3	No	No	No	No	No	No	No	No	No	No
8	1	530	1	3	No	No	No	No	No	No	No	No	No	No
9	1	523	1	3	No	No	No	No	No	No	No	No	No	No
10	1	515	1	3	No	No	No	No	No	No	No	No	No	No
11	1	447	1	2	No	No	No	No	No	No	No	No	No	No
12	1	416	1	2	No	No	No	No	No	No	No	No	No	No
13	1	409	1	2	No	No	No	No	No	No	No	No	No	No
14	1	303	1	2	No	No	No	No	No	No	No	No	No	No
15	1	303	1	2	No	No	No	No	No	No	No	No	No	No
16	1	212	1	1	No	No	No	No	No	No	No	No	No	No
17	1	121	1	1	No	No	No	No	No	No	No	No	No	No
18	1	121	1	1	No	No	No	No	No	No	No	No	No	No
19	1	68	1	0	No	No	No	No	No	No	No	No	No	No
20	1	38	1	0	No	No	No	No	No	No	No	No	No	No
21	1	23	1	0	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	4
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	761
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	281	188	159	135
2	273	182	154	131
3	267	179	151	128
4	250	167	142	120
5	222	149	126	107
6	219	147	124	105
7	216	145	122	104
8	197	132	111	95
9	194	130	110	93
10	191	128	108	92
11	166	111	94	80
12	155	103	87	74
13	152	102	86	73
14	112	75	64	54
15	112	75	64	54
16	79	53	45	38
17	45	30	25	22
18	45	30	25	22
19	25	17	14	12
20	14	9	8	7
21	8	6	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1

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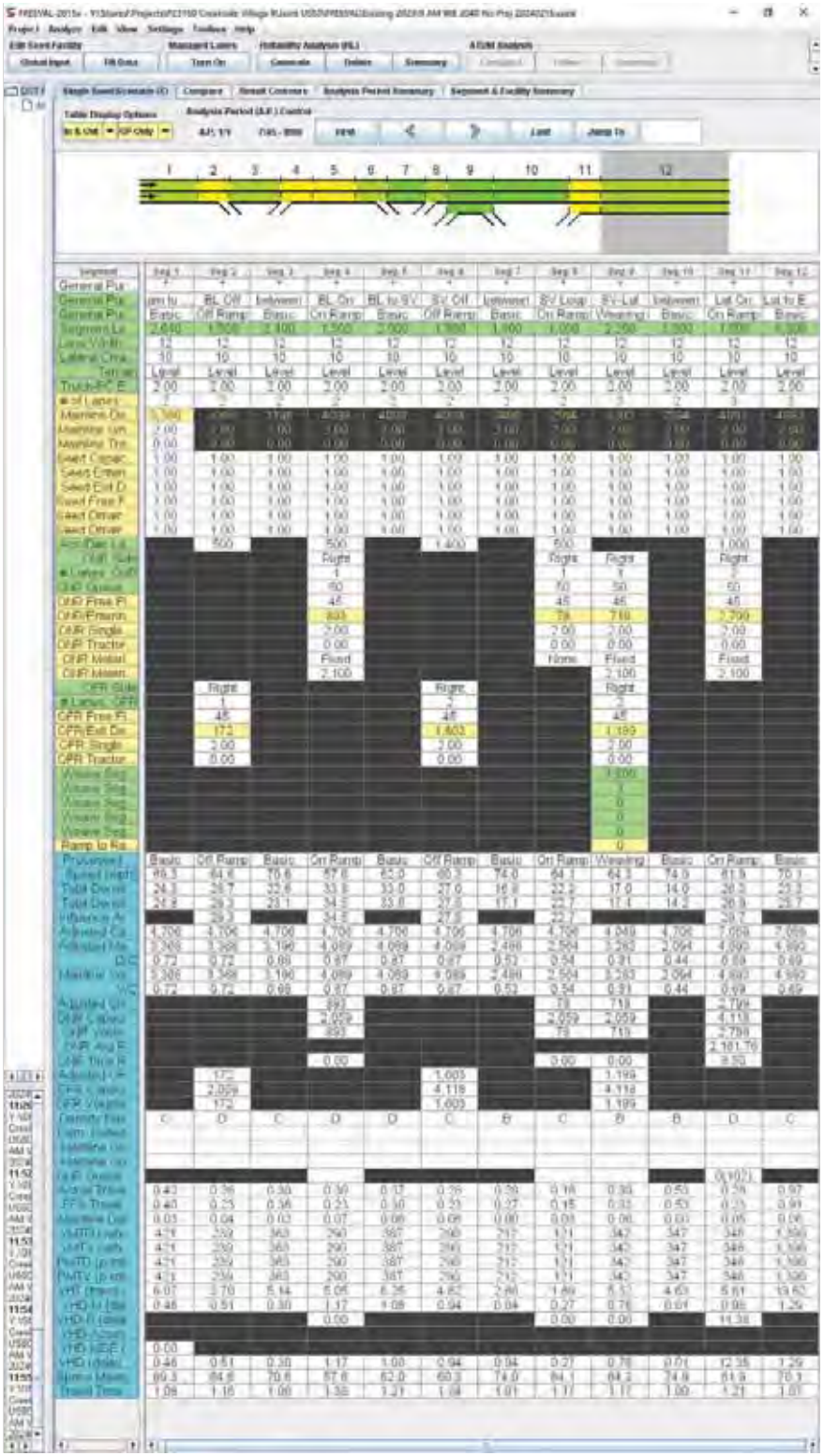
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	469	1	159	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	455	1	154	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	446	1	151	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	417	1	142	No	Yes	Yes	Yes	No	No	No	No	No	No
5	1	371	1	126	No	No	Yes	Yes	No	No	No	No	No	No
6	1	366	1	124	No	No	Yes	Yes	No	No	No	No	No	No
7	1	361	1	122	No	No	Yes	Yes	No	No	No	No	No	No
8	1	329	1	111	No	No	No	Yes	No	No	No	No	No	No
9	1	324	1	110	No	No	No	Yes	No	No	No	No	No	No
10	1	319	1	108	No	No	No	Yes	No	No	No	No	No	No
11	1	277	1	94	No	No	No	No	No	No	No	No	No	No
12	1	258	1	87	No	No	No	No	No	No	No	No	No	No
13	1	254	1	86	No	No	No	No	No	No	No	No	No	No
14	1	187	1	64	No	No	No	No	No	No	No	No	No	No
15	1	187	1	64	No	No	No	No	No	No	No	No	No	No
16	1	132	1	45	No	No	No	No	No	No	No	No	No	No
17	1	75	1	25	No	No	No	No	No	No	No	No	No	No
18	1	75	1	25	No	No	No	No	No	No	No	No	No	No
19	1	42	1	14	No	No	No	No	No	No	No	No	No	No
20	1	23	1	8	No	No	No	No	No	No	No	No	No	No
21	1	14	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	3	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.4	19
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43	0:42
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	159	135
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	763	763
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	



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Scenario 5 2040 PM with CCSP, No Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.989	63.1	E
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	NB Left	0.978	69.6	E
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.074	71.5	E
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.962	61.7	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	1.068	70.5	E
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.798	48.9	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.813	23.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	SB Right	0.999	45.6	D
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Left	1.244	217.0	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.789	19.6	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Left	0.012	27.2	D
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.416	44.1	E
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	229.236	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	NB Thru	1.845	273.2	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.630	35.4	E
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.971	152.3	F
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.222	8.7	A
18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 7th Edition	EB Left	0.574	17.4	B
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.640	34.8	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	NB Left	0.668	44.9	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	EB Left	0.893	33.5	C
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	1.007	57.5	E
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	NB Right	1.068	38.0	D
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Right	0.753	27.5	C
25	New Intersection	Two-way stop	HCM 7th Edition	SB Thru	0.006	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.078	16.3	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	WB Left	0.159	20.0	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	63.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.989

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	131	1772	406	35	1147	74	62	29	110	339	66	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-14	0	0	-4	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	22	0	0	33	0	0	7
Total Hourly Volume [veh/h]	3	131	1758	406	35	1143	52	62	29	77	339	66	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	38	505	117	10	328	15	18	8	22	97	19	4
Total Analysis Volume [veh/h]	3	151	2021	467	40	1314	60	71	33	89	390	76	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	83	83	83	83	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	40	40	2	33	33	8	8	15	15
g / C, Green / Cycle	0.11	0.48	0.48	0.03	0.40	0.40	0.10	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.09	0.57	0.29	0.02	0.37	0.37	0.04	0.07	0.14	0.14
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1841	1781	1657	1781	1793
c, Capacity [veh/h]	193	1711	764	51	750	739	175	163	321	324
d1, Uniform Delay [s]	36.37	21.70	15.96	40.32	23.77	23.82	35.36	36.65	32.44	32.44
k, delay calibration	0.04	0.08	0.10	0.04	0.23	0.23	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.90	82.54	0.72	9.47	10.10	10.58	0.56	2.57	4.92	4.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	1.18	0.61	0.79	0.92	0.92	0.41	0.75	0.75	0.75
d, Delay for Lane Group [s/veh]	39.27	104.24	16.67	49.80	33.88	34.40	35.92	39.23	37.36	37.33
Lane Group LOS	D	F	B	D	C	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.04	33.54	5.74	0.91	13.39	13.34	1.36	2.49	4.92	4.95
50th-Percentile Queue Length [ft/ln]	75.90	838.61	143.56	22.71	334.75	333.46	33.95	62.16	123.00	123.73
95th-Percentile Queue Length [veh/ln]	5.47	48.45	9.67	1.64	19.39	19.33	2.44	4.48	8.56	8.60
95th-Percentile Queue Length [ft/ln]	136.63	1211.25	241.81	40.88	484.78	483.20	61.11	111.89	213.94	214.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.27	39.27	104.2	16.67	49.80	34.12	34.40	35.92	39.23	39.23	37.35	37.33	37.33
Movement LOS	D	D	F	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	84.97				34.58			38.01			37.35		
Approach LOS	F				C			D			D		
d_I, Intersection Delay [s/veh]	63.14												
Intersection LOS	E												
Intersection V/C	0.989												

Emissions

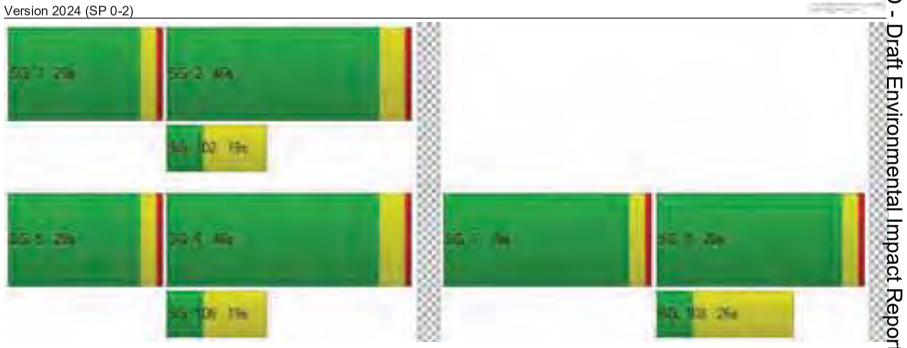
Vehicle Miles Traveled [mph]	36.78	482.68	111.53	5.88	101.62	100.39	3.03	5.21	12.60	12.68
Stops [stops/h]	131.14	2897.82	248.03	39.24	578.36	576.13	58.65	107.39	212.51	213.78
Fuel consumption [US gal/h]	4.12	95.44	8.49	1.09	15.44	15.38	0.97	1.78	3.52	3.54
CO [g/h]	288.12	6671.30	593.56	76.53	1079.22	1075.30	67.66	124.54	246.24	247.69
NOx [g/h]	56.06	1297.99	115.49	14.89	209.98	209.21	13.16	24.23	47.91	48.19
VOC [g/h]	66.78	1546.14	137.56	17.74	250.12	249.21	15.68	28.86	57.07	57.41

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.40	31.40	31.40
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.366	2.157	2.280
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	840	840
d_b, Bicycle Delay [s]	11.12	11.12	14.02	14.02
l_b,int, Bicycle LOS Score for Intersection	3.737	2.744	1.933	2.368
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	69.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.978

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	445	1623	173	4	218	1176	198	390	53	619	69	107	295
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	-14	0	0	0	-4	0	0	0	-1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	52	0	0	0	59	0	0	185	0	0	89
Total Hourly Volume [veh/h]	5	439	1609	121	4	218	1172	139	390	53	433	69	107	206
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	118	433	33	1	59	315	37	105	14	116	19	29	55
Total Analysis Volume [veh/h]	5	472	1730	130	4	234	1260	149	419	57	466	74	115	222
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Overlap	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	5	3	8	0
Auxiliary Signal Groups											5,7			
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	20	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	24	0	0	0	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	24	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	4	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No	No		No	
Maximum Recall		No	No			No	No			No	No		No	
Pedestrian Recall		No	No			No	No			No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	122	122	122	122	122	122	122	122	122	122	122
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	20	48	48	18	46	46	18	18	66	20	20
g / C, Green / Cycle	0.16	0.39	0.39	0.15	0.37	0.37	0.15	0.15	0.55	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.27	0.35	0.35	0.13	0.25	0.09	0.13	0.13	0.17	0.08	0.20
s, saturation flow rate [veh/h]	1799	3560	1804	1781	5094	1589	1781	1801	2813	927	1675
c, Capacity [veh/h]	325	1390	704	265	1910	596	270	273	1534	196	275
d1, Uniform Delay [s]	53.59	34.60	34.84	50.97	31.63	26.27	50.63	50.55	15.10	48.12	50.95
k, delay calibration	0.26	0.13	0.35	0.26	0.13	0.13	0.26	0.25	0.04	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	219.51	2.47	12.14	21.34	0.47	0.26	18.98	17.50	0.04	0.45	129.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.47	0.88	0.90	0.90	0.66	0.25	0.88	0.87	0.30	0.38	1.23
d, Delay for Lane Group [s/veh]	273.09	37.07	46.97	72.31	32.10	26.53	69.61	68.05	15.14	48.57	180.57
Lane Group LOS	F	D	D	E	C	C	E	E	B	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	14.81	16.49	18.92	8.50	9.90	2.93	8.51	8.41	3.50	2.11	18.24
50th-Percentile Queue Length [ft/ln]	370.36	412.22	473.10	212.57	247.46	73.37	212.75	210.34	87.38	52.77	456.10
95th-Percentile Queue Length [veh/ln]	24.48	23.15	26.06	13.28	15.06	5.28	13.29	13.17	6.29	3.80	27.72
95th-Percentile Queue Length [ft/ln]	612.05	578.70	651.46	332.12	376.45	132.07	332.35	329.27	157.29	94.98	692.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	273.0	273.0	39.94	46.97	72.31	72.31	32.10	26.53	68.93	68.05	15.14	48.57	180.57	180.57
Movement LOS	F	F	D	D	E	E	C	C	E	E	B	D	F	F
d_A, Approach Delay [s/veh]	87.92				37.41				42.27			156.80		
Approach LOS	F				D				D			F		
d_I, Intersection Delay [s/veh]	69.58													
Intersection LOS	E													
Intersection V/C	0.978													

Emissions

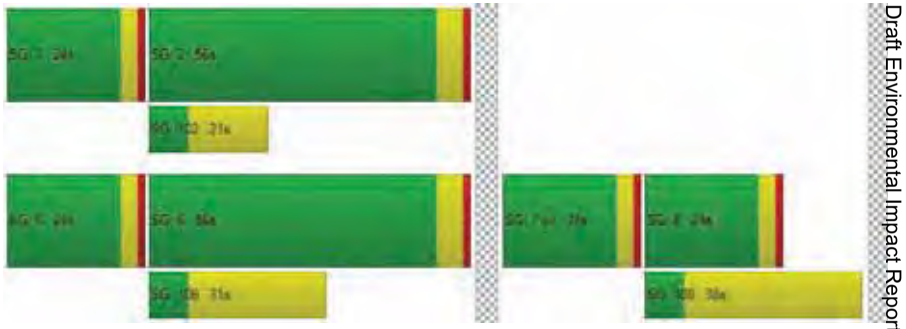
Vehicle Miles Traveled [mph]	89.77	231.31	118.73	56.84	300.93	35.59	14.83	14.85	29.06	3.61	16.43
Stops [stops/h]	875.89	974.87	559.43	251.36	877.84	86.76	251.57	248.73	206.65	62.40	539.32
Fuel consumption [US gal/h]	40.47	29.32	17.06	8.58	29.46	3.10	5.37	5.28	3.77	1.22	16.04
CO [g/h]	2828.91	2049.60	1192.21	599.41	2059.32	216.90	375.28	369.32	263.79	85.60	1121.00
NOx [g/h]	550.40	398.78	231.96	116.62	400.67	42.20	73.02	71.86	51.32	16.65	218.11
VOC [g/h]	655.63	475.01	276.31	138.92	477.27	50.27	86.97	85.59	61.13	19.84	259.80

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	50.39	50.39	50.39
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.585	3.721	2.398
Crosswalk LOS	F	D	D	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	826	826	328	328
d_b, Bicycle Delay [s]	20.98	20.98	42.53	42.53
l_b,int, Bicycle LOS Score for Intersection	2.871	2.369	3.419	2.385
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	71.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.074

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1441	1689	425	0	37	1298	534	306	130	409	257	92	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-27	-20	-4	0	0	-5	0	0	0	-2	-1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	126	0	0	0	160	0	0	122	0	0	75
Total Hourly Volume [veh/h]	1	1414	1669	295	0	37	1293	374	306	130	285	256	92	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	354	417	74	0	9	323	94	77	33	71	64	23	44
Total Analysis Volume [veh/h]	1	1414	1669	295	0	37	1293	374	306	130	285	256	92	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.41	0.36	0.39	0.02	0.26	0.24	0.12	0.12	0.10	0.10	0.11
s, saturation flow rate [veh/h]	3459	3532	1722	1781	5053	1589	1781	1832	1781	1826	1589
c, Capacity [veh/h]	1155	1913	933	81	1278	684	250	257	223	228	199
d1, Uniform Delay [s]	45.28	22.48	23.52	63.30	50.81	28.83	57.16	57.15	57.64	57.60	58.54
k, delay calibration	0.11	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.16	0.15	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	103.02	1.91	4.89	1.51	28.19	3.12	12.10	11.78	7.97	7.49	23.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.22	0.67	0.72	0.46	1.01	0.55	0.86	0.86	0.77	0.77	0.89
d, Delay for Lane Group [s/veh]	148.31	24.40	28.41	64.81	78.99	31.95	69.25	68.93	65.60	65.09	81.66
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	35.86	15.11	17.31	1.26	17.39	9.37	8.07	8.28	6.25	6.34	7.25
50th-Percentile Queue Length [ft/ln]	896.41	377.68	432.78	31.57	434.63	234.18	201.87	207.05	156.16	158.54	181.18
95th-Percentile Queue Length [veh/ln]	51.78	21.48	24.13	2.27	24.40	14.39	12.73	13.00	10.35	10.47	11.66
95th-Percentile Queue Length [ft/ln]	1294.60	537.04	603.37	56.82	610.02	359.66	318.37	325.04	258.63	261.79	291.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	148.3	148.3	25.31	28.41	64.81	64.81	78.99	31.95	69.16	68.93	0.00	65.44	65.09	81.66
Movement LOS	F	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	77.09				68.36				41.78			70.82		
Approach LOS	E				E				D			E		
d_I, Intersection Delay [s/veh]	71.54													
Intersection LOS	E													
Intersection V/C	1.074													

Emissions

Vehicle Miles Traveled [mph]	242.35	220.54	115.83	6.96	243.34	70.39	9.94	10.23	5.48	5.59	5.60
Stops [stops/h]	1898.29	799.79	458.24	33.42	1380.58	247.95	213.74	219.23	165.35	167.87	191.84
Fuel consumption [US gal/h]	63.16	19.89	11.21	1.14	46.29	7.93	4.62	4.73	3.44	3.48	4.21
CO [g/h]	4414.97	1390.33	783.61	79.84	3235.58	554.08	322.86	330.82	240.33	243.60	294.59
NOx [g/h]	858.99	270.51	152.46	15.53	629.53	107.80	62.82	64.36	46.76	47.40	57.32
VOC [g/h]	1023.21	322.22	181.61	18.50	749.88	128.41	74.83	76.67	55.70	56.46	68.28

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.547
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.487	2.564	2.279	2.054
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	61.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.962

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2691	613	1	388	1576	0	0	0	1667	0	0	864
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-51	-10	0	0	-8	0	0	0	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	181	0	0	0	0	0	0	498	0	0	259
Total Hourly Volume [veh/h]	0	2640	422	1	388	1568	0	0	0	1163	0	0	605
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	695	126	0	115	413	0	0	0	346	0	0	180
Total Analysis Volume [veh/h]	0	2779	502	1	462	1651	0	0	0	1385	0	0	720
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.41	0.32	0.26	0.24	0.49	
s, saturation flow rate [veh/h]	6792	1589	1781	6792	2813	
c, Capacity [veh/h]	3745	876	516	3476	927	
d1, Uniform Delay [s]	11.58	10.00	23.17	10.71	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.20	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.37	2.72	8.80	0.47	224.78	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.74	0.57	0.90	0.48	1.49	
d, Delay for Lane Group [s/veh]	12.95	12.72	31.97	11.18	247.58	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	No	No	No	Yes	Yes	
50th-Percentile Queue Length [veh/ln]	6.11	4.25	7.43	3.20	35.69	
50th-Percentile Queue Length [ft/ln]	152.75	106.29	185.84	79.94	892.32	
95th-Percentile Queue Length [veh/ln]	10.16	7.63	11.90	5.76	55.99	
95th-Percentile Queue Length [ft/ln]	254.09	190.83	297.62	143.90	1399.72	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.95	12.72	31.97	31.97	11.18	0.00	0.00	0.00	247.58	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]	12.91			15.73				247.58			0.00		
Approach LOS	B			B				F			A		
d_I, Intersection Delay [s/veh]	61.73												
Intersection LOS	E												
Intersection V/C	0.962												

Emissions

Vehicle Miles Traveled [mph]	402.11	72.64	79.30	282.77	99.11	
Stops [stops/h]	1293.87	225.09	393.53	677.17	3779.23	
Fuel consumption [US gal/h]	37.19	6.59	10.62	21.87	94.73	
CO [g/h]	2599.90	460.49	742.59	1528.52	6621.47	
NOx [g/h]	505.85	89.59	144.48	297.39	1288.30	
VOC [g/h]	602.55	106.72	172.10	354.25	1534.59	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.258
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.988	2.241	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	70.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.068

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	2098	245	3	606	2038	596	508	40	83	1	94	6	695
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-61	-4	0	0	-14	0	0	0	0	0	-1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	72	0	0	0	179	0	0	25	0	0	0	209
Total Hourly Volume [veh/h]	1	23	2037	169	3	606	2024	417	508	40	58	1	93	6	486
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	530	44	1	158	527	109	132	10	15	0	24	2	127
Total Analysis Volume [veh/h]	1	24	2122	176	3	631	2108	434	529	42	60	1	97	6	506
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	49	49	12	58	58	19	19	19	15	15	15
g / C, Green / Cycle	0.02	0.44	0.44	0.11	0.53	0.53	0.17	0.17	0.17	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.01	0.42	0.11	0.18	0.41	0.27	0.15	0.02	0.04	0.06	0.16	0.16
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1595	1589
c, Capacity [veh/h]	69	2241	699	375	2692	840	593	321	273	241	216	215
d1, Uniform Delay [s]	53.55	29.75	19.52	49.33	20.98	16.92	44.83	38.85	39.47	43.75	47.83	47.83
k, delay calibration	0.04	0.04	0.04	0.27	0.04	0.04	0.08	0.08	0.08	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.21	1.10	0.07	316.95	0.19	0.18	3.72	0.14	0.30	0.81	120.55	120.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.95	0.25	1.69	0.78	0.52	0.89	0.13	0.22	0.41	1.19	1.19
d, Delay for Lane Group [s/veh]	54.75	30.86	19.59	366.28	21.18	17.10	48.55	38.98	39.76	44.57	168.38	168.56
Lane Group LOS	D	C	B	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	17.59	2.85	21.66	13.94	6.96	7.35	0.98	1.43	2.51	13.15	13.12
50th-Percentile Queue Length [ft/ln]	8.85	439.71	71.18	541.45	348.48	174.02	183.71	24.52	35.72	62.66	328.84	327.96
95th-Percentile Queue Length [veh/ln]	0.64	24.47	5.13	34.56	20.06	11.29	11.79	1.77	2.57	4.51	20.53	20.48
95th-Percentile Queue Length [ft/ln]	15.93	611.66	128.13	863.90	501.55	282.20	294.85	44.14	64.29	112.80	513.24	512.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.75	54.75	30.86	19.59	366.2	366.2	21.18	17.10	48.55	38.98	39.76	44.57	44.57	168.3	168.4
Movement LOS	D	D	C	B	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	30.26				89.51				47.08			148.56			
Approach LOS	C				F				D			F			
d_I, Intersection Delay [s/veh]	70.46														
Intersection LOS	E														
Intersection V/C	1.068														

Emissions

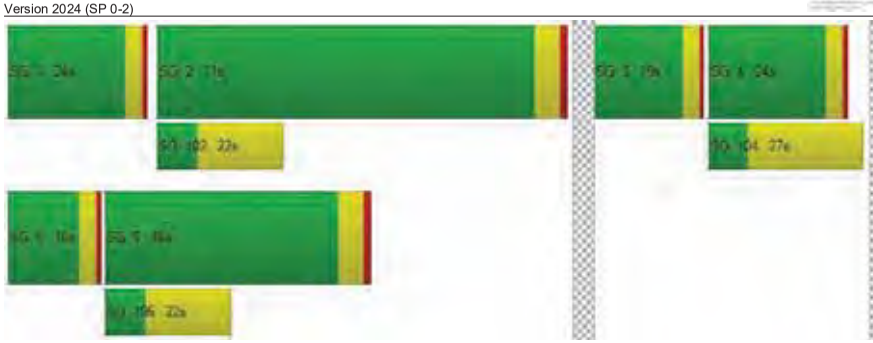
Vehicle Miles Traveled [mph]	5.58	473.71	39.29	91.74	305.02	62.80	67.47	5.36	7.65	34.39	90.00	89.70
Stops [stops/h]	23.07	1719.08	92.77	1411.23	1362.39	226.78	478.81	31.96	46.55	81.66	428.54	427.39
Fuel consumption [US gal/h]	0.64	42.32	2.83	58.82	29.17	5.35	10.65	0.73	1.06	2.76	14.86	14.82
CO [g/h]	44.44	2958.34	197.93	4111.51	2038.88	373.88	744.38	51.05	73.93	192.63	1038.52	1035.85
NOx [g/h]	8.65	575.59	38.51	799.95	396.69	72.74	144.83	9.93	14.38	37.48	202.06	201.54
VOC [g/h]	10.30	685.62	45.87	952.88	472.53	86.65	172.52	11.83	17.13	44.64	240.69	240.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.80	0.00	44.80	44.80
l_p,int, Pedestrian LOS Score for Intersectio	3.469	0.000	2.709	2.946
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	1186	371	281
d_b, Bicycle Delay [s]	22.17	9.16	36.65	40.84
l_b,int, Bicycle LOS Score for Intersection	2.876	3.058	2.101	2.751
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	48.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	2	0	0	1	2	0	0	1	1	0	2
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	400.0	100.0	100.0	400.0	360.0	100.0	100.0	300.0	400.00	100.00	300.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	155	1777	629	2	259	1490	465	2	395	566	152	600	264	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-66	-16	0	0	-15	0	0	0	0	0	-4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	184	0	0	0	140	0	0	0	46	0	0	58
Total Hourly Volume [veh/h]	6	155	1711	429	2	259	1475	325	2	395	566	106	596	264	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	42	460	115	1	70	397	87	1	106	152	28	160	71	37
Total Analysis Volume [veh/h]	6	167	1840	461	2	278	1586	349	2	425	609	114	641	284	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Overl	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups				2,3											
Maximum Green [s]	0	20	50	36	0	20	50	0	0	21	15	0	36	25	0
Amber [s]	0.0	4.0	4.7	4.5	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	1.5	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	5	0	0	0	5	0	0	0	4	0	0	5	0
Pedestrian Clearance [s]	0	0	28	0	0	0	24	0	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	4.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	58	42	0	25	58	0	0	27	35	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	9	9	0	9	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	1.5	3.0	1.5	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	No	No		No	No			No	No		No	No	
Maximum Recall		No	No	No		No	No			No	No		No	No	
Pedestrian Recall		No	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.70	6.00	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	0.00	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	54	99	15	59	59	22	29	29	39	47	47
g / C, Green / Cycle	0.06	0.34	0.62	0.09	0.37	0.37	0.14	0.18	0.18	0.24	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.29	0.08	0.31	0.22	0.12	0.17	0.07	0.19	0.08	0.09
s, saturation flow rate [veh/h]	3459	6792	1589	3459	5094	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	218	2310	986	323	1888	589	468	647	289	847	1036	463
d1, Uniform Delay [s]	73.94	47.79	16.23	71.54	46.03	40.61	68.23	64.63	57.71	36.97	25.02	25.27
k, delay calibration	0.04	0.11	0.31	0.04	0.11	0.13	0.04	0.04	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	0.65	1.00	2.76	1.07	1.18	2.96	3.20	0.33	6.27	0.65	1.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.80	0.47	0.87	0.84	0.59	0.91	0.94	0.39	0.76	0.27	0.32
d, Delay for Lane Group [s/veh]	76.44	48.44	17.22	74.30	47.09	41.80	71.19	67.83	58.04	43.24	25.67	27.05
Lane Group LOS	E	D	B	E	D	D	E	E	E	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.61	16.78	9.35	5.72	18.91	11.10	8.85	12.59	4.14	9.36	2.61	2.84
50th-Percentile Queue Length [ft/ln]	90.14	419.52	233.75	142.98	472.75	277.51	221.25	314.70	103.46	234.11	65.28	70.91
95th-Percentile Queue Length [veh/ln]	6.49	23.50	14.36	9.64	26.04	16.56	13.73	18.41	7.45	14.38	4.70	5.11
95th-Percentile Queue Length [ft/ln]	162.25	587.47	359.12	241.03	651.04	414.11	343.23	460.16	186.23	359.58	117.50	127.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.44	76.44	48.44	17.22	74.30	74.30	47.09	41.80	71.19	71.19	67.83	58.04	43.24	25.67	27.05
Movement LOS	E	E	D	B	E	E	D	D	E	E	E	E	D	C	C
d_A, Approach Delay [s/veh]	44.58				49.70				68.11				36.37		
Approach LOS	D				D				E				D		
d_I, Intersection Delay [s/veh]	48.86														
Intersection LOS	D														
Intersection V/C	0.798														

Emissions

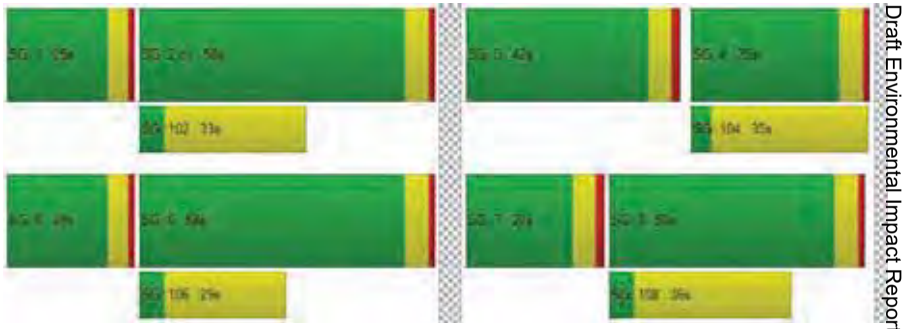
Vehicle Miles Traveled [mph]	68.89	732.65	183.56	62.51	354.05	77.91	106.57	151.99	28.45	67.22	29.78	15.31
Stops [stops/h]	162.25	1510.26	210.38	257.36	1276.43	249.76	398.26	566.46	93.11	421.40	117.50	63.82
Fuel consumption [US gal/h]	6.42	56.64	10.33	9.58	43.20	8.74	12.77	17.79	3.03	10.74	3.36	1.79
CO [g/h]	448.95	3959.23	722.40	669.32	3019.98	611.21	892.80	1243.60	211.93	750.39	234.79	124.88
NOx [g/h]	87.35	770.32	140.55	130.23	587.58	118.92	173.71	241.96	41.23	146.00	45.68	24.30
VOC [g/h]	104.05	917.59	167.42	155.12	699.91	141.65	206.91	288.22	49.12	173.91	54.41	28.94

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	71.25	71.25	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.749	3.899	2.985	3.075
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	654	654	366	554
d_b, Bicycle Delay [s]	36.25	36.25	53.38	41.83
l_b,int, Bicycle LOS Score for Intersection	2.654	2.702	2.196	2.491
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	300.0	200.0	100.0	100.0	100.0	320.00	100.00	320.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	18	1787	36	0	34	1740	490	751	10	41	2	8	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-82	0	0	0	-19	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	0	0	147	0	0	12	0	0	6
Total Hourly Volume [veh/h]	1	18	1705	25	0	34	1721	343	751	10	29	2	8	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	479	7	0	10	483	96	211	3	8	1	2	4
Total Analysis Volume [veh/h]	1	20	1916	29	0	39	1934	385	844	11	33	2	9	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	16	34	0	0	15	34	0	0	36	0	0	16	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	11	0	0	0	18	0	0	24	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	20	40	0	0	20	40	0	0	40	0	0	20	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	C
C, Cycle Length [s]	78	78	78	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	34	34	2	34	34	22	22	22	2
g / C, Green / Cycle	0.02	0.43	0.43	0.03	0.43	0.43	0.28	0.28	0.28	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.36	0.36	0.02	0.38	0.24	0.24	0.24	0.02	0.02
s, saturation flow rate [veh/h]	1781	3560	1856	1781	5094	1589	1781	1783	1589	1691
c, Capacity [veh/h]	42	1529	797	49	2206	688	508	509	453	47
d1, Uniform Delay [s]	37.77	19.90	19.91	37.86	20.29	16.61	26.32	26.32	20.43	37.58
k, delay calibration	0.04	0.15	0.32	0.04	0.15	0.15	0.11	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.30	1.81	6.80	10.15	1.73	1.02	3.85	3.83	0.07	3.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.84	0.84	0.79	0.88	0.56	0.84	0.84	0.07	0.55
d, Delay for Lane Group [s/veh]	41.07	21.70	26.71	48.01	22.02	17.62	30.17	30.14	20.50	41.24
Lane Group LOS	D	C	C	D	C	B	C	C	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.43	9.86	11.40	0.82	8.96	4.40	7.66	7.66	0.43	0.53
50th-Percentile Queue Length [ft/ln]	10.71	246.49	284.95	20.52	224.10	110.10	191.51	191.48	10.87	13.24
95th-Percentile Queue Length [veh/ln]	0.77	15.01	16.93	1.48	13.87	7.85	12.20	12.20	0.78	0.95
95th-Percentile Queue Length [ft/ln]	19.28	375.23	423.37	36.94	346.86	196.14	304.99	304.94	19.57	23.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.07	41.07	23.37	26.71	48.01	48.01	22.02	17.62	30.16	30.14	20.50	41.24	41.24	41.24
Movement LOS	D	D	C	C	D	D	C	B	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	23.61				21.73				29.80			41.24		
Approach LOS	C				C				C			D		
d_I, Intersection Delay [s/veh]	23.90													
Intersection LOS	C													
Intersection V/C	0.813													

Emissions

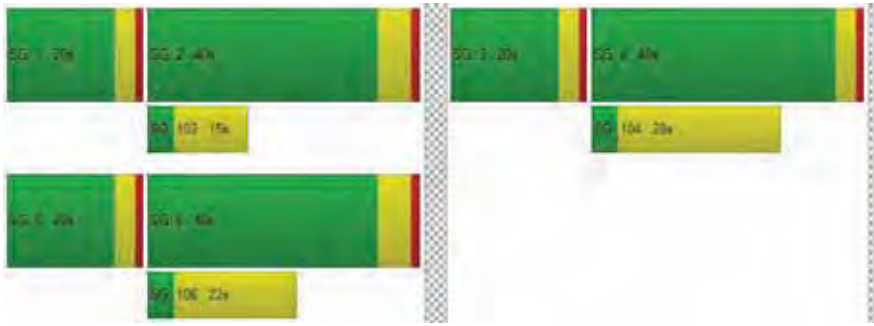
Vehicle Miles Traveled [mph]	7.43	452.19	235.90	15.53	770.08	153.30	102.97	103.01	7.95	0.49
Stops [stops/h]	19.72	907.55	524.56	37.78	1237.67	202.68	352.56	352.49	20.02	24.38
Fuel consumption [US gal/h]	0.59	29.27	16.23	1.60	57.41	10.27	8.81	8.81	0.58	0.37
CO [g/h]	41.26	2046.30	1134.75	112.00	4013.27	718.12	615.89	615.88	40.23	26.09
NOx [g/h]	8.03	398.14	220.78	21.79	780.84	139.72	119.83	119.83	7.83	5.08
VOC [g/h]	9.56	474.25	262.99	25.96	930.12	166.43	142.74	142.74	9.32	6.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.52	0.00	31.52	31.52
l_p,int, Pedestrian LOS Score for Intersectio	3.157	0.000	2.500	1.779
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	869	869	920	409
d_b, Bicycle Delay [s]	12.50	12.50	11.40	24.75
l_b,int, Bicycle LOS Score for Intersection	2.646	2.916	3.045	1.612
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	45.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.999

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	131	1454	1541	243	388	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-82	-19	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	73	0	66
Total Hourly Volume [veh/h]	0	130	1372	1522	170	388	153
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	385	428	48	109	43
Total Analysis Volume [veh/h]	0	146	1542	1710	191	436	172
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	52	40	40	20	20
g / C, Green / Cycle	0.10	0.64	0.49	0.49	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.43	0.51	0.53	0.24	0.11
s, saturation flow rate [veh/h]	1781	3560	1870	1806	1781	1589
c, Capacity [veh/h]	182	2264	908	877	432	386
d1, Uniform Delay [s]	36.19	9.63	21.21	21.21	31.21	26.50
k, delay calibration	0.04	0.15	0.47	0.49	0.44	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.13	0.52	42.03	55.64	42.59	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.68	1.05	1.08	1.01	0.45
d, Delay for Lane Group [s/veh]	39.31	10.15	63.24	76.85	73.80	27.31
Lane Group LOS	D	B	F	F	F	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.97	7.57	26.27	28.69	13.36	2.87
50th-Percentile Queue Length [ft/ln]	74.21	189.37	656.84	717.18	333.92	71.82
95th-Percentile Queue Length [veh/ln]	5.34	12.09	35.94	39.84	19.45	5.17
95th-Percentile Queue Length [ft/ln]	133.57	302.21	898.54	996.08	486.23	129.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.31	39.31	10.15	69.29	76.85	73.80	27.31
Movement LOS	D	D	B	E	E	F	C
d_A, Approach Delay [s/veh]	12.67			70.05		60.65	
Approach LOS	B			E		E	
d_I, Intersection Delay [s/veh]	45.61						
Intersection LOS	D						
Intersection V/C	0.999						

Emissions

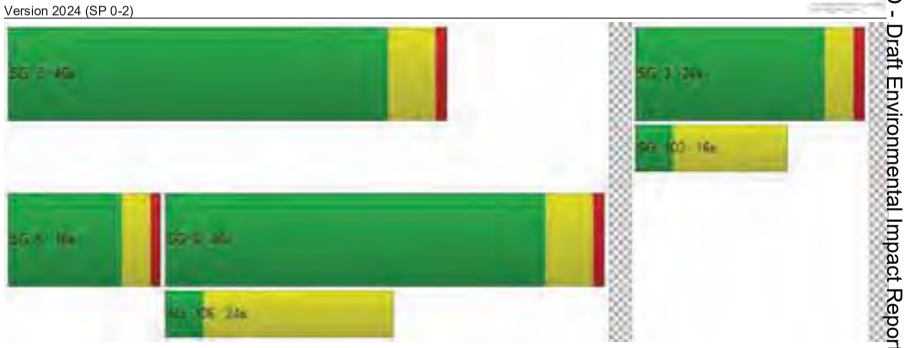
Vehicle Miles Traveled [mph]	101.55	1072.54	336.26	336.26	147.11	58.04
Stops [stops/h]	129.71	661.98	1148.09	1253.56	583.65	125.53
Fuel consumption [US gal/h]	6.07	51.00	32.42	35.63	15.83	4.04
CO [g/h]	423.95	3564.63	2265.98	2490.66	1106.38	282.30
NOx [g/h]	82.49	693.55	440.88	484.59	215.26	54.92
VOC [g/h]	98.25	826.14	525.16	577.23	256.41	65.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.58	0.00	33.58
l_p,int, Pedestrian LOS Score for Intersectio	3.007	0.000	2.385
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	971	971	486
d_b, Bicycle Delay [s]	10.90	10.90	23.62
l_b,int, Bicycle LOS Score for Intersection	2.952	3.188	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	217.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.244

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	114	590	31	419	446	895	817	306	63	76	201	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-11	-34	-5	0	-8	-12	-49	-8	-2	-1	-2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	265	0	0	18	0	0	53
Total Hourly Volume [veh/h]	103	556	18	419	438	618	768	298	43	75	199	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	153	5	115	120	170	211	82	12	21	55	34
Total Analysis Volume [veh/h]	113	611	20	460	481	679	844	327	47	82	219	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	7	20	20	12	25	25	15	15	15	15
g / C, Green / Cycle	0.08	0.24	0.24	0.15	0.31	0.31	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.17	0.26	0.26	0.43	0.34	0.34	0.16	0.09
s, saturation flow rate [veh/h]	1781	1870	1849	1781	1870	1589	1781	1810	1845	1589
c, Capacity [veh/h]	146	456	451	266	581	494	332	338	345	297
d1, Uniform Delay [s]	36.19	27.71	27.71	34.22	25.72	27.72	32.72	32.72	31.77	29.09
k, delay calibration	0.04	0.04	0.04	0.50	0.25	0.50	0.50	0.50	0.10	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.27	0.72	0.73	344.42	6.90	180.95	386.73	373.33	6.72	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.70	0.70	1.73	0.83	1.37	1.83	1.80	0.87	0.46
d, Delay for Lane Group [s/veh]	39.46	28.43	28.44	378.64	32.62	208.67	419.45	406.05	38.48	29.51
Lane Group LOS	D	C	C	F	C	F	F	F	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.26	5.43	5.38	30.09	8.45	32.96	41.90	41.34	6.13	2.32
50th-Percentile Queue Length [ft/ln]	56.41	135.87	134.49	752.16	211.32	823.88	1047.56	1033.47	153.32	58.06
95th-Percentile Queue Length [veh/ln]	4.06	9.26	9.18	47.42	13.22	50.36	65.72	64.72	10.19	4.18
95th-Percentile Queue Length [ft/ln]	101.53	231.46	229.59	1185.60	330.52	1258.90	1643.06	1618.09	254.86	104.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.46	28.44	28.44	378.64	32.62	208.67	415.72	406.05	406.05	38.48	38.48	29.51
Movement LOS	D	C	C	F	C	F	F	F	F	D	D	C
d_A, Approach Delay [s/veh]	30.11			204.66			412.75			35.67		
Approach LOS	C			F			F			D		
d_I, Intersection Delay [s/veh]	216.99											
Intersection LOS	F											
Intersection V/C	1.244											

Emissions

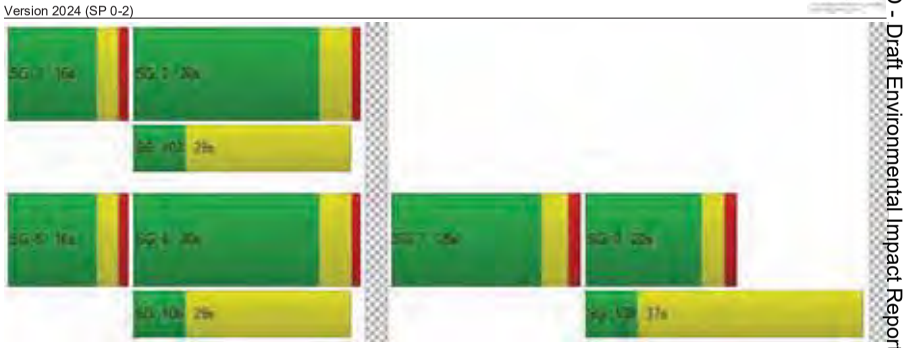
Vehicle Miles Traveled [mph]	65.26	183.17	181.25	319.95	334.56	472.28	45.81	45.81	33.29	15.15
Stops [stops/h]	101.18	243.73	241.25	1349.24	379.07	1477.90	1879.13	1853.86	275.03	104.14
Fuel consumption [US gal/h]	4.15	10.72	10.61	71.20	21.43	72.08	64.24	62.44	5.25	2.02
CO [g/h]	290.28	749.47	741.68	4977.01	1497.62	5038.24	4490.36	4364.55	366.77	141.32
NOx [g/h]	56.48	145.82	144.30	968.35	291.38	980.26	873.66	849.18	71.36	27.50
VOC [g/h]	67.28	173.70	171.89	1153.47	347.09	1167.66	1040.68	1011.53	85.00	32.75

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.89	0.00	29.89	29.89
l_p,int, Pedestrian LOS Score for Intersectio	2.574	0.000	2.776	2.434
Crosswalk LOS	B	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	615	615	386	498
d_b, Bicycle Delay [s]	19.24	19.24	26.13	22.63
l_b,int, Bicycle LOS Score for Intersection	2.180	3.115	3.599	2.370
Bicycle LOS	B	C	D	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.789

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	171	325	456	129	410	157
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-1	0	0	-12	-50	-6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	35	0	45
Total Hourly Volume [veh/h]	170	325	456	82	360	106
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	90	127	26	114	29
Total Analysis Volume [veh/h]	189	361	507	104	456	118
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	32	20	20	18	18
g / C, Green / Cycle	0.13	0.53	0.33	0.33	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.11	0.19	0.27	0.07	0.26	0.07
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	239	996	623	529	541	482
d1, Uniform Delay [s]	25.60	8.26	18.64	14.54	19.91	16.00
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.22	0.32	3.74	0.26	3.69	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.36	0.81	0.20	0.84	0.24
d, Delay for Lane Group [s/veh]	27.82	8.58	22.38	14.79	23.60	16.26
Lane Group LOS	C	A	C	B	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.40	1.83	5.70	0.85	6.01	1.17
50th-Percentile Queue Length [ft/ln]	59.88	45.67	142.56	21.16	150.29	29.25
95th-Percentile Queue Length [veh/ln]	4.31	3.29	9.62	1.52	10.03	2.11
95th-Percentile Queue Length [ft/ln]	107.78	82.21	240.47	38.09	250.82	52.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.82	8.58	22.38	14.79	23.60	16.26
Movement LOS	C	A	C	B	C	B
d_A, Approach Delay [s/veh]	15.19		21.09		22.09	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	19.55					
Intersection LOS	B					
Intersection V/C	0.789					

Emissions

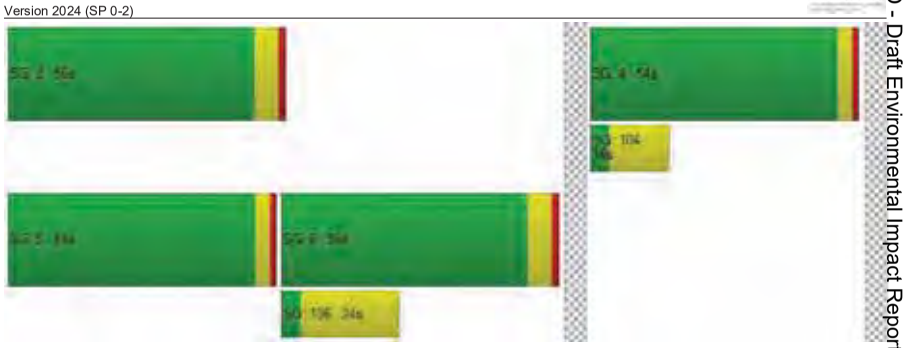
Vehicle Miles Traveled [mph]	23.32	44.54	292.80	60.06	107.10	27.71
Stops [stops/h]	141.56	107.98	337.03	50.03	355.30	69.14
Fuel consumption [US gal/h]	4.48	4.13	18.36	3.25	8.56	1.91
CO [g/h]	313.12	288.39	1283.63	227.29	598.49	133.75
NOx [g/h]	60.92	56.11	249.75	44.22	116.44	26.02
VOC [g/h]	72.57	66.84	297.49	52.68	138.70	31.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.98	0.00	22.98
l_p,int, Pedestrian LOS Score for Intersectio	2.650	0.000	2.295
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1642	1642	1642
d_b, Bicycle Delay [s]	0.98	0.98	0.98
l_b,int, Bicycle LOS Score for Intersection	2.467	2.626	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	27.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	438	0	25	588	0	0	0	0	2	0	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	0	0	-6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	437	0	25	582	0	0	0	0	2	0	58
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	119	0	6	158	0	0	0	0	1	0	15
Total Analysis Volume [veh/h]	0	475	0	25	633	0	0	0	0	2	0	58
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.10
d_M, Delay for Movement [s/veh]	8.79	0.00	0.00	8.34	0.00	0.00	30.04	24.04	12.50	27.22	24.69	11.76
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.33	0.33	0.33
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.06	1.06	1.06	0.00	0.00	0.00	8.21	8.21	8.21
d_A, Approach Delay [s/veh]	0.00			0.32			22.20			12.27		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.79											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	44.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.416

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	334	21	144	446	0	0	0	0	59	0	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	0	0	-6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	333	21	144	440	0	0	0	0	59	0	104
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	90	6	39	118	0	0	0	0	16	0	28
Total Analysis Volume [veh/h]	0	358	23	155	473	0	0	0	0	63	0	112
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.42	0.00	0.17
d_M, Delay for Movement [s/veh]	8.31	0.00	0.00	8.52	0.00	0.00	36.10	26.32	11.09	44.10	41.34	25.67
Movement LOS	A	A	A	A	A	A	E	D	B	E	E	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	3.42	3.42	3.42
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	11.33	0.00	0.00	0.00	0.00	0.00	85.54	85.54	85.54
d_A, Approach Delay [s/veh]	0.00			2.10			24.51			32.31		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	5.89											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	229.236

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	127	1017	168	55	1	1019	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-18	-58	-2	-4	0	-13	-11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	109	959	166	51	1	1006	179
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	31	272	47	14	0	286	51
Total Analysis Volume [veh/h]	0	124	1090	189	58	1	1143	203
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	229.24	1.33	0.00	0.00	0.00	0.87	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	10000.00	18.89	0.00
Movement LOS	F	F	F	A	A	F	C	A
95th-Percentile Queue Length [veh/ln]	154.05	154.05	154.05	0.00	0.00	10.74	10.74	10.74
95th-Percentile Queue Length [ft/ln]	3851.18	3851.18	3851.18	0.00	0.00	268.41	268.41	268.41
d_A, Approach Delay [s/veh]	10000.00			0.00		23.45		
Approach LOS	F			A		C		
d_I, Intersection Delay [s/veh]	4334.61							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	273.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.845

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	60	657	105	0	40	585	40	56	49	40	225	17	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	-18	-79	-56	0	0	-13	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	657	105	0	40	585	22	0	0	40	225	4	79
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	198	32	0	13	176	7	0	0	12	68	1	25
Total Analysis Volume [veh/h]	72	792	127	0	51	705	27	0	0	48	271	5	100
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	991	783	430	494
Degree of Utilization, x	1.84	1.47	0.11	0.76

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	62.66	38.84	0.37	6.61
95th-Percentile Queue Length [ft]	1566.60	970.96	9.37	165.27
Approach Delay [s/veh]	404.06	240.47	12.44	29.97
Approach LOS	F	F	B	D
Intersection Delay [s/veh]	273.24			
Intersection LOS	F			

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Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	35.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	159	80	0	143	294	2	132	196
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	0	-1	0	0	-27	-2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	74	0	142	294	2	105	194
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	22	0	42	88	1	31	58
Total Analysis Volume [veh/h]	189	88	0	169	350	2	125	231
Pedestrian Volume [ped/h]	0		0			0		

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Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.63	0.13	0.00	0.00	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	35.37	10.89	9.41	0.00	0.00	13.29	8.93	0.00
Movement LOS	E	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.97	0.43	0.00	0.00	0.00	0.42	0.42	0.00
95th-Percentile Queue Length [ft/ln]	99.21	10.75	0.00	0.00	0.00	10.55	10.55	0.00
d_A, Approach Delay [s/veh]	27.59		0.00			3.19		
Approach LOS	D		A			A		
d_I, Intersection Delay [s/veh]	7.61							
Intersection LOS	E							

Scenario 5: 5 2040 PM with CCSP, No Project
Vistro File: C:\...\PM 918 DU 20240212.vistro
Report File: C:\...\14 2040 PM no Proj.pdf
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Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	152.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.971

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	205	208	87	201	294	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-6	0	0	-27
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	205	208	81	201	294	160
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	57	22	55	80	43
Total Analysis Volume [veh/h]	223	226	88	218	320	174
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.97	0.23	0.00	0.00	0.26	0.00
d_M, Delay for Movement [s/veh]	152.30	140.33	0.00	0.00	8.85	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	18.58	18.58	0.00	0.00	1.02	0.00
95th-Percentile Queue Length [ft/ln]	464.46	464.46	0.00	0.00	25.45	0.00
d_A, Approach Delay [s/veh]	146.27		0.00		5.73	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	54.85					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.222

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	310	12	28	203	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-27	0	0	-6	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	283	12	28	197	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	3	8	54	0	1
Total Analysis Volume [veh/h]	308	13	30	214	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	723	730	680	751	751	706
Degree of Utilization, x	0.22	0.22	0.04	0.14	0.14	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.85	0.83	0.14	0.50	0.50	0.01
95th-Percentile Queue Length [ft]	21.16	20.86	3.46	12.39	12.39	0.32
Approach Delay [s/veh]	9.05		8.28			8.13
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.72					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	253	10	50	7	1	21	5	697	138	90	634	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-27	0	0	0	0	0	0	0	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	6	0	0	40	0	0	3
Total Hourly Volume [veh/h]	226	10	35	7	1	15	5	697	92	90	634	8
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	3	9	2	0	4	1	180	24	24	163	2
Total Analysis Volume [veh/h]	233	10	38	7	1	15	5	719	95	97	654	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	25	0	15	35	0	15	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	21	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	0	0	30	0	20	40	0	20	40	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	0	0	9	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	53	53	53	53	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	9	3	1	14	14	7	21	21
g / C, Green / Cycle	0.17	0.17	0.17	0.05	0.01	0.27	0.27	0.13	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.01	0.02	0.01	0.00	0.20	0.06	0.05	0.18	0.01
s, saturation flow rate [veh/h]	1781	1870	1589	1654	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	309	325	276	82	22	966	431	231	1384	618
d1, Uniform Delay [s]	20.89	18.25	18.60	24.36	26.01	17.69	15.02	21.30	12.17	9.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.72	0.04	0.22	1.86	5.23	1.16	0.25	1.22	0.25	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.03	0.14	0.28	0.23	0.74	0.22	0.42	0.47	0.01
d, Delay for Lane Group [s/veh]	24.61	18.29	18.82	26.22	31.24	18.85	15.27	22.51	12.42	9.99
Lane Group LOS	C	B	B	C	C	B	B	C	B	A
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.81	0.10	0.38	0.30	0.09	3.70	0.82	1.10	2.50	0.05
50th-Percentile Queue Length [ft/ln]	70.28	2.42	9.48	7.54	2.25	92.38	20.61	27.44	62.57	1.27
95th-Percentile Queue Length [veh/ln]	5.06	0.17	0.68	0.54	0.16	6.65	1.48	1.98	4.51	0.09
95th-Percentile Queue Length [ft/ln]	126.51	4.36	17.06	13.57	4.06	166.28	37.10	49.39	112.63	2.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.61	18.29	18.82	26.22	26.22	26.22	31.24	18.85	15.27	22.51	12.42	9.99
Movement LOS	C	B	B	C	C	C	C	B	B	C	B	A
d_A, Approach Delay [s/veh]	23.60			26.22			18.51			13.69		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	17.42											
Intersection LOS	B											
Intersection V/C	0.574											

Emissions

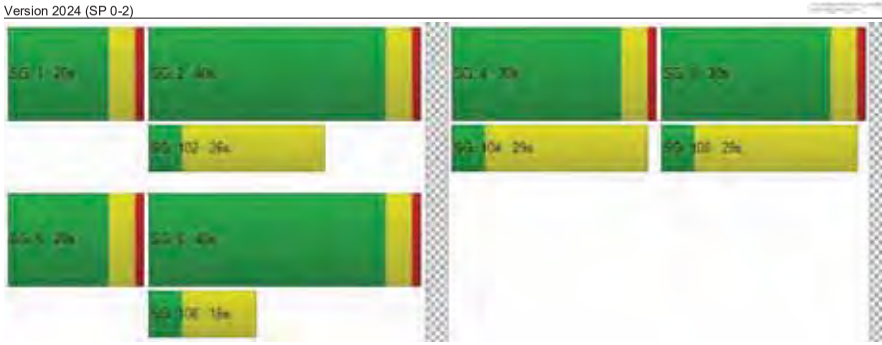
Vehicle Miles Traveled [mph]	69.17	2.97	11.28	0.51	0.72	102.95	13.60	81.63	550.36	6.73
Stops [stops/h]	190.84	6.58	25.73	20.47	6.12	501.67	55.96	74.50	339.81	3.44
Fuel consumption [US gal/h]	5.07	0.20	0.75	0.26	0.10	9.77	1.16	4.22	26.19	0.31
CO [g/h]	354.30	13.68	52.57	17.96	6.65	682.82	81.39	294.72	1830.49	21.84
NOx [g/h]	68.93	2.66	10.23	3.49	1.29	132.85	15.84	57.34	356.15	4.25
VOC [g/h]	82.11	3.17	12.18	4.16	1.54	158.25	18.86	68.30	424.23	5.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.28	18.28	18.28	18.28
l_p,int, Pedestrian LOS Score for Intersectio	2.398	1.724	2.771	2.681
Crosswalk LOS	B	A	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	943	943	1320	1320
d_b, Bicycle Delay [s]	7.41	7.41	3.07	3.07
l_b,int, Bicycle LOS Score for Intersection	2.048	1.607	2.268	2.188
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

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Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	305	5	361	5	5	5	5	754	92	14	260	607	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	108	0	0	0	0	0	28	0	0	0	0
Total Hourly Volume [veh/h]	305	5	253	5	5	5	5	754	64	14	260	607	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	1	67	1	1	1	1	201	17	4	69	161	1
Total Analysis Volume [veh/h]	324	5	269	5	5	5	5	802	68	14	277	646	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	24	1	1	1	52	52	21	73	73
g / C, Green / Cycle	0.20	0.20	0.01	0.01	0.01	0.44	0.44	0.18	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.18	0.17	0.00	0.01	0.00	0.23	0.04	0.16	0.17	0.17
s, saturation flow rate [veh/h]	1781	1594	1781	1718	1781	3560	1589	1781	1870	1865
c, Capacity [veh/h]	349	313	12	13	12	1548	691	318	1134	1131
d1, Uniform Delay [s]	47.44	46.78	59.33	59.43	59.34	24.73	20.02	48.42	11.26	11.26
k, delay calibration	0.30	0.09	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.29	6.61	19.50	27.26	19.95	1.24	0.28	4.44	0.64	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.88	0.40	0.76	0.40	0.52	0.10	0.92	0.29	0.29
d, Delay for Lane Group [s/veh]	70.72	53.39	78.83	86.69	79.29	25.97	20.30	52.87	11.90	11.91
Lane Group LOS	E	D	E	F	E	C	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.73	8.48	0.22	0.40	0.22	8.52	1.19	8.92	4.24	4.23
50th-Percentile Queue Length [ft/ln]	293.26	212.08	5.48	10.09	5.50	212.88	29.66	222.95	105.90	105.63
95th-Percentile Queue Length [veh/ln]	17.35	13.26	0.39	0.73	0.40	13.30	2.14	13.82	7.61	7.60
95th-Percentile Queue Length [ft/ln]	433.68	331.49	9.86	18.17	9.90	332.52	53.40	345.39	190.28	189.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.72	53.39	53.39	78.83	86.69	86.69	79.29	25.97	20.30	52.87	52.87	11.90	11.91
Movement LOS	E	D	D	E	F	F	E	C	C	D	D	B	B
d_A, Approach Delay [s/veh]	62.78			84.07			25.84			24.56			
Approach LOS	E			F			C			C			
d_I, Intersection Delay [s/veh]	34.79												
Intersection LOS	C												
Intersection V/C	0.640												

Emissions

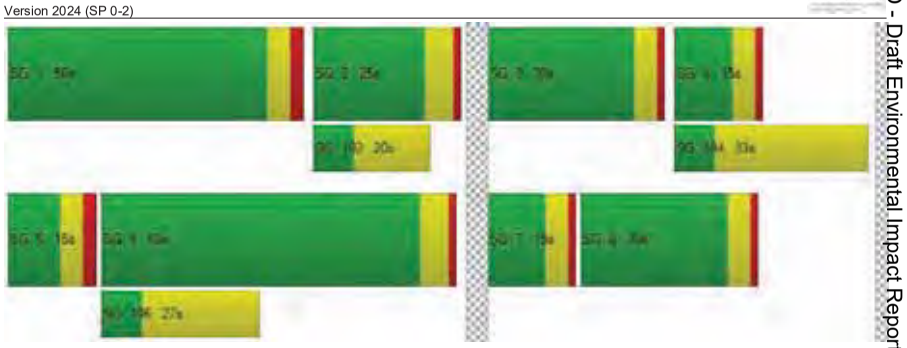
Vehicle Miles Traveled [mph]	124.84	105.58	0.23	0.46	4.21	674.90	57.22	72.63	81.35	81.13
Stops [stops/h]	351.91	254.49	6.57	12.11	6.60	510.92	35.60	267.54	127.08	126.75
Fuel consumption [US gal/h]	11.75	8.73	0.13	0.26	0.29	34.84	2.83	7.60	4.84	4.83
CO [g/h]	821.04	610.15	8.80	18.32	20.29	2435.66	198.05	531.12	338.35	337.45
NOx [g/h]	159.75	118.71	1.71	3.56	3.95	473.89	38.53	103.34	65.83	65.65
VOC [g/h]	190.29	141.41	2.04	4.25	4.70	564.49	45.90	123.09	78.41	78.21

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.460	1.964	2.812	0.000
Crosswalk LOS	B	A	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.725	1.584	2.305	2.108
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.0	100.0	100.0	100.0	200.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			No				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	71	16	42	191	15	246	3	227	1167	57	86	738	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-1	0	-4	-12	0	0	-3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	13	0	0	74	0	0	0	17	0	0	54
Total Hourly Volume [veh/h]	71	16	29	191	15	171	3	223	1155	40	86	735	127
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	4	8	52	4	47	1	61	336	11	24	202	35
Total Analysis Volume [veh/h]	78	18	32	210	16	188	3	245	1343	44	95	808	140
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	24	0	8	26	0	0	23	31	0	15	34	0
Amber [s]	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	3.0	0.0	2.5	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	29	0	13	31	0	0	28	80	0	20	72	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No			No	No		No	No	
Maximum Recall		No			No			No	No		No	No	
Pedestrian Recall		No			No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	23	23	69	97	97	10	38	38
g / C, Green / Cycle	0.06	0.06	0.15	0.15	0.43	0.61	0.61	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.12	0.13	0.14	0.38	0.03	0.05	0.23	0.09
s, saturation flow rate [veh/h]	1781	1680	1781	1608	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	103	98	261	235	771	2158	963	115	847	378
d1, Uniform Delay [s]	74.22	73.15	66.09	66.77	29.91	19.94	12.77	73.95	60.12	50.96
k, delay calibration	0.13	0.13	0.13	0.13	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.87	5.10	7.14	11.29	1.10	1.36	0.09	5.55	3.09	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.51	0.81	0.87	0.32	0.62	0.05	0.83	0.95	0.37
d, Delay for Lane Group [s/veh]	87.09	78.25	73.23	78.05	31.01	21.31	12.86	79.50	63.20	51.19
Lane Group LOS	F	E	E	E	C	C	B	E	E	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.55	2.15	8.86	8.93	6.66	16.16	0.69	4.06	16.56	4.78
50th-Percentile Queue Length [ft/ln]	88.76	53.69	221.57	223.20	166.62	404.11	17.13	101.51	414.02	119.55
95th-Percentile Queue Length [veh/ln]	6.39	3.87	13.75	13.83	10.90	22.76	1.23	7.31	23.23	8.37
95th-Percentile Queue Length [ft/ln]	159.76	96.64	343.63	345.71	272.47	568.95	30.83	182.72	580.86	209.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	87.09	78.25	78.25	73.23	78.05	78.05	31.01	31.01	21.31	12.86	79.50	63.20	51.19
Movement LOS	F	E	E	E	E	E	C	C	C	B	E	E	D
d_A, Approach Delay [s/veh]	83.64			75.61			22.55				63.08		
Approach LOS	F			E			C				E		
d_I, Intersection Delay [s/veh]	44.93												
Intersection LOS	D												
Intersection V/C	0.668												

Emissions

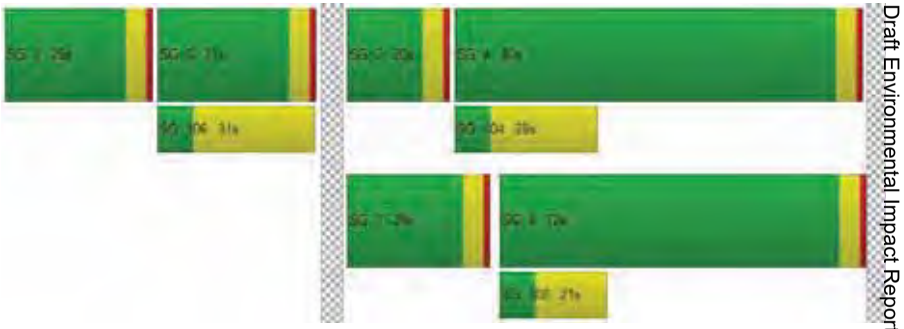
Vehicle Miles Traveled [mph]	3.90	2.50	9.76	9.48	26.01	140.84	4.61	33.23	282.60	48.97
Stops [stops/h]	79.88	48.32	199.41	200.88	149.96	727.39	15.42	91.36	745.23	107.59
Fuel consumption [US gal/h]	1.98	1.17	4.63	4.74	3.46	15.64	0.39	3.41	26.14	4.07
CO [g/h]	138.70	81.51	323.84	331.33	242.14	1093.23	27.28	238.30	1827.32	284.37
NOx [g/h]	26.99	15.86	63.01	64.46	47.11	212.70	5.31	46.36	355.53	55.33
VOC [g/h]	32.14	18.89	75.05	76.79	56.12	253.37	6.32	55.23	423.50	65.91

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.088	2.380	2.959	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	325	938	838
d_b, Bicycle Delay [s]	57.80	56.11	22.58	27.03
l_b,int, Bicycle LOS Score for Intersection	1.792	2.365	2.720	2.465
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	2	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	300.00	100.00	300.00	200.00	100.00	100.00	300.00	100.00	200.00	500.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	117	83	587	373	142	63	67	1081	264	432	840	207
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-2	-6	0	0	0	0	-12	0	-1	-3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	174	0	0	19	0	0	79	0	0	62
Total Hourly Volume [veh/h]	117	81	407	373	142	44	67	1069	185	431	837	145
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	21	105	96	37	11	17	276	48	111	216	37
Total Analysis Volume [veh/h]	121	84	420	385	146	45	69	1102	191	444	863	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	153
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Overlap	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	1	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,4									
Maximum Green [s]	0	35	25	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	3.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.5	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	28	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	1.5	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	150.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	29	0	45	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	2.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No	No		No		No	No		No	No	
Maximum Recall		No	No		No		No	No		No	No	
Pedestrian Recall		No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	113	113	113	113	113	113	113	113	113	113	113	113
L, Total Lost Time per Cycle [s]	4.20	4.20	3.50	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	0.00	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	12	12	65	28	28	28	4	39	39	17	51	51
g / C, Green / Cycle	0.10	0.10	0.58	0.25	0.25	0.25	0.04	0.34	0.34	0.15	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.07	0.04	0.15	0.21	0.08	0.03	0.02	0.31	0.12	0.13	0.24	0.09
s, saturation flow rate [veh/h]	1781	1870	2813	1877	1870	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	185	194	1629	496	464	394	136	1222	546	528	1604	716
d1, Uniform Delay [s]	48.71	47.54	11.78	42.10	34.67	32.90	53.24	35.31	27.71	46.55	22.52	18.83
k, delay calibration	0.13	0.13	0.04	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.82	1.89	0.03	3.27	0.48	0.16	1.10	2.75	0.38	1.41	0.36	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.43	0.26	0.78	0.31	0.11	0.51	0.90	0.35	0.84	0.54	0.21
d, Delay for Lane Group [s/veh]	53.53	49.43	11.82	45.37	35.15	33.06	54.34	38.05	28.09	47.97	22.88	19.01
Lane Group LOS	D	D	B	D	D	C	D	D	C	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.52	2.32	2.56	5.37	3.34	0.98	0.98	14.60	3.90	6.14	8.26	2.40
50th-Percentile Queue Length [ft/ln]	88.07	58.02	63.90	134.29	83.51	24.40	24.50	365.08	97.60	153.45	206.38	59.91
95th-Percentile Queue Length [veh/ln]	6.34	4.18	4.60	9.17	6.01	1.76	1.76	20.87	7.03	10.20	12.97	4.31
95th-Percentile Queue Length [ft/ln]	158.52	104.44	115.02	229.32	150.32	43.93	44.10	521.75	175.68	255.03	324.18	107.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.53	49.43	11.82	45.37	35.15	33.06	54.34	38.05	28.09	47.97	22.88	19.01
Movement LOS	D	D	B	D	D	C	D	D	C	D	C	B
d_A, Approach Delay [s/veh]	24.95			41.82			37.48			30.14		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	33.49											
Intersection LOS	C											
Intersection V/C	0.893											

Emissions

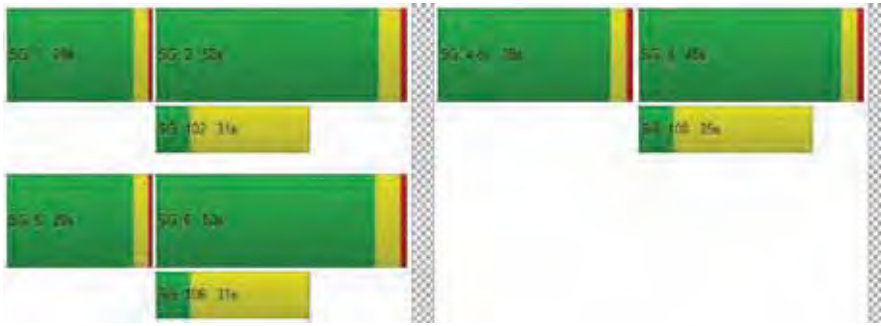
Vehicle Miles Traveled [mph]	206.98	143.69	718.44	78.05	29.60	9.12	24.13	385.43	66.80	200.34	389.41	67.23
Stops [stops/h]	112.31	73.99	162.98	342.52	106.50	31.12	62.49	931.15	124.47	391.38	526.38	76.40
Fuel consumption [US gal/h]	10.46	7.17	31.49	8.66	2.85	0.85	2.10	29.54	4.53	14.74	22.96	3.77
CO [g/h]	731.09	501.10	2200.87	605.33	199.30	59.43	146.90	2065.12	316.61	1030.55	1604.71	263.26
NOx [g/h]	142.24	97.49	428.21	117.78	38.78	11.56	28.58	401.80	61.60	200.51	312.22	51.22
VOC [g/h]	169.44	116.13	510.07	140.29	46.19	13.77	34.05	478.61	73.38	238.84	371.91	61.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.99	45.99	45.99	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.981	2.647	3.064	0.000
Crosswalk LOS	C	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	616	723	792	779
d_b, Bicycle Delay [s]	27.02	23.03	20.61	21.03
l_b,int, Bicycle LOS Score for Intersection	2.878	2.541	2.748	2.812
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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TKEAR

Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	57.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.007

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	2032	1	0	1145	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-18	0	0	-5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	2014	1	0	1140	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	524	0	0	297	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	2098	1	0	1188	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	93	93	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	50	50	0	49	49
g / C, Green / Cycle	0.00	0.00	0.22	0.22	0.01	0.54	0.54	0.00	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.56	0.56	0.00	0.33	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	11	9	384	343	25	1009	1009	3	1877	838
d1, Uniform Delay [s]	0.00	45.90	30.25	36.34	45.31	21.34	21.34	0.00	15.56	10.38
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.46	0.46	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	19.59	0.37	133.62	9.98	38.20	38.25	0.00	0.36	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.33	0.27	1.25	0.40	1.04	1.04	0.00	0.63	0.00
d, Delay for Lane Group [s/veh]	0.00	65.49	30.62	169.96	55.29	59.54	59.60	0.00	15.91	10.39
Lane Group LOS	A	E	C	F	E	F	F	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.12	1.93	20.28	0.30	30.26	30.27	0.00	8.34	0.03
50th-Percentile Queue Length [ft/ln]	0.00	2.95	48.17	506.99	7.39	756.52	756.82	0.00	208.39	0.70
95th-Percentile Queue Length [veh/ln]	0.00	0.21	3.47	30.90	0.53	40.58	40.60	0.00	13.07	0.05
95th-Percentile Queue Length [ft/ln]	0.00	5.30	86.70	772.40	13.29	1014.45	1014.93	0.00	326.77	1.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	65.49	30.62	30.62	169.96	55.29	59.57	59.60	0.00	15.91	10.39
Movement LOS	A	A	E	C	C	F	E	F	E	A	B	B
d_A, Approach Delay [s/veh]	65.49			142.93			59.55			15.90		
Approach LOS	E			F			E			B		
d_I, Intersection Delay [s/veh]	57.54											
Intersection LOS	E											
Intersection V/C	1.007											

Emissions

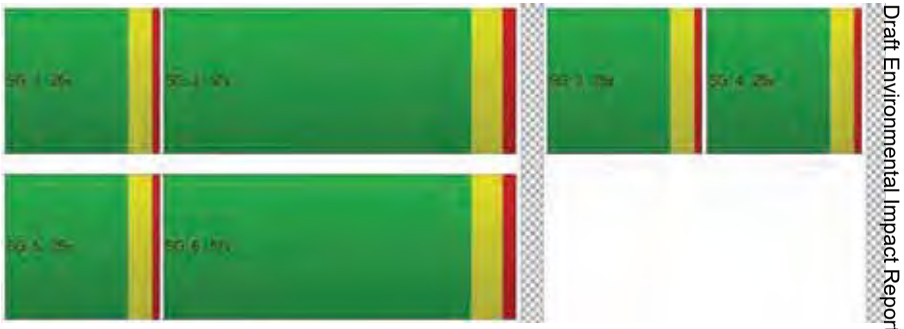
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	473.56	473.56	0.00	207.25	0.52
Stops [stops/h]	0.00	4.59	74.96	789.00	11.49	1177.34	1177.80	0.00	648.62	1.10
Fuel consumption [US gal/h]	0.00	0.07	3.07	27.52	0.36	38.71	38.73	0.00	15.96	0.03
CO [g/h]	0.00	5.00	214.41	1923.50	25.29	2706.13	2707.19	0.00	1115.77	2.37
NOx [g/h]	0.00	0.97	41.72	374.24	4.92	526.51	526.72	0.00	217.09	0.46
VOC [g/h]	0.00	1.16	49.69	445.79	5.86	627.17	627.42	0.00	258.59	0.55

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	432	432	1081	1081
d_b, Bicycle Delay [s]	28.43	28.43	9.77	9.77
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	3.300	2.542
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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TKEAR

Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.068

Intersection Setup

Name	White Rock Rd			White Rock Rd			US 50 EB					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

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TKEAR

Volumes

Name	White Rock Rd			White Rock Rd			US 50 EB					
Base Volume Input [veh/h]	0	855	1259	0	1056	301	512	0	91	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-9	-3	-6	0	-5	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	0	852	1253	0	1051	301	512	0	79	0	0	0
Peak Hour Factor	0.8300	0.9100	1.0000	1.0000	0.9100	0.8300	0.8300	1.0000	0.8300	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	234	313	0	289	91	154	0	24	0	0	0
Total Analysis Volume [veh/h]	0	936	1253	0	1155	363	617	0	95	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	0	0	73	0	34	0	0	0	0	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	5.0	0.0	0.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	80	0	0	80	0	40	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	8	0	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	6.00	6.00	6.00	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00	
g_i, Effective Green Time [s]	84	84	84	84	23	23	23	
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.19	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.79	0.32	0.23	0.17	0.17	0.06	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2485	1109	2485	1109	345	345	308	
d1, Uniform Delay [s]	7.43	18.13	8.11	7.10	47.16	47.16	41.47	
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.08	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.44	70.12	0.63	0.79	6.43	6.43	0.21	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.38	1.13	0.46	0.33	0.89	0.89	0.31	
d, Delay for Lane Group [s/veh]	7.87	88.25	8.74	7.89	53.60	53.60	41.68	
Lane Group LOS	A	F	A	A	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.70	47.92	6.35	3.62	9.57	9.57	2.44	
50th-Percentile Queue Length [ft/ln]	117.59	1198.12	158.66	90.40	239.36	239.36	61.08	
95th-Percentile Queue Length [veh/ln]	8.26	65.85	10.48	6.51	14.65	14.65	4.40	
95th-Percentile Queue Length [ft/ln]	206.51	1646.23	261.94	162.72	366.22	366.22	109.95	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.87	88.25	0.00	8.74	7.89	53.60	0.00	41.68	0.00	0.00	0.00
Movement LOS		A	F		A	A	D		D			
d_A, Approach Delay [s/veh]		53.88			8.53			52.01			0.00	
Approach LOS		D			A			D			A	
d_I, Intersection Delay [s/veh]	38.00											
Intersection LOS	D											
Intersection V/C	1.068											

Emissions

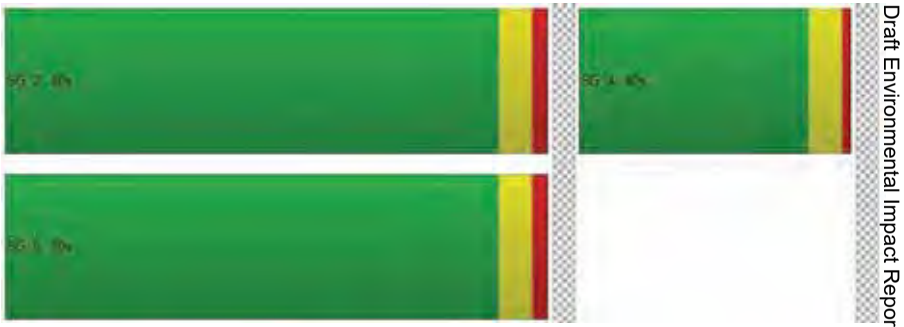
Vehicle Miles Traveled [mph]	163.28	218.59	204.68	64.33	18.68	18.68	5.75	
Stops [stops/h]	282.22	1437.75	380.77	108.48	287.23	287.23	73.30	
Fuel consumption [US gal/h]	9.78	39.44	12.58	3.83	5.72	5.72	1.45	
CO [g/h]	683.65	2756.99	879.58	267.73	399.85	399.85	101.18	
NOx [g/h]	133.01	536.41	171.13	52.09	77.80	77.80	19.69	
VOC [g/h]	158.44	638.96	203.85	62.05	92.67	92.67	23.45	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1217	1217	567	0
d_b, Bicycle Delay [s]	9.20	9.20	30.82	60.00
l_b,int, Bicycle LOS Score for Intersection	3.366	2.812	2.754	4.132
Bicycle LOS	C	C	C	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	1215	152	0	686	254	671	1	310	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	0	-1	0	-4	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1212	152	0	685	254	667	1	310	0	0	0
Peak Hour Factor	0.7900	0.7900	1.0000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	384	38	0	217	80	211	0	98	0	0	0
Total Analysis Volume [veh/h]	0	1534	152	0	867	322	844	1	392	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	0	0	73	0	0	34	0	0	0	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	80	0	0	80	0	0	40	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	6.80	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.80	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	76	76	76	76	31	31	31	
g / C, Green / Cycle	0.63	0.63	0.63	0.63	0.26	0.26	0.26	
(v / s)_i Volume / Saturation Flow Rate	0.43	0.10	0.24	0.20	0.24	0.24	0.25	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2253	1006	2253	1006	467	467	417	
d1, Uniform Delay [s]	14.22	8.95	10.70	10.15	42.81	42.81	43.35	
k, delay calibration	0.50	0.50	0.50	0.50	0.27	0.27	0.30	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.69	0.32	0.50	0.84	14.67	14.65	22.13	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.68	0.15	0.38	0.32	0.90	0.90	0.94	
d, Delay for Lane Group [s/veh]	15.90	9.27	11.20	10.99	57.48	57.46	65.48	
Lane Group LOS	B	A	B	B	E	E	E	
Critical Lane Group	Yes	No	No	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.11	1.66	5.51	4.00	13.94	13.94	13.87	
50th-Percentile Queue Length [ft/ln]	327.73	41.45	137.66	100.12	348.45	348.40	346.71	
95th-Percentile Queue Length [veh/ln]	19.05	2.98	9.35	7.21	20.06	20.06	19.98	
95th-Percentile Queue Length [ft/ln]	476.18	74.62	233.87	180.22	501.52	501.46	499.40	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.90	9.27	0.00	11.20	10.99	57.47	57.46	65.48	0.00	0.00	0.00
Movement LOS		B	A		B	B	E	E	E			
d_A, Approach Delay [s/veh]		15.31			11.14			60.01			0.00	
Approach LOS		B			B			E			A	
d_I, Intersection Delay [s/veh]	27.55											
Intersection LOS	C											
Intersection V/C	0.753											

Emissions

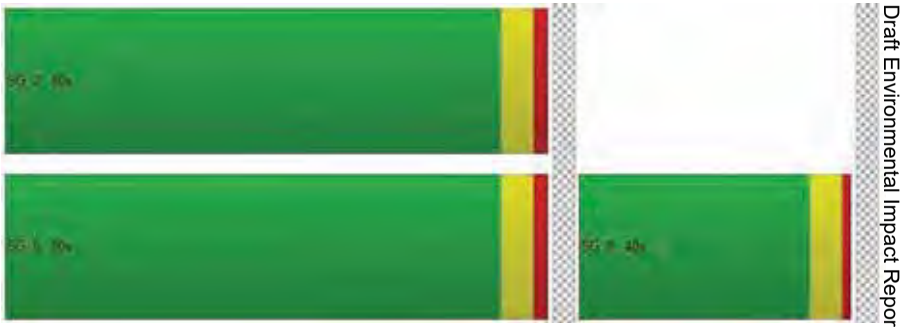
Vehicle Miles Traveled [mph]	271.84	26.94	118.55	44.03	14.64	14.64	13.58	
Stops [stops/h]	786.56	49.74	330.38	120.15	418.15	418.08	416.05	
Fuel consumption [US gal/h]	20.50	1.67	8.68	3.20	7.85	7.85	8.08	
CO [g/h]	1433.03	116.76	606.82	223.43	549.00	548.87	564.81	
NOx [g/h]	278.82	22.72	118.07	43.47	106.82	106.79	109.89	
VOC [g/h]	332.12	27.06	140.64	51.78	127.24	127.21	130.90	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1220	1220	570	0
d_b, Bicycle Delay [s]	9.13	9.13	30.67	60.00
l_b,int, Bicycle LOS Score for Intersection	2.951	2.541	3.601	4.132
Bicycle LOS	C	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	438	590	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	437	584	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	109	146	0	0	0
Total Analysis Volume [veh/h]	0	437	584	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	12.04
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		12.04	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.078

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	328	485	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	327	479	20	27	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	82	120	5	7	0
Total Analysis Volume [veh/h]	0	327	479	20	27	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	8.38	0.00	0.00	0.00	16.26	12.09
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.25	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	6.30	6.30
d_A, Approach Delay [s/veh]	0.00		0.00		16.26	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.51					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	20.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.159

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	67	47	288	46	10	41	2	49	25	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	0	0	-6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	184	67	47	282	46	10	41	2	49	25	87
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	47	17	12	73	12	3	11	1	13	6	22
Total Analysis Volume [veh/h]	0	190	69	48	291	47	10	42	2	51	26	90
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.04	0.12	0.00	0.16	0.07	0.11
d_M, Delay for Movement [s/veh]	7.95	0.00	0.00	7.82	0.00	0.00	19.59	16.84	11.83	20.01	18.58	13.17
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.08	0.08	0.08	0.54	0.54	0.54	1.50	1.50	1.50
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.11	2.11	2.11	13.50	13.50	13.50	37.40	37.40	37.40
d_A, Approach Delay [s/veh]	0.00			0.97			17.16			16.10		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.61											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	437	607	60	0
2	424	589	58	0
3	415	577	57	0
4	389	540	53	0
5	345	480	47	0
6	341	473	47	0
7	336	467	46	0
8	306	425	42	0
9	302	419	41	0
10	297	413	41	0
11	258	358	35	0
12	240	334	33	0
13	236	328	32	0
14	175	243	24	0
15	175	243	24	0
16	122	170	17	0
17	70	97	10	0
18	70	97	10	0
19	39	55	5	0
20	22	30	3	0
21	13	18	2	0
22	4	6	1	0
23	4	6	1	0
24	4	6	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1044	1	60	No	No	No	No	No	Yes	Yes	Yes	No	No
2	1	1013	1	58	No	No	No	No	No	No	Yes	Yes	No	No
3	1	992	1	57	No	No	No	No	No	No	Yes	Yes	No	No
4	1	929	1	53	No	No	No	No	No	No	Yes	Yes	No	No
5	1	825	1	47	No	No	No	No	No	No	No	Yes	No	No
6	1	814	1	47	No	No	No	No	No	No	No	Yes	No	No
7	1	803	1	46	No	No	No	No	No	No	No	Yes	No	No
8	1	731	1	42	No	No	No	No	No	No	No	Yes	No	No
9	1	721	1	41	No	No	No	No	No	No	No	No	No	No
10	1	710	1	41	No	No	No	No	No	No	No	No	No	No
11	1	616	1	35	No	No	No	No	No	No	No	No	No	No
12	1	574	1	33	No	No	No	No	No	No	No	No	No	No
13	1	564	1	32	No	No	No	No	No	No	No	No	No	No
14	1	418	1	24	No	No	No	No	No	No	No	No	No	No
15	1	418	1	24	No	No	No	No	No	No	No	No	No	No
16	1	292	1	17	No	No	No	No	No	No	No	No	No	No
17	1	167	1	10	No	No	No	No	No	No	No	No	No	No
18	1	167	1	10	No	No	No	No	No	No	No	No	No	No
19	1	94	1	5	No	No	No	No	No	No	No	No	No	No
20	1	52	1	3	No	No	No	No	No	No	No	No	No	No
21	1	31	1	2	No	No	No	No	No	No	No	No	No	No
22	1	10	1	1	No	No	No	No	No	No	No	No	No	No
23	1	10	1	1	No	No	No	No	No	No	No	No	No	No
24	1	10	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	1	4	8	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.3	22.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:12	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	60	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1104	1104
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	354	584	163	0
2	343	566	158	0
3	336	555	155	0
4	315	520	145	0
5	280	461	129	0
6	276	456	127	0
7	273	450	126	0
8	248	409	114	0
9	244	403	112	0
10	241	397	111	0
11	209	345	96	0
12	195	321	90	0
13	191	315	88	0
14	142	234	65	0
15	142	234	65	0
16	99	164	46	0
17	57	93	26	0
18	57	93	26	0
19	32	53	15	0
20	18	29	8	0
21	11	18	5	0
22	4	6	2	0
23	4	6	2	0
24	4	6	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	938	1	163	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	909	1	158	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	891	1	155	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	835	1	145	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	2	741	1	129	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	2	732	1	127	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	2	723	1	126	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
8	2	657	1	114	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No
9	2	647	1	112	No	No	Yes	Yes	No	No	Yes	Yes	No	No
10	2	638	1	111	No	No	Yes	Yes	No	No	Yes	Yes	No	No
11	2	554	1	96	No	No	No	Yes	No	No	No	Yes	No	No
12	2	516	1	90	No	No	No	Yes	No	No	No	Yes	No	No
13	2	506	1	88	No	No	No	Yes	No	No	No	Yes	No	No
14	2	376	1	65	No	No	No	No	No	No	No	No	No	No
15	2	376	1	65	No	No	No	No	No	No	No	No	No	No
16	2	263	1	46	No	No	No	No	No	No	No	No	No	No
17	2	150	1	26	No	No	No	No	No	No	No	No	No	No
18	2	150	1	26	No	No	No	No	No	No	No	No	No	No
19	2	85	1	15	No	No	No	No	No	No	No	No	No	No
20	2	47	1	8	No	No	No	No	No	No	No	No	No	No
21	2	29	1	5	No	No	No	No	No	No	No	No	No	No
22	2	10	1	2	No	No	No	No	No	No	No	No	No	No
23	2	10	1	2	No	No	No	No	No	No	No	No	No	No
24	2	10	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	2	7	10	13	8	3

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	32.3	24.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:27	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	163	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1101	1101
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1186	217	1068
2	1150	210	1036
3	1127	206	1015
4	1056	193	951
5	937	171	844
6	925	169	833
7	913	167	822
8	830	152	748
9	818	150	737
10	806	148	726
11	700	128	630
12	652	119	587
13	640	117	577
14	474	87	427
15	474	87	427
16	332	61	299
17	190	35	171
18	190	35	171
19	107	20	96
20	59	11	53
21	36	7	32
22	12	2	11
23	12	2	11
24	12	2	11

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1403	1	1068	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1360	1	1036	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1333	1	1015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1249	1	951	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1108	1	844	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1094	1	833	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1080	1	822	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	982	1	748	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	968	1	737	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	954	1	726	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	828	1	630	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	771	1	587	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	1	757	1	577	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	1	561	1	427	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
15	1	561	1	427	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
16	1	393	1	299	No	No	Yes	Yes	No	No	No	No	No	No
17	1	225	1	171	No	No	No	No	No	No	No	No	No	No
18	1	225	1	171	No	No	No	No	No	No	No	No	No	No
19	1	127	1	96	No	No	No	No	No	No	No	No	No	No
20	1	70	1	53	No	No	No	No	No	No	No	No	No	No
21	1	43	1	32	No	No	No	No	No	No	No	No	No	No
22	1	14	1	11	No	No	No	No	No	No	No	No	No	No
23	1	14	1	11	No	No	No	No	No	No	No	No	No	No
24	1	14	1	11	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	13	13	15	15	15	13

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2966:40
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	1068
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2471
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	822	647	308	40
2	797	628	299	39
3	781	615	293	38
4	732	576	274	36
5	649	511	243	32
6	641	505	240	31
7	633	498	237	31
8	575	453	216	28
9	567	446	213	28
10	559	440	209	27
11	485	382	182	24
12	452	356	169	22
13	444	349	166	22
14	329	259	123	16
15	329	259	123	16
16	230	181	86	11
17	132	104	49	6
18	132	104	49	6
19	74	58	28	4
20	41	32	15	2
21	25	19	9	1
22	8	6	3	0
23	8	6	3	0
24	8	6	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1469	1	308	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1425	1	299	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1396	1	293	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1308	1	274	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1160	1	243	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1146	1	240	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1131	1	237	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	1028	1	216	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	1013	1	213	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	999	1	209	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	867	1	182	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	1	808	1	169	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	1	793	1	166	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
14	1	588	1	123	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
15	1	588	1	123	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
16	1	411	1	86	No	No	No	Yes	No	No	No	No	No	No
17	1	236	1	49	No	No	No	No	No	No	No	No	No	No
18	1	236	1	49	No	No	No	No	No	No	No	No	No	No
19	1	132	1	28	No	No	No	No	No	No	No	No	No	No
20	1	73	1	15	No	No	No	No	No	No	No	No	No	No
21	1	44	1	9	No	No	No	No	No	No	No	No	No	No
22	1	14	1	3	No	No	No	No	No	No	No	No	No	No
23	1	14	1	3	No	No	No	No	No	No	No	No	No	No
24	1	14	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	13	13	15	15	13	6

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	30	12.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:33	0:08
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	308	40
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1817	1817
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	301	436	233
2	292	423	226
3	286	414	221
4	268	388	207
5	238	344	184
6	235	340	182
7	232	336	179
8	211	305	163
9	208	301	161
10	205	296	158
11	178	257	137
12	166	240	128
13	163	235	126
14	120	174	93
15	120	174	93
16	84	122	65
17	48	70	37
18	48	70	37
19	27	39	21
20	15	22	12
21	9	13	7
22	3	4	2
23	3	4	2
24	3	4	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	737	2	233	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	715	2	226	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	2	700	2	221	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	2	656	2	207	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	2	582	2	184	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	575	2	182	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	568	2	179	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	516	2	163	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	2	509	2	161	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	2	501	2	158	No	No	Yes	Yes	No	No	No	No	No	No
11	2	435	2	137	No	No	No	Yes	No	No	No	No	No	No
12	2	406	2	128	No	No	No	Yes	No	No	No	No	No	No
13	2	398	2	126	No	No	No	Yes	No	No	No	No	No	No
14	2	294	2	93	No	No	No	No	No	No	No	No	No	No
15	2	294	2	93	No	No	No	No	No	No	No	No	No	No
16	2	206	2	65	No	No	No	No	No	No	No	No	No	No
17	2	118	2	37	No	No	No	No	No	No	No	No	No	No
18	2	118	2	37	No	No	No	No	No	No	No	No	No	No
19	2	66	2	21	No	No	No	No	No	No	No	No	No	No
20	2	37	2	12	No	No	No	No	No	No	No	No	No	No
21	2	22	2	7	No	No	No	No	No	No	No	No	No	No
22	2	7	2	2	No	No	No	No	No	No	No	No	No	No
23	2	7	2	2	No	No	No	No	No	No	No	No	No	No
24	2	7	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	9	10	13	0	1	4	9	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	27.6
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:47
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	233
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	970
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	454	282	413
2	440	274	401
3	431	268	392
4	404	251	368
5	359	223	326
6	354	220	322
7	350	217	318
8	318	197	289
9	313	195	285
10	309	192	281
11	268	166	244
12	250	155	227
13	245	152	223
14	182	113	165
15	182	113	165
16	127	79	116
17	73	45	66
18	73	45	66
19	41	25	37
20	23	14	21
21	14	8	12
22	5	3	4
23	5	3	4
24	5	3	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	736	1	413	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	714	1	401	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	2	699	1	392	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	2	655	1	368	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	2	582	1	326	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	2	574	1	322	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	2	567	1	318	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	2	515	1	289	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	2	508	1	285	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	2	501	1	281	No	Yes	Yes	Yes	No	No	No	No	No	No
11	2	434	1	244	No	No	Yes	Yes	No	No	No	No	No	No
12	2	405	1	227	No	No	No	Yes	No	No	No	No	No	No
13	2	397	1	223	No	No	No	Yes	No	No	No	No	No	No
14	2	295	1	165	No	No	No	No	No	No	No	No	No	No
15	2	295	1	165	No	No	No	No	No	No	No	No	No	No
16	2	206	1	116	No	No	No	No	No	No	No	No	No	No
17	2	118	1	66	No	No	No	No	No	No	No	No	No	No
18	2	118	1	66	No	No	No	No	No	No	No	No	No	No
19	2	66	1	37	No	No	No	No	No	No	No	No	No	No
20	2	37	1	21	No	No	No	No	No	No	No	No	No	No
21	2	22	1	12	No	No	No	No	No	No	No	No	No	No
22	2	8	1	4	No	No	No	No	No	No	No	No	No	No
23	2	8	1	4	No	No	No	No	No	No	No	No	No	No
24	2	8	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	0	1	4	9	7	1

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	146.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	16:46
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	413
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1149
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	295	225	3
2	286	218	3
3	280	214	3
4	263	200	3
5	233	178	2
6	230	176	2
7	227	173	2
8	207	158	2
9	204	155	2
10	201	153	2
11	174	133	2
12	162	124	2
13	159	122	2
14	118	90	1
15	118	90	1
16	83	63	1
17	47	36	0
18	47	36	0
19	27	20	0
20	15	11	0
21	9	7	0
22	3	2	0
23	3	2	0
24	3	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	520	1	3	No	No	No	No	No	No	No	No	No	No
2	3	504	1	3	No	No	No	No	No	No	No	No	No	No
3	3	494	1	3	No	No	No	No	No	No	No	No	No	No
4	3	463	1	3	No	No	No	No	No	No	No	No	No	No
5	3	411	1	2	No	No	No	No	No	No	No	No	No	No
6	3	406	1	2	No	No	No	No	No	No	No	No	No	No
7	3	400	1	2	No	No	No	No	No	No	No	No	No	No
8	3	365	1	2	No	No	No	No	No	No	No	No	No	No
9	3	359	1	2	No	No	No	No	No	No	No	No	No	No
10	3	354	1	2	No	No	No	No	No	No	No	No	No	No
11	3	307	1	2	No	No	No	No	No	No	No	No	No	No
12	3	286	1	2	No	No	No	No	No	No	No	No	No	No
13	3	281	1	2	No	No	No	No	No	No	No	No	No	No
14	3	208	1	1	No	No	No	No	No	No	No	No	No	No
15	3	208	1	1	No	No	No	No	No	No	No	No	No	No
16	3	146	1	1	No	No	No	No	No	No	No	No	No	No
17	3	83	1	0	No	No	No	No	No	No	No	No	No	No
18	3	83	1	0	No	No	No	No	No	No	No	No	No	No
19	3	47	1	0	No	No	No	No	No	No	No	No	No	No
20	3	26	1	0	No	No	No	No	No	No	No	No	No	No
21	3	16	1	0	No	No	No	No	No	No	No	No	No	No
22	3	5	1	0	No	No	No	No	No	No	No	No	No	No
23	3	5	1	0	No	No	No	No	No	No	No	No	No	No
24	3	5	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	523
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	437	584	0
2	424	566	0
3	415	555	0
4	389	520	0
5	345	461	0
6	341	456	0
7	336	450	0
8	306	409	0
9	302	403	0
10	297	397	0
11	258	345	0
12	240	321	0
13	236	315	0
14	175	234	0
15	175	234	0
16	122	164	0
17	70	93	0
18	70	93	0
19	39	53	0
20	22	29	0
21	13	18	0
22	4	6	0
23	4	6	0
24	4	6	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1021	1	0	No	No	No	No	No	No	No	No	No	No
2	1	990	1	0	No	No	No	No	No	No	No	No	No	No
3	1	970	1	0	No	No	No	No	No	No	No	No	No	No
4	1	909	1	0	No	No	No	No	No	No	No	No	No	No
5	1	806	1	0	No	No	No	No	No	No	No	No	No	No
6	1	797	1	0	No	No	No	No	No	No	No	No	No	No
7	1	786	1	0	No	No	No	No	No	No	No	No	No	No
8	1	715	1	0	No	No	No	No	No	No	No	No	No	No
9	1	705	1	0	No	No	No	No	No	No	No	No	No	No
10	1	694	1	0	No	No	No	No	No	No	No	No	No	No
11	1	603	1	0	No	No	No	No	No	No	No	No	No	No
12	1	561	1	0	No	No	No	No	No	No	No	No	No	No
13	1	551	1	0	No	No	No	No	No	No	No	No	No	No
14	1	409	1	0	No	No	No	No	No	No	No	No	No	No
15	1	409	1	0	No	No	No	No	No	No	No	No	No	No
16	1	286	1	0	No	No	No	No	No	No	No	No	No	No
17	1	163	1	0	No	No	No	No	No	No	No	No	No	No
18	1	163	1	0	No	No	No	No	No	No	No	No	No	No
19	1	92	1	0	No	No	No	No	No	No	No	No	No	No
20	1	51	1	0	No	No	No	No	No	No	No	No	No	No
21	1	31	1	0	No	No	No	No	No	No	No	No	No	No
22	1	10	1	0	No	No	No	No	No	No	No	No	No	No
23	1	10	1	0	No	No	No	No	No	No	No	No	No	No
24	1	10	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1021
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	327	499	27
2	317	484	26
3	311	474	26
4	291	444	24
5	258	394	21
6	255	389	21
7	252	384	21
8	229	349	19
9	226	344	19
10	222	339	18
11	193	294	16
12	180	274	15
13	177	269	15
14	131	200	11
15	131	200	11
16	92	140	8
17	52	80	4
18	52	80	4
19	29	45	2
20	16	25	1
21	10	15	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	826	1	27	No	No	No	No	No	No	No	No	No	No
2	1	801	1	26	No	No	No	No	No	No	No	No	No	No
3	1	785	1	26	No	No	No	No	No	No	No	No	No	No
4	1	735	1	24	No	No	No	No	No	No	No	No	No	No
5	1	652	1	21	No	No	No	No	No	No	No	No	No	No
6	1	644	1	21	No	No	No	No	No	No	No	No	No	No
7	1	636	1	21	No	No	No	No	No	No	No	No	No	No
8	1	578	1	19	No	No	No	No	No	No	No	No	No	No
9	1	570	1	19	No	No	No	No	No	No	No	No	No	No
10	1	561	1	18	No	No	No	No	No	No	No	No	No	No
11	1	487	1	16	No	No	No	No	No	No	No	No	No	No
12	1	454	1	15	No	No	No	No	No	No	No	No	No	No
13	1	446	1	15	No	No	No	No	No	No	No	No	No	No
14	1	331	1	11	No	No	No	No	No	No	No	No	No	No
15	1	331	1	11	No	No	No	No	No	No	No	No	No	No
16	1	232	1	8	No	No	No	No	No	No	No	No	No	No
17	1	132	1	4	No	No	No	No	No	No	No	No	No	No
18	1	132	1	4	No	No	No	No	No	No	No	No	No	No
19	1	74	1	2	No	No	No	No	No	No	No	No	No	No
20	1	41	1	1	No	No	No	No	No	No	No	No	No	No
21	1	25	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	27
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	853
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

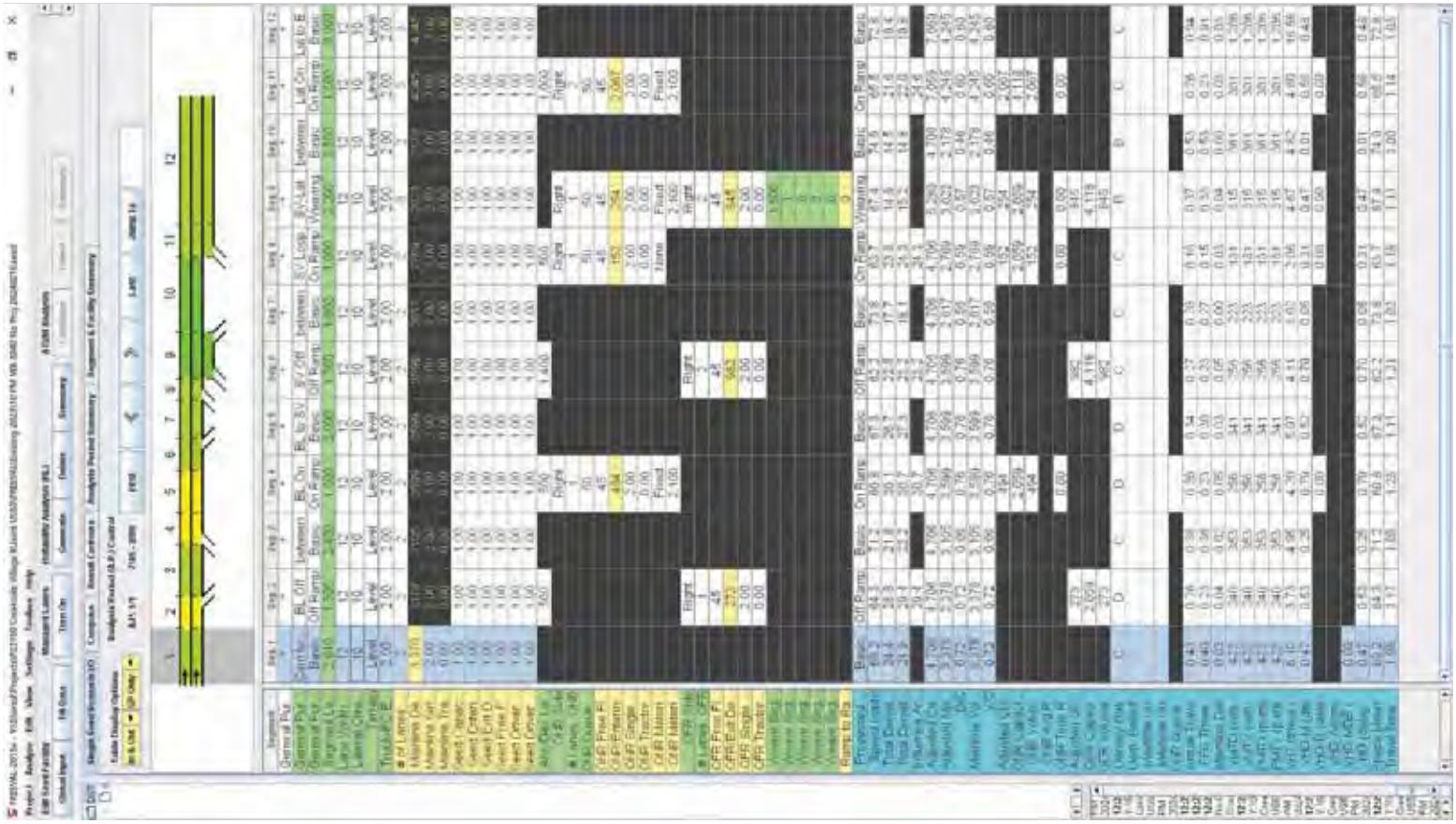
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	251	375	161	53
2	243	364	156	51
3	238	356	153	50
4	223	334	143	47
5	198	296	127	42
6	196	293	126	41
7	193	289	124	41
8	176	263	113	37
9	173	259	111	37
10	171	255	109	36
11	148	221	95	31
12	138	206	89	29
13	136	203	87	29
14	100	150	64	21
15	100	150	64	21
16	70	105	45	15
17	40	60	26	8
18	40	60	26	8
19	23	34	14	5
20	13	19	8	3
21	8	11	5	2
22	3	4	2	1
23	3	4	2	1
24	3	4	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	626	1	161	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	607	1	156	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	594	1	153	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	557	1	143	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	494	1	127	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	1	489	1	126	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	1	482	1	124	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	439	1	113	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	432	1	111	No	No	Yes	Yes	No	No	No	Yes	No	No
10	1	426	1	109	No	No	Yes	Yes	No	No	No	Yes	No	No
11	1	369	1	95	No	No	No	Yes	No	No	No	No	No	No
12	1	344	1	89	No	No	No	Yes	No	No	No	No	No	No
13	1	339	1	87	No	No	No	Yes	No	No	No	No	No	No
14	1	250	1	64	No	No	No	No	No	No	No	No	No	No
15	1	250	1	64	No	No	No	No	No	No	No	No	No	No
16	1	175	1	45	No	No	No	No	No	No	No	No	No	No
17	1	100	1	26	No	No	No	No	No	No	No	No	No	No
18	1	100	1	26	No	No	No	No	No	No	No	No	No	No
19	1	57	1	14	No	No	No	No	No	No	No	No	No	No
20	1	32	1	8	No	No	No	No	No	No	No	No	No	No
21	1	19	1	5	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	2	4	10	6	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.1	17.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43	0:15
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	161	53
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	840	840
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	



Cumulative AM plus Project

Vistro File: C:\...\AM 918 DU 20240213.vistro Scenario 6 2040 AM with CCSP, + Project
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Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.176	188.9	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	0.977	54.7	D
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.193	130.5	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	1.044	35.5	D
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.963	37.5	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	SB Thru	0.758	60.1	E
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.768	16.4	B
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	SB Right	0.939	27.2	C
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	WB Right	1.261	161.2	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Thru	0.974	23.4	C
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	1.135	317.8	F
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	7.691	3,188.6	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	0.548	797.9	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	1.194	88.3	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.481	22.8	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.508	32.8	D
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.104	8.1	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 7th Edition	EB Left	0.491	17.7	B
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.656	35.0	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	NB Left	0.613	43.6	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	NB Left	0.781	26.8	C
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.936	42.2	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.563	11.1	B
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	1.016	49.4	D
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.011	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.069	15.6	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.198	24.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	188.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.176

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	242	863	301	72	1684	51	27	16	270	494	70	114
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	39	0	0	-40	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	15	0	0	81	0	0	34
Total Hourly Volume [veh/h]	5	242	902	301	72	1644	36	27	16	189	494	70	80
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	70	259	86	21	472	10	8	5	54	142	20	23
Total Analysis Volume [veh/h]	5	278	1037	346	83	1890	41	31	18	217	568	80	92
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	134	134	134	134	134	134	134	134	134	134
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	55	55	8	40	40	22	22	31	31
g / C, Green / Cycle	0.17	0.41	0.41	0.06	0.30	0.30	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.16	0.29	0.22	0.05	0.52	0.52	0.02	0.15	0.21	0.21
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1856	1781	1608	1781	1746
c, Capacity [veh/h]	308	1467	655	106	558	554	289	261	417	409
d1, Uniform Delay [s]	54.51	32.72	29.64	62.22	47.06	47.06	47.90	55.12	49.70	49.77
k, delay calibration	0.31	0.04	0.19	0.04	0.50	0.50	0.04	0.07	0.33	0.34
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.16	0.24	1.19	4.72	336.50	342.32	0.06	7.28	17.52	18.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.71	0.53	0.78	1.73	1.74	0.11	0.90	0.89	0.90
d, Delay for Lane Group [s/veh]	78.67	32.96	30.84	66.94	383.56	389.38	47.96	62.40	67.22	68.19
Lane Group LOS	E	C	C	E	F	F	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.22	13.42	8.30	2.87	70.01	70.39	0.90	8.31	14.09	14.00
50th-Percentile Queue Length [ft/ln]	280.41	335.43	207.48	71.84	1750.31	1759.67	22.42	207.73	352.26	349.91
95th-Percentile Queue Length [veh/ln]	16.71	19.42	13.02	5.17	108.13	108.86	1.61	13.04	20.25	20.13
95th-Percentile Queue Length [ft/ln]	417.72	485.61	325.59	129.31	2703.30	2721.57	40.36	325.92	506.16	503.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.67	78.67	32.96	30.84	66.94	386.41	389.38	47.96	62.40	62.40	67.56	68.19	68.19
Movement LOS	E	E	C	C	E	F	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	40.28				373.30			60.72			67.70		
Approach LOS	D				F			E			E		
d_I, Intersection Delay [s/veh]	188.90												
Intersection LOS	F												
Intersection V/C	1.176												

Emissions

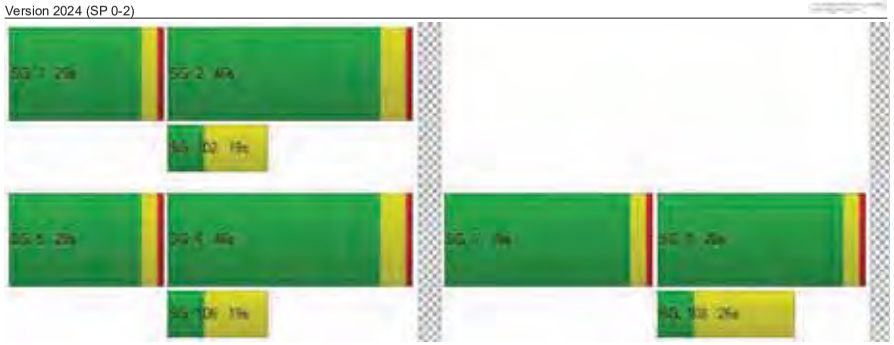
Vehicle Miles Traveled [mph]	67.59	247.67	82.64	12.20	141.95	141.95	1.32	10.04	19.50	19.22
Stops [stops/h]	301.70	721.81	223.24	77.29	1883.26	1893.33	24.12	223.51	379.02	376.49
Fuel consumption [US gal/h]	10.60	24.42	7.78	2.51	103.63	104.89	0.49	4.63	7.99	7.97
CO [g/h]	740.79	1706.88	543.77	175.44	7243.39	7332.07	34.27	323.78	558.80	556.96
NOx [g/h]	144.13	332.10	105.80	34.13	1409.30	1426.55	6.67	63.00	108.72	108.36
VOC [g/h]	171.69	395.59	126.02	40.66	1678.73	1699.28	7.94	75.04	129.51	129.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	56.37	56.37	56.37
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.283	2.322	2.404
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	602	602	523	523
d_b, Bicycle Delay [s]	32.68	32.68	36.49	36.49
l_b,int, Bicycle LOS Score for Intersection	2.930	3.234	2.132	2.837
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	54.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.977

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	420	988	150	1	218	1793	441	150	61	724	68	52	272
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	39	0	0	0	-40	0	0	0	-19	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	132	0	0	212	0	0	82
Total Hourly Volume [veh/h]	1	440	1027	105	1	218	1753	309	150	61	493	68	52	190
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	118	276	28	0	59	471	83	40	16	133	18	14	51
Total Analysis Volume [veh/h]	1	473	1104	113	1	234	1885	332	161	66	530	73	56	204
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	5	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	20	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	24	0	0	0	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	24	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	4	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	127	127	127	127	127	127	127	127	127	127	127
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	51	51	19	50	50	20	20	20	20	20
g / C, Green / Cycle	0.15	0.40	0.40	0.15	0.39	0.39	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.14	0.23	0.23	0.13	0.37	0.21	0.06	0.06	0.19	0.04	0.16
s, saturation flow rate [veh/h]	3459	3560	1783	1781	5094	1589	1781	1831	2813	1781	1643
c, Capacity [veh/h]	526	1418	710	262	2003	625	281	289	443	281	259
d1, Uniform Delay [s]	52.87	29.75	29.76	53.19	37.09	29.53	48.08	48.05	53.47	46.97	53.47
k, delay calibration	0.04	0.13	0.16	0.28	0.13	0.13	0.04	0.04	0.08	0.04	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.37	0.44	1.07	22.56	3.32	0.85	0.34	0.33	91.85	0.18	52.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.57	0.57	0.90	0.94	0.53	0.40	0.40	1.20	0.26	1.00
d, Delay for Lane Group [s/veh]	55.24	30.19	30.83	75.75	40.40	30.38	48.42	48.38	145.32	47.15	105.93
Lane Group LOS	E	C	C	E	D	C	D	D	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.40	9.34	9.49	8.82	18.38	7.62	3.24	3.30	12.71	2.05	12.01
50th-Percentile Queue Length [ft/ln]	185.09	233.44	237.21	220.50	459.55	190.55	81.06	82.58	317.66	51.36	300.14
95th-Percentile Queue Length [veh/ln]	11.87	14.35	14.54	13.69	25.41	12.15	5.84	5.95	20.06	3.70	17.73
95th-Percentile Queue Length [ft/ln]	296.65	358.73	363.51	342.27	635.33	303.74	145.90	148.64	501.59	92.45	443.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.24	55.24	30.36	30.83	75.75	75.75	40.40	30.38	48.42	48.38	145.32	47.15	105.93	105.93
Movement LOS	E	E	C	C	E	E	D	C	D	D	F	D	F	F
d_A, Approach Delay [s/veh]	37.37				42.43				116.26			93.05		
Approach LOS	D				D				F			F		
d_I, Intersection Delay [s/veh]	54.70													
Intersection LOS	D													
Intersection V/C	0.977													

Emissions

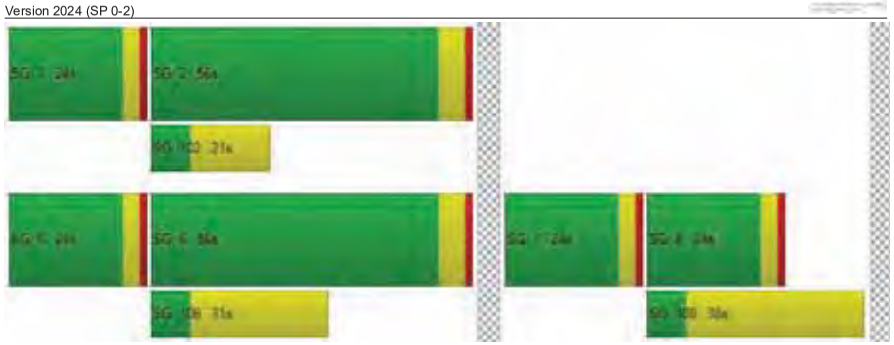
Vehicle Miles Traveled [mph]	89.25	152.64	76.51	56.13	450.20	79.29	7.01	7.15	33.05	3.56	12.68
Stops [stops/h]	420.16	529.91	269.23	250.27	1564.74	216.27	92.00	93.73	721.09	58.29	340.65
Fuel consumption [US gal/h]	13.61	16.80	8.52	8.66	50.38	7.46	1.90	1.94	21.02	1.17	8.01
CO [g/h]	951.41	1174.39	595.51	605.17	3521.85	521.40	133.11	135.62	1468.96	81.71	559.76
NOx [g/h]	185.11	228.49	115.87	117.74	685.22	101.44	25.90	26.39	285.81	15.90	108.91
VOC [g/h]	220.50	272.18	138.02	140.25	816.22	120.84	30.85	31.43	340.45	18.94	129.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	52.91	52.91	52.91
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.686	3.090	2.357
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	793	793	315	315
d_b, Bicycle Delay [s]	23.11	23.11	45.01	45.01
l_b,int, Bicycle LOS Score for Intersection	2.514	2.852	3.158	2.244
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	130.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.193

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1588	1190	150	3	70	1406	1107	260	92	837	171	104	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	65	59	13	0	0	-59	0	0	0	-31	-12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	49	0	0	0	332	0	0	242	0	0	32
Total Hourly Volume [veh/h]	1	1653	1249	114	3	70	1347	775	260	92	564	159	104	74
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	413	312	29	1	18	337	194	65	23	141	40	26	19
Total Analysis Volume [veh/h]	1	1653	1249	114	3	70	1347	775	260	92	564	159	104	74
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	69	69	8	39	73	28	28	11	11	11
g / C, Green / Cycle	0.28	0.51	0.51	0.06	0.29	0.53	0.21	0.21	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.48	0.25	0.26	0.04	0.26	0.49	0.10	0.10	0.06	0.06	0.07
s, saturation flow rate [veh/h]	3459	3560	1793	1781	5094	1589	1781	1826	1781	1833	1670
c, Capacity [veh/h]	951	1811	912	98	1472	849	369	379	144	148	135
d1, Uniform Delay [s]	36.83	5.76	5.81	63.28	46.73	28.83	47.34	47.33	61.35	61.30	61.47
k, delay calibration	0.33	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	335.46	0.96	2.07	4.06	10.35	15.87	0.69	0.67	3.56	3.28	4.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.74	0.49	0.51	0.74	0.91	0.91	0.47	0.47	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	372.29	6.72	7.88	67.34	57.08	44.69	48.04	48.01	64.91	64.59	65.74
Lane Group LOS	F	A	A	E	E	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	58.06	2.60	3.01	2.56	15.64	24.98	5.29	5.41	3.99	4.04	3.87
50th-Percentile Queue Length [ft/ln]	1451.46	65.03	75.29	63.92	390.95	624.39	132.13	135.14	99.71	101.08	96.71
95th-Percentile Queue Length [veh/ln]	90.33	4.68	5.42	4.60	22.12	33.17	9.06	9.22	7.18	7.28	6.96
95th-Percentile Queue Length [ft/ln]	2258.26	117.05	135.52	115.05	553.09	829.29	226.39	230.46	179.47	181.95	174.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	372.2	372.2	7.05	7.88	67.34	67.34	57.08	44.69	48.03	48.01	0.00	64.82	64.97	65.74
Movement LOS	F	F	A	A	E	E	E	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	207.32				53.05				18.45			65.07		
Approach LOS	F				D				B			E		
d_I, Intersection Delay [s/veh]	130.54													
Intersection LOS	F													
Intersection V/C	1.193													

Emissions

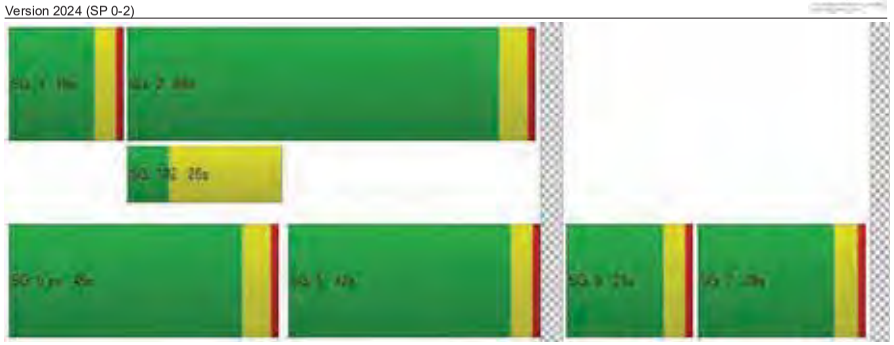
Vehicle Miles Traveled [mph]	283.02	152.91	80.31	13.75	253.63	145.92	8.05	8.23	3.60	3.66	3.46
Stops [stops/h]	3073.68	137.71	79.72	67.68	1241.85	661.12	139.90	143.09	105.57	107.03	102.40
Fuel consumption [US gal/h]	153.91	8.28	4.50	2.31	39.78	20.27	2.80	2.87	2.23	2.25	2.16
CO [g/h]	10758.4	578.65	314.51	161.67	2780.53	1416.90	196.05	200.52	155.54	157.53	151.29
NOx [g/h]	2093.20	112.58	61.19	31.46	540.99	275.68	38.14	39.01	30.26	30.65	29.44
VOC [g/h]	2493.38	134.11	72.89	37.47	644.41	328.38	45.44	46.47	36.05	36.51	35.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.366
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	576	337	241
d_b, Bicycle Delay [s]	20.02	34.45	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.245	2.911	2.140	1.864
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	35.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.044

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2400	463	0	529	1886	0	0	0	1410	0	0	529
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	137	20	0	0	-102	0	0	0	-72	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	145	0	0	0	0	0	0	401	0	0	159
Total Hourly Volume [veh/h]	0	2537	338	0	529	1784	0	0	0	937	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	755	101	0	157	531	0	0	0	279	0	0	110
Total Analysis Volume [veh/h]	0	3020	402	0	630	2124	0	0	0	1115	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	26	35	22	
g / C, Green / Cycle	0.47	0.47	0.38	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.44	0.25	0.35	0.31	0.40	
s, saturation flow rate [veh/h]	6792	1589	1781	6792	2813	
c, Capacity [veh/h]	3159	739	670	3476	927	
d1, Uniform Delay [s]	17.51	13.02	20.49	11.79	22.80	
k, delay calibration	0.50	0.50	0.15	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	8.61	2.86	9.26	0.81	92.31	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.96	0.54	0.94	0.61	1.20	
d, Delay for Lane Group [s/veh]	26.12	15.88	29.74	12.60	115.11	
Lane Group LOS	C	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	10.76	4.10	9.75	4.57	18.64	
50th-Percentile Queue Length [ft/ln]	268.91	102.44	243.76	114.16	466.05	
95th-Percentile Queue Length [veh/ln]	16.14	7.38	14.87	8.07	28.64	
95th-Percentile Queue Length [ft/ln]	403.38	184.39	371.78	201.77	715.94	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	26.12	15.88	29.74	29.74	12.60	0.00	0.00	0.00	115.11	0.00	0.00	0.00
Movement LOS		C	B	C	C	B				F			
d_A, Approach Delay [s/veh]	24.91			16.52			115.11				0.00		
Approach LOS	C			B			F				A		
d_I, Intersection Delay [s/veh]	35.54												
Intersection LOS	D												
Intersection V/C	1.044												

Emissions

Vehicle Miles Traveled [mph]	436.98	58.17	107.80	363.44	79.79	
Stops [stops/h]	2277.82	216.92	516.19	966.99	1973.85	
Fuel consumption [US gal/h]	59.35	5.99	13.93	29.93	40.31	
CO [g/h]	4148.65	418.70	973.46	2092.01	2817.39	
NOx [g/h]	807.18	81.46	189.40	407.03	548.16	
VOC [g/h]	961.49	97.04	225.61	484.84	652.96	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.273
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	3.031	2.436	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	73	2071	262	4	570	2319	403	184	10	32	1	74	33	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	157	16	0	0	-174	0	0	0	-3	0	-9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	83	0	0	0	121	0	0	9	0	0	0	181
Total Hourly Volume [veh/h]	1	77	2228	195	4	570	2145	282	184	10	20	1	65	33	423
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	20	568	50	1	145	547	72	47	3	5	0	17	8	108
Total Analysis Volume [veh/h]	1	79	2273	199	4	582	2189	288	188	10	20	1	66	34	432
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	50	50	15	61	61	8	8	8	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.14	0.59	0.59	0.08	0.08	0.08	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.45	0.13	0.17	0.43	0.18	0.05	0.01	0.01	0.04	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1625	1589
c, Capacity [veh/h]	138	2450	764	499	2981	930	266	144	122	257	234	229
d1, Uniform Delay [s]	49.09	25.31	16.02	44.52	15.69	10.93	46.87	44.56	44.88	39.59	44.52	44.52
k, delay calibration	0.04	0.04	0.04	0.07	0.04	0.04	0.08	0.08	0.08	0.08	0.43	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	0.74	0.07	82.11	0.13	0.07	2.56	0.15	0.46	0.40	55.78	56.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.93	0.26	1.18	0.73	0.31	0.71	0.07	0.16	0.26	1.01	1.01
d, Delay for Lane Group [s/veh]	50.53	26.05	16.09	126.63	15.82	11.00	49.43	44.71	45.35	39.98	100.29	100.94
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.05	16.73	2.77	12.05	11.64	3.21	2.46	0.25	0.50	1.55	9.60	9.44
50th-Percentile Queue Length [ft/ln]	26.14	418.13	69.17	301.16	290.96	80.18	61.47	6.13	12.44	38.69	240.09	235.93
95th-Percentile Queue Length [veh/ln]	1.88	23.43	4.98	19.01	17.23	5.77	4.43	0.44	0.90	2.79	14.72	14.51
95th-Percentile Queue Length [ft/ln]	47.05	585.81	124.51	475.19	430.83	144.32	110.65	11.03	22.38	69.65	368.07	362.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.53	50.53	26.05	16.09	126.6	126.6	15.82	11.00	49.43	44.71	45.35	39.98	39.98	100.2	100.6
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	26.04				36.57				48.84			92.99			
Approach LOS	C				D				D			F			
d_I, Intersection Delay [s/veh]	37.49														
Intersection LOS	D														
Intersection V/C	0.963														

Emissions

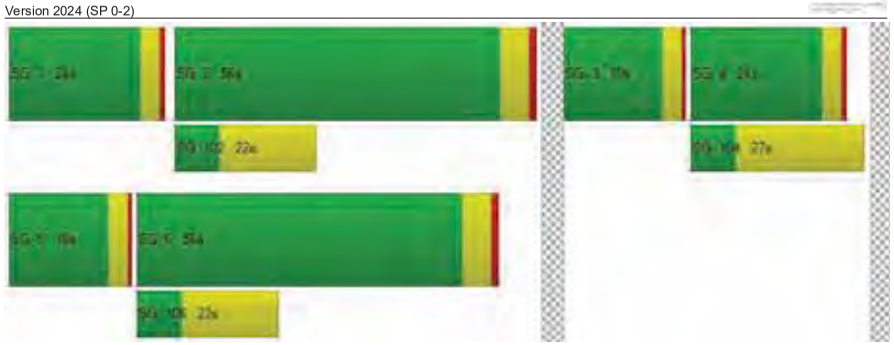
Vehicle Miles Traveled [mph]	17.87	507.85	44.46	84.79	316.74	41.67	23.98	1.28	2.55	23.51	82.66	80.89
Stops [stops/h]	72.41	1737.61	95.82	834.33	1209.12	111.06	170.31	8.49	17.23	53.60	332.58	326.81
Fuel consumption [US gal/h]	1.96	42.56	3.01	23.20	26.77	2.97	3.82	0.19	0.38	1.81	10.05	9.87
CO [g/h]	136.90	2974.79	210.49	1621.55	1871.13	207.86	266.95	13.31	26.89	126.47	702.26	689.85
NOx [g/h]	26.64	578.79	40.95	315.49	364.05	40.44	51.94	2.59	5.23	24.61	136.63	134.22
VOC [g/h]	31.73	689.44	48.78	375.81	433.65	48.17	61.87	3.08	6.23	29.31	162.76	159.88

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.56	0.00	41.56	41.56
I_p,int, Pedestrian LOS Score for Intersectio	3.507	0.000	2.594	2.874
Crosswalk LOS	D	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	972	972	394	298
d_b, Bicycle Delay [s]	13.74	13.74	33.50	37.63
I_b,int, Bicycle LOS Score for Intersection	3.008	2.991	1.747	2.629
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	60.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	2	0	0	1	2	0	0	1	1	0	2
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	400.0	100.0	100.0	400.0	360.0	100.0	100.0	300.0	400.00	100.00	300.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	157	1794	426	1	98	1858	469	2	355	447	90	517	381	257
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	177	47	0	0	-186	0	0	0	0	0	-47	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	142	0	0	0	141	0	0	0	27	0	0	77
Total Hourly Volume [veh/h]	2	157	1971	331	1	98	1672	328	2	355	447	63	470	381	180
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	42	524	88	0	26	445	87	1	94	119	17	125	101	48
Total Analysis Volume [veh/h]	2	167	2097	352	1	104	1779	349	2	378	476	67	500	405	191
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Overl	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups				2,3											
Maximum Green [s]	0	20	53	37	0	20	53	0	0	30	30	0	37	45	0
Amber [s]	0.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	5	0	0	0	5	0	0	0	4	0	0	5	0
Pedestrian Clearance [s]	0	0	28	0	0	0	24	0	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	58	42	0	25	58	0	0	27	35	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	9	9	0	9	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	1.0	1.5	1.0	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No	Yes	No		No	Yes			No	No		No	No	
Maximum Recall		No	No	No		No	No			No	No		No	No	
Pedestrian Recall		No	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	54	113	9	53	53	20	24	24	53	57	57
g / C, Green / Cycle	0.06	0.34	0.70	0.06	0.33	0.33	0.12	0.15	0.15	0.33	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.05	0.31	0.22	0.03	0.35	0.22	0.11	0.13	0.04	0.15	0.11	0.12
s, saturation flow rate [veh/h]	3431	6737	1577	3431	5053	1577	3431	3532	1577	3431	3532	1577
c, Capacity [veh/h]	212	2284	1108	193	1685	526	420	520	232	1141	1262	563
d1, Uniform Delay [s]	74.06	50.75	9.09	73.50	53.33	45.65	69.28	67.26	60.78	19.71	15.64	15.71
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.59	7.37	0.75	0.89	38.39	6.48	3.04	2.82	0.25	1.22	0.67	1.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.92	0.32	0.54	1.06	0.66	0.90	0.92	0.29	0.44	0.32	0.34
d, Delay for Lane Group [s/veh]	76.65	58.12	9.85	74.39	91.71	52.13	72.32	70.08	61.03	20.94	16.31	17.34
Lane Group LOS	E	E	A	E	F	D	E	E	E	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.47	20.82	4.59	2.10	27.95	12.63	7.89	9.84	2.47	3.81	2.55	2.55
50th-Percentile Queue Length [ft/ln]	86.65	520.41	114.85	52.57	698.69	315.72	197.37	245.95	61.68	95.22	63.64	63.79
95th-Percentile Queue Length [veh/ln]	6.24	28.30	8.11	3.79	38.01	18.46	12.50	14.98	4.44	6.86	4.58	4.59
95th-Percentile Queue Length [ft/ln]	155.97	707.47	202.73	94.63	950.19	461.42	312.57	374.55	111.02	171.39	114.55	114.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.65	76.65	58.12	9.85	74.39	74.39	91.71	52.13	72.32	72.32	70.08	61.03	20.94	16.31	17.34
Movement LOS	E	E	E	A	E	E	F	D	E	E	E	E	C	B	B
d_A, Approach Delay [s/veh]	52.83				84.71				70.35				18.60		
Approach LOS	D				F				E				B		
d_I, Intersection Delay [s/veh]	60.08														
Intersection LOS	E														
Intersection V/C	0.758														

Emissions

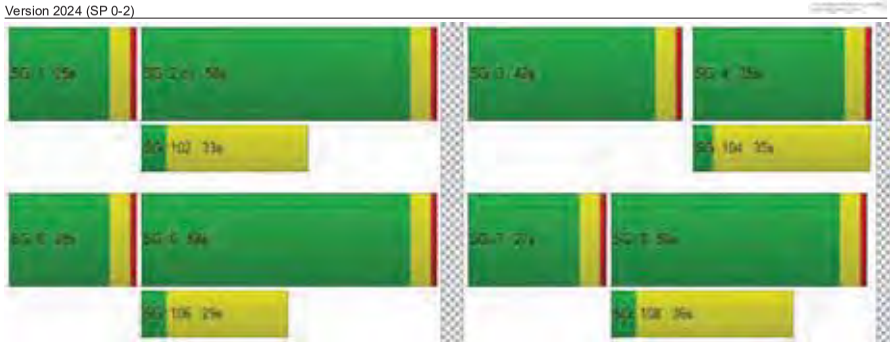
Vehicle Miles Traveled [mph]	67.24	834.36	140.05	23.46	397.48	77.98	94.69	118.61	16.69	52.44	42.48	20.03
Stops [stops/h]	155.97	1873.47	103.37	94.63	1886.45	284.15	355.27	442.71	55.51	171.39	114.55	57.41
Fuel consumption [US gal/h]	6.88	76.69	6.79	3.57	70.28	9.91	11.45	14.12	1.83	5.24	3.73	1.82
CO [g/h]	480.90	5360.82	474.71	249.54	4912.36	692.57	800.54	986.70	127.63	365.98	260.44	126.93
NOx [g/h]	93.56	1043.02	92.36	48.55	955.77	134.75	155.76	191.98	24.83	71.21	50.67	24.70
VOC [g/h]	111.45	1242.42	110.02	57.83	1138.49	160.51	185.53	228.68	29.58	84.82	60.36	29.42

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	71.25	71.25	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.948	3.944	2.941	3.045
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	663	663	375	563
d_b, Bicycle Delay [s]	35.78	35.78	52.81	41.33
l_b,int, Bicycle LOS Score for Intersection	2.697	2.808	2.032	2.527
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	300.0	200.0	100.0	100.0	100.0	320.00	100.00	320.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	74	1954	3	2	19	1885	577	279	6	21	5	11	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	224	0	0	0	-233	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	173	0	0	6	0	0	5
Total Hourly Volume [veh/h]	1	74	2178	2	2	19	1652	404	279	6	15	5	11	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	21	626	1	1	5	475	116	80	2	4	1	3	3
Total Analysis Volume [veh/h]	1	85	2503	2	2	22	1899	464	321	7	17	6	13	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	16	34	0	0	15	34	0	0	36	0	0	16	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	11	0	0	0	18	0	0	24	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	20	40	0	0	20	40	0	0	40	0	0	20	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	C
C, Cycle Length [s]	67	67	67	67	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	37	37	1	34	34	9	9	9	2
g / C, Green / Cycle	0.06	0.55	0.55	0.02	0.50	0.50	0.13	0.13	0.13	0.03
(v / s)_i Volume / Saturation Flow Rate	0.05	0.46	0.46	0.01	0.37	0.29	0.09	0.09	0.01	0.02
s, saturation flow rate [veh/h]	1781	3560	1869	1781	5094	1589	1781	1785	1589	1740
c, Capacity [veh/h]	114	1954	1026	30	2556	798	237	238	212	57
d1, Uniform Delay [s]	30.89	12.67	12.68	32.86	13.27	11.76	27.75	27.75	25.47	31.93
k, delay calibration	0.04	0.15	0.37	0.04	0.15	0.16	0.11	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.81	1.46	6.33	16.51	0.62	1.03	3.57	3.56	0.16	2.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.84	0.84	0.80	0.74	0.58	0.69	0.69	0.08	0.53
d, Delay for Lane Group [s/veh]	34.70	14.14	19.00	49.38	13.90	12.78	31.32	31.31	25.63	34.70
Lane Group LOS	C	B	B	D	B	B	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.43	8.77	10.59	0.48	5.42	3.65	2.62	2.63	0.24	0.50
50th-Percentile Queue Length [ft/ln]	35.83	219.18	264.86	12.10	135.47	91.25	65.61	65.72	5.92	12.62
95th-Percentile Queue Length [veh/ln]	2.58	13.62	15.93	0.87	9.24	6.57	4.72	4.73	0.43	0.91
95th-Percentile Queue Length [ft/ln]	64.50	340.57	398.31	21.79	230.90	164.25	118.09	118.29	10.66	22.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.70	34.70	15.81	19.00	49.38	49.38	13.90	12.78	31.31	31.31	25.63	34.70	34.70	34.70
Movement LOS	C	C	B	B	D	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.44				14.04				31.03			34.70		
Approach LOS	B				B				C			C		
d_I, Intersection Delay [s/veh]	16.41													
Intersection LOS	B													
Intersection V/C	0.768													

Emissions

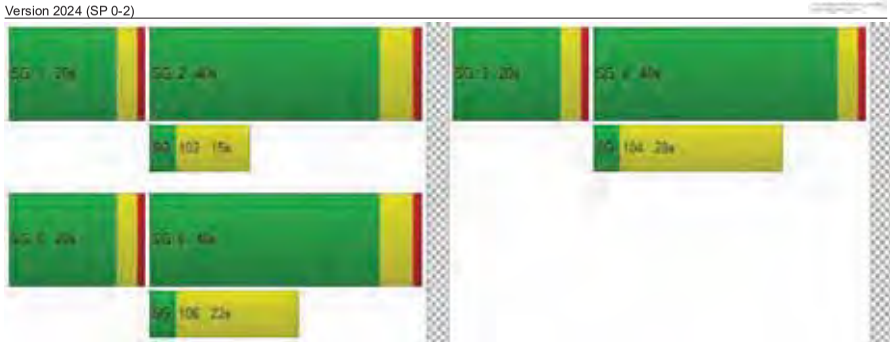
Vehicle Miles Traveled [mph]	30.43	581.21	305.21	9.55	755.58	184.62	39.46	39.53	4.09	0.57
Stops [stops/h]	77.10	943.24	569.92	26.05	874.48	196.35	141.17	141.41	12.75	27.16
Fuel consumption [US gal/h]	2.29	33.86	19.05	1.04	46.89	11.03	3.45	3.45	0.33	0.39
CO [g/h]	159.79	2367.08	1331.48	73.00	3277.52	771.00	241.06	241.47	22.90	26.94
NOx [g/h]	31.09	460.55	259.06	14.20	637.69	150.01	46.90	46.98	4.46	5.24
VOC [g/h]	37.03	548.59	308.58	16.92	759.60	178.69	55.87	55.96	5.31	6.24

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.94	0.00	25.94	25.94
l_p,int, Pedestrian LOS Score for Intersectio	3.213	0.000	2.392	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1016	1016	1076	478
d_b, Bicycle Delay [s]	8.10	8.10	7.14	19.37
l_b,int, Bicycle LOS Score for Intersection	2.985	2.956	2.139	1.617
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	27.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	155	1839	1449	463	193	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	96	0	0	0
Site-Generated Trips [veh/h]	0	12	224	-233	0	0	-2
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	139	0	31
Total Hourly Volume [veh/h]	1	167	2063	1312	324	193	71
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	593	377	93	55	20
Total Analysis Volume [veh/h]	1	192	2371	1508	372	222	82
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	10	54	40	40	12	12
g / C, Green / Cycle	0.13	0.71	0.53	0.53	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.11	0.67	0.50	0.54	0.12	0.05
s, saturation flow rate [veh/h]	1781	3560	1870	1748	1781	1589
c, Capacity [veh/h]	235	2535	986	922	278	248
d1, Uniform Delay [s]	32.06	9.42	17.04	17.93	30.85	28.47
k, delay calibration	0.12	0.21	0.41	0.45	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.74	3.74	16.86	33.21	5.22	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.94	0.95	1.02	0.80	0.33
d, Delay for Lane Group [s/veh]	39.79	13.16	33.90	51.14	36.07	29.24
Lane Group LOS	D	B	C	F	D	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.83	12.53	17.91	22.22	4.18	1.34
50th-Percentile Queue Length [ft/ln]	95.87	313.34	447.87	555.49	104.42	33.49
95th-Percentile Queue Length [veh/ln]	6.90	18.34	24.86	30.42	7.52	2.41
95th-Percentile Queue Length [ft/ln]	172.57	458.49	621.40	760.61	187.95	60.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.79	39.79	13.16	40.40	51.14	36.07	29.24
Movement LOS	D	D	B	D	D	D	C
d_A, Approach Delay [s/veh]	15.16			42.52		34.23	
Approach LOS	B			D		C	
d_I, Intersection Delay [s/veh]	27.22						
Intersection LOS	C						
Intersection V/C	0.939						

Emissions

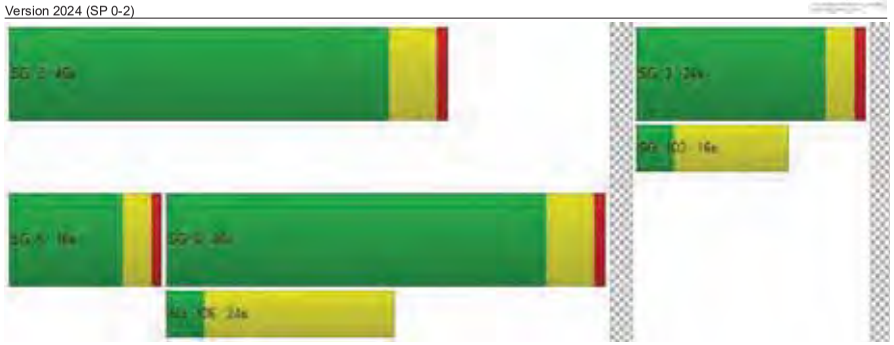
Vehicle Miles Traveled [mph]	134.69	1654.70	332.63	332.63	74.90	27.67
Stops [stops/h]	182.35	1191.96	851.86	1056.57	198.61	63.70
Fuel consumption [US gal/h]	8.12	81.05	24.88	29.31	5.81	1.98
CO [g/h]	567.25	5665.58	1739.45	2048.99	406.13	138.32
NOx [g/h]	110.37	1102.32	338.43	398.66	79.02	26.91
VOC [g/h]	131.47	1313.05	403.13	474.87	94.12	32.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00	0.00
d_p, Pedestrian Delay [s]	30.28		0.00	30.28
l_p,int, Pedestrian LOS Score for Intersectio	3.110		0.000	2.316
Crosswalk LOS	C		F	B
s_b, Saturation Flow Rate of the bicycle lane	2000		2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1057		1057	528
d_b, Bicycle Delay [s]	8.42		8.42	20.50
l_b,int, Bicycle LOS Score for Intersection	3.674		3.225	1.560
Bicycle LOS	D		C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	161.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.261

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	60	778	21	276	401	877	613	90	86	136	351	604
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	20	8	0	148	0	0	0	11	28	0	0
Site-Generated Trips [veh/h]	84	308	34	0	1	-235	-72	-12	-3	-9	-41	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	19	0	0	193	0	0	28	0	0	181
Total Hourly Volume [veh/h]	144	1106	44	276	550	449	541	78	66	155	310	423
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	311	12	78	154	126	152	22	19	44	87	119
Total Analysis Volume [veh/h]	162	1243	49	310	618	504	608	88	74	174	348	475
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	91	91	91	91	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	10	25	25	12	27	27	15	15	20	20
g / C, Green / Cycle	0.11	0.28	0.28	0.13	0.30	0.30	0.17	0.17	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.35	0.35	0.17	0.32	0.33	0.22	0.22	0.28	0.30
s, saturation flow rate [veh/h]	1781	1870	1845	1781	1870	1600	1781	1759	1839	1589
c, Capacity [veh/h]	197	515	508	235	556	475	294	291	405	350
d1, Uniform Delay [s]	39.53	32.90	32.90	39.40	31.91	31.91	37.90	37.90	35.40	35.40
k, delay calibration	0.12	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.42	132.45	134.34	169.45	58.89	73.92	163.43	165.84	147.29	178.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	1.26	1.27	1.32	1.07	1.11	1.31	1.32	1.29	1.36
d, Delay for Lane Group [s/veh]	48.95	165.35	167.24	208.85	90.80	105.83	201.33	203.74	182.69	213.55
Lane Group LOS	D	F	F	F	F	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.00	29.88	29.75	15.92	19.91	19.02	19.76	19.71	25.30	24.86
50th-Percentile Queue Length [ft/ln]	100.04	746.99	743.72	398.11	497.85	475.51	494.01	492.86	632.40	621.52
95th-Percentile Queue Length [veh/ln]	7.20	44.21	44.10	25.06	28.44	27.84	30.49	30.47	38.09	38.24
95th-Percentile Queue Length [ft/ln]	180.07	1105.22	1102.47	626.50	711.02	695.99	762.18	761.66	952.29	955.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.95	166.25	167.24	208.85	91.34	105.83	202.21	203.74	203.74	182.69	182.69	213.55
Movement LOS	D	F	F	F	F	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	153.21			121.88			202.53			197.39		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	161.20											
Intersection LOS	F											
Intersection V/C	1.261											

Emissions

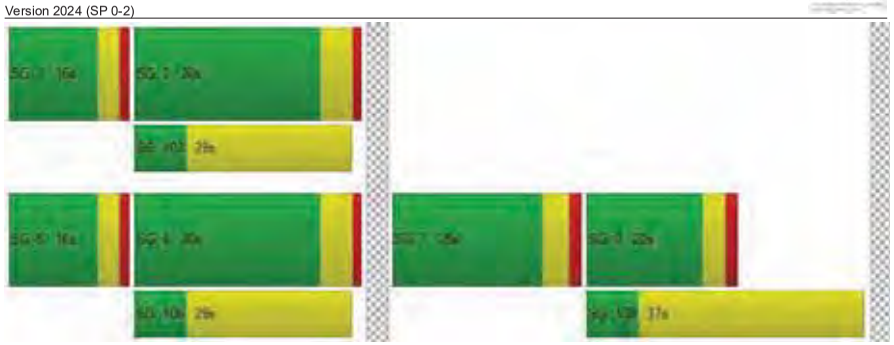
Vehicle Miles Traveled [mph]	93.56	374.97	371.19	216.35	415.65	367.39	29.08	28.84	57.73	52.53
Stops [stops/h]	158.65	1184.65	1179.47	631.36	789.54	754.11	783.45	781.63	1002.92	985.67
Fuel consumption [US gal/h]	6.34	43.82	43.67	32.14	39.57	37.63	21.36	21.40	27.32	28.25
CO [g/h]	443.28	3063.33	3052.33	2246.37	2766.14	2630.53	1493.17	1495.85	1909.74	1974.44
NOx [g/h]	86.25	596.01	593.87	437.06	538.19	511.80	290.52	291.04	371.57	384.15
VOC [g/h]	102.73	709.96	707.41	520.62	641.08	609.65	346.06	346.68	442.60	457.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.07	0.00	35.07	35.07
l_p,int, Pedestrian LOS Score for Intersectio	2.788	0.000	2.632	2.732
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	544	544	341	441
d_b, Bicycle Delay [s]	24.06	24.06	31.22	27.60
l_b,int, Bicycle LOS Score for Intersection	2.775	2.900	2.876	3.503
Bicycle LOS	C	C	C	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	582	265	358	277	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	44	0	0	155	21	0
Site-Generated Trips [veh/h]	-31	498	229	-240	-72	-10
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	82	0	30
Total Hourly Volume [veh/h]	135	1080	494	191	226	69
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	300	137	53	63	19
Total Analysis Volume [veh/h]	150	1200	549	212	251	77
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	7	40	29	29	11	11
g / C, Green / Cycle	0.11	0.66	0.48	0.48	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.64	0.29	0.13	0.14	0.05
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	194	1227	900	765	322	287
d1, Uniform Delay [s]	26.50	10.11	11.65	9.49	23.91	21.58
k, delay calibration	0.04	0.43	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.45	19.07	0.96	0.28	4.13	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.98	0.61	0.28	0.78	0.27
d, Delay for Lane Group [s/veh]	28.95	29.17	12.60	9.77	28.03	22.08
Lane Group LOS	C	C	B	A	C	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.95	12.52	3.93	1.22	3.59	0.93
50th-Percentile Queue Length [ft/ln]	48.69	313.02	98.15	30.48	89.65	23.26
95th-Percentile Queue Length [veh/ln]	3.51	18.32	7.07	2.19	6.45	1.68
95th-Percentile Queue Length [ft/ln]	87.64	458.10	176.67	54.87	161.36	41.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.95	29.17	12.60	9.77	28.03	22.08
Movement LOS	C	C	B	A	C	C
d_A, Approach Delay [s/veh]	29.15		11.81		26.63	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	23.40					
Intersection LOS	C					
Intersection V/C	0.974					

Emissions

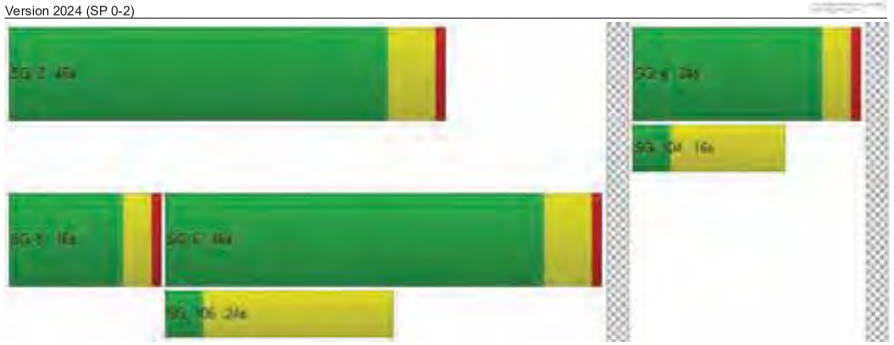
Vehicle Miles Traveled [mph]	18.51	148.06	317.06	122.44	58.95	18.08
Stops [stops/h]	114.98	739.26	231.80	72.00	211.72	54.94
Fuel consumption [US gal/h]	3.64	25.81	16.32	5.85	5.03	1.39
CO [g/h]	254.34	1803.99	1140.77	409.23	351.49	97.44
NOx [g/h]	49.48	350.99	221.95	79.62	68.39	18.96
VOC [g/h]	58.94	418.09	264.38	94.84	81.46	22.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	23.01	0.00	23.01
l_p,int, Pedestrian LOS Score for Intersectio	3.119	0.000	2.227
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1312	1312	656
d_b, Bicycle Delay [s]	3.61	3.61	13.77
l_b,int, Bicycle LOS Score for Intersection	3.787	2.951	1.560
Bicycle LOS	D	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	317.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.135

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	360	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	13	0	0	0	4	11	0	0	0	0	0
Site-Generated Trips [veh/h]	2	433	0	0	208	12	34	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1104	0	14	568	16	45	0	5	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	300	0	4	154	4	12	0	1	0	0	10
Total Analysis Volume [veh/h]	2	1200	0	14	617	17	49	0	5	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	1.14	0.00	0.01	0.00	0.00	0.17
d_M, Delay for Movement [s/veh]	8.80	0.00	0.00	11.21	0.00	0.00	317.81	285.60	241.83	76.10	60.14	24.27
Movement LOS	A	A	A	B	A	A	F	F	F	F	F	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	4.92	4.92	4.92	0.61	0.61	0.61
95th-Percentile Queue Length [ft/ln]	0.08	0.08	0.08	0.59	0.59	0.59	123.00	123.00	123.00	15.28	15.28	15.28
d_A, Approach Delay [s/veh]	0.01			0.24			310.77			24.27		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	9.21											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	3,188.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	7.691

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	422	48	74	286	0	0	0	0	12	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	-10	0	0	4	141	446	6	51	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	412	48	74	290	141	483	6	69	12	2	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	111	13	20	78	38	130	2	19	3	1	67
Total Analysis Volume [veh/h]	63	443	52	80	312	152	519	6	74	13	2	269
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.07	0.00	0.00	7.69	0.04	0.11	0.10	0.01	0.45
d_M, Delay for Movement [s/veh]	8.48	0.00	0.00	8.64	0.00	0.00	3188.65	3156.68	3140.76	42.98	37.02	20.18
Movement LOS	A	A	A	A	A	A	F	F	F	E	E	C
95th-Percentile Queue Length [veh/ln]	0.18	0.00	0.00	0.24	0.00	0.00	68.60	68.60	68.60	3.51	3.51	3.51
95th-Percentile Queue Length [ft/ln]	4.56	0.00	0.00	6.06	0.00	0.00	1714.93	1714.93	1714.93	87.76	87.76	87.76
d_A, Approach Delay [s/veh]	0.96			1.27			3182.41			21.34		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	964.01											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	797.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	560	229	53	0	1106	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-24	-85	-3	-83	0	-277	84
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	14	0	0	59	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	3	475	226	29	0	829	266
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	131	62	8	0	229	73
Total Analysis Volume [veh/h]	0	3	524	249	32	0	915	294
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.55	0.68	0.00	0.00	0.00	0.71	0.00
d_M, Delay for Movement [s/veh]	797.94	797.94	145.09	0.00	0.00	22.22	10.31	0.00
Movement LOS	F	F	F	A	A	C	B	A
95th-Percentile Queue Length [veh/ln]	21.36	21.36	21.36	0.00	0.00	3.43	3.43	3.43
95th-Percentile Queue Length [ft/ln]	534.04	534.04	534.04	0.00	0.00	85.83	85.83	85.83
d_A, Approach Delay [s/veh]	148.80			0.00		7.80		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	43.56							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	88.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.194

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	16	229	88	2	30	1009	55	19	21	0	258	55	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-117	-90	0	4	-299	-75	6	3	0	-229	-55	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	112	0	2	34	710	0	25	24	0	29	0	83
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	34	0	1	10	214	0	8	7	0	9	0	25
Total Analysis Volume [veh/h]	19	135	0	2	41	855	0	30	29	0	35	0	100
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	655	898	552	614
Degree of Utilization, x	0.24	1.19	0.11	0.22

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.91	29.63	0.36	0.83
95th-Percentile Queue Length [ft]	22.75	740.73	8.92	20.82
Approach Delay [s/veh]	10.19	118.48	10.30	10.50
Approach LOS	B	F	B	B
Intersection Delay [s/veh]	88.27			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	175	151	1	131	225	0	67	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-78	0	-8	0	0	62	-2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	73	1	123	225	0	129	126
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	19	0	32	59	0	34	33
Total Analysis Volume [veh/h]	184	77	1	129	237	0	136	133
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.48	0.10	0.00	0.00	0.00	0.00	0.11	0.00
d_M, Delay for Movement [s/veh]	22.84	10.04	8.80	0.00	0.00	11.37	8.41	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	2.52	0.32	0.00	0.00	0.00	0.39	0.39	0.00
95th-Percentile Queue Length [ft/ln]	63.11	8.06	0.05	0.05	0.05	9.63	9.63	0.00
d_A, Approach Delay [s/veh]	19.06		0.02			4.25		
Approach LOS	C		A			A		
d_I, Intersection Delay [s/veh]	6.83							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	32.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	134	128	233	92	194	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-78	0	0	62
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	128	155	92	194	214
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	35	42	25	53	58
Total Analysis Volume [veh/h]	146	139	168	100	211	233
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.51	0.16	0.00	0.00	0.16	0.00
d_M, Delay for Movement [s/veh]	32.82	24.40	0.00	0.00	8.32	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	4.74	4.74	0.00	0.00	0.58	0.00
95th-Percentile Queue Length [ft/ln]	118.51	118.51	0.00	0.00	14.53	0.00
d_A, Approach Delay [s/veh]	28.71		0.00		3.95	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	9.97					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.104

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	12	202	20	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	62	0	0	-78	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	10	12	124	20	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	3	3	34	5	5
Total Analysis Volume [veh/h]	140	11	13	135	22	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	729	744	684	755	755	720
Degree of Utilization, x	0.10	0.10	0.02	0.09	0.09	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.35	0.34	0.06	0.29	0.29	0.19
95th-Percentile Queue Length [ft]	8.63	8.44	1.45	7.34	7.34	4.64
Approach Delay [s/veh]	8.15		7.95			8.31
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.08					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	343	152	60	603	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	62	0	0	0	0	0	0	0	-78	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	0	18	66	1	8	4	343	74	60	603	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	0	5	17	0	2	1	88	19	15	155	4
Total Analysis Volume [veh/h]	131	0	19	68	1	8	4	354	76	62	622	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	7	25	0	0	25	0	15	35	0	15	35	0
Amber [s]	3.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	21	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	150.0	150.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	0	30	0	20	40	0	20	40	0
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	9	0	0	9	0	9	9	0	9	9	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	48	48	48	48	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	8	8	8	6	0	9	9	5	14	14
g / C, Green / Cycle	0.16	0.16	0.16	0.12	0.01	0.19	0.19	0.11	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.01	0.05	0.00	0.11	0.05	0.04	0.19	0.01
s, saturation flow rate [veh/h]	1603	1683	1431	1584	1603	3204	1431	1603	3204	1431
c, Capacity [veh/h]	263	277	235	196	17	603	269	174	916	409
d1, Uniform Delay [s]	18.31	0.00	17.04	19.44	23.62	17.84	16.76	19.91	15.23	12.41
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.45	0.00	0.15	1.28	6.70	0.91	0.57	1.23	0.89	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.00	0.08	0.39	0.23	0.59	0.28	0.36	0.68	0.04
d, Delay for Lane Group [s/veh]	19.76	0.00	17.19	20.72	30.32	18.75	17.32	21.14	16.12	12.44
Lane Group LOS	B	A	B	C	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.28	0.00	0.17	0.78	0.07	1.65	0.68	0.64	2.67	0.10
50th-Percentile Queue Length [ft/ln]	32.04	0.00	4.20	19.52	1.83	41.27	16.94	15.98	66.71	2.61
95th-Percentile Queue Length [veh/ln]	2.31	0.00	0.30	1.41	0.13	2.97	1.22	1.15	4.80	0.19
95th-Percentile Queue Length [ft/ln]	57.66	0.00	7.57	35.14	3.30	74.29	30.49	28.77	120.07	4.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.76	0.00	17.19	20.72	20.72	20.72	30.32	18.75	17.32	21.14	16.12	12.44
Movement LOS	B	A	B	C	C	C	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	19.44			20.72			18.61			16.49		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	17.73											
Intersection LOS	B											
Intersection V/C	0.491											

Emissions

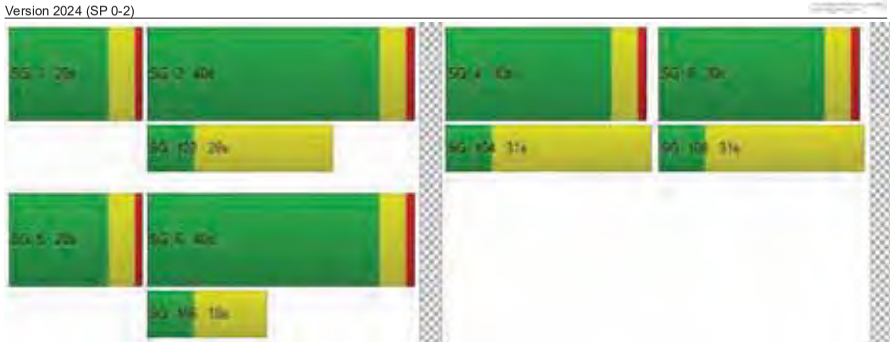
Vehicle Miles Traveled [mph]	38.89	0.00	5.64	1.72	0.57	50.69	10.88	52.17	523.43	12.62
Stops [stops/h]	96.32	0.00	12.64	58.70	5.51	248.21	50.93	48.06	401.15	7.85
Fuel consumption [US gal/h]	2.66	0.00	0.37	0.72	0.08	4.81	1.00	2.68	25.81	0.60
CO [g/h]	185.94	0.00	25.76	50.30	5.50	336.12	69.71	187.35	1803.79	42.01
NOx [g/h]	36.18	0.00	5.01	9.79	1.07	65.40	13.56	36.45	350.95	8.17
VOC [g/h]	43.09	0.00	5.97	11.66	1.27	77.90	16.16	43.42	418.05	9.74

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.21	14.21	14.21	14.21
l_p,int, Pedestrian LOS Score for Intersectio	2.320	1.725	2.611	2.602
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1044	1044	1462	1462
d_b, Bicycle Delay [s]	5.47	5.47	1.74	1.74
l_b,int, Bicycle LOS Score for Intersection	1.807	1.687	1.918	2.136
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	72	5	243	5	5	0	5	644	184	0	499	505	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	73	0	0	0	0	0	55	0	0	0	2
Total Hourly Volume [veh/h]	72	5	170	5	5	0	5	644	129	0	499	505	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	1	44	1	1	0	1	166	33	0	129	130	1
Total Analysis Volume [veh/h]	74	5	175	5	5	0	5	664	133	0	514	521	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	6	15	1	10	1	46	46	36	81	81
g / C, Green / Cycle	0.05	0.13	0.01	0.08	0.01	0.38	0.38	0.30	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.00	0.00	0.00	0.19	0.08	0.29	0.14	0.14
s, saturation flow rate [veh/h]	1781	1596	1781	1870	1781	3560	1589	1781	1870	1866
c, Capacity [veh/h]	96	204	12	152	12	1354	604	537	1262	1259
d1, Uniform Delay [s]	56.04	51.41	59.33	50.78	59.34	28.34	25.16	41.16	7.39	7.39
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.24	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.83	4.76	19.50	0.03	19.95	1.27	0.84	18.67	0.37	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.88	0.40	0.03	0.40	0.49	0.22	0.96	0.21	0.21
d, Delay for Lane Group [s/veh]	60.87	56.16	78.83	50.82	79.29	29.61	26.00	59.83	7.76	7.76
Lane Group LOS	E	E	E	D	E	C	C	E	A	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	5.58	0.22	0.14	0.22	7.49	2.72	17.53	2.55	2.55
50th-Percentile Queue Length [ft/ln]	58.56	139.55	5.48	3.51	5.50	187.21	67.97	438.14	63.82	63.70
95th-Percentile Queue Length [veh/ln]	4.22	9.46	0.39	0.25	0.40	11.98	4.89	24.39	4.59	4.59
95th-Percentile Queue Length [ft/ln]	105.40	236.42	9.86	6.32	9.90	299.40	122.35	609.78	114.87	114.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.87	56.16	56.16	78.83	50.82	0.00	79.29	29.61	26.00	59.83	59.83	7.76	7.76
Movement LOS	E	E	E	E	D		E	C	C	E	E	A	A
d_A, Approach Delay [s/veh]	57.53			64.82			29.32			33.55			
Approach LOS	E			E			C			C			
d_I, Intersection Delay [s/veh]	34.98												
Intersection LOS	C												
Intersection V/C	0.656												

Emissions

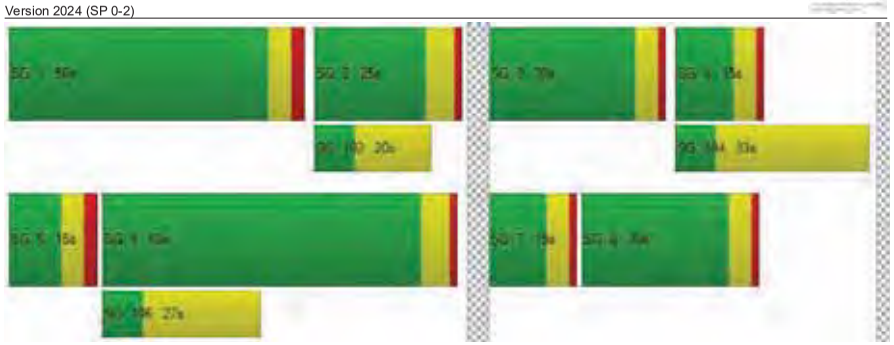
Vehicle Miles Traveled [mph]	28.51	69.36	0.17	0.17	4.21	558.77	111.92	128.07	65.35	65.22
Stops [stops/h]	70.27	167.46	6.57	4.21	6.60	449.30	81.57	525.77	76.58	76.43
Fuel consumption [US gal/h]	2.48	5.84	0.12	0.08	0.29	29.49	5.76	14.44	3.53	3.52
CO [g/h]	173.25	408.03	8.65	5.74	20.30	2061.06	402.74	1009.02	246.58	246.09
NOx [g/h]	33.71	79.39	1.68	1.12	3.95	401.01	78.36	196.32	47.98	47.88
VOC [g/h]	40.15	94.57	2.00	1.33	4.70	477.67	93.34	233.85	57.15	57.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.394	1.962	2.781	0.000
Crosswalk LOS	B	A	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
I_b,int, Bicycle LOS Score for Intersection	2.099	1.576	2.267	1.994
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	43.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.0	100.0	100.0	100.0	200.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			No				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	60	7	28	115	11	210	0	243	666	62	56	885	214
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-18	0	-5	52	0	0	-29	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	58	0	0	0	19	0	0	64
Total Hourly Volume [veh/h]	60	7	20	115	11	134	0	238	718	43	56	856	150
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	5	32	3	37	0	65	197	12	15	235	41
Total Analysis Volume [veh/h]	66	8	22	126	12	147	0	262	789	47	62	941	165
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	7	24	0	7	26	0	0	23	75	0	15	67	0
Amber [s]	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	3.0	0.0	2.5	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	29	0	13	31	0	0	28	80	0	20	72	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	9	0	3	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No			No			No	Yes		No	No	
Maximum Recall		No			No			No	No		No	No	
Pedestrian Recall		No			No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	18	18	69	105	105	8	44	44
g / C, Green / Cycle	0.06	0.06	0.11	0.11	0.43	0.66	0.66	0.05	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.10	0.15	0.22	0.03	0.03	0.26	0.10
s, saturation flow rate [veh/h]	1790	1589	1781	1608	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	100	89	199	179	767	2331	1041	94	987	440
d1, Uniform Delay [s]	74.39	72.32	67.96	70.08	30.42	12.25	9.82	74.36	56.83	46.65
k, delay calibration	0.04	0.04	0.04	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.97	0.53	1.25	5.66	1.21	0.39	0.08	2.90	2.67	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.25	0.63	0.89	0.34	0.34	0.05	0.66	0.95	0.37
d, Delay for Lane Group [s/veh]	78.37	72.85	69.21	75.74	31.63	12.64	9.90	77.26	59.50	46.85
Lane Group LOS	E	E	E	E	C	B	A	E	E	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.13	0.89	5.03	6.74	7.14	6.43	0.63	2.59	19.07	5.41
50th-Percentile Queue Length [ft/ln]	78.19	22.13	125.81	168.52	178.60	160.86	15.66	64.87	476.72	135.21
95th-Percentile Queue Length [veh/ln]	5.63	1.59	8.71	11.00	11.53	10.59	1.13	4.67	26.23	9.22
95th-Percentile Queue Length [ft/ln]	140.74	39.83	217.78	274.97	288.19	264.86	28.19	116.77	655.76	230.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.37	78.37	72.85	69.21	75.74	75.74	31.63	31.63	12.64	9.90	77.26	59.50	46.85
Movement LOS	E	E	E	E	E	E	C	C	B	A	E	E	D
d_A, Approach Delay [s/veh]	77.10			72.85			17.06				58.65		
Approach LOS	E			E			B				E		
d_I, Intersection Delay [s/veh]	43.60												
Intersection LOS	D												
Intersection V/C	0.613												

Emissions

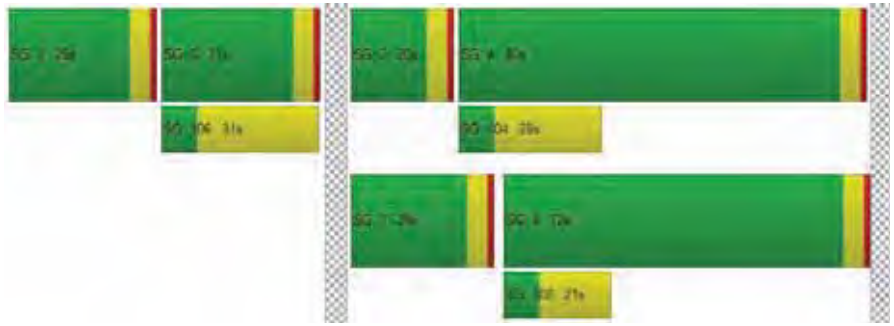
Vehicle Miles Traveled [mph]	3.70	1.10	5.86	7.39	27.48	82.75	4.93	21.71	329.50	57.78
Stops [stops/h]	70.37	19.92	113.23	151.67	160.74	289.55	14.09	58.39	858.10	121.69
Fuel consumption [US gal/h]	1.72	0.48	2.64	3.59	3.71	7.04	0.38	2.19	29.70	4.62
CO [g/h]	120.31	33.65	184.60	251.13	259.02	491.82	26.25	153.15	2075.81	323.18
NOx [g/h]	23.41	6.55	35.92	48.86	50.40	95.69	5.11	29.80	403.88	62.88
VOC [g/h]	27.88	7.80	42.78	58.20	60.03	113.98	6.08	35.49	481.09	74.90

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.058	2.324	2.886	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	325	938	838
d_b, Bicycle Delay [s]	57.80	56.11	22.58	27.03
l_b,int, Bicycle LOS Score for Intersection	1.731	2.126	2.265	2.576
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	26.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.781

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	2	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	300.00	100.00	300.00	200.00	100.00	200.00	300.00	100.00	200.00	500.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	300.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	129	55	474	219	51	48	223	336	271	414	989	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	27	0	-9	10	21	31	0	-10	-38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	150	0	0	17	0	0	81	0	0	101
Total Hourly Volume [veh/h]	129	52	351	219	42	41	244	367	190	404	951	234
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	15	101	63	12	12	70	105	55	116	273	67
Total Analysis Volume [veh/h]	148	60	403	252	48	47	280	422	218	464	1093	269
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	153
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Overlap	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	1	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,4									
Maximum Green [s]	0	35	25	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	3.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.5	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	28	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	1.5	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	150.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	29	0	45	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	2.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No	No		No		No	No		No	No	
Maximum Recall		No	No		No		No	No		No	No	
Pedestrian Recall		No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	86	86	86	86	86	86	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	4.20	4.20	3.50	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	0.00	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	10	10	49	16	16	16	9	28	28	14	33	33
g / C, Green / Cycle	0.12	0.12	0.57	0.19	0.19	0.19	0.11	0.33	0.33	0.17	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.08	0.03	0.14	0.13	0.03	0.03	0.08	0.12	0.14	0.13	0.31	0.17
s, saturation flow rate [veh/h]	1781	1870	2813	1907	1870	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	212	223	1601	392	346	294	369	1171	523	579	1358	606
d1, Uniform Delay [s]	36.53	34.60	9.36	34.97	29.43	29.55	37.48	22.06	22.53	34.57	23.84	19.89
k, delay calibration	0.13	0.13	0.04	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.05	0.80	0.03	2.21	0.23	0.31	1.21	0.19	0.53	1.00	1.50	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.27	0.25	0.64	0.14	0.16	0.76	0.36	0.42	0.80	0.80	0.44
d, Delay for Lane Group [s/veh]	41.58	35.40	9.39	37.18	29.66	29.86	38.69	22.24	23.06	35.57	25.33	20.54
Lane Group LOS	D	D	A	D	C	C	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.24	1.18	1.75	2.61	0.84	0.83	2.88	3.19	3.41	4.65	9.70	3.98
50th-Percentile Queue Length [ft/ln]	80.97	29.47	43.87	65.37	21.01	20.76	72.07	79.73	85.28	116.34	242.48	99.44
95th-Percentile Queue Length [veh/ln]	5.83	2.12	3.16	4.71	1.51	1.49	5.19	5.74	6.14	8.19	14.81	7.16
95th-Percentile Queue Length [ft/ln]	145.75	53.04	78.97	117.66	37.82	37.37	129.73	143.51	153.50	204.78	370.17	178.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.58	35.40	9.39	37.18	29.66	29.86	38.69	22.24	23.06	35.57	25.33	20.54
Movement LOS	D	D	A	D	C	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	19.74			35.15			27.44			27.23		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	26.79											
Intersection LOS	C											
Intersection V/C	0.781											

Emissions

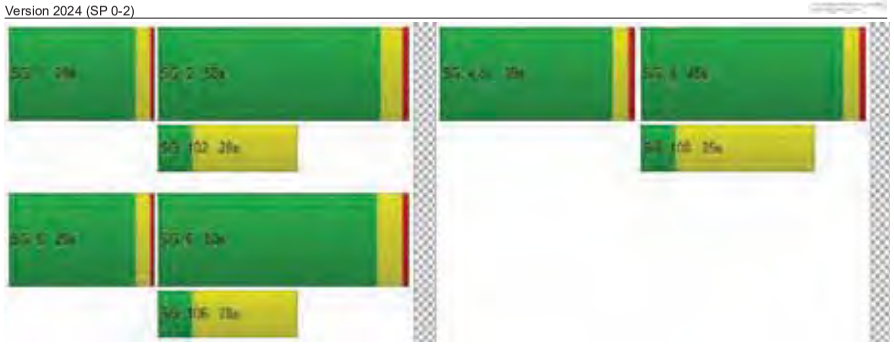
Vehicle Miles Traveled [mph]	253.80	102.89	691.08	51.09	9.73	9.53	98.04	147.77	76.33	209.37	493.19	121.38
Stops [stops/h]	135.22	49.21	146.53	218.32	35.08	34.67	240.71	266.28	142.40	388.55	809.84	166.05
Fuel consumption [US gal/h]	12.45	4.94	30.03	5.22	0.88	0.87	7.57	9.46	4.95	14.12	30.41	7.04
CO [g/h]	870.06	345.29	2099.02	364.60	61.80	60.77	529.19	661.56	346.17	987.26	2125.80	492.01
NOx [g/h]	169.28	67.18	408.39	70.94	12.02	11.82	102.96	128.72	67.35	192.08	413.60	95.73
VOC [g/h]	201.65	80.02	486.47	84.50	14.32	14.08	122.64	153.32	80.23	228.81	492.68	114.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	32.82			32.82			32.82			0.00		
l_p,int, Pedestrian LOS Score for Intersectio	2.919			2.649			3.028			0.000		
Crosswalk LOS	C			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	807			946			1037			1021		
d_b, Bicycle Delay [s]	15.34			11.97			10.00			10.34		
l_b,int, Bicycle LOS Score for Intersection	2.815			2.160			2.385			3.149		
Bicycle LOS	C			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	42.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	5	4	0	354	3	1026	0	4	1384	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	58	0	0	-48	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	5	4	0	354	3	1084	0	4	1336	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	1	0	113	1	347	0	1	428	10
Total Analysis Volume [veh/h]	0	0	6	5	0	454	4	1390	0	5	1713	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	92	92	92	92	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	1	1	20	20	1	48	48	1	49	49
g / C, Green / Cycle	0.01	0.01	0.22	0.22	0.01	0.53	0.53	0.01	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.37	0.37	0.00	0.48	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	15	13	387	346	10	987	987	12	1884	841
d1, Uniform Delay [s]	0.00	45.38	28.21	35.96	45.54	16.30	16.30	45.45	19.64	10.45
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.20	0.20	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	23.17	0.01	159.95	22.53	1.74	1.74	19.52	1.97	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.46	0.01	1.31	0.39	0.70	0.70	0.40	0.91	0.05
d, Delay for Lane Group [s/veh]	0.00	68.55	28.23	195.91	68.06	18.04	18.04	64.97	21.61	10.48
Lane Group LOS	A	E	C	F	E	B	B	E	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.22	0.09	22.91	0.15	10.61	10.61	0.18	15.58	0.38
50th-Percentile Queue Length [ft/ln]	0.00	5.47	2.17	572.73	3.85	265.17	265.17	4.50	389.54	9.50
95th-Percentile Queue Length [veh/ln]	0.00	0.39	0.16	35.11	0.28	15.95	15.95	0.32	22.06	0.68
95th-Percentile Queue Length [ft/ln]	0.00	9.85	3.91	877.78	6.94	398.70	398.70	8.10	551.38	17.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	68.55	28.23	28.23	195.91	68.06	18.04	18.04	64.97	21.61	10.48
Movement LOS	A	A	E	C	C	F	E	B	B	E	C	B
d_A, Approach Delay [s/veh]	68.55			194.09			18.19			21.48		
Approach LOS	E			F			B			C		
d_I, Intersection Delay [s/veh]	42.19											
Intersection LOS	D											
Intersection V/C	0.936											

Emissions

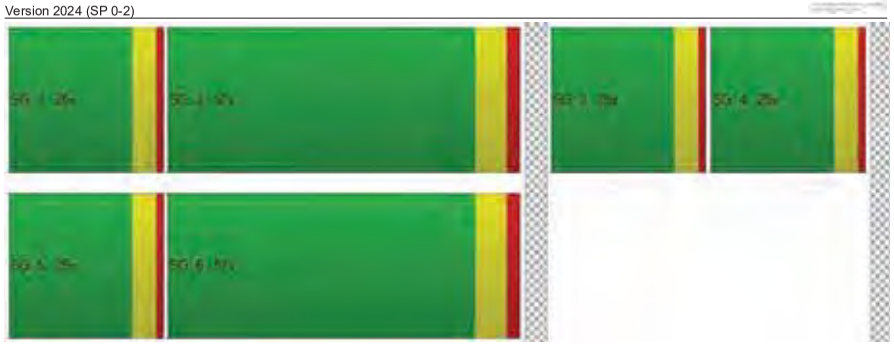
Vehicle Miles Traveled [mph]	0.00	0.30	2.37	215.36	1.80	313.60	313.60	0.87	298.82	6.98
Stops [stops/h]	0.00	8.59	3.41	898.25	6.04	415.89	415.89	7.06	1221.89	14.90
Fuel consumption [US gal/h]	0.00	0.14	0.15	31.93	0.16	17.76	17.76	0.14	26.59	0.45
CO [g/h]	0.00	10.03	10.15	2231.59	11.40	1241.39	1241.39	9.86	1858.42	31.79
NOx [g/h]	0.00	1.95	1.97	434.19	2.22	241.53	241.53	1.92	361.58	6.19
VOC [g/h]	0.00	2.32	2.35	517.19	2.64	287.70	287.70	2.28	430.71	7.37

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	436	436	1089	1089
d_b, Bicycle Delay [s]	28.09	28.09	9.52	9.52
l_b,int, Bicycle LOS Score for Intersection	1.570	2.317	2.710	3.010
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

Intersection Setup

Name	White Rock Rd			White Rock Rd			US 50 EB					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			White Rock Rd			US 50 EB					
Base Volume Input [veh/h]	0	425	610	0	1303	320	243	0	116	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	10	45	0	-48	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	3	435	655	0	1255	320	243	0	104	0	0	0
Peak Hour Factor	0.8300	0.8300	1.0000	1.0000	0.8300	0.8300	0.8300	1.0000	0.8300	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	131	164	0	378	96	73	0	31	0	0	0
Total Analysis Volume [veh/h]	4	524	655	0	1512	386	293	0	125	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	62	0	0	62	0	45	0	0	0	0	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	5.0	0.0	0.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	69	0	0	69	0	51	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	8	0	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	6.00	6.00	6.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00	
g_i, Effective Green Time [s]	95	95	95	95	12	12	12	
g / C, Green / Cycle	0.79	0.79	0.79	0.79	0.10	0.10	0.10	
(v / s)_i Volume / Saturation Flow Rate	0.15	0.41	0.42	0.24	0.08	0.08	0.08	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2808	1254	2808	1254	183	183	164	
d1, Uniform Delay [s]	3.14	4.55	4.65	3.54	52.62	52.62	52.41	
k, delay calibration	0.50	0.50	0.50	0.50	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.15	1.56	0.74	0.64	3.04	3.04	2.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.19	0.52	0.54	0.31	0.80	0.80	0.76	
d, Delay for Lane Group [s/veh]	3.29	6.11	5.40	4.17	55.66	55.66	55.20	
Lane Group LOS	A	A	A	A	E	E	E	
Critical Lane Group	No	No	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	1.33	5.15	5.73	2.33	4.47	4.47	3.80	
50th-Percentile Queue Length [ft/ln]	33.20	128.79	143.15	58.27	111.78	111.78	94.88	
95th-Percentile Queue Length [veh/ln]	2.39	8.87	9.65	4.20	7.94	7.94	6.83	
95th-Percentile Queue Length [ft/ln]	59.76	221.84	241.25	104.88	198.47	198.47	170.79	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	3.29	6.11	0.00	5.40	4.17	55.66	0.00	55.20	0.00	0.00	0.00
Movement LOS		A	A		A	A	E		E			
d_A, Approach Delay [s/veh]		4.86			5.15		55.52			0.00		
Approach LOS		A			A		E			A		
d_I, Intersection Delay [s/veh]	11.07											
Intersection LOS	B											
Intersection V/C	0.563											

Emissions

Vehicle Miles Traveled [mph]	91.41	114.26	267.94	68.40	8.87	8.87	7.57	
Stops [stops/h]	79.68	154.54	343.55	69.92	134.13	134.13	113.86	
Fuel consumption [US gal/h]	4.55	6.37	14.59	3.53	2.77	2.77	2.34	
CO [g/h]	318.30	445.43	1019.78	246.75	193.30	193.30	163.89	
NOx [g/h]	61.93	86.66	198.41	48.01	37.61	37.61	31.89	
VOC [g/h]	73.77	103.23	236.34	57.19	44.80	44.80	37.98	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	1033	750	0
d_b, Bicycle Delay [s]	14.02	14.02	23.44	60.00
l_b,int, Bicycle LOS Score for Intersection	2.532	3.125	2.269	4.132
Bicycle LOS	B	C	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	49.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.016

Intersection Setup

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	590	78	0	518	719	1105	0	398	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	-10	0	-38	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	600	78	0	508	672	1067	0	368	0	0	0
Peak Hour Factor	0.7900	0.7900	1.0000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	190	20	0	161	213	338	0	116	0	0	0
Total Analysis Volume [veh/h]	0	759	78	0	643	851	1351	0	466	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	125	70	0	0	70	0	0	50	0	0	0	0
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	6.80	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.80	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	63	63	63	63	44	44	44	
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.37	0.37	0.37	
(v / s)_i Volume / Saturation Flow Rate	0.21	0.05	0.18	0.54	0.38	0.38	0.29	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	1875	837	1875	837	656	656	585	
d1, Uniform Delay [s]	17.08	14.14	16.41	28.40	37.90	37.90	33.87	
k, delay calibration	0.50	0.50	0.50	0.50	0.45	0.45	0.25	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.65	0.22	0.50	35.31	41.27	41.27	5.74	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.40	0.09	0.34	1.02	1.03	1.03	0.80	
d, Delay for Lane Group [s/veh]	17.74	14.36	16.91	63.71	79.17	79.17	39.61	
Lane Group LOS	B	B	B	F	F	F	D	
Critical Lane Group	No	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	6.39	1.11	5.19	31.01	26.39	26.39	12.91	
50th-Percentile Queue Length [ft/ln]	159.71	27.72	129.73	775.37	659.77	659.77	322.85	
95th-Percentile Queue Length [veh/ln]	10.53	2.00	8.93	40.70	35.56	35.56	18.81	
95th-Percentile Queue Length [ft/ln]	263.34	49.90	223.13	1017.52	888.92	888.92	470.18	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	17.74	14.36	0.00	16.91	63.71	79.17	79.17	39.61	0.00	0.00	0.00
Movement LOS		B	B		B	F	F	E	D			
d_A, Approach Delay [s/veh]	17.42			43.57			69.02			0.00		
Approach LOS	B			D			E			A		
d_I, Intersection Delay [s/veh]	49.44											
Intersection LOS	D											
Intersection V/C	1.016											

Emissions

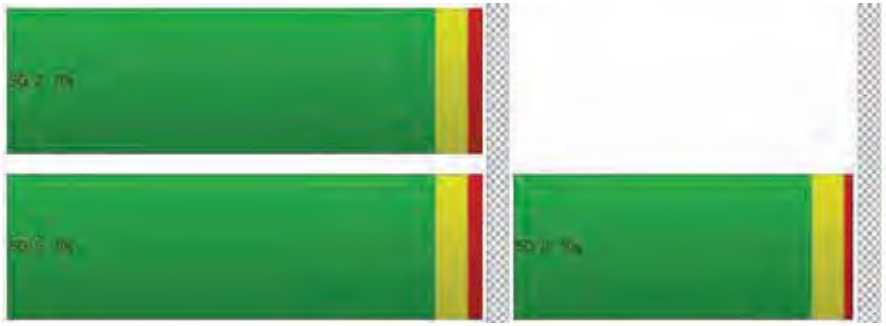
Vehicle Miles Traveled [mph]	134.50	13.82	87.92	116.36	44.36	44.36	30.60	
Stops [stops/h]	383.30	33.27	311.35	930.44	791.72	791.72	387.41	
Fuel consumption [US gal/h]	10.39	0.98	7.55	20.96	17.08	17.08	7.16	
CO [g/h]	726.55	68.55	527.87	1465.33	1194.02	1194.02	500.22	
NOx [g/h]	141.36	13.34	102.70	285.10	232.31	232.31	97.33	
VOC [g/h]	168.38	15.89	122.34	339.61	276.72	276.72	115.93	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1053	1053	737	0
d_b, Bicycle Delay [s]	13.44	13.44	23.94	60.00
l_b,int, Bicycle LOS Score for Intersection	2.250	2.831	4.607	4.132
Bicycle LOS	B	C	E	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	658	360	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	13	0	0	0	0
Site-Generated Trips [veh/h]	0	435	144	68	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	18	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1106	504	86	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	277	126	22	0	0
Total Analysis Volume [veh/h]	0	1106	504	86	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.71
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		11.71	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	15.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	466	260	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-9	46	9	21	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	457	306	47	25	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	114	77	12	6	1
Total Analysis Volume [veh/h]	0	457	306	47	25	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	7.99	0.00	0.00	0.00	15.65	10.72
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.22	0.22
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.57	5.57
d_A, Approach Delay [s/veh]	0.00		0.00		15.12	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.51					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.198

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	241	41	52	127	9	48	87	0	37	75	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-29	0	23	3	23	10	0	0	0	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	212	41	75	130	32	58	87	0	37	75	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	53	10	19	33	8	15	22	0	9	19	14
Total Analysis Volume [veh/h]	6	212	41	75	130	32	58	87	0	37	75	57
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.06	0.00	0.00	0.20	0.21	0.00	0.12	0.18	0.07
d_M, Delay for Movement [s/veh]	7.55	0.00	0.00	7.84	0.00	0.00	24.27	20.82	15.97	21.04	18.40	14.07
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.14	0.14	0.14	1.95	1.95	1.95	1.69	1.69	1.69
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	3.39	3.39	3.39	48.83	48.83	48.83	42.32	42.32	42.32
d_A, Approach Delay [s/veh]	0.17			2.48			22.20			17.52		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.41											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	1106	598	39	50
2	1073	580	38	49
3	1051	568	37	48
4	984	532	35	45
5	874	472	31	40
6	863	466	30	39
7	852	460	30	39
8	774	419	27	35
9	763	413	27	35
10	752	407	27	34
11	653	353	23	30
12	608	329	21	28
13	597	323	21	27
14	442	239	16	20
15	442	239	16	20
16	310	167	11	14
17	177	96	6	8
18	177	96	6	8
19	100	54	4	5
20	55	30	2	3
21	33	18	1	2
22	11	6	0	1
23	11	6	0	1
24	11	6	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1704	1	50	No	No	No	No	No	No	No	Yes	No	No
2	1	1653	1	49	No	No	No	No	No	No	No	Yes	No	No
3	1	1619	1	48	No	No	No	No	No	No	No	Yes	No	No
4	1	1516	1	45	No	No	No	No	No	No	No	Yes	No	No
5	1	1346	1	40	No	No	No	No	No	No	No	No	No	No
6	1	1329	1	39	No	No	No	No	No	No	No	No	No	No
7	1	1312	1	39	No	No	No	No	No	No	No	No	No	No
8	1	1193	1	35	No	No	No	No	No	No	No	No	No	No
9	1	1176	1	35	No	No	No	No	No	No	No	No	No	No
10	1	1159	1	34	No	No	No	No	No	No	No	No	No	No
11	1	1006	1	30	No	No	No	No	No	No	No	No	No	No
12	1	937	1	28	No	No	No	No	No	No	No	No	No	No
13	1	920	1	27	No	No	No	No	No	No	No	No	No	No
14	1	681	1	20	No	No	No	No	No	No	No	No	No	No
15	1	681	1	20	No	No	No	No	No	No	No	No	No	No
16	1	477	1	14	No	No	No	No	No	No	No	No	No	No
17	1	273	1	8	No	No	No	No	No	No	No	No	No	No
18	1	273	1	8	No	No	No	No	No	No	No	No	No	No
19	1	154	1	5	No	No	No	No	No	No	No	No	No	No
20	1	85	1	3	No	No	No	No	No	No	No	No	No	No
21	1	51	1	2	No	No	No	No	No	No	No	No	No	No
22	1	17	1	1	No	No	No	No	No	No	No	No	No	No
23	1	17	1	1	No	No	No	No	No	No	No	No	No	No
24	1	17	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	24.3	310.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15	4:18
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	39	50
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1793	1793
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	519	505	264	558
2	503	490	256	541
3	493	480	251	530
4	462	449	235	497
5	410	399	209	441
6	405	394	206	435
7	400	389	203	430
8	363	354	185	391
9	358	348	182	385
10	353	343	180	379
11	306	298	156	329
12	285	278	145	307
13	280	273	143	301
14	208	202	106	223
15	208	202	106	223
16	145	141	74	156
17	83	81	42	89
18	83	81	42	89
19	47	45	24	50
20	26	25	13	28
21	16	15	8	17
22	5	5	3	6
23	5	5	3	6
24	5	5	3	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1024	1	558	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	993	1	541	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	973	1	530	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	911	1	497	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2	809	1	441	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
6	2	799	1	435	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
7	2	789	1	430	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
8	2	717	1	391	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
9	2	706	1	385	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
10	2	696	1	379	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
11	2	604	1	329	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
12	2	563	1	307	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
13	2	553	1	301	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
14	2	410	1	223	No	No	No	Yes	No	No	No	No	Yes	No
15	2	410	1	223	No	No	No	Yes	No	No	No	No	Yes	No
16	2	286	1	156	No	No	No	No	No	No	No	No	No	No
17	2	164	1	89	No	No	No	No	No	No	No	No	No	No
18	2	164	1	89	No	No	No	No	No	No	No	No	No	No
19	2	92	1	50	No	No	No	No	No	No	No	No	No	No
20	2	51	1	28	No	No	No	No	No	No	No	No	No	No
21	2	31	1	17	No	No	No	No	No	No	No	No	No	No
22	2	10	1	6	No	No	No	No	No	No	No	No	No	No
23	2	10	1	6	No	No	No	No	No	No	No	No	No	No
24	2	10	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					11	13	13	15	4	7	10	13	15	13

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	21.3	3182.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:33	493:16
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	264	558
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1846	1846
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1095	255	478
2	1062	247	464
3	1040	242	454
4	975	227	425
5	865	201	378
6	854	199	373
7	843	196	368
8	767	179	335
9	756	176	330
10	745	173	325
11	646	150	282
12	602	140	263
13	591	138	258
14	438	102	191
15	438	102	191
16	307	71	134
17	175	41	76
18	175	41	76
19	99	23	43
20	55	13	24
21	33	8	14
22	11	3	5
23	11	3	5
24	11	3	5

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1350	1	478	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1309	1	464	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1282	1	454	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1202	1	425	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1066	1	378	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1053	1	373	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1039	1	368	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	946	1	335	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	932	1	330	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	918	1	325	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	796	1	282	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	1	742	1	263	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	729	1	258	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	540	1	191	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
15	1	540	1	191	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
16	1	378	1	134	No	No	Yes	Yes	No	No	No	No	No	No
17	1	216	1	76	No	No	No	No	No	No	No	No	No	No
18	1	216	1	76	No	No	No	No	No	No	No	No	No	No
19	1	122	1	43	No	No	No	No	No	No	No	No	No	No
20	1	68	1	24	No	No	No	No	No	No	No	No	No	No
21	1	41	1	14	No	No	No	No	No	No	No	No	No	No
22	1	14	1	5	No	No	No	No	No	No	No	No	No	No
23	1	14	1	5	No	No	No	No	No	No	No	No	No	No
24	1	14	1	5	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	11	13	15	15	13	10

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	148.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	19:45
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	478
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1828
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	128	746	112	49
2	124	724	109	48
3	122	709	106	47
4	114	664	100	44
5	101	589	88	39
6	100	582	87	38
7	99	574	86	38
8	90	522	78	34
9	88	515	77	34
10	87	507	76	33
11	76	440	66	29
12	70	410	62	27
13	69	403	60	26
14	51	298	45	20
15	51	298	45	20
16	36	209	31	14
17	20	119	18	8
18	20	119	18	8
19	12	67	10	4
20	6	37	6	2
21	4	22	3	1
22	1	7	1	0
23	1	7	1	0
24	1	7	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	874	1	112	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2	1	848	1	109	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
3	1	831	1	106	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
4	1	778	1	100	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
5	1	690	1	88	No	No	No	Yes	No	Yes	Yes	Yes	No	No
6	1	682	1	87	No	No	No	Yes	No	Yes	Yes	Yes	No	No
7	1	673	1	86	No	No	No	Yes	No	Yes	Yes	Yes	No	No
8	1	612	1	78	No	No	No	No	No	Yes	Yes	Yes	No	No
9	1	603	1	77	No	No	No	No	No	Yes	Yes	Yes	No	No
10	1	594	1	76	No	No	No	No	No	No	Yes	Yes	No	No
11	1	516	1	66	No	No	No	No	No	No	No	Yes	No	No
12	1	480	1	62	No	No	No	No	No	No	No	Yes	No	No
13	1	472	1	60	No	No	No	No	No	No	No	Yes	No	No
14	1	349	1	45	No	No	No	No	No	No	No	No	No	No
15	1	349	1	45	No	No	No	No	No	No	No	No	No	No
16	1	245	1	31	No	No	No	No	No	No	No	No	No	No
17	1	139	1	18	No	No	No	No	No	No	No	No	No	No
18	1	139	1	18	No	No	No	No	No	No	No	No	No	No
19	1	79	1	10	No	No	No	No	No	No	No	No	No	No
20	1	43	1	6	No	No	No	No	No	No	No	No	No	No
21	1	26	1	3	No	No	No	No	No	No	No	No	No	No
22	1	8	1	1	No	No	No	No	No	No	No	No	No	No
23	1	8	1	1	No	No	No	No	No	No	No	No	No	No
24	1	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	7	4	9	10	13	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.5	10.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:19	0:08
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	112	49
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1035	1035
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	255	349	248
2	247	339	241
3	242	332	236
4	227	311	221
5	201	276	196
6	199	272	193
7	196	269	191
8	179	244	174
9	176	241	171
10	173	237	169
11	150	206	146
12	140	192	136
13	138	188	134
14	102	140	99
15	102	140	99
16	71	98	69
17	41	56	40
18	41	56	40
19	23	31	22
20	13	17	12
21	8	10	7
22	3	3	2
23	3	3	2
24	3	3	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	604	2	248	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	586	2	241	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	574	2	236	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	538	2	221	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	477	2	196	No	No	Yes	Yes	No	No	No	No	No	No
6	2	471	2	193	No	No	Yes	Yes	No	No	No	No	No	No
7	2	465	2	191	No	No	Yes	Yes	No	No	No	No	No	No
8	2	423	2	174	No	No	Yes	Yes	No	No	No	No	No	No
9	2	417	2	171	No	No	No	Yes	No	No	No	No	No	No
10	2	410	2	169	No	No	No	Yes	No	No	No	No	No	No
11	2	356	2	146	No	No	No	Yes	No	No	No	No	No	No
12	2	332	2	136	No	No	No	No	No	No	No	No	No	No
13	2	326	2	134	No	No	No	No	No	No	No	No	No	No
14	2	242	2	99	No	No	No	No	No	No	No	No	No	No
15	2	242	2	99	No	No	No	No	No	No	No	No	No	No
16	2	169	2	69	No	No	No	No	No	No	No	No	No	No
17	2	97	2	40	No	No	No	No	No	No	No	No	No	No
18	2	97	2	40	No	No	No	No	No	No	No	No	No	No
19	2	54	2	22	No	No	No	No	No	No	No	No	No	No
20	2	30	2	12	No	No	No	No	No	No	No	No	No	No
21	2	18	2	7	No	No	No	No	No	No	No	No	No	No
22	2	6	2	2	No	No	No	No	No	No	No	No	No	No
23	2	6	2	2	No	No	No	No	No	No	No	No	No	No
24	2	6	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					1	4	8	11	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:18
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	248
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	852
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	408	247	262
2	396	240	254
3	388	235	249
4	363	220	233
5	322	195	207
6	318	193	204
7	314	190	202
8	286	173	183
9	282	170	181
10	277	168	178
11	241	146	155
12	224	136	144
13	220	133	141
14	163	99	105
15	163	99	105
16	114	69	73
17	65	40	42
18	65	40	42
19	37	22	24
20	20	12	13
21	12	7	8
22	4	2	3
23	4	2	3
24	4	2	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	655	1	262	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	2	636	1	254	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	2	623	1	249	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	583	1	233	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	517	1	207	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	511	1	204	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	504	1	202	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	459	1	183	No	No	Yes	Yes	No	No	No	No	No	No
9	2	452	1	181	No	No	Yes	Yes	No	No	No	No	No	No
10	2	445	1	178	No	No	Yes	Yes	No	No	No	No	No	No
11	2	387	1	155	No	No	No	Yes	No	No	No	No	No	No
12	2	360	1	144	No	No	No	Yes	No	No	No	No	No	No
13	2	353	1	141	No	No	No	Yes	No	No	No	No	No	No
14	2	262	1	105	No	No	No	No	No	No	No	No	No	No
15	2	262	1	105	No	No	No	No	No	No	No	No	No	No
16	2	183	1	73	No	No	No	No	No	No	No	No	No	No
17	2	105	1	42	No	No	No	No	No	No	No	No	No	No
18	2	105	1	42	No	No	No	No	No	No	No	No	No	No
19	2	59	1	24	No	No	No	No	No	No	No	No	No	No
20	2	32	1	13	No	No	No	No	No	No	No	No	No	No
21	2	19	1	8	No	No	No	No	No	No	No	No	No	No
22	2	6	1	3	No	No	No	No	No	No	No	No	No	No
23	2	6	1	3	No	No	No	No	No	No	No	No	No	No
24	2	6	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	0	2	7	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	28.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	262
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	917
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	139	136	38
2	135	132	37
3	132	129	36
4	124	121	34
5	110	107	30
6	108	106	30
7	107	105	29
8	97	95	27
9	96	94	26
10	95	92	26
11	82	80	22
12	76	75	21
13	75	73	21
14	56	54	15
15	56	54	15
16	39	38	11
17	22	22	6
18	22	22	6
19	13	12	3
20	7	7	2
21	4	4	1
22	1	1	0
23	1	1	0
24	1	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	275	1	38	No	No	No	No	No	No	No	No	No	No
2	3	267	1	37	No	No	No	No	No	No	No	No	No	No
3	3	261	1	36	No	No	No	No	No	No	No	No	No	No
4	3	245	1	34	No	No	No	No	No	No	No	No	No	No
5	3	217	1	30	No	No	No	No	No	No	No	No	No	No
6	3	214	1	30	No	No	No	No	No	No	No	No	No	No
7	3	212	1	29	No	No	No	No	No	No	No	No	No	No
8	3	192	1	27	No	No	No	No	No	No	No	No	No	No
9	3	190	1	26	No	No	No	No	No	No	No	No	No	No
10	3	187	1	26	No	No	No	No	No	No	No	No	No	No
11	3	162	1	22	No	No	No	No	No	No	No	No	No	No
12	3	151	1	21	No	No	No	No	No	No	No	No	No	No
13	3	148	1	21	No	No	No	No	No	No	No	No	No	No
14	3	110	1	15	No	No	No	No	No	No	No	No	No	No
15	3	110	1	15	No	No	No	No	No	No	No	No	No	No
16	3	77	1	11	No	No	No	No	No	No	No	No	No	No
17	3	44	1	6	No	No	No	No	No	No	No	No	No	No
18	3	44	1	6	No	No	No	No	No	No	No	No	No	No
19	3	25	1	3	No	No	No	No	No	No	No	No	No	No
20	3	14	1	2	No	No	No	No	No	No	No	No	No	No
21	3	8	1	1	No	No	No	No	No	No	No	No	No	No
22	3	2	1	0	No	No	No	No	No	No	No	No	No	No
23	3	2	1	0	No	No	No	No	No	No	No	No	No	No
24	3	2	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	313
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	1106	590	0
2	1073	572	0
3	1051	561	0
4	984	525	0
5	874	466	0
6	863	460	0
7	852	454	0
8	774	413	0
9	763	407	0
10	752	401	0
11	653	348	0
12	608	325	0
13	597	319	0
14	442	236	0
15	442	236	0
16	310	165	0
17	177	94	0
18	177	94	0
19	100	53	0
20	55	30	0
21	33	18	0
22	11	6	0
23	11	6	0
24	11	6	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1696	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1645	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1612	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1509	1	0	No	No	No	No	No	No	No	No	No	No
5	1	1340	1	0	No	No	No	No	No	No	No	No	No	No
6	1	1323	1	0	No	No	No	No	No	No	No	No	No	No
7	1	1306	1	0	No	No	No	No	No	No	No	No	No	No
8	1	1187	1	0	No	No	No	No	No	No	No	No	No	No
9	1	1170	1	0	No	No	No	No	No	No	No	No	No	No
10	1	1153	1	0	No	No	No	No	No	No	No	No	No	No
11	1	1001	1	0	No	No	No	No	No	No	No	No	No	No
12	1	933	1	0	No	No	No	No	No	No	No	No	No	No
13	1	916	1	0	No	No	No	No	No	No	No	No	No	No
14	1	678	1	0	No	No	No	No	No	No	No	No	No	No
15	1	678	1	0	No	No	No	No	No	No	No	No	No	No
16	1	475	1	0	No	No	No	No	No	No	No	No	No	No
17	1	271	1	0	No	No	No	No	No	No	No	No	No	No
18	1	271	1	0	No	No	No	No	No	No	No	No	No	No
19	1	153	1	0	No	No	No	No	No	No	No	No	No	No
20	1	85	1	0	No	No	No	No	No	No	No	No	No	No
21	1	51	1	0	No	No	No	No	No	No	No	No	No	No
22	1	17	1	0	No	No	No	No	No	No	No	No	No	No
23	1	17	1	0	No	No	No	No	No	No	No	No	No	No
24	1	17	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1696
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	457	353	28
2	443	342	27
3	434	335	27
4	407	314	25
5	361	279	22
6	356	275	22
7	352	272	22
8	320	247	20
9	315	244	19
10	311	240	19
11	270	208	17
12	251	194	15
13	247	191	15
14	183	141	11
15	183	141	11
16	128	99	8
17	73	56	4
18	73	56	4
19	41	32	3
20	23	18	1
21	14	11	1
22	5	4	0
23	5	4	0
24	5	4	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	810	1	28	No	No	No	No	No	No	No	No	No	No
2	1	785	1	27	No	No	No	No	No	No	No	No	No	No
3	1	769	1	27	No	No	No	No	No	No	No	No	No	No
4	1	721	1	25	No	No	No	No	No	No	No	No	No	No
5	1	640	1	22	No	No	No	No	No	No	No	No	No	No
6	1	631	1	22	No	No	No	No	No	No	No	No	No	No
7	1	624	1	22	No	No	No	No	No	No	No	No	No	No
8	1	567	1	20	No	No	No	No	No	No	No	No	No	No
9	1	559	1	19	No	No	No	No	No	No	No	No	No	No
10	1	551	1	19	No	No	No	No	No	No	No	No	No	No
11	1	478	1	17	No	No	No	No	No	No	No	No	No	No
12	1	445	1	15	No	No	No	No	No	No	No	No	No	No
13	1	438	1	15	No	No	No	No	No	No	No	No	No	No
14	1	324	1	11	No	No	No	No	No	No	No	No	No	No
15	1	324	1	11	No	No	No	No	No	No	No	No	No	No
16	1	227	1	8	No	No	No	No	No	No	No	No	No	No
17	1	129	1	4	No	No	No	No	No	No	No	No	No	No
18	1	129	1	4	No	No	No	No	No	No	No	No	No	No
19	1	73	1	3	No	No	No	No	No	No	No	No	No	No
20	1	41	1	1	No	No	No	No	No	No	No	No	No	No
21	1	25	1	1	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	28
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	838
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

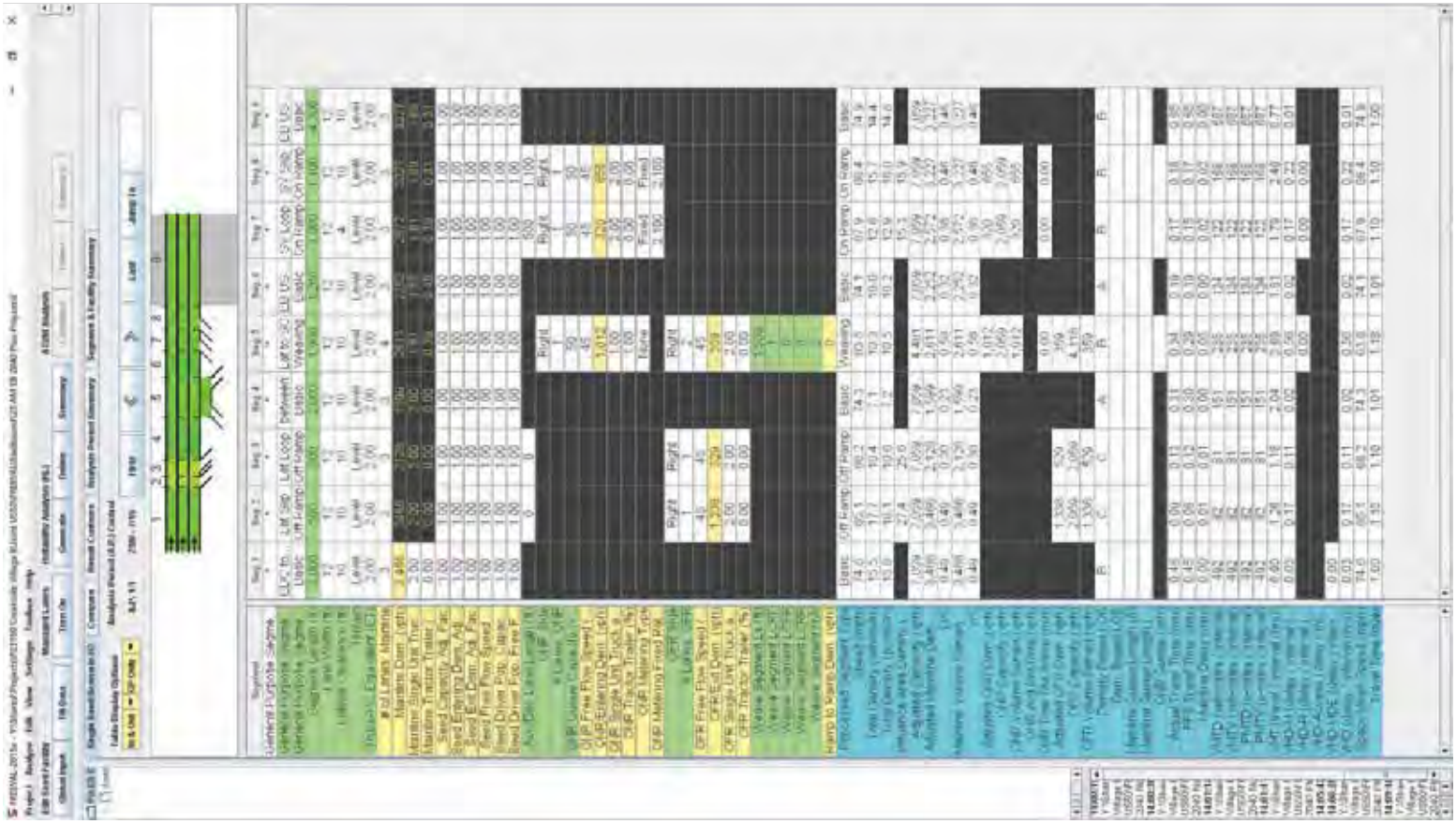
Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	259	237	169	145
2	251	230	164	141
3	246	225	161	138
4	231	211	150	129
5	205	187	134	115
6	202	185	132	113
7	199	182	130	112
8	181	166	118	102
9	179	164	117	100
10	176	161	115	99
11	153	140	100	86
12	142	130	93	80
13	140	128	91	78
14	104	95	68	58
15	104	95	68	58
16	73	66	47	41
17	41	38	27	23
18	41	38	27	23
19	23	21	15	13
20	13	12	8	7
21	8	7	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1



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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	496	1	169	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	481	1	164	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	471	1	161	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	442	1	150	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
5	1	392	1	134	No	No	Yes	Yes	No	No	No	No	No	No
6	1	387	1	132	No	No	Yes	Yes	No	No	No	No	No	No
7	1	381	1	130	No	No	Yes	Yes	No	No	No	No	No	No
8	1	347	1	118	No	No	No	Yes	No	No	No	No	No	No
9	1	343	1	117	No	No	No	Yes	No	No	No	No	No	No
10	1	337	1	115	No	No	No	Yes	No	No	No	No	No	No
11	1	293	1	100	No	No	No	Yes	No	No	No	No	No	No
12	1	272	1	93	No	No	No	No	No	No	No	No	No	No
13	1	268	1	91	No	No	No	No	No	No	No	No	No	No
14	1	199	1	68	No	No	No	No	No	No	No	No	No	No
15	1	199	1	68	No	No	No	No	No	No	No	No	No	No
16	1	139	1	47	No	No	No	No	No	No	No	No	No	No
17	1	79	1	27	No	No	No	No	No	No	No	No	No	No
18	1	79	1	27	No	No	No	No	No	No	No	No	No	No
19	1	44	1	15	No	No	No	No	No	No	No	No	No	No
20	1	25	1	8	No	No	No	No	No	No	No	No	No	No
21	1	15	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	0	0	4	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.5	22.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:49	0:53
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	169	145
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	810	810
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Creekside Village
Traffic Impact Analysis

El Dorado Hills, California

Cumulative PM plus Project

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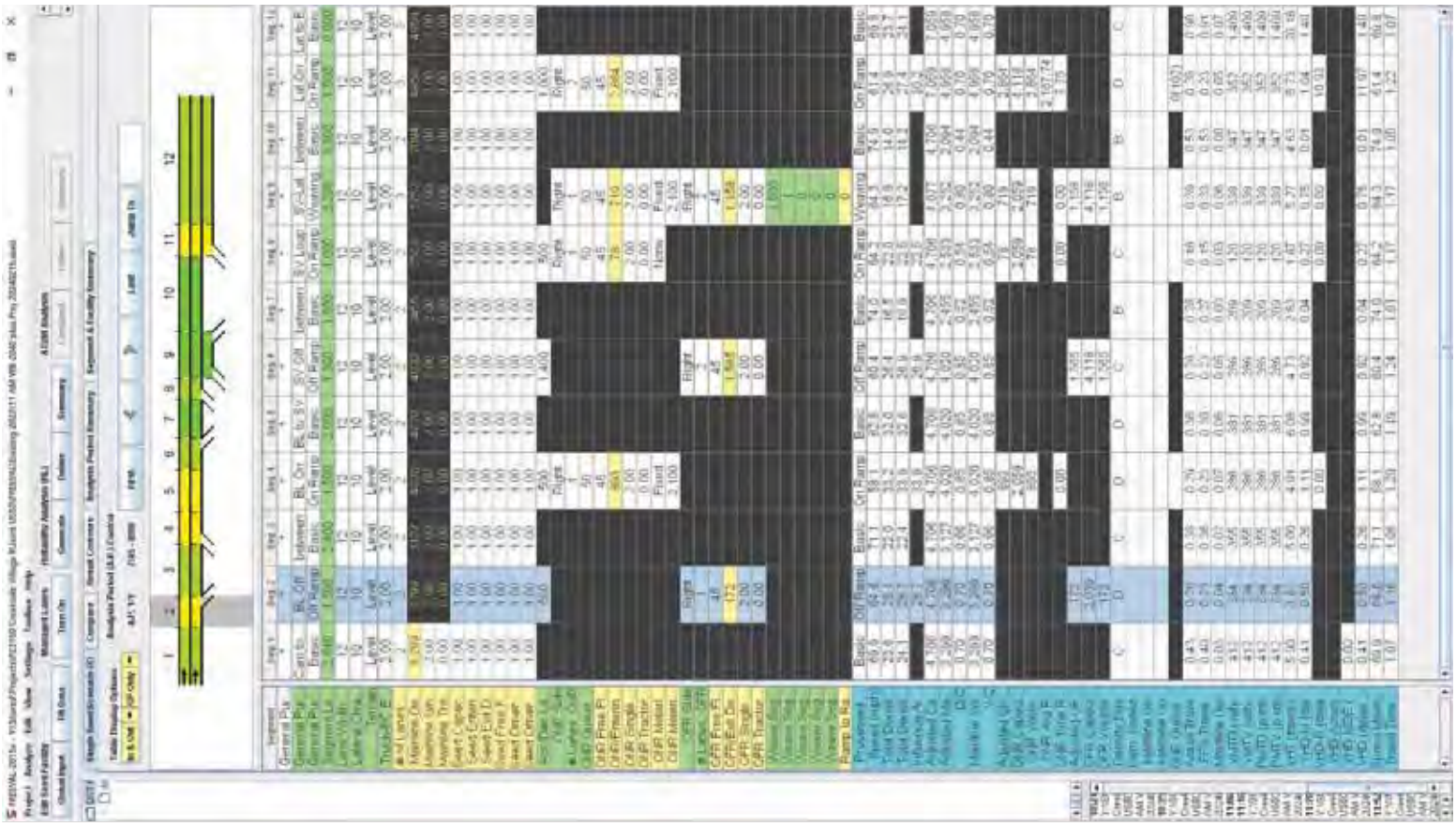

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Scenario 6 2040 PM with CCSP, + Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.979	59.2	E
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	NB Left	0.988	68.2	E
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.074	70.7	E
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.998	67.9	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	1.039	77.0	E
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.843	49.1	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.862	25.3	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	SB Right	1.064	68.3	E
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	1.231	207.0	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	SB Thru	1.069	83.9	F
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.961	311.1	F
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	7.067	2,977.7	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	55.000	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.952	36.5	E
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.526	25.6	D
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.999	170.2	F
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.197	8.7	A
18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 7th Edition	EB Left	0.546	16.9	B
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.640	34.8	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	WB Left	0.672	43.9	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	EB Left	0.894	33.7	C
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	1.001	55.7	E
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	NB Right	1.059	36.2	D
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.757	28.2	C
25	New Intersection	Two-way stop	HCM 7th Edition	SB Thru	0.010	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.130	18.1	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.136	23.0	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	59.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.979

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	131	1772	406	35	1147	74	62	29	110	339	66	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-30	0	0	27	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	22	0	0	33	0	0	7
Total Hourly Volume [veh/h]	3	131	1742	406	35	1174	52	62	29	77	339	66	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	38	501	117	10	337	15	18	8	22	97	19	4
Total Analysis Volume [veh/h]	3	151	2002	467	40	1349	60	71	33	89	390	76	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	85	85	85	85	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	41	41	2	34	34	8	8	15	15
g / C, Green / Cycle	0.11	0.49	0.49	0.03	0.41	0.41	0.10	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.09	0.56	0.29	0.02	0.38	0.38	0.04	0.07	0.14	0.14
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1842	1781	1657	1781	1793
c, Capacity [veh/h]	191	1729	772	51	760	749	174	162	319	321
d1, Uniform Delay [s]	36.93	21.78	15.86	40.89	24.00	24.05	35.90	37.21	32.98	32.98
k, delay calibration	0.04	0.08	0.10	0.04	0.26	0.26	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.01	72.18	0.74	9.79	11.89	12.49	0.57	2.67	5.10	5.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.16	0.60	0.79	0.93	0.93	0.41	0.75	0.75	0.75
d, Delay for Lane Group [s/veh]	39.94	93.95	16.60	50.68	35.89	36.54	36.47	39.88	38.08	38.05
Lane Group LOS	D	F	B	D	D	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.09	31.65	5.79	0.93	14.34	14.32	1.38	2.53	5.01	5.04
50th-Percentile Queue Length [ft/ln]	77.31	791.31	144.74	23.13	358.55	358.02	34.53	63.26	125.34	126.09
95th-Percentile Queue Length [veh/ln]	5.57	45.44	9.74	1.67	20.55	20.53	2.49	4.55	8.69	8.73
95th-Percentile Queue Length [ft/ln]	139.17	1135.90	243.40	41.63	513.82	513.17	62.15	113.87	217.15	218.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.94	39.94	93.95	16.60	50.68	36.20	36.54	36.47	39.88	39.88	38.07	38.05	38.05
Movement LOS	D	D	F	B	D	D	D	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	77.01				36.61			38.63			38.07		
Approach LOS	E				D			D			D		
d_I, Intersection Delay [s/veh]	59.16												
Intersection LOS	E												
Intersection V/C	0.979												

Emissions

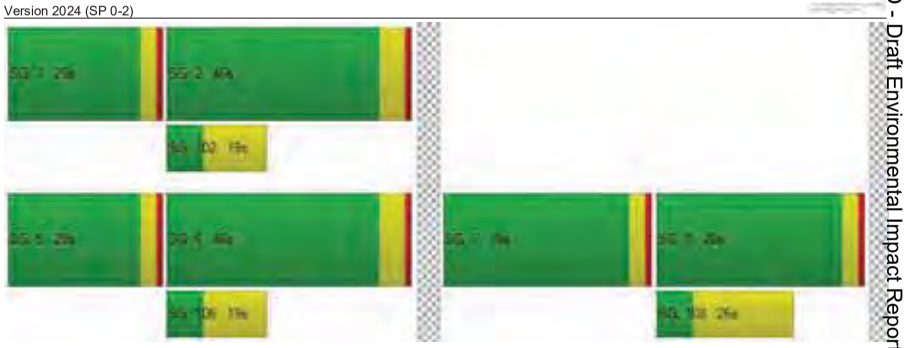
Vehicle Miles Traveled [mph]	36.78	478.14	111.53	5.88	104.17	102.99	3.03	5.21	12.60	12.68
Stops [stops/h]	131.71	2696.09	246.58	39.40	610.81	609.91	58.82	107.77	213.53	214.80
Fuel consumption [US gal/h]	4.15	88.18	8.47	1.10	16.34	16.32	0.98	1.80	3.56	3.58
CO [g/h]	290.08	6163.97	591.80	77.17	1142.16	1140.94	68.28	125.82	249.09	250.57
NOx [g/h]	56.44	1199.28	115.14	15.01	222.22	221.98	13.28	24.48	48.46	48.75
VOC [g/h]	67.23	1428.56	137.16	17.88	264.71	264.42	15.82	29.16	57.73	58.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.98	31.98	31.98
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.371	2.157	2.281
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	954	954	828	828
d_b, Bicycle Delay [s]	11.57	11.57	14.51	14.51
l_b,int, Bicycle LOS Score for Intersection	3.721	2.773	1.933	2.368
Bicycle LOS	D	C	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	68.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.988

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	445	1623	173	4	218	1176	198	390	53	619	69	107	295
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-13	-30	0	0	0	27	0	0	0	14	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	52	0	0	0	59	0	0	190	0	0	89
Total Hourly Volume [veh/h]	5	432	1593	121	4	218	1203	139	390	53	443	69	107	206
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	116	428	33	1	59	323	37	105	14	119	19	29	55
Total Analysis Volume [veh/h]	5	465	1713	130	4	234	1294	149	419	57	476	74	115	222
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Overlap	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	5	3	8	0
Auxiliary Signal Groups											5,7			
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	20	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	24	0	0	0	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	24	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	4	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No	No		No	
Maximum Recall		No	No			No	No			No	No		No	
Pedestrian Recall		No	No			No	No			No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	121	121	121	121	121	121	121	121	121	121	121
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	20	47	47	18	45	45	18	18	66	20	20
g / C, Green / Cycle	0.16	0.39	0.39	0.15	0.37	0.37	0.15	0.15	0.55	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.26	0.34	0.35	0.13	0.25	0.09	0.13	0.13	0.17	0.08	0.20
s, saturation flow rate [veh/h]	1783	3560	1804	1781	5094	1589	1781	1801	2813	918	1675
c, Capacity [veh/h]	323	1385	701	265	1901	593	270	274	1539	195	276
d1, Uniform Delay [s]	53.39	34.48	34.71	50.78	31.99	26.34	50.43	50.35	15.00	47.94	50.74
k, delay calibration	0.25	0.13	0.34	0.26	0.13	0.13	0.26	0.25	0.04	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	212.48	2.38	11.52	21.10	0.52	0.27	18.69	17.17	0.04	0.45	127.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.45	0.88	0.89	0.90	0.68	0.25	0.88	0.87	0.31	0.38	1.22
d, Delay for Lane Group [s/veh]	265.87	36.86	46.23	71.88	32.52	26.60	69.11	67.52	15.04	48.39	178.63
Lane Group LOS	F	D	D	E	C	C	E	E	B	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	14.42	16.23	18.53	8.46	10.26	2.93	8.46	8.36	3.55	2.10	18.14
50th-Percentile Queue Length [ft/ln]	360.48	405.80	463.18	211.43	256.40	73.34	211.55	208.97	88.85	52.57	453.52
95th-Percentile Queue Length [veh/ln]	23.85	22.84	25.59	13.23	15.51	5.28	13.23	13.10	6.40	3.79	27.55
95th-Percentile Queue Length [ft/ln]	596.23	570.98	639.65	330.67	387.70	132.01	330.82	327.51	159.93	94.63	688.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	265.8	265.8	39.57	46.23	71.88	71.88	32.52	26.60	68.42	67.52	15.04	48.39	178.63	178.63
Movement LOS	F	F	D	D	E	E	C	C	E	E	B	D	F	F
d_A, Approach Delay [s/veh]	85.93				37.57				41.68			155.18		
Approach LOS	F				D				D			F		
d_I, Intersection Delay [s/veh]	68.20													
Intersection LOS	E													
Intersection V/C	0.988													

Emissions

Vehicle Miles Traveled [mph]	88.45	229.27	117.57	56.84	309.05	35.59	14.84	14.85	29.69	3.61	16.43
Stops [stops/h]	855.56	963.11	549.65	250.91	912.81	87.03	251.05	247.99	210.87	62.39	538.19
Fuel consumption [US gal/h]	39.09	28.97	16.74	8.55	30.51	3.11	5.34	5.25	3.84	1.22	15.90
CO [g/h]	2732.60	2025.16	1170.17	597.57	2132.35	217.28	373.48	367.17	268.73	85.40	1111.28
NOx [g/h]	531.66	394.02	227.67	116.27	414.88	42.28	72.67	71.44	52.28	16.62	216.22
VOC [g/h]	633.31	469.35	271.20	138.49	494.19	50.36	86.56	85.09	62.28	19.79	257.55

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0				11.0			11.0			11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00				0.00			0.00			0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00				0.00			0.00			0.00
d_p, Pedestrian Delay [s]	0.00				50.17			50.17			50.17
l_p,int, Pedestrian LOS Score for Intersectio	0.000				3.588			3.720			2.397
Crosswalk LOS	F				D			D			B
s_b, Saturation Flow Rate of the bicycle lane	2000				2000			2000			2000
c_b, Capacity of the bicycle lane [bicycles/h]	829				829			330			330
d_b, Bicycle Delay [s]	20.80				20.80			42.32			42.32
l_b,int, Bicycle LOS Score for Intersection	2.858				2.388			3.444			2.385
Bicycle LOS	C				B			C			B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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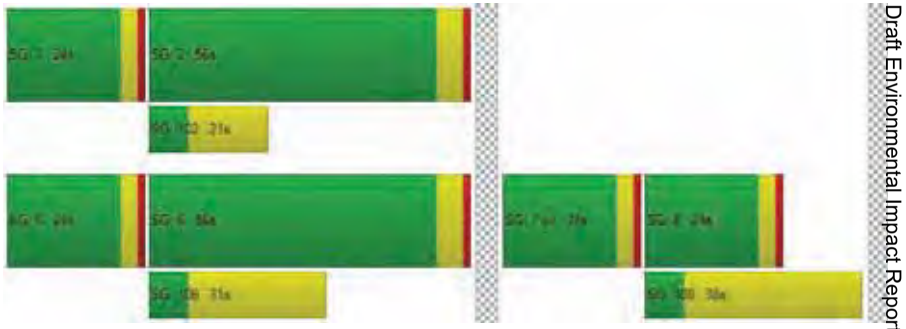


Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	70.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.074

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1441	1689	425	0	37	1298	534	306	130	409	257	92	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-61	-43	-10	0	0	41	0	0	0	11	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	125	0	0	0	160	0	0	126	0	0	75
Total Hourly Volume [veh/h]	1	1380	1646	290	0	37	1339	374	306	130	294	266	92	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	345	412	73	0	9	335	94	77	33	74	67	23	44
Total Analysis Volume [veh/h]	1	1380	1646	290	0	37	1339	374	306	130	294	266	92	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	5	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	45	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	3.6	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	2.6	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	50	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	10	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	2.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.40	0.36	0.39	0.02	0.26	0.24	0.12	0.12	0.10	0.10	0.11
s, saturation flow rate [veh/h]	3459	3532	1723	1781	5053	1589	1781	1832	1781	1825	1589
c, Capacity [veh/h]	1155	1913	933	81	1277	684	250	257	223	228	199
d1, Uniform Delay [s]	45.28	22.30	23.31	63.30	50.81	28.83	57.16	57.15	57.81	57.78	58.54
k, delay calibration	0.10	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.17	0.17	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	89.77	1.83	4.66	1.51	38.81	3.12	12.10	11.78	9.80	9.25	23.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.20	0.66	0.71	0.46	1.05	0.55	0.86	0.86	0.80	0.79	0.89
d, Delay for Lane Group [s/veh]	135.05	24.14	27.97	64.81	89.61	31.95	69.26	68.94	67.61	67.03	81.62
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	33.73	14.76	16.88	1.26	18.64	9.37	8.08	8.28	6.54	6.64	7.25
50th-Percentile Queue Length [ft/ln]	843.24	369.06	421.93	31.57	465.98	234.19	201.88	207.06	163.60	165.98	181.14
95th-Percentile Queue Length [veh/ln]	48.39	21.06	23.61	2.27	26.45	14.39	12.74	13.00	10.74	10.86	11.66
95th-Percentile Queue Length [ft/ln]	1209.64	526.59	590.37	56.82	661.37	359.68	318.39	325.05	268.49	271.62	291.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	135.0	135.0	25.01	27.97	64.81	64.81	89.61	31.95	69.17	68.94	0.00	67.41	67.03	81.62
Movement LOS	F	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	71.08				76.77				41.27			72.03		
Approach LOS	E				E				D			E		
d_I, Intersection Delay [s/veh]	70.66													
Intersection LOS	E													
Intersection V/C	1.074													

Emissions

Vehicle Miles Traveled [mph]	236.52	217.40	114.18	6.96	251.99	70.39	9.94	10.23	5.63	5.75	5.60
Stops [stops/h]	1785.68	781.53	446.75	33.42	1480.17	247.97	213.75	219.24	173.23	175.74	191.79
Fuel consumption [US gal/h]	57.55	19.50	10.96	1.14	51.46	7.93	4.62	4.73	3.63	3.67	4.21
CO [g/h]	4022.70	1363.19	766.28	79.84	3596.79	554.12	322.89	330.84	253.53	256.72	294.49
NOx [g/h]	782.67	265.23	149.09	15.53	699.81	107.81	62.82	64.37	49.33	49.95	57.30
VOC [g/h]	932.30	315.93	177.59	18.50	833.59	128.42	74.83	76.68	58.76	59.50	68.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.548
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.452	2.590	2.279	2.062
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	67.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.998

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2691	613	1	388	1576	0	0	0	1667	0	0	864
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-114	-27	0	0	61	0	0	0	53	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	176	0	0	0	0	0	0	516	0	0	259
Total Hourly Volume [veh/h]	0	2577	410	1	388	1637	0	0	0	1204	0	0	605
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	678	122	0	115	431	0	0	0	358	0	0	180
Total Analysis Volume [veh/h]	0	2713	488	1	462	1723	0	0	0	1433	0	0	720
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.40	0.31	0.26	0.25	0.51	
s, saturation flow rate [veh/h]	6792	1589	1781	6792	2813	
c, Capacity [veh/h]	3745	876	516	3476	927	
d1, Uniform Delay [s]	11.39	9.87	23.17	10.86	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.22	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.25	2.55	8.80	0.51	248.18	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.72	0.56	0.90	0.50	1.55	
d, Delay for Lane Group [s/veh]	12.65	12.42	31.97	11.37	270.98	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	No	No	No	Yes	Yes	
50th-Percentile Queue Length [veh/ln]	5.85	4.07	7.43	3.39	38.70	
50th-Percentile Queue Length [ft/ln]	146.31	101.66	185.84	84.69	967.61	
95th-Percentile Queue Length [veh/ln]	9.82	7.32	11.90	6.10	60.95	
95th-Percentile Queue Length [ft/ln]	245.49	182.99	297.62	152.45	1523.87	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.65	12.42	31.97	31.97	11.37	0.00	0.00	0.00	270.98	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]	12.61			15.73				270.98			0.00		
Approach LOS	B			B				F			A		
d_I, Intersection Delay [s/veh]	67.90												
Intersection LOS	E												
Intersection V/C	0.998												

Emissions

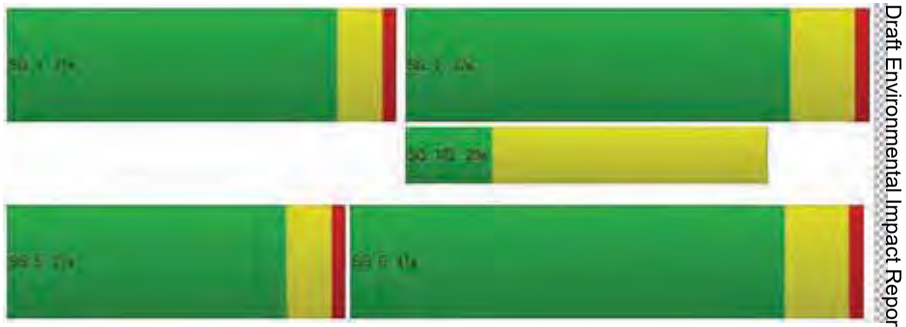
Vehicle Miles Traveled [mph]	392.56	70.61	79.30	295.10	102.55	
Stops [stops/h]	1239.30	215.28	393.53	717.40	4098.10	
Fuel consumption [US gal/h]	35.85	6.33	10.62	23.02	105.87	
CO [g/h]	2505.74	442.53	742.59	1609.19	7400.31	
NOx [g/h]	487.53	86.10	144.48	313.09	1439.83	
VOC [g/h]	580.73	102.56	172.10	372.95	1715.09	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.248
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.953	2.271	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	77.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.039

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	2098	245	3	606	2038	596	508	40	83	1	94	6	695
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	-141	-6	0	0	114	0	0	0	3	0	12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	72	0	0	0	179	0	0	26	0	0	0	209
Total Hourly Volume [veh/h]	1	21	1957	167	3	606	2152	417	508	40	60	1	106	6	486
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	5	510	43	1	158	560	109	132	10	16	0	28	2	127
Total Analysis Volume [veh/h]	1	22	2039	174	3	631	2242	434	529	42	63	1	110	6	506
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	117	117	117	117	117	117	117	117	117	117	117	117
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	55	55	12	64	64	20	20	20	15	15	15
g / C, Green / Cycle	0.02	0.47	0.47	0.10	0.55	0.55	0.17	0.17	0.17	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.11	0.18	0.44	0.27	0.15	0.02	0.04	0.06	0.16	0.16
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1595	1589
c, Capacity [veh/h]	67	2372	740	353	2794	872	583	315	268	227	204	203
d1, Uniform Delay [s]	56.92	27.98	18.85	52.78	21.41	16.49	47.97	41.57	42.31	47.72	51.28	51.28
k, delay calibration	0.04	0.04	0.04	0.31	0.04	0.04	0.08	0.08	0.08	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.14	0.37	0.06	365.30	0.21	0.16	4.38	0.14	0.33	1.21	150.36	150.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.86	0.24	1.80	0.80	0.50	0.91	0.13	0.24	0.49	1.26	1.26
d, Delay for Lane Group [s/veh]	58.06	28.36	18.91	418.08	21.62	16.65	52.36	41.71	42.64	48.92	201.64	201.86
Lane Group LOS	E	C	B	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	16.58	2.86	23.10	15.84	7.10	7.92	1.05	1.61	3.10	14.46	14.43
50th-Percentile Queue Length [ft/ln]	8.69	414.40	71.40	577.50	396.10	177.54	198.12	26.35	40.37	77.58	361.60	360.64
95th-Percentile Queue Length [veh/ln]	0.63	23.25	5.14	36.84	22.37	11.47	12.54	1.90	2.91	5.59	22.71	22.66
95th-Percentile Queue Length [ft/ln]	15.65	581.32	128.52	920.95	559.30	286.80	313.54	47.42	72.67	139.64	567.77	566.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.06	58.06	28.36	18.91	418.0	418.0	21.62	16.65	52.36	41.71	42.64	48.92	48.92	201.6	201.7
Movement LOS	E	E	C	B	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	27.93				96.90				50.69			174.52			
Approach LOS	C				F				D			F			
d_I, Intersection Delay [s/veh]	77.03														
Intersection LOS	E														
Intersection V/C	1.039														

Emissions

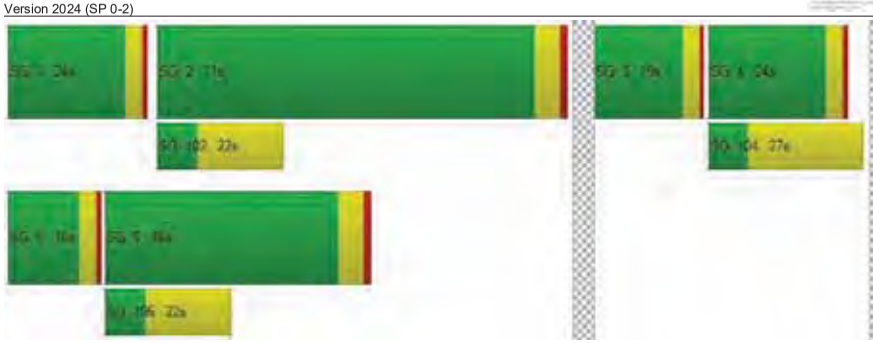
Vehicle Miles Traveled [mph]	5.13	455.18	38.84	91.74	324.41	62.80	67.47	5.36	8.04	38.96	90.00	89.70
Stops [stops/h]	21.32	1524.44	87.55	1416.28	1457.13	217.71	485.89	32.31	49.51	95.13	443.41	442.22
Fuel consumption [US gal/h]	0.60	38.93	2.75	65.53	31.27	5.26	11.10	0.76	1.15	3.23	16.67	16.63
CO [g/h]	42.00	2720.93	192.38	4580.49	2185.60	367.57	775.74	52.81	80.45	226.08	1165.55	1162.61
NOx [g/h]	8.17	529.39	37.43	891.20	425.24	71.52	150.93	10.27	15.65	43.99	226.77	226.20
VOC [g/h]	9.73	630.60	44.59	1061.57	506.53	85.19	179.79	12.24	18.65	52.40	270.13	269.45

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.23	0.00	48.23	48.23
l_p,int, Pedestrian LOS Score for Intersectio	3.479	0.000	2.714	2.951
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	690	1116	349	264
d_b, Bicycle Delay [s]	25.20	11.48	40.01	44.24
l_b,int, Bicycle LOS Score for Intersection	2.828	3.132	2.104	2.751
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	49.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	2	0	0	1	2	0	0	1	1	0	2
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	400.0	100.0	100.0	400.0	360.0	100.0	100.0	300.0	400.00	100.00	300.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	155	1777	629	2	259	1490	465	2	395	566	152	600	264	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-150	-35	0	0	129	0	0	0	0	0	30	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	178	0	0	0	140	0	0	0	46	0	0	58
Total Hourly Volume [veh/h]	6	155	1627	416	2	259	1619	325	2	395	566	106	630	264	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	42	437	112	1	70	435	87	1	106	152	28	169	71	37
Total Analysis Volume [veh/h]	6	167	1749	447	2	278	1741	349	2	425	609	114	677	284	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Overl	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups				2,3											
Maximum Green [s]	0	20	53	37	0	20	53	0	0	22	30	0	37	45	0
Amber [s]	0.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	5	0	0	0	5	0	0	0	4	0	0	5	0
Pedestrian Clearance [s]	0	0	28	0	0	0	24	0	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	58	42	0	25	58	0	0	27	35	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	9	9	0	9	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	1.0	1.5	1.0	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No	No	No		No	No			No	No		No	No	
Maximum Recall		No	No	No		No	No			No	No		No	No	
Pedestrian Recall		No	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	53	101	15	58	58	22	29	29	43	51	51
g / C, Green / Cycle	0.06	0.33	0.63	0.09	0.36	0.36	0.14	0.18	0.18	0.27	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.28	0.08	0.34	0.22	0.12	0.17	0.07	0.20	0.08	0.09
s, saturation flow rate [veh/h]	3459	6792	1589	3459	5094	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	218	2236	1003	322	1831	571	468	648	289	936	1129	504
d1, Uniform Delay [s]	73.93	48.48	15.15	71.57	49.87	42.06	68.22	64.58	57.67	32.19	20.99	21.18
k, delay calibration	0.04	0.04	0.26	0.04	0.04	0.07	0.04	0.04	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	0.23	0.74	2.81	1.43	0.70	2.95	3.12	0.32	4.84	0.53	1.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.78	0.45	0.87	0.95	0.61	0.91	0.94	0.39	0.72	0.25	0.29
d, Delay for Lane Group [s/veh]	76.41	48.71	15.90	74.38	51.30	42.76	71.17	67.69	57.99	37.04	21.53	22.63
Lane Group LOS	E	D	B	E	D	D	E	E	E	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.61	15.90	8.61	5.72	22.19	11.24	8.85	12.58	4.14	8.75	2.26	2.46
50th-Percentile Queue Length [ft/ln]	90.14	397.38	215.17	143.07	554.83	281.12	221.22	314.40	103.42	218.87	56.59	61.48
95th-Percentile Queue Length [veh/ln]	6.49	22.43	13.42	9.65	29.92	16.74	13.73	18.39	7.45	13.61	4.07	4.43
95th-Percentile Queue Length [ft/ln]	162.26	560.84	335.46	241.16	747.98	418.61	343.18	459.79	186.15	340.19	101.86	110.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.41	76.41	48.71	15.90	74.38	74.38	51.30	42.76	71.17	71.17	67.69	57.99	37.04	21.53	22.63
Movement LOS	E	E	D	B	E	E	D	D	E	E	E	E	D	C	C
d_A, Approach Delay [s/veh]	44.54				52.77				68.02				31.16		
Approach LOS	D				D				E				C		
d_I, Intersection Delay [s/veh]	49.07														
Intersection LOS	D														
Intersection V/C	0.843														

Emissions

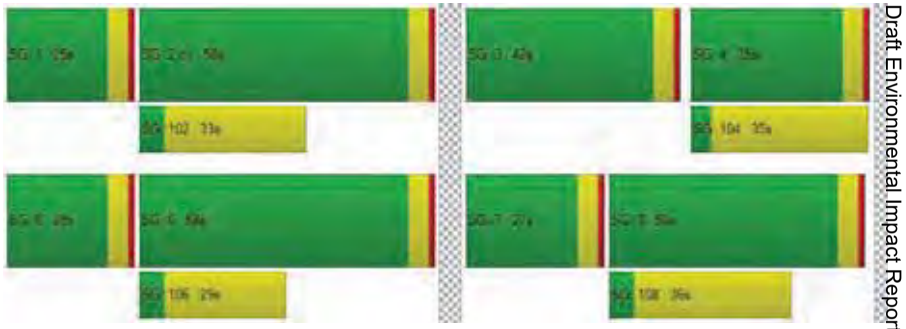
Vehicle Miles Traveled [mph]	68.89	696.45	177.99	62.51	388.65	77.91	106.57	151.99	28.45	71.53	30.01	15.43
Stops [stops/h]	162.26	1430.57	193.66	257.53	1498.05	253.01	398.20	565.91	93.08	393.97	101.86	55.33
Fuel consumption [US gal/h]	6.42	53.91	9.84	9.58	50.12	8.85	12.77	17.77	3.03	10.22	3.04	1.61
CO [g/h]	448.90	3768.35	688.04	669.81	3503.62	618.84	892.66	1242.23	211.84	714.58	212.65	112.75
NOx [g/h]	87.34	733.18	133.87	130.32	681.68	120.40	173.68	241.69	41.22	139.03	41.37	21.94
VOC [g/h]	104.04	873.35	159.46	155.23	812.00	143.42	206.88	287.90	49.10	165.61	49.28	26.13

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	71.25	71.25	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.748	3.909	2.985	3.078
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	663	663	375	563
d_b, Bicycle Delay [s]	35.78	35.78	52.81	41.33
l_b,int, Bicycle LOS Score for Intersection	2.608	2.787	2.196	2.521
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	300.0	200.0	100.0	100.0	100.0	320.00	100.00	320.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	18	1787	36	0	34	1740	490	751	10	41	2	8	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-185	0	0	0	160	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	0	0	147	0	0	12	0	0	6
Total Hourly Volume [veh/h]	1	18	1602	25	0	34	1900	343	751	10	29	2	8	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	450	7	0	10	534	96	211	3	8	1	2	4
Total Analysis Volume [veh/h]	1	20	1800	29	0	39	2135	385	844	11	33	2	9	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	16	34	0	0	15	34	0	0	36	0	0	16	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	11	0	0	0	18	0	0	24	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	20	40	0	0	20	40	0	0	40	0	0	20	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	C
C, Cycle Length [s]	78	78	78	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	34	34	2	34	34	22	22	22	2
g / C, Green / Cycle	0.02	0.43	0.43	0.03	0.43	0.43	0.28	0.28	0.28	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.34	0.34	0.02	0.42	0.24	0.24	0.24	0.02	0.02
s, saturation flow rate [veh/h]	1781	3560	1855	1781	5094	1589	1781	1783	1589	1691
c, Capacity [veh/h]	42	1530	797	49	2209	689	508	508	453	47
d1, Uniform Delay [s]	37.81	19.25	19.25	37.90	21.65	16.60	26.37	26.36	20.46	37.62
k, delay calibration	0.04	0.15	0.29	0.04	0.15	0.15	0.11	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.31	1.31	4.60	10.18	5.35	1.01	3.86	3.84	0.07	3.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.79	0.79	0.79	0.97	0.56	0.84	0.84	0.07	0.55
d, Delay for Lane Group [s/veh]	41.12	20.56	23.85	48.08	27.01	17.61	30.23	30.20	20.53	41.29
Lane Group LOS	D	C	C	D	C	B	C	C	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.43	8.91	10.02	0.82	11.25	4.41	7.68	7.67	0.44	0.53
50th-Percentile Queue Length [ft/ln]	10.73	222.76	250.52	20.56	281.34	110.16	191.89	191.85	10.89	13.26
95th-Percentile Queue Length [veh/ln]	0.77	13.81	15.21	1.48	16.76	7.85	12.22	12.22	0.78	0.95
95th-Percentile Queue Length [ft/ln]	19.31	345.15	380.31	37.01	418.88	196.23	305.48	305.43	19.61	23.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.12	41.12	21.65	23.85	48.08	48.08	27.01	17.61	30.22	30.20	20.53	41.29	41.29	41.29
Movement LOS	D	D	C	C	D	D	C	B	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	21.91				25.91				29.86			41.29		
Approach LOS	C				C				C			D		
d_I, Intersection Delay [s/veh]	25.25													
Intersection LOS	C													
Intersection V/C	0.862													

Emissions

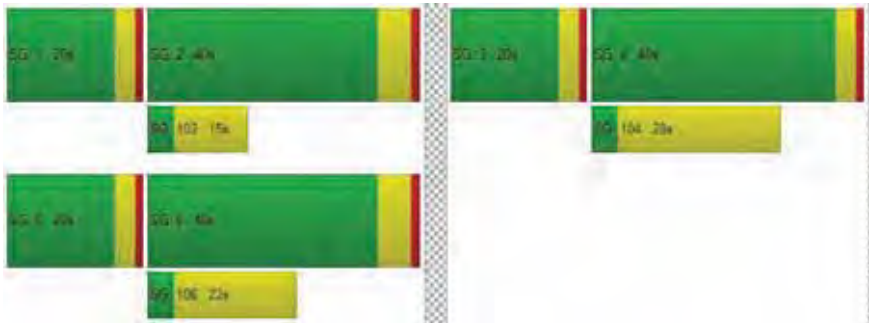
Vehicle Miles Traveled [mph]	7.43	425.31	221.70	15.53	850.15	153.31	102.89	102.93	7.94	0.49
Stops [stops/h]	19.72	819.09	460.57	37.80	1551.70	202.53	352.79	352.72	20.03	24.39
Fuel consumption [US gal/h]	0.59	27.06	14.71	1.60	68.99	10.27	8.81	8.81	0.58	0.37
CO [g/h]	41.28	1891.77	1028.47	112.06	4822.74	717.87	616.09	616.08	40.23	26.11
NOx [g/h]	8.03	368.07	200.10	21.80	938.33	139.67	119.87	119.87	7.83	5.08
VOC [g/h]	9.57	438.44	238.36	25.97	1117.72	166.37	142.79	142.78	9.32	6.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.57	0.00	31.57	31.57
l_p,int, Pedestrian LOS Score for Intersectio	3.168	0.000	2.500	1.779
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	868	868	919	409
d_b, Bicycle Delay [s]	12.54	12.54	11.44	24.80
l_b,int, Bicycle LOS Score for Intersection	2.583	3.026	3.045	1.612
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	68.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.064

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	131	1454	1541	243	388	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	69	0	0	0	0
Site-Generated Trips [veh/h]	0	3	-185	160	0	0	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	73	0	69
Total Hourly Volume [veh/h]	0	134	1338	1701	170	388	160
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	38	376	478	48	109	45
Total Analysis Volume [veh/h]	0	151	1503	1911	191	436	180
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	9	53	40	40	20	20
g / C, Green / Cycle	0.10	0.64	0.48	0.48	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.42	0.56	0.58	0.24	0.11
s, saturation flow rate [veh/h]	1781	3560	1870	1812	1781	1589
c, Capacity [veh/h]	187	2269	905	877	431	384
d1, Uniform Delay [s]	36.18	9.42	21.34	21.34	31.34	26.80
k, delay calibration	0.04	0.15	0.50	0.50	0.44	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.17	0.48	85.05	100.60	43.62	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.66	1.16	1.20	1.01	0.47
d, Delay for Lane Group [s/veh]	39.35	9.90	106.39	121.94	74.97	27.68
Lane Group LOS	D	A	F	F	F	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.08	7.24	37.08	39.71	13.47	3.04
50th-Percentile Queue Length [ft/ln]	77.01	180.93	927.01	992.86	336.77	76.06
95th-Percentile Queue Length [veh/ln]	5.54	11.65	52.52	56.98	19.63	5.48
95th-Percentile Queue Length [ft/ln]	138.62	291.23	1312.96	1424.62	490.66	136.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.35	39.35	9.90	113.39	121.94	74.97	27.68
Movement LOS	D	D	A	F	F	F	C
d_A, Approach Delay [s/veh]	12.59			114.16		61.15	
Approach LOS	B			F		E	
d_I, Intersection Delay [s/veh]	68.27						
Intersection LOS	E						
Intersection V/C	1.064						

Emissions

Vehicle Miles Traveled [mph]	105.03	1045.41	371.79	371.79	147.10	60.73
Stops [stops/h]	134.16	630.40	1614.98	1729.69	586.69	132.50
Fuel consumption [US gal/h]	6.27	49.55	46.98	50.94	15.95	4.25
CO [g/h]	438.56	3463.27	3283.83	3560.55	1114.76	296.81
NOx [g/h]	85.33	673.83	638.91	692.75	216.89	57.75
VOC [g/h]	101.64	802.65	761.06	825.19	258.36	68.79

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.72	0.00	33.72
l_p,int, Pedestrian LOS Score for Intersectio	3.042	0.000	2.394
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	968	968	484
d_b, Bicycle Delay [s]	11.01	11.01	23.75
l_b,int, Bicycle LOS Score for Intersection	2.924	3.354	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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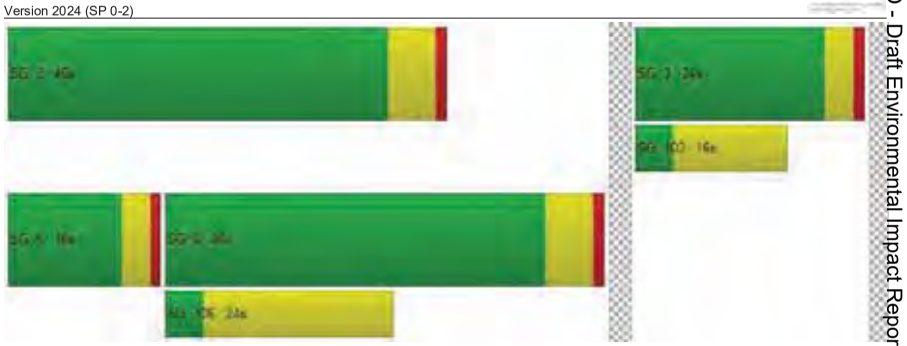

Scenario 6: 6 2040 PM with CCSP, + Project
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Report File: C:\...\16 2040 PM plus Proj.pdf
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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	207.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.231

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	114	590	31	419	446	895	817	306	63	76	201	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	147	17	0	85	0	0	0	6	0	0	0
Site-Generated Trips [veh/h]	11	53	2	0	292	-123	-236	-40	79	30	-21	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	232	0	0	44	0	0	53
Total Hourly Volume [veh/h]	125	790	35	419	823	540	581	266	104	106	180	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	217	10	115	226	148	160	73	29	29	49	34
Total Analysis Volume [veh/h]	137	868	38	460	904	593	638	292	114	116	198	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	84	84	84	84	84	84	84	84	84	84
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	8	22	22	12	26	26	15	15	16	16
g / C, Green / Cycle	0.10	0.26	0.26	0.14	0.31	0.31	0.18	0.18	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.24	0.24	0.26	0.40	0.46	0.29	0.29	0.17	0.09
s, saturation flow rate [veh/h]	1781	1870	1843	1781	1870	1641	1781	1782	1836	1589
c, Capacity [veh/h]	172	496	488	253	581	510	316	316	354	307
d1, Uniform Delay [s]	37.37	30.19	30.19	36.25	29.13	29.13	34.75	34.75	33.19	30.11
k, delay calibration	0.04	0.25	0.25	0.50	0.50	0.50	0.50	0.50	0.16	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	14.92	15.10	383.70	142.61	221.63	306.86	306.62	10.38	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.92	0.92	1.82	1.29	1.47	1.65	1.65	0.89	0.45
d, Delay for Lane Group [s/veh]	40.56	45.11	45.29	419.96	171.74	250.76	341.62	341.37	43.57	30.49
Lane Group LOS	D	D	D	F	F	F	F	F	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.87	10.71	10.58	31.69	33.22	40.33	33.24	33.23	7.10	2.44
50th-Percentile Queue Length [ft/ln]	71.69	267.87	264.57	792.33	830.51	1008.23	831.03	830.76	177.39	60.91
95th-Percentile Queue Length [veh/ln]	5.16	16.08	15.92	49.99	49.37	62.02	51.95	51.93	11.46	4.39
95th-Percentile Queue Length [ft/ln]	129.05	402.08	397.95	1249.75	1234.27	1550.53	1298.65	1298.18	286.61	109.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.56	45.20	45.29	419.96	185.33	250.76	341.57	341.37	341.37	43.57	43.57	30.49
Movement LOS	D	D	D	F	F	F	F	F	F	D	D	C
d_A, Approach Delay [s/veh]	44.59			260.31			341.49			39.60		
Approach LOS	D			F			F			D		
d_I, Intersection Delay [s/veh]	206.96											
Intersection LOS	F											
Intersection V/C	1.231											

Emissions

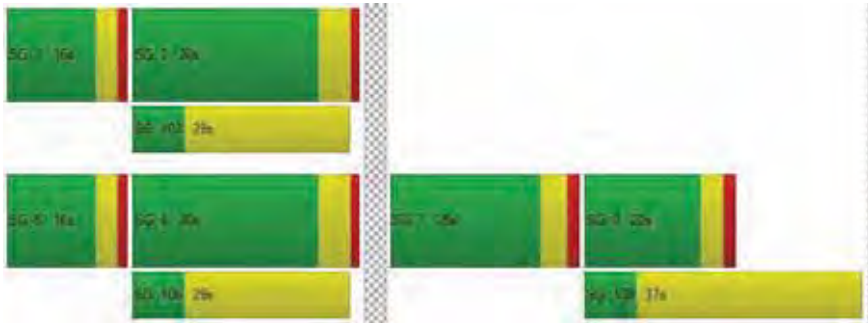
Vehicle Miles Traveled [mph]	79.12	263.54	259.69	319.95	520.62	520.62	39.27	39.27	34.73	15.15
Stops [stops/h]	122.40	457.31	451.68	1352.67	1417.85	1721.26	1418.74	1418.29	302.85	103.98
Fuel consumption [US gal/h]	5.06	17.56	17.33	75.13	69.91	87.58	45.74	45.71	5.89	2.05
CO [g/h]	353.98	1227.76	1211.39	5251.74	4886.45	6121.54	3196.97	3194.98	411.50	143.17
NOx [g/h]	68.87	238.88	235.69	1021.80	950.73	1191.03	622.01	621.63	80.06	27.86
VOC [g/h]	82.04	284.55	280.75	1217.14	1132.48	1418.73	740.93	740.47	95.37	33.18

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.89	0.00	31.89	31.89
l_p,int, Pedestrian LOS Score for Intersectio	2.753	0.000	2.730	2.437
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	586	586	368	474
d_b, Bicycle Delay [s]	21.09	21.09	28.10	24.55
l_b,int, Bicycle LOS Score for Intersection	2.432	3.366	3.355	2.391
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	83.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.069

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	171	325	456	129	410	157
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	47	209	0
Site-Generated Trips [veh/h]	-15	305	526	-125	-239	-29
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	15	0	38
Total Hourly Volume [veh/h]	156	630	982	36	380	90
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	175	273	11	120	25
Total Analysis Volume [veh/h]	173	700	1091	46	481	100
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	12	66	50	50	32	32
g / C, Green / Cycle	0.11	0.61	0.46	0.46	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.10	0.37	0.58	0.03	0.27	0.06
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	205	1146	862	732	525	469
d1, Uniform Delay [s]	47.04	12.99	29.25	16.24	36.95	28.78
k, delay calibration	0.04	0.33	0.50	0.15	0.16	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.61	1.60	128.94	0.05	9.41	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.61	1.27	0.06	0.92	0.21
d, Delay for Lane Group [s/veh]	50.65	14.60	158.19	16.29	46.36	29.00
Lane Group LOS	D	B	F	B	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.54	9.05	50.37	0.59	13.47	1.99
50th-Percentile Queue Length [ft/ln]	113.54	226.15	1259.17	14.71	336.74	49.70
95th-Percentile Queue Length [veh/ln]	8.04	13.98	72.88	1.06	19.49	3.58
95th-Percentile Queue Length [ft/ln]	200.91	349.46	1822.05	26.47	487.21	89.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.65	14.60	158.19	16.29	46.36	29.00
Movement LOS	D	B	F	B	D	C
d_A, Approach Delay [s/veh]	21.74		152.45		43.37	
Approach LOS	C		F		D	
d_I, Intersection Delay [s/veh]	83.95					
Intersection LOS	F					
Intersection V/C	1.069					

Emissions

Vehicle Miles Traveled [mph]	21.35	86.37	630.08	26.57	112.97	23.49
Stops [stops/h]	150.82	300.42	1672.69	19.54	447.32	66.02
Fuel consumption [US gal/h]	5.30	10.55	87.26	1.40	11.66	1.92
CO [g/h]	370.36	737.36	6099.51	98.15	815.01	134.33
NOx [g/h]	72.06	143.46	1186.74	19.10	158.57	26.14
VOC [g/h]	85.83	170.89	1413.62	22.75	188.89	31.13

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.50	0.00	46.50
l_p,int, Pedestrian LOS Score for Intersectio	3.204	0.000	2.283
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	923	923	923
d_b, Bicycle Delay [s]	15.73	15.73	15.73
l_b,int, Bicycle LOS Score for Intersection	3.000	3.460	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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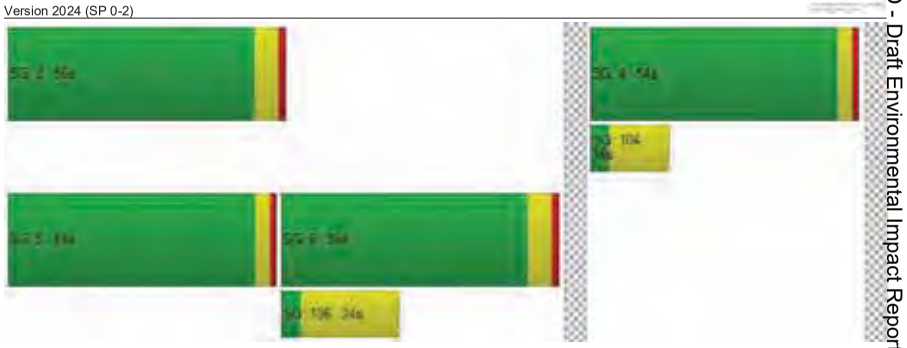

Scenario 6: 6 2040 PM with CCSP, + Project
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Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	311.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.961

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	438	0	25	588	0	0	0	0	2	0	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	10	6	0	0	0	0	0
Site-Generated Trips [veh/h]	5	267	0	0	455	42	23	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	705	0	25	1043	52	29	0	3	2	0	58
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	192	0	6	283	14	8	0	1	1	0	15
Total Analysis Volume [veh/h]	5	766	0	25	1134	57	32	0	3	2	0	58
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.03	0.01	0.00	0.96	0.00	0.01	0.05	0.00	0.14
d_M, Delay for Movement [s/veh]	11.15	0.00	0.00	9.28	0.00	0.00	311.14	268.95	218.24	96.20	75.29	15.58
Movement LOS	B	A	A	A	A	A	F	F	F	F	F	C
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.04	0.04	0.04	3.53	3.53	3.53	0.53	0.53	0.53
95th-Percentile Queue Length [ft/ln]	0.21	0.21	0.21	1.07	1.07	1.07	88.37	88.37	88.37	13.31	13.31	13.31
d_A, Approach Delay [s/veh]	0.07			0.19			303.18			18.26		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	5.76											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	2,977.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	7.067

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	334	21	144	446	0	0	0	0	59	0	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	2	0	0	-4	434	270	0	31	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	55	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	336	21	144	442	434	307	0	86	59	5	104
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	90	6	39	119	117	83	0	23	16	1	28
Total Analysis Volume [veh/h]	97	361	23	155	475	467	330	0	92	63	5	112
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.00	0.00	0.13	0.00	0.00	7.07	0.00	0.21	1.31	0.09	0.17
d_M, Delay for Movement [s/veh]	10.70	0.00	0.00	8.53	0.00	0.00	2977.69	2945.52	2908.89	399.30	386.21	329.98
Movement LOS	B	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.46	0.00	0.00	0.45	0.00	0.00	48.75	48.75	48.75	13.18	13.18	13.18
95th-Percentile Queue Length [ft/ln]	11.46	0.00	0.00	11.36	0.00	0.00	1218.72	1218.72	1218.72	329.56	329.56	329.56
d_A, Approach Delay [s/veh]	2.16			1.21			2962.69			355.81		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	603.97											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	55.000

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	127	1017	168	55	1	1019	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-83	-276	79	-43	0	-144	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	59	0	0	36	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	103	741	247	48	1	875	201
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	211	70	14	0	249	57
Total Analysis Volume [veh/h]	0	117	842	281	55	1	994	228
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	55.00	1.15	0.00	0.00	0.00	0.81	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	10000.00	15.93	0.00
Movement LOS	F	F	F	A	A	F	C	A
95th-Percentile Queue Length [veh/ln]	120.72	120.72	120.72	0.00	0.00	7.84	7.84	7.84
95th-Percentile Queue Length [ft/ln]	3017.98	3017.98	3017.98	0.00	0.00	195.96	195.96	195.96
d_A, Approach Delay [s/veh]	10000.00			0.00		21.13		
Approach LOS	F			A		C		
d_I, Intersection Delay [s/veh]	3818.84							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	36.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.952

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	60	657	105	0	40	585	40	56	49	40	225	17	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-293	-225	0	13	-176	-18	-79	-56	0	-135	-13	8
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	364	0	0	53	409	22	0	0	40	90	4	87
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	110	0	0	17	123	7	0	0	12	27	1	28
Total Analysis Volume [veh/h]	72	439	0	0	67	493	27	0	0	48	108	5	110
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	601	617	495	521
Degree of Utilization, x	0.85	0.95	0.10	0.43

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	9.30	13.11	0.32	2.12
95th-Percentile Queue Length [ft]	232.52	327.73	8.01	53.03
Approach Delay [s/veh]	33.75	49.25	11.06	14.96
Approach LOS	D	E	B	B
Intersection Delay [s/veh]	36.54			
Intersection LOS	E			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	25.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	159	80	0	143	294	2	132	196
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	0	-4	0	0	-64	-8
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	120	0	139	294	2	68	188
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	36	0	41	88	1	20	56
Total Analysis Volume [veh/h]	189	143	0	165	350	2	81	224
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.53	0.20	0.00	0.00	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	25.58	11.43	9.36	0.00	0.00	13.82	8.74	0.00
Movement LOS	D	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	2.92	0.76	0.00	0.00	0.00	0.27	0.27	0.00
95th-Percentile Queue Length [ft/ln]	73.07	18.97	0.00	0.00	0.00	6.67	6.67	0.00
d_A, Approach Delay [s/veh]	19.49			0.00			2.40	
Approach LOS	C			A			A	
d_I, Intersection Delay [s/veh]	6.24							
Intersection LOS	D							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	170.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.999

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	205	208	87	201	294	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	40	0	0	-64
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	205	208	127	201	294	123
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	57	35	55	80	33
Total Analysis Volume [veh/h]	223	226	138	218	320	134
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.00	0.25	0.00	0.00	0.27	0.00
d_M, Delay for Movement [s/veh]	170.24	158.06	0.00	0.00	9.07	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	19.69	19.69	0.00	0.00	1.08	0.00
95th-Percentile Queue Length [ft/ln]	492.27	492.27	0.00	0.00	26.93	0.00
d_A, Approach Delay [s/veh]	164.11		0.00		6.40	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	60.83					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.197

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	310	12	28	203	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-64	0	0	40	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	246	12	28	243	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	3	8	66	0	1
Total Analysis Volume [veh/h]	267	13	30	264	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	711	720	684	756	756	704
Degree of Utilization, x	0.20	0.19	0.04	0.17	0.17	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.73	0.72	0.14	0.63	0.63	0.01
95th-Percentile Queue Length [ft]	18.21	17.92	3.43	15.74	15.74	0.32
Approach Delay [s/veh]	8.95		8.44			8.14
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.69					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	253	10	50	7	1	21	5	697	138	90	634	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-64	0	0	0	0	0	0	0	40	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	6	0	0	53	0	0	3
Total Hourly Volume [veh/h]	189	10	35	7	1	15	5	697	125	90	634	8
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	3	9	2	0	4	1	180	32	24	163	2
Total Analysis Volume [veh/h]	195	10	38	7	1	15	5	719	129	97	654	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	25	0	15	35	0	15	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	21	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	0	0	30	0	20	40	0	20	40	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	0	0	9	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	53	53	53	53	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	9	3	1	14	14	7	21	21
g / C, Green / Cycle	0.17	0.17	0.17	0.05	0.01	0.27	0.27	0.13	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.11	0.01	0.02	0.01	0.00	0.20	0.08	0.05	0.18	0.01
s, saturation flow rate [veh/h]	1781	1870	1589	1654	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	296	311	265	82	22	974	435	232	1395	623
d1, Uniform Delay [s]	20.53	18.38	18.73	24.11	25.75	17.40	15.11	21.05	11.93	9.79
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	0.04	0.25	1.84	5.19	1.11	0.38	1.20	0.25	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.03	0.14	0.28	0.23	0.74	0.30	0.42	0.47	0.01
d, Delay for Lane Group [s/veh]	23.01	18.42	18.98	25.96	30.94	18.51	15.49	22.24	12.17	9.79
Lane Group LOS	C	B	B	C	C	B	B	C	B	A
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.24	0.10	0.38	0.30	0.09	3.63	1.13	1.08	2.45	0.05
50th-Percentile Queue Length [ft/ln]	55.90	2.42	9.48	7.46	2.23	90.73	28.24	27.09	61.27	1.24
95th-Percentile Queue Length [veh/ln]	4.02	0.17	0.68	0.54	0.16	6.53	2.03	1.95	4.41	0.09
95th-Percentile Queue Length [ft/ln]	100.61	4.36	17.07	13.42	4.02	163.31	50.83	48.75	110.29	2.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.01	18.42	18.98	25.96	25.96	25.96	30.94	18.51	15.49	22.24	12.17	9.79
Movement LOS	C	B	B	C	C	C	C	B	B	C	B	A
d_A, Approach Delay [s/veh]	22.19			25.96			18.13			13.44		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	16.85											
Intersection LOS	B											
Intersection V/C	0.546											

Emissions

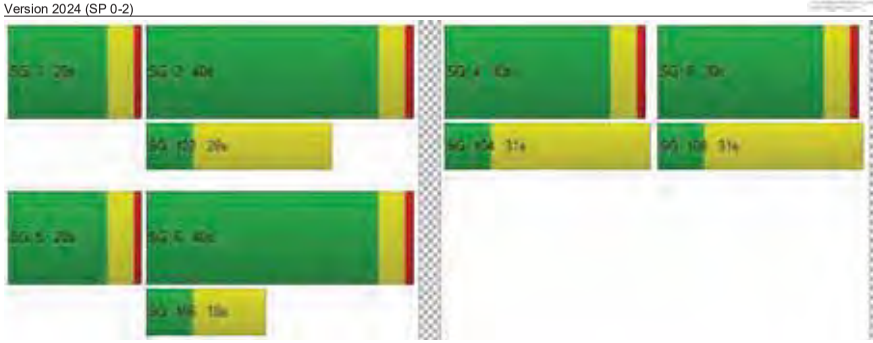
Vehicle Miles Traveled [mph]	57.89	2.97	11.28	0.51	0.72	102.95	18.47	81.63	550.36	6.73
Stops [stops/h]	153.21	6.64	25.99	20.44	6.12	497.37	77.40	74.24	335.89	3.40
Fuel consumption [US gal/h]	4.14	0.20	0.75	0.26	0.09	9.69	1.59	4.21	26.13	0.31
CO [g/h]	289.58	13.73	52.76	17.86	6.63	677.65	111.46	294.25	1826.64	21.80
NOx [g/h]	56.34	2.67	10.26	3.48	1.29	131.85	21.69	57.25	355.40	4.24
VOC [g/h]	67.11	3.18	12.23	4.14	1.54	157.05	25.83	68.20	423.34	5.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.42	16.42	16.42	16.42
l_p,int, Pedestrian LOS Score for Intersectio	2.396	1.720	2.786	2.677
Crosswalk LOS	B	A	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	952	952	1332	1332
d_b, Bicycle Delay [s]	7.22	7.22	2.93	2.93
l_b,int, Bicycle LOS Score for Intersection	1.985	1.607	2.307	2.188
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	305	5	361	5	5	5	5	754	92	14	260	607	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	108	0	0	0	0	0	28	0	0	0	0
Total Hourly Volume [veh/h]	305	5	253	5	5	5	5	754	64	14	260	607	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	1	67	1	1	1	1	201	17	4	69	161	1
Total Analysis Volume [veh/h]	324	5	269	5	5	5	5	802	68	14	277	646	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	24	1	1	1	52	52	21	73	73
g / C, Green / Cycle	0.20	0.20	0.01	0.01	0.01	0.44	0.44	0.18	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.18	0.17	0.00	0.01	0.00	0.23	0.04	0.16	0.17	0.17
s, saturation flow rate [veh/h]	1781	1594	1781	1718	1781	3560	1589	1781	1870	1865
c, Capacity [veh/h]	349	313	12	13	12	1548	691	318	1134	1131
d1, Uniform Delay [s]	47.44	46.78	59.33	59.43	59.34	24.73	20.02	48.42	11.26	11.26
k, delay calibration	0.30	0.09	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.29	6.61	19.50	27.26	19.95	1.24	0.28	4.44	0.64	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.88	0.40	0.76	0.40	0.52	0.10	0.92	0.29	0.29
d, Delay for Lane Group [s/veh]	70.72	53.39	78.83	86.69	79.29	25.97	20.30	52.87	11.90	11.91
Lane Group LOS	E	D	E	F	E	C	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.73	8.48	0.22	0.40	0.22	8.52	1.19	8.92	4.24	4.23
50th-Percentile Queue Length [ft/ln]	293.26	212.08	5.48	10.09	5.50	212.88	29.66	222.95	105.90	105.63
95th-Percentile Queue Length [veh/ln]	17.35	13.26	0.39	0.73	0.40	13.30	2.14	13.82	7.61	7.60
95th-Percentile Queue Length [ft/ln]	433.68	331.49	9.86	18.17	9.90	332.52	53.40	345.39	190.28	189.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.72	53.39	53.39	78.83	86.69	86.69	79.29	25.97	20.30	52.87	52.87	11.90	11.91
Movement LOS	E	D	D	E	F	F	E	C	C	D	D	B	B
d_A, Approach Delay [s/veh]	62.78			84.07			25.84			24.56			
Approach LOS	E			F			C			C			
d_I, Intersection Delay [s/veh]	34.79												
Intersection LOS	C												
Intersection V/C	0.640												

Emissions

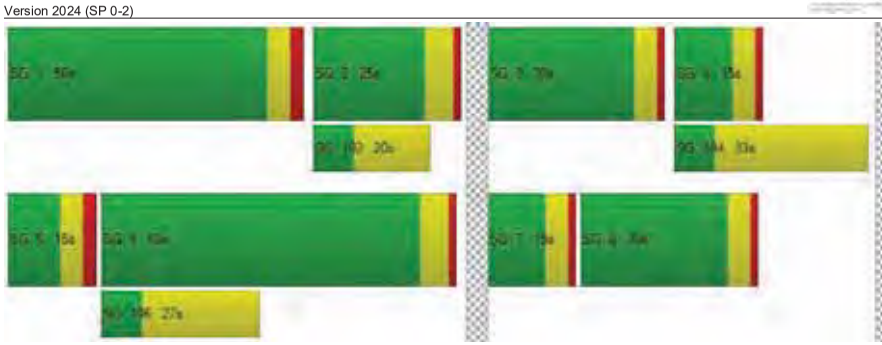
Vehicle Miles Traveled [mph]	124.84	105.58	0.23	0.46	4.21	674.90	57.22	72.63	81.35	81.13
Stops [stops/h]	351.91	254.49	6.57	12.11	6.60	510.92	35.60	267.54	127.08	126.75
Fuel consumption [US gal/h]	11.75	8.73	0.13	0.26	0.29	34.84	2.83	7.60	4.84	4.83
CO [g/h]	821.04	610.15	8.80	18.32	20.29	2435.66	198.05	531.12	338.35	337.45
NOx [g/h]	159.75	118.71	1.71	3.56	3.95	473.89	38.53	103.34	65.83	65.65
VOC [g/h]	190.29	141.41	2.04	4.25	4.70	564.49	45.90	123.09	78.41	78.21

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.460	1.964	2.812	0.000
Crosswalk LOS	B	A	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.725	1.584	2.305	2.108
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

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TKEAR

Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	43.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.0	100.0	100.0	100.0	200.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			No				No		

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Version 2024 (SP 0-2)
Report File: C:\...\16 2040 PM plus Proj.pdf
TKEAR

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	71	16	42	191	15	246	3	227	1167	57	86	738	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-10	0	-18	-17	0	0	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	13	0	0	71	0	0	0	17	0	0	54
Total Hourly Volume [veh/h]	71	16	29	191	15	165	3	209	1150	40	86	778	127
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	4	8	52	4	45	1	57	334	11	24	214	35
Total Analysis Volume [veh/h]	78	18	32	210	16	181	3	230	1337	44	95	855	140
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	7	24	0	7	26	0	0	24	75	0	15	67	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	13	29	0	47	31	0	0	28	80	0	20	72	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	3	9	0	3	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No			No			No	No		No	No	
Maximum Recall		No			No			No	No		No	No	
Pedestrian Recall		No			No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	11	22	22	67	98	98	10	40	40
g / C, Green / Cycle	0.07	0.07	0.14	0.14	0.42	0.61	0.61	0.06	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.12	0.12	0.13	0.38	0.03	0.05	0.24	0.09
s, saturation flow rate [veh/h]	1797	1589	1781	1609	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	118	105	241	218	750	2170	969	115	901	402
d1, Uniform Delay [s]	73.74	71.24	67.82	68.17	30.86	19.55	12.55	73.96	58.76	48.96
k, delay calibration	0.04	0.04	0.04	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.92	0.60	3.82	5.59	1.08	1.32	0.09	5.60	2.69	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.31	0.87	0.91	0.31	0.62	0.05	0.83	0.95	0.35
d, Delay for Lane Group [s/veh]	78.66	71.84	71.64	73.77	31.94	20.87	12.64	79.56	61.44	49.15
Lane Group LOS	E	E	E	E	C	C	B	E	E	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.08	1.28	8.72	8.32	6.35	15.88	0.68	4.06	17.39	4.68
50th-Percentile Queue Length [ft/ln]	102.02	31.99	217.98	207.97	158.67	396.97	16.96	101.55	434.87	116.91
95th-Percentile Queue Length [veh/ln]	7.35	2.30	13.56	13.05	10.48	22.41	1.22	7.31	24.23	8.22
95th-Percentile Queue Length [ft/ln]	183.64	57.58	339.05	326.22	261.96	560.35	30.52	182.79	605.87	205.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.66	78.66	71.84	71.70	73.77	73.77	31.94	31.94	20.87	12.64	79.56	61.44	49.15
Movement LOS	E	E	E	E	E	E	C	C	C	B	E	E	D
d_A, Approach Delay [s/veh]	76.96			72.67			22.24				61.44		
Approach LOS	E			E			C				E		
d_I, Intersection Delay [s/veh]	43.93												
Intersection LOS	D												
Intersection V/C	0.672												

Emissions

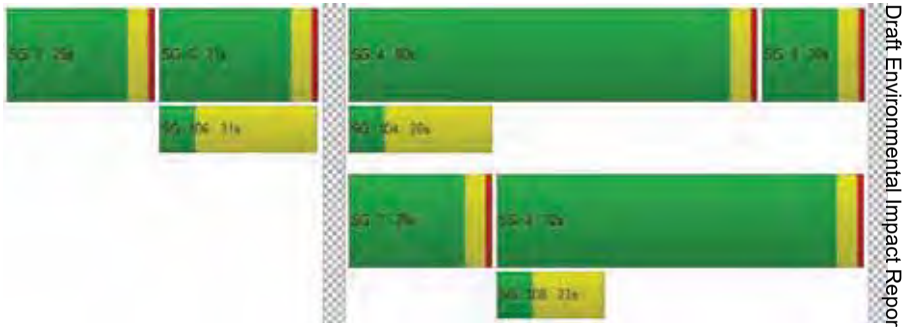
Vehicle Miles Traveled [mph]	4.80	1.60	9.76	9.16	24.62	141.26	4.65	33.15	298.38	48.86
Stops [stops/h]	91.82	28.79	196.18	187.17	142.80	714.55	15.26	91.40	782.77	105.22
Fuel consumption [US gal/h]	2.24	0.69	4.55	4.37	3.32	15.44	0.39	3.41	27.30	3.99
CO [g/h]	156.69	48.42	317.83	305.32	231.85	1079.33	27.18	238.19	1908.08	279.10
NOx [g/h]	30.49	9.42	61.84	59.40	45.11	210.00	5.29	46.34	371.24	54.30
VOC [g/h]	36.31	11.22	73.66	70.76	53.73	250.15	6.30	55.20	442.22	64.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.088	2.368	2.962	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	325	938	838
d_b, Bicycle Delay [s]	57.80	56.11	22.58	27.03
l_b,int, Bicycle LOS Score for Intersection	1.792	2.348	2.715	2.503
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	2	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	300.00	100.00	300.00	200.00	100.00	200.00	300.00	100.00	200.00	500.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	300.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	117	83	587	373	142	63	67	1081	264	432	840	207
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-9	-6	0	-5	22	12	-29	0	22	19	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	174	0	0	26	0	0	79	0	0	62
Total Hourly Volume [veh/h]	117	74	407	373	137	59	79	1052	185	454	859	145
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	19	105	96	35	15	20	271	48	117	221	37
Total Analysis Volume [veh/h]	121	76	420	385	141	61	81	1085	191	468	886	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	153
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Overlap	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	1	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,4									
Maximum Green [s]	0	35	25	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	3.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.5	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	28	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	1.5	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	150.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	29	0	45	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	2.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No	No		No		No	No		No	No	
Maximum Recall		No	No		No		No	No		No	No	
Pedestrian Recall		No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	113	113	113	113	113	113	113	113	113	113	113	113
L, Total Lost Time per Cycle [s]	4.20	4.20	3.50	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	0.00	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	12	12	66	28	28	28	5	38	38	18	51	51
g / C, Green / Cycle	0.10	0.10	0.58	0.25	0.25	0.25	0.04	0.34	0.34	0.16	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.07	0.04	0.15	0.21	0.08	0.04	0.02	0.30	0.12	0.14	0.25	0.09
s, saturation flow rate [veh/h]	1781	1870	2813	1877	1870	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	183	192	1643	497	464	394	141	1205	538	551	1606	717
d1, Uniform Delay [s]	49.07	47.67	11.55	42.27	34.73	33.39	53.52	35.73	28.24	46.41	22.78	18.88
k, delay calibration	0.13	0.13	0.04	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.05	1.65	0.03	3.27	0.46	0.23	1.39	2.74	0.40	1.44	0.38	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.40	0.26	0.78	0.30	0.15	0.58	0.90	0.35	0.85	0.55	0.21
d, Delay for Lane Group [s/veh]	54.12	49.32	11.58	45.54	35.18	33.61	54.90	38.48	28.64	47.85	23.16	19.06
Lane Group LOS	D	D	B	D	D	C	D	D	C	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.55	2.10	2.53	5.40	3.23	1.34	1.16	14.47	3.96	6.50	8.59	2.41
50th-Percentile Queue Length [ft/ln]	88.82	52.49	63.27	134.91	80.79	33.61	29.02	361.78	98.94	162.44	214.67	60.16
95th-Percentile Queue Length [veh/ln]	6.39	3.78	4.56	9.21	5.82	2.42	2.09	20.71	7.12	10.68	13.39	4.33
95th-Percentile Queue Length [ft/ln]	159.87	94.48	113.89	230.15	145.43	60.50	52.24	517.74	178.10	266.95	334.81	108.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.12	49.32	11.58	45.54	35.18	33.61	54.90	38.48	28.64	47.85	23.16	19.06
Movement LOS	D	D	B	D	D	C	D	D	C	D	C	B
d_A, Approach Delay [s/veh]	24.57			41.82			38.07			30.44		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	33.74											
Intersection LOS	C											
Intersection V/C	0.894											

Emissions

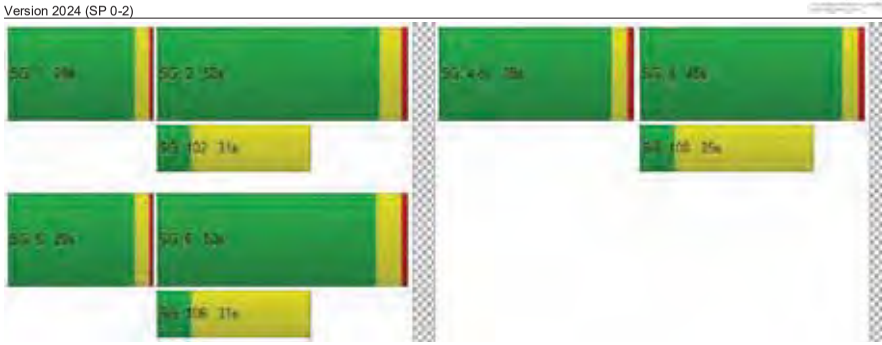
Vehicle Miles Traveled [mph]	206.98	130.00	718.44	78.05	28.59	12.37	28.27	378.64	66.66	211.18	399.79	67.23
Stops [stops/h]	112.76	66.64	160.65	342.56	102.57	42.67	73.69	918.61	125.62	412.47	545.08	76.38
Fuel consumption [US gal/h]	10.48	6.48	31.45	8.67	2.75	1.16	2.48	29.16	4.55	15.53	23.65	3.77
CO [g/h]	732.27	453.14	2198.59	606.29	192.43	81.23	173.05	2038.10	318.11	1085.45	1652.79	263.36
NOx [g/h]	142.47	88.17	427.76	117.96	37.44	15.80	33.67	396.54	61.89	211.19	321.57	51.24
VOC [g/h]	169.71	105.02	509.54	140.51	44.60	18.83	40.11	472.35	73.73	251.56	383.05	61.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.24	46.24	46.24	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.983	2.660	3.070	0.000
Crosswalk LOS	C	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	614	719	788	776
d_b, Bicycle Delay [s]	27.25	23.25	20.82	21.25
l_b,int, Bicycle LOS Score for Intersection	2.865	2.571	2.744	2.851
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	55.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.001

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	2032	1	0	1145	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-34	0	0	41	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1998	1	0	1186	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	520	0	0	309	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	2081	1	0	1235	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	20.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	93	93	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	50	50	0	49	49
g / C, Green / Cycle	0.00	0.00	0.22	0.22	0.01	0.54	0.54	0.00	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.56	0.56	0.00	0.35	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	11	9	384	343	25	1009	1009	3	1877	838
d1, Uniform Delay [s]	0.00	45.90	30.25	36.34	45.31	21.34	21.34	0.00	15.87	10.38
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.45	0.45	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	19.59	0.37	133.62	9.98	35.48	35.54	0.00	0.40	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.33	0.27	1.25	0.40	1.03	1.03	0.00	0.66	0.00
d, Delay for Lane Group [s/veh]	0.00	65.49	30.62	169.96	55.29	56.82	56.88	0.00	16.27	10.39
Lane Group LOS	A	E	C	F	E	F	F	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.12	1.93	20.28	0.30	29.50	29.51	0.00	8.85	0.03
50th-Percentile Queue Length [ft/ln]	0.00	2.95	48.17	506.99	7.39	737.50	737.78	0.00	221.14	0.70
95th-Percentile Queue Length [veh/ln]	0.00	0.21	3.47	30.90	0.53	39.42	39.43	0.00	13.72	0.05
95th-Percentile Queue Length [ft/ln]	0.00	5.30	86.70	772.40	13.29	985.39	985.85	0.00	343.08	1.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	65.49	30.62	30.62	169.96	55.29	56.85	56.88	0.00	16.27	10.39
Movement LOS	A	A	E	C	C	F	E	F	E	A	B	B
d_A, Approach Delay [s/veh]	65.49			142.93			56.85			16.25		
Approach LOS	E			F			E			B		
d_I, Intersection Delay [s/veh]	55.68											
Intersection LOS	E											
Intersection V/C	1.001											

Emissions

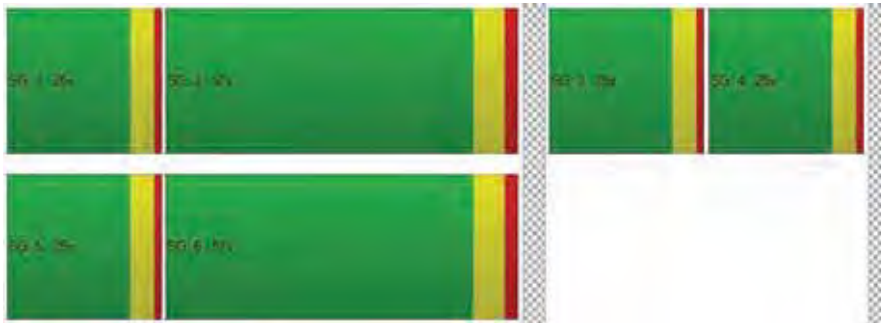
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	469.73	469.73	0.00	215.44	0.52
Stops [stops/h]	0.00	4.59	74.96	789.00	11.49	1147.74	1148.17	0.00	688.31	1.10
Fuel consumption [US gal/h]	0.00	0.07	3.07	27.52	0.36	37.72	37.73	0.00	16.76	0.03
CO [g/h]	0.00	5.00	214.41	1923.50	25.29	2636.29	2637.31	0.00	1171.54	2.37
NOx [g/h]	0.00	0.97	41.72	374.24	4.92	512.93	513.12	0.00	227.94	0.46
VOC [g/h]	0.00	1.16	49.69	445.79	5.86	610.99	611.22	0.00	271.52	0.55

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	432	432	1081	1081
d_b, Bicycle Delay [s]	28.43	28.43	9.77	9.77
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	3.286	2.581
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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TKEAR

Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.059

Intersection Setup

Name	White Rock Rd			White Rock Rd			US 50 EB					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

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Volumes

Name	White Rock Rd			White Rock Rd			US 50 EB					
Base Volume Input [veh/h]	0	855	1259	0	1056	301	512	0	91	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-9	-5	-20	0	41	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	0	850	1239	0	1097	301	512	0	79	0	0	0
Peak Hour Factor	0.8300	0.9100	1.0000	1.0000	0.9100	0.8300	0.8300	1.0000	0.8300	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	234	310	0	301	91	154	0	24	0	0	0
Total Analysis Volume [veh/h]	0	934	1239	0	1205	363	617	0	95	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	0	0	73	0	34	0	0	0	0	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	5.0	0.0	0.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	80	0	0	80	0	40	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	8	0	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	6.00	6.00	6.00	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00	
g_i, Effective Green Time [s]	84	84	84	84	23	23	23	
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.19	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.78	0.34	0.23	0.17	0.17	0.06	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2485	1109	2485	1109	345	345	308	
d1, Uniform Delay [s]	7.43	18.13	8.28	7.10	47.16	47.16	41.47	
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.08	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.44	65.19	0.68	0.79	6.43	6.43	0.21	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.38	1.12	0.49	0.33	0.89	0.89	0.31	
d, Delay for Lane Group [s/veh]	7.86	83.32	8.96	7.89	53.60	53.60	41.68	
Lane Group LOS	A	F	A	A	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.69	46.41	6.77	3.62	9.57	9.57	2.44	
50th-Percentile Queue Length [ft/ln]	117.25	1160.14	169.14	90.40	239.36	239.36	61.08	
95th-Percentile Queue Length [veh/ln]	8.24	63.39	11.03	6.51	14.65	14.65	4.40	
95th-Percentile Queue Length [ft/ln]	206.04	1584.77	275.78	162.72	366.22	366.22	109.95	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.86	83.32	0.00	8.96	7.89	53.60	0.00	41.68	0.00	0.00	0.00
Movement LOS		A	F		A	A	D		D			
d_A, Approach Delay [s/veh]		50.89			8.71			52.01			0.00	
Approach LOS		D			A			D			A	
d_I, Intersection Delay [s/veh]	36.22											
Intersection LOS	D											
Intersection V/C	1.059											

Emissions

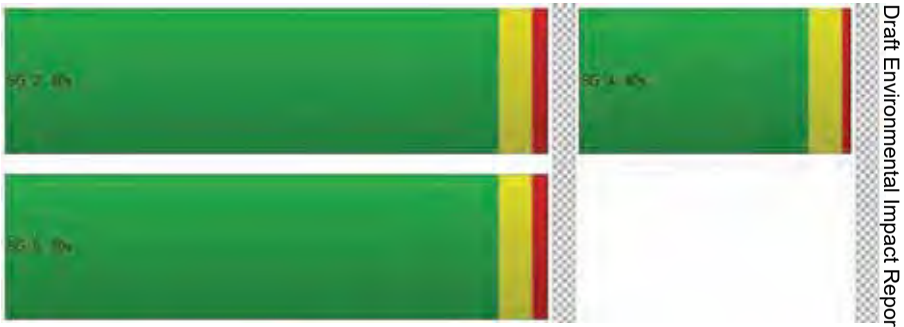
Vehicle Miles Traveled [mph]	162.93	216.13	213.54	64.33	18.68	18.68	5.75	
Stops [stops/h]	281.40	1392.17	405.93	108.48	287.23	287.23	73.30	
Fuel consumption [US gal/h]	9.76	37.59	13.23	3.83	5.72	5.72	1.45	
CO [g/h]	681.99	2627.87	924.86	267.73	399.85	399.85	101.18	
NOx [g/h]	132.69	511.29	179.94	52.09	77.80	77.80	19.69	
VOC [g/h]	158.06	609.03	214.34	62.05	92.67	92.67	23.45	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1217	1217	567	0
d_b, Bicycle Delay [s]	9.20	9.20	30.82	60.00
l_b,int, Bicycle LOS Score for Intersection	3.352	2.853	2.754	4.132
Bicycle LOS	C	C	C	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	1215	152	0	686	254	671	1	310	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-5	0	0	6	0	35	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	1210	152	0	692	207	706	1	280	0	0	0
Peak Hour Factor	0.7900	0.7900	1.0000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	383	38	0	219	66	223	0	89	0	0	0
Total Analysis Volume [veh/h]	0	1532	152	0	876	262	894	1	354	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	0	0	73	0	0	34	0	0	0	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	80	0	0	80	0	0	40	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	6.80	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.80	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	75	75	75	75	32	32	32	
g / C, Green / Cycle	0.63	0.63	0.63	0.63	0.27	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.43	0.10	0.25	0.16	0.25	0.25	0.22	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2238	999	2238	999	474	475	423	
d1, Uniform Delay [s]	14.53	9.15	10.98	9.91	43.12	43.12	41.54	
k, delay calibration	0.50	0.50	0.50	0.50	0.31	0.31	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.72	0.32	0.52	0.64	21.30	21.28	8.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.68	0.15	0.39	0.26	0.94	0.94	0.84	
d, Delay for Lane Group [s/veh]	16.25	9.48	11.49	10.55	64.42	64.40	50.33	
Lane Group LOS	B	A	B	B	E	E	D	
Critical Lane Group	Yes	No	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	13.28	1.68	5.67	3.15	15.71	15.71	10.86	
50th-Percentile Queue Length [ft/ln]	332.03	42.07	141.68	78.78	392.71	392.64	271.62	
95th-Percentile Queue Length [veh/ln]	19.26	3.03	9.57	5.67	22.21	22.20	16.27	
95th-Percentile Queue Length [ft/ln]	481.44	75.73	239.29	141.80	555.21	555.12	406.76	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	16.25	9.48	0.00	11.49	10.55	64.41	64.40	50.33	0.00	0.00	0.00
Movement LOS		B	A		B	B	E	E	D			
d_A, Approach Delay [s/veh]		15.64			11.28			60.42			0.00	
Approach LOS		B			B			E			A	
d_I, Intersection Delay [s/veh]	28.16											
Intersection LOS	C											
Intersection V/C	0.757											

Emissions

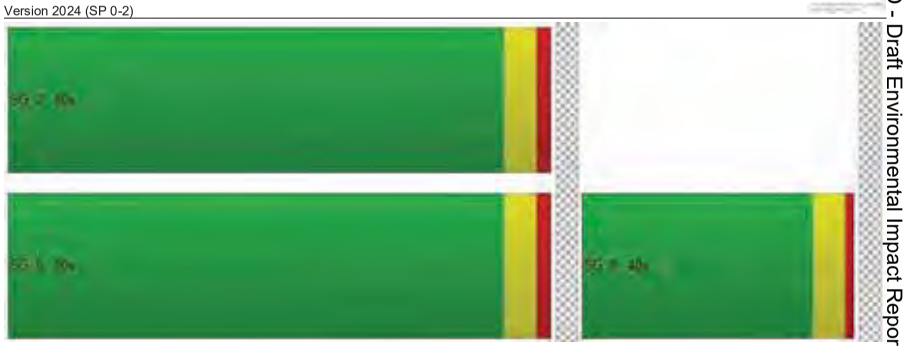
Vehicle Miles Traveled [mph]	271.48	26.94	119.78	35.83	15.50	15.50	12.26	
Stops [stops/h]	796.86	50.49	340.04	94.53	471.25	471.16	325.94	
Fuel consumption [US gal/h]	20.65	1.68	8.86	2.56	9.11	9.11	5.93	
CO [g/h]	1443.13	117.49	619.23	178.92	636.64	636.46	414.58	
NOx [g/h]	280.78	22.86	120.48	34.81	123.87	123.83	80.66	
VOC [g/h]	334.46	27.23	143.51	41.47	147.55	147.51	96.08	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1220	1220	570	0
d_b, Bicycle Delay [s]	9.13	9.13	30.67	60.00
l_b,int, Bicycle LOS Score for Intersection	2.949	2.537	3.670	4.132
Bicycle LOS	C	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix B
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GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	438	590	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	272	430	28	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	55	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	710	1020	83	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	178	255	21	0	0
Total Analysis Volume [veh/h]	0	710	1020	83	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	18.25
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		18.25	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

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Version 2024 (SP 0-2)

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.130

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	328	485	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	41	2	25	14	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	369	487	45	41	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	92	122	11	10	1
Total Analysis Volume [veh/h]	3	369	487	45	41	2
Pedestrian Volume [ped/h]	0		0		0	

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Version 2024 (SP 0-2)

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	8.48	0.00	0.00	0.00	18.08	13.02
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.44	0.44
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.00	0.00	11.11	11.11
d_A, Approach Delay [s/veh]	0.07		0.00		17.84	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.84					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.136

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	67	47	288	46	10	41	2	49	25	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-4	0	14	-24	14	24	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	181	67	61	264	60	34	41	2	49	25	111
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	47	17	16	68	15	9	11	1	13	6	29
Total Analysis Volume [veh/h]	0	187	69	63	272	62	35	42	2	51	26	114
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.14	0.12	0.00	0.17	0.07	0.14
d_M, Delay for Movement [s/veh]	7.94	0.00	0.00	7.83	0.00	0.00	23.02	19.40	13.96	21.05	19.60	13.72
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.11	0.11	0.11	1.01	1.01	1.01	1.76	1.76	1.76
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.82	2.82	2.82	25.29	25.29	25.29	43.96	43.96	43.96
d_A, Approach Delay [s/veh]	0.00			1.24			20.87			16.48		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	5.73											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	710	1120	60	32
2	689	1086	58	31
3	675	1064	57	30
4	632	997	53	28
5	561	885	47	25
6	554	874	47	25
7	547	862	46	25
8	497	784	42	22
9	490	773	41	22
10	483	762	41	22
11	419	661	35	19
12	391	616	33	18
13	383	605	32	17
14	284	448	24	13
15	284	448	24	13
16	199	314	17	9
17	114	179	10	5
18	114	179	10	5
19	64	101	5	3
20	36	56	3	2
21	21	34	2	1
22	7	11	1	0
23	7	11	1	0
24	7	11	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1830	1	60	No	No	No	No	No	Yes	Yes	Yes	No	No
2	1	1775	1	58	No	No	No	No	No	No	Yes	Yes	No	No
3	1	1739	1	57	No	No	No	No	No	No	Yes	Yes	No	No
4	1	1629	1	53	No	No	No	No	No	No	Yes	Yes	No	No
5	1	1446	1	47	No	No	No	No	No	No	No	Yes	No	No
6	1	1428	1	47	No	No	No	No	No	No	No	Yes	No	No
7	1	1409	1	46	No	No	No	No	No	No	No	Yes	No	No
8	1	1281	1	42	No	No	No	No	No	No	No	Yes	No	No
9	1	1263	1	41	No	No	No	No	No	No	No	No	No	No
10	1	1245	1	41	No	No	No	No	No	No	No	No	No	No
11	1	1080	1	35	No	No	No	No	No	No	No	No	No	No
12	1	1007	1	33	No	No	No	No	No	No	No	No	No	No
13	1	988	1	32	No	No	No	No	No	No	No	No	No	No
14	1	732	1	24	No	No	No	No	No	No	No	No	No	No
15	1	732	1	24	No	No	No	No	No	No	No	No	No	No
16	1	513	1	17	No	No	No	No	No	No	No	No	No	No
17	1	293	1	10	No	No	No	No	No	No	No	No	No	No
18	1	293	1	10	No	No	No	No	No	No	No	No	No	No
19	1	165	1	5	No	No	No	No	No	No	No	No	No	No
20	1	92	1	3	No	No	No	No	No	No	No	No	No	No
21	1	55	1	2	No	No	No	No	No	No	No	No	No	No
22	1	18	1	1	No	No	No	No	No	No	No	No	No	No
23	1	18	1	1	No	No	No	No	No	No	No	No	No	No
24	1	18	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	1	4	8	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.3	303.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:18	2:41
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	60	32
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1922	1922
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	447	1020	168	393
2	434	989	163	381
3	425	969	160	373
4	398	908	150	350
5	353	806	133	310
6	349	796	131	307
7	344	785	129	303
8	313	714	118	275
9	308	704	116	271
10	304	694	114	267
11	264	602	99	232
12	246	561	92	216
13	241	551	91	212
14	179	408	67	157
15	179	408	67	157
16	125	286	47	110
17	72	163	27	63
18	72	163	27	63
19	40	92	15	35
20	22	51	8	20
21	13	31	5	12
22	4	10	2	4
23	4	10	2	4
24	4	10	2	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1467	1	393	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	1423	1	381	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	1394	1	373	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	1306	1	350	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2	1159	1	310	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	2	1145	1	307	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	2	1129	1	303	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	2	1027	1	275	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	2	1012	1	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	2	998	1	267	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	2	866	1	232	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
12	2	807	1	216	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
13	2	792	1	212	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
14	2	587	1	157	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
15	2	587	1	157	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
16	2	411	1	110	No	No	No	Yes	No	No	No	No	No	No
17	2	235	1	63	No	No	No	No	No	No	No	No	No	No
18	2	235	1	63	No	No	No	No	No	No	No	No	No	No
19	2	132	1	35	No	No	No	No	No	No	No	No	No	No
20	2	73	1	20	No	No	No	No	No	No	No	No	No	No
21	2	44	1	12	No	No	No	No	No	No	No	No	No	No
22	2	14	1	4	No	No	No	No	No	No	No	No	No	No
23	2	14	1	4	No	No	No	No	No	No	No	No	No	No
24	2	14	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	15	13

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	355.8	2962.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	16:36	323:25
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	168	393
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	2028	2028
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1077	295	844
2	1045	286	819
3	1023	280	802
4	959	263	751
5	851	233	667
6	840	230	658
7	829	227	650
8	754	207	591
9	743	204	582
10	732	201	574
11	635	174	498
12	592	162	464
13	582	159	456
14	431	118	338
15	431	118	338
16	302	83	236
17	172	47	135
18	172	47	135
19	97	27	76
20	54	15	42
21	32	9	25
22	11	3	8
23	11	3	8
24	11	3	8

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1372	1	844	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1331	1	819	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1303	1	802	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1222	1	751	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1084	1	667	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1070	1	658	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1056	1	650	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	961	1	591	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	947	1	582	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	933	1	574	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	809	1	498	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	754	1	464	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	1	741	1	456	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
14	1	549	1	338	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
15	1	549	1	338	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
16	1	385	1	236	No	No	Yes	Yes	No	No	No	No	No	No
17	1	219	1	135	No	No	No	No	No	No	No	No	No	No
18	1	219	1	135	No	No	No	No	No	No	No	No	No	No
19	1	124	1	76	No	No	No	No	No	No	No	No	No	No
20	1	69	1	42	No	No	No	No	No	No	No	No	No	No
21	1	41	1	25	No	No	No	No	No	No	No	No	No	No
22	1	14	1	8	No	No	No	No	No	No	No	No	No	No
23	1	14	1	8	No	No	No	No	No	No	No	No	No	No
24	1	14	1	8	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	12	13	15	15	15	13

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2344:26
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	844
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2216
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	80%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	424	484	181	40
2	411	469	176	39
3	403	460	172	38
4	377	431	161	36
5	335	382	143	32
6	331	378	141	31
7	326	373	139	31
8	297	339	127	28
9	293	334	125	28
10	288	329	123	27
11	250	286	107	24
12	233	266	100	22
13	229	261	98	22
14	170	194	72	16
15	170	194	72	16
16	119	136	51	11
17	68	77	29	6
18	68	77	29	6
19	38	44	16	4
20	21	24	9	2
21	13	15	5	1
22	4	5	2	0
23	4	5	2	0
24	4	5	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	908	1	181	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	880	1	176	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	863	1	172	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	808	1	161	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	717	1	143	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	709	1	141	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	699	1	139	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	636	1	127	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
9	1	627	1	125	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
10	1	617	1	123	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
11	1	536	1	107	No	No	Yes	Yes	No	No	Yes	Yes	No	No
12	1	499	1	100	No	No	No	Yes	No	No	No	Yes	No	No
13	1	490	1	98	No	No	No	Yes	No	No	No	Yes	No	No
14	1	364	1	72	No	No	No	No	No	No	No	No	No	No
15	1	364	1	72	No	No	No	No	No	No	No	No	No	No
16	1	255	1	51	No	No	No	No	No	No	No	No	No	No
17	1	145	1	29	No	No	No	No	No	No	No	No	No	No
18	1	145	1	29	No	No	No	No	No	No	No	No	No	No
19	1	82	1	16	No	No	No	No	No	No	No	No	No	No
20	1	45	1	9	No	No	No	No	No	No	No	No	No	No
21	1	28	1	5	No	No	No	No	No	No	No	No	No	No
22	1	9	1	2	No	No	No	No	No	No	No	No	No	No
23	1	9	1	2	No	No	No	No	No	No	No	No	No	No
24	1	9	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	4	10	11	13	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15	11.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:45	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	181	40
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1129	1129
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	258	433	279
2	250	420	271
3	245	411	265
4	230	385	248
5	204	342	220
6	201	338	218
7	199	333	215
8	181	303	195
9	178	299	193
10	175	294	190
11	152	255	165
12	142	238	153
13	139	234	151
14	103	173	112
15	103	173	112
16	72	121	78
17	41	69	45
18	41	69	45
19	23	39	25
20	13	22	14
21	8	13	8
22	3	4	3
23	3	4	3
24	3	4	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	691	2	279	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	2	670	2	271	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	2	656	2	265	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	2	615	2	248	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	546	2	220	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	539	2	218	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	532	2	215	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	484	2	195	No	Yes	Yes	Yes	No	No	No	No	No	No
9	2	477	2	193	No	No	Yes	Yes	No	No	No	No	No	No
10	2	469	2	190	No	No	Yes	Yes	No	No	No	No	No	No
11	2	407	2	165	No	No	No	Yes	No	No	No	No	No	No
12	2	380	2	153	No	No	No	Yes	No	No	No	No	No	No
13	2	373	2	151	No	No	No	Yes	No	No	No	No	No	No
14	2	276	2	112	No	No	No	No	No	No	No	No	No	No
15	2	276	2	112	No	No	No	No	No	No	No	No	No	No
16	2	193	2	78	No	No	No	No	No	No	No	No	No	No
17	2	110	2	45	No	No	No	No	No	No	No	No	No	No
18	2	110	2	45	No	No	No	No	No	No	No	No	No	No
19	2	62	2	25	No	No	No	No	No	No	No	No	No	No
20	2	35	2	14	No	No	No	No	No	No	No	No	No	No
21	2	21	2	8	No	No	No	No	No	No	No	No	No	No
22	2	7	2	3	No	No	No	No	No	No	No	No	No	No
23	2	7	2	3	No	No	No	No	No	No	No	No	No	No
24	2	7	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					4	8	10	13	0	0	3	7	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.5
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:30
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	279
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	970
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	417	328	413
2	404	318	401
3	396	312	392
4	371	292	368
5	329	259	326
6	325	256	322
7	321	253	318
8	292	230	289
9	288	226	285
10	284	223	281
11	246	194	244
12	229	180	227
13	225	177	223
14	167	131	165
15	167	131	165
16	117	92	116
17	67	52	66
18	67	52	66
19	38	30	37
20	21	16	21
21	13	10	12
22	4	3	4
23	4	3	4
24	4	3	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	745	1	413	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	722	1	401	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	2	708	1	392	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	2	663	1	368	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	2	588	1	326	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	2	581	1	322	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	2	574	1	318	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	2	522	1	289	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	2	514	1	285	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	2	507	1	281	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	2	440	1	244	No	No	Yes	Yes	No	No	No	No	No	No
12	2	409	1	227	No	No	No	Yes	No	No	No	No	No	No
13	2	402	1	223	No	No	No	Yes	No	No	No	No	No	No
14	2	298	1	165	No	No	No	No	No	No	No	No	No	No
15	2	298	1	165	No	No	No	No	No	No	No	No	No	No
16	2	209	1	116	No	No	No	No	No	No	No	No	No	No
17	2	119	1	66	No	No	No	No	No	No	No	No	No	No
18	2	119	1	66	No	No	No	No	No	No	No	No	No	No
19	2	68	1	37	No	No	No	No	No	No	No	No	No	No
20	2	37	1	21	No	No	No	No	No	No	No	No	No	No
21	2	23	1	12	No	No	No	No	No	No	No	No	No	No
22	2	7	1	4	No	No	No	No	No	No	No	No	No	No
23	2	7	1	4	No	No	No	No	No	No	No	No	No	No
24	2	7	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	0	2	4	10	7	1

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	164.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	18:49
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	413
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1158
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	258	271	3
2	250	263	3
3	245	257	3
4	230	241	3
5	204	214	2
6	201	211	2
7	199	209	2
8	181	190	2
9	178	187	2
10	175	184	2
11	152	160	2
12	142	149	2
13	139	146	2
14	103	108	1
15	103	108	1
16	72	76	1
17	41	43	0
18	41	43	0
19	23	24	0
20	13	14	0
21	8	8	0
22	3	3	0
23	3	3	0
24	3	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	529	1	3	No	No	No	No	No	No	No	No	No	No
2	3	513	1	3	No	No	No	No	No	No	No	No	No	No
3	3	502	1	3	No	No	No	No	No	No	No	No	No	No
4	3	471	1	3	No	No	No	No	No	No	No	No	No	No
5	3	418	1	2	No	No	No	No	No	No	No	No	No	No
6	3	412	1	2	No	No	No	No	No	No	No	No	No	No
7	3	408	1	2	No	No	No	No	No	No	No	No	No	No
8	3	371	1	2	No	No	No	No	No	No	No	No	No	No
9	3	365	1	2	No	No	No	No	No	No	No	No	No	No
10	3	359	1	2	No	No	No	No	No	No	No	No	No	No
11	3	312	1	2	No	No	No	No	No	No	No	No	No	No
12	3	291	1	2	No	No	No	No	No	No	No	No	No	No
13	3	285	1	2	No	No	No	No	No	No	No	No	No	No
14	3	211	1	1	No	No	No	No	No	No	No	No	No	No
15	3	211	1	1	No	No	No	No	No	No	No	No	No	No
16	3	148	1	1	No	No	No	No	No	No	No	No	No	No
17	3	84	1	0	No	No	No	No	No	No	No	No	No	No
18	3	84	1	0	No	No	No	No	No	No	No	No	No	No
19	3	47	1	0	No	No	No	No	No	No	No	No	No	No
20	3	27	1	0	No	No	No	No	No	No	No	No	No	No
21	3	16	1	0	No	No	No	No	No	No	No	No	No	No
22	3	6	1	0	No	No	No	No	No	No	No	No	No	No
23	3	6	1	0	No	No	No	No	No	No	No	No	No	No
24	3	6	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	532
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	710	1103	0
2	689	1070	0
3	675	1048	0
4	632	982	0
5	561	871	0
6	554	860	0
7	547	849	0
8	497	772	0
9	490	761	0
10	483	750	0
11	419	651	0
12	391	607	0
13	383	596	0
14	284	441	0
15	284	441	0
16	199	309	0
17	114	176	0
18	114	176	0
19	64	99	0
20	36	55	0
21	21	33	0
22	7	11	0
23	7	11	0
24	7	11	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1813	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1759	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1723	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1614	1	0	No	No	No	No	No	No	No	No	No	No
5	1	1432	1	0	No	No	No	No	No	No	No	No	No	No
6	1	1414	1	0	No	No	No	No	No	No	No	No	No	No
7	1	1396	1	0	No	No	No	No	No	No	No	No	No	No
8	1	1269	1	0	No	No	No	No	No	No	No	No	No	No
9	1	1251	1	0	No	No	No	No	No	No	No	No	No	No
10	1	1233	1	0	No	No	No	No	No	No	No	No	No	No
11	1	1070	1	0	No	No	No	No	No	No	No	No	No	No
12	1	998	1	0	No	No	No	No	No	No	No	No	No	No
13	1	979	1	0	No	No	No	No	No	No	No	No	No	No
14	1	725	1	0	No	No	No	No	No	No	No	No	No	No
15	1	725	1	0	No	No	No	No	No	No	No	No	No	No
16	1	508	1	0	No	No	No	No	No	No	No	No	No	No
17	1	290	1	0	No	No	No	No	No	No	No	No	No	No
18	1	290	1	0	No	No	No	No	No	No	No	No	No	No
19	1	163	1	0	No	No	No	No	No	No	No	No	No	No
20	1	91	1	0	No	No	No	No	No	No	No	No	No	No
21	1	54	1	0	No	No	No	No	No	No	No	No	No	No
22	1	18	1	0	No	No	No	No	No	No	No	No	No	No
23	1	18	1	0	No	No	No	No	No	No	No	No	No	No
24	1	18	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1813
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	372	532	43
2	361	516	42
3	353	505	41
4	331	473	38
5	294	420	34
6	290	415	34
7	286	410	33
8	260	372	30
9	257	367	30
10	253	362	29
11	219	314	25
12	205	293	24
13	201	287	23
14	149	213	17
15	149	213	17
16	104	149	12
17	60	85	7
18	60	85	7
19	33	48	4
20	19	27	2
21	11	16	1
22	4	5	0
23	4	5	0
24	4	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	904	1	43	No	No	No	No	No	No	No	Yes	No	No
2	1	877	1	42	No	No	No	No	No	No	No	Yes	No	No
3	1	858	1	41	No	No	No	No	No	No	No	No	No	No
4	1	804	1	38	No	No	No	No	No	No	No	No	No	No
5	1	714	1	34	No	No	No	No	No	No	No	No	No	No
6	1	705	1	34	No	No	No	No	No	No	No	No	No	No
7	1	696	1	33	No	No	No	No	No	No	No	No	No	No
8	1	632	1	30	No	No	No	No	No	No	No	No	No	No
9	1	624	1	30	No	No	No	No	No	No	No	No	No	No
10	1	615	1	29	No	No	No	No	No	No	No	No	No	No
11	1	533	1	25	No	No	No	No	No	No	No	No	No	No
12	1	498	1	24	No	No	No	No	No	No	No	No	No	No
13	1	488	1	23	No	No	No	No	No	No	No	No	No	No
14	1	362	1	17	No	No	No	No	No	No	No	No	No	No
15	1	362	1	17	No	No	No	No	No	No	No	No	No	No
16	1	253	1	12	No	No	No	No	No	No	No	No	No	No
17	1	145	1	7	No	No	No	No	No	No	No	No	No	No
18	1	145	1	7	No	No	No	No	No	No	No	No	No	No
19	1	81	1	4	No	No	No	No	No	No	No	No	No	No
20	1	46	1	2	No	No	No	No	No	No	No	No	No	No
21	1	27	1	1	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	2	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:12
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	43
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	947
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

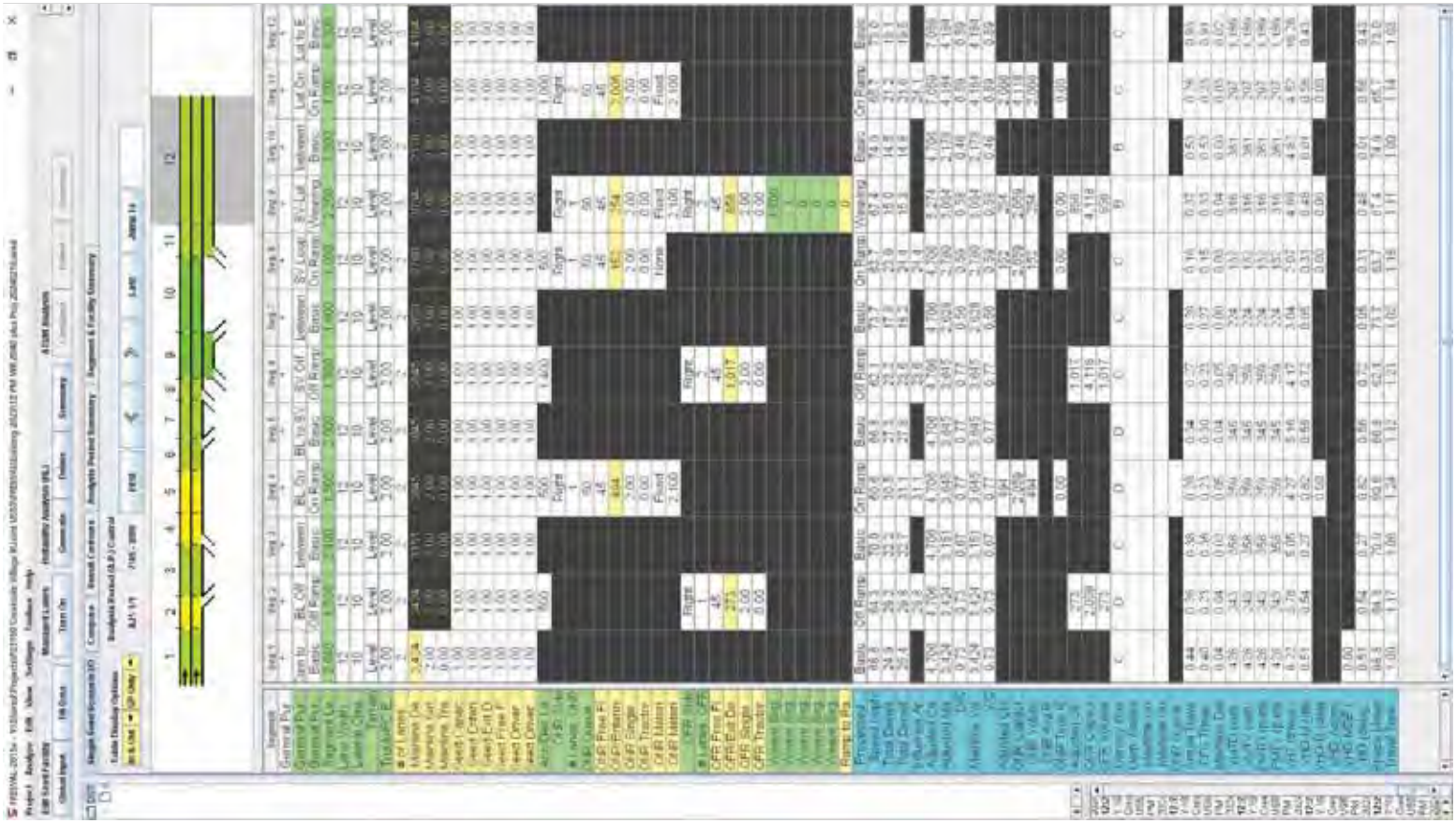
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	248	385	185	77
2	241	373	179	75
3	236	366	176	73
4	221	343	165	69
5	196	304	146	61
6	193	300	144	60
7	191	296	142	59
8	174	270	130	54
9	171	266	128	53
10	169	262	126	52
11	146	227	109	45
12	136	212	102	42
13	134	208	100	42
14	99	154	74	31
15	99	154	74	31
16	69	108	52	22
17	40	62	30	12
18	40	62	30	12
19	22	35	17	7
20	12	19	9	4
21	7	12	6	2
22	2	4	2	1
23	2	4	2	1
24	2	4	2	1

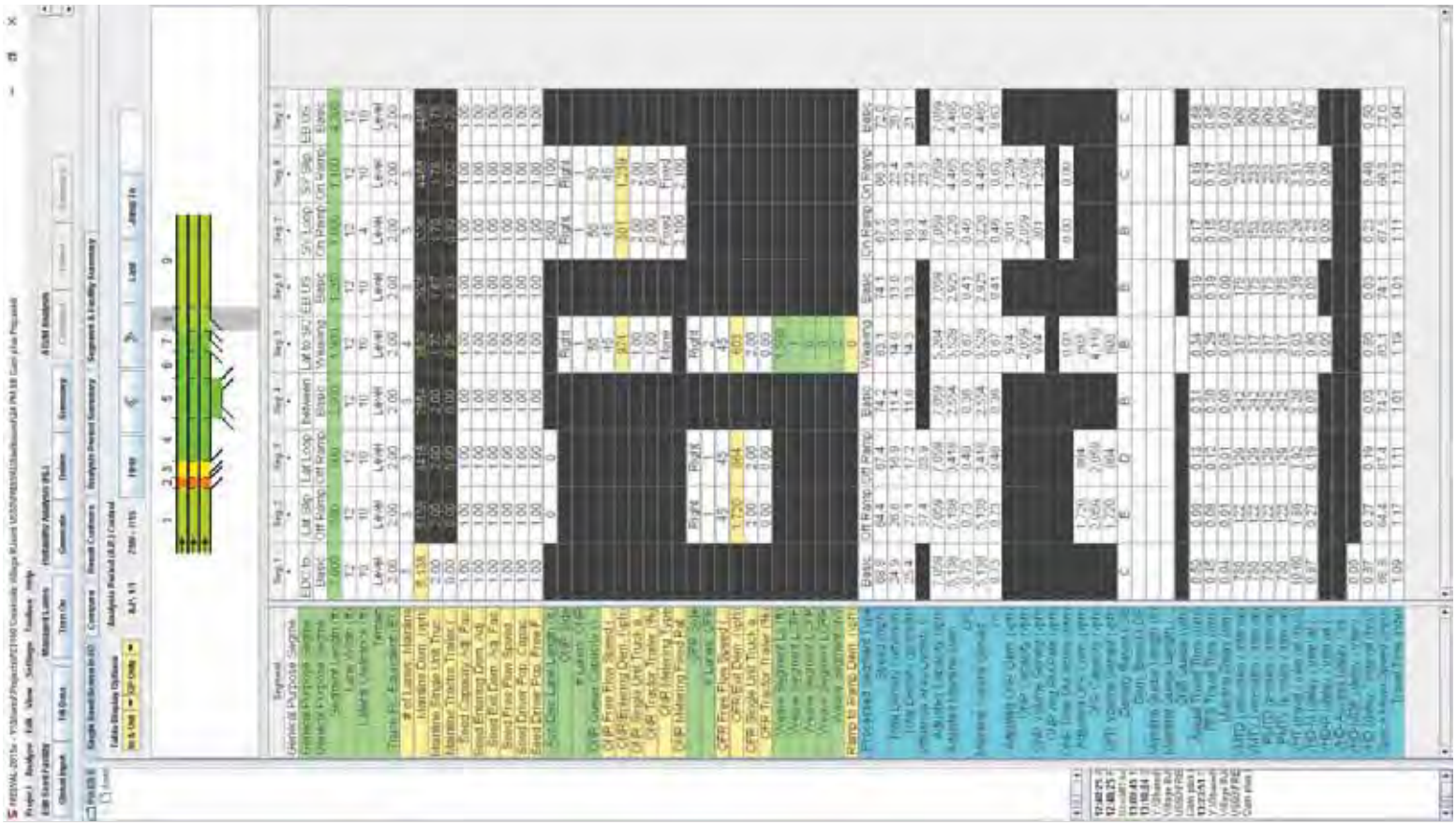
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	633	1	185	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	614	1	179	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	602	1	176	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	564	1	165	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	500	1	146	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	1	493	1	144	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	1	487	1	142	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	1	444	1	130	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	437	1	128	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	431	1	126	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	373	1	109	No	No	Yes	Yes	No	No	No	No	No	No
12	1	348	1	102	No	No	No	Yes	No	No	No	No	No	No
13	1	342	1	100	No	No	No	Yes	No	No	No	No	No	No
14	1	253	1	74	No	No	No	No	No	No	No	No	No	No
15	1	253	1	74	No	No	No	No	No	No	No	No	No	No
16	1	177	1	52	No	No	No	No	No	No	No	No	No	No
17	1	102	1	30	No	No	No	No	No	No	No	No	No	No
18	1	102	1	30	No	No	No	No	No	No	No	No	No	No
19	1	57	1	17	No	No	No	No	No	No	No	No	No	No
20	1	31	1	9	No	No	No	No	No	No	No	No	No	No
21	1	19	1	6	No	No	No	No	No	No	No	No	No	No
22	1	6	1	2	No	No	No	No	No	No	No	No	No	No
23	1	6	1	2	No	No	No	No	No	No	No	No	No	No
24	1	6	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	0	3	4	10	7	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.5	20.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:50	0:26
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	185	77
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	895	895
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	





Cumulative AM plus abated Project

Vistro File: C:\...\AM 918 DU 20240212 - ABATED.vistro
Report File: C:\...\17 2040 AM plus abated Proj.pdf

Scenario 6 Abated 2040 AM with CCSP, + Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.188	115.8	F
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.963	37.5	D
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	WB Thru	1.030	61.7	E
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.980	13.7	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.380	47.7	E
12	Latrobe Rd/Royal Oaks Dr	Signalized	HCM 6th Edition	SB Left	0.776	28.4	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Option 1: Copy of Latrobe Rd/US 50 EB

Number	4											
Intersection	Latrobe Rd/US 50 EB											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp	
Approach	Northbound			Southbound				Eastbound			Westbound	
Lane Configuration												
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	2400	463	0	529	1886	0	0	0	1410	0	0	529
Total Analysis Volume [veh/h]	0	3020	402	0	630	2124	0	0	0	1115	0	0	440

Intersection Settings

Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

g / C, Green / Cycle	0.47	0.47	0.38	0.55	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.44	0.25	0.35	0.31	0.26	
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	
Arrival type	3		3		3	3
s, saturation flow rate [veh/h]	6702	1589	1781	6702	4220	

s, saturation flow rate [veh/h]	6792	1589	1781	6792	4220	
c, Capacity [veh/h]	3164	741	668	3733	1231	
X, volume / capacity	0.95	0.54	0.94	0.57	0.91	
d, Delay for Lane Group [s/veh]	25.89	15.83	29.99	10.67	24.29	
Lane Group LOS	C	B	C	B	C	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	10.72	4.09	9.79	3.97	5.44	
50th-Percentile Queue Length [ft/ln]	267.89	102.34	244.70	99.24	135.92	
95th-Percentile Queue Length [veh/ln]	16.08	7.37	14.92	7.15	9.26	
95th-Percentile Queue Length [ft/ln]	402.11	184.21	372.97	178.63	231.51	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.89	15.83	29.99	29.99	10.67	0.00	0.00	0.00	24.29	0.00	0.00	0.00
Movement LOS		C	B	C	C	B				C			
Critical Movement		No	No	No	Yes	No				No			No
d_A, Approach Delay [s/veh]	24.71			15.09			24.29			0.00			
Approach LOS	C			B			C			A			
d_I, Intersection Delay [s/veh]	21.01												
Intersection LOS	C												
Intersection V/C	1.044												

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Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	115.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.188

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1588	1190	150	3	70	1406	1107	260	92	837	171	104	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	65	59	13	0	0	-59	0	0	0	-31	-12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	49	0	0	0	332	0	0	242	0	0	32
Total Hourly Volume [veh/h]	1	1653	1249	114	3	70	1347	775	260	92	564	159	104	74
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	413	312	29	1	18	337	194	65	23	141	40	26	19
Total Analysis Volume [veh/h]	1	1653	1249	114	3	70	1347	775	260	92	564	159	104	74
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	45	68	0	0	19	42	28	0	28	0	0	20	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	40	69	69	8	36	69	27	27	11	11	11
g / C, Green / Cycle	0.30	0.51	0.51	0.06	0.27	0.51	0.20	0.20	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.48	0.25	0.26	0.04	0.26	0.49	0.10	0.10	0.06	0.06	0.07
s, saturation flow rate [veh/h]	3459	3560	1793	1781	5094	1589	1781	1826	1781	1833	1670
c, Capacity [veh/h]	1035	1826	919	99	1372	809	359	368	144	148	135
d1, Uniform Delay [s]	33.83	5.40	5.45	62.75	49.00	31.78	47.66	47.65	60.90	60.85	61.01
k, delay calibration	0.27	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	271.62	0.94	2.02	3.89	20.37	22.97	0.75	0.73	3.56	3.28	4.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.60	0.49	0.51	0.73	0.98	0.96	0.48	0.48	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	305.45	6.34	7.47	66.63	69.36	54.75	48.41	48.38	64.46	64.14	65.28
Lane Group LOS	F	A	A	E	E	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	53.49	2.47	2.86	2.53	17.15	27.62	5.29	5.41	3.96	4.01	3.84
50th-Percentile Queue Length [ft/ln]	1337.22	61.66	71.62	63.29	428.72	690.49	132.14	135.15	98.94	100.30	95.97
95th-Percentile Queue Length [veh/ln]	82.41	4.44	5.16	4.56	23.94	36.24	9.06	9.22	7.12	7.22	6.91
95th-Percentile Queue Length [ft/ln]	2060.36	110.99	128.92	113.93	598.51	905.97	226.41	230.48	178.09	180.55	172.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	305.4	305.4	6.66	7.47	66.63	66.63	69.36	54.75	48.40	48.38	0.00	64.37	64.52	65.28
Movement LOS	F	F	A	A	E	E	E	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	170.50				64.11				18.60			64.62		
Approach LOS	F				E				B			E		
d_I, Intersection Delay [s/veh]	115.82													
Intersection LOS	F													
Intersection V/C	1.188													

Emissions

Vehicle Miles Traveled [mph]	283.02	152.91	80.31	13.75	253.63	145.92	8.05	8.23	3.60	3.66	3.46
Stops [stops/h]	2852.73	131.54	76.40	67.51	1371.90	736.53	140.95	144.16	105.53	106.99	102.37
Fuel consumption [US gal/h]	130.20	8.17	4.44	2.30	44.76	22.79	2.82	2.89	2.21	2.24	2.15
CO [g/h]	9100.93	571.43	310.48	160.79	3128.91	1593.23	197.39	201.89	154.80	156.77	150.58
NOx [g/h]	1770.71	111.18	60.41	31.28	608.77	309.98	38.40	39.28	30.12	30.50	29.30
VOC [g/h]	2109.23	132.43	71.96	37.27	725.16	369.25	45.75	46.79	35.88	36.33	34.90

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	56.95
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.365
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	921	536	339	228
d_b, Bicycle Delay [s]	19.63	36.15	46.54	52.98
l_b,int, Bicycle LOS Score for Intersection	3.245	2.911	2.140	1.864
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	160.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	73	2071	262	4	570	2319	403	184	10	32	1	74	33	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	157	16	0	0	-174	0	0	0	-3	0	-9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	83	0	0	0	121	0	0	9	0	0	0	181
Total Hourly Volume [veh/h]	1	77	2228	195	4	570	2145	282	184	10	20	1	65	33	423
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	20	568	50	1	145	547	72	47	3	5	0	17	8	108
Total Analysis Volume [veh/h]	1	79	2273	199	4	582	2189	288	188	10	20	1	66	34	432
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	50	50	15	61	61	8	8	8	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.14	0.59	0.59	0.08	0.08	0.08	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.45	0.13	0.17	0.43	0.18	0.05	0.01	0.01	0.04	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1625	1589
c, Capacity [veh/h]	138	2450	764	499	2981	930	266	144	122	257	234	229
d1, Uniform Delay [s]	49.09	25.31	16.02	44.52	15.69	10.93	46.87	44.56	44.88	39.59	44.52	44.52
k, delay calibration	0.04	0.04	0.04	0.07	0.04	0.04	0.08	0.08	0.08	0.08	0.43	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	0.74	0.07	82.11	0.13	0.07	2.56	0.15	0.46	0.40	55.78	56.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.93	0.26	1.18	0.73	0.31	0.71	0.07	0.16	0.26	1.01	1.01
d, Delay for Lane Group [s/veh]	50.53	26.05	16.09	126.63	15.82	11.00	49.43	44.71	45.35	39.98	100.29	100.94
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.05	16.73	2.77	12.05	11.64	3.21	2.46	0.25	0.50	1.55	9.60	9.44
50th-Percentile Queue Length [ft/ln]	26.14	418.13	69.17	301.16	290.96	80.18	61.47	6.13	12.44	38.69	240.09	235.93
95th-Percentile Queue Length [veh/ln]	1.88	23.43	4.98	19.01	17.23	5.77	4.43	0.44	0.90	2.79	14.72	14.51
95th-Percentile Queue Length [ft/ln]	47.05	585.81	124.51	475.19	430.83	144.32	110.65	11.03	22.38	69.65	368.07	362.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.53	50.53	26.05	16.09	126.6	126.6	15.82	11.00	49.43	44.71	45.35	39.98	39.98	100.2	100.6
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	26.04				36.57				48.84			92.99			
Approach LOS	C				D				D			F			
d_I, Intersection Delay [s/veh]	37.49														
Intersection LOS	D														
Intersection V/C	0.963														

Emissions

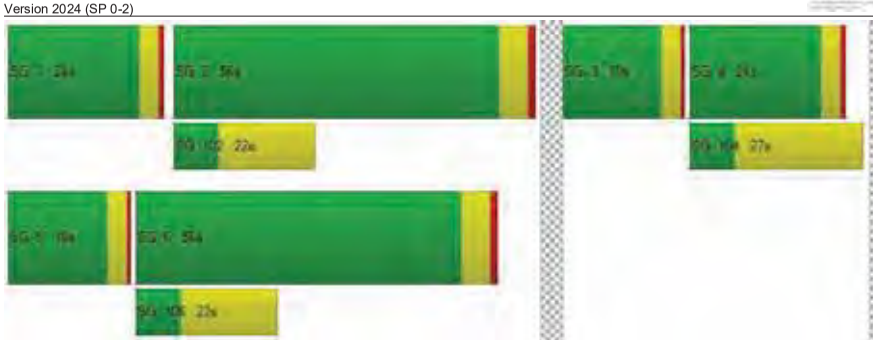
Vehicle Miles Traveled [mph]	17.87	507.85	44.46	84.79	316.74	41.67	23.98	1.28	2.55	23.51	82.66	80.89
Stops [stops/h]	72.41	1737.61	95.82	834.33	1209.12	111.06	170.31	8.49	17.23	53.60	332.58	326.81
Fuel consumption [US gal/h]	1.96	42.56	3.01	23.20	26.77	2.97	3.82	0.19	0.38	1.81	10.05	9.87
CO [g/h]	136.90	2974.79	210.49	1621.55	1871.13	207.86	266.95	13.31	26.89	126.47	702.26	689.85
NOx [g/h]	26.64	578.79	40.95	315.49	364.05	40.44	51.94	2.59	5.23	24.61	136.63	134.22
VOC [g/h]	31.73	689.44	48.78	375.81	433.65	48.17	61.87	3.08	6.23	29.31	162.76	159.88

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.56	0.00	41.56	41.56
l_p,int, Pedestrian LOS Score for Intersectio	3.507	0.000	2.594	2.874
Crosswalk LOS	D	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	972	972	394	298
d_b, Bicycle Delay [s]	13.74	13.74	33.50	37.63
l_b,int, Bicycle LOS Score for Intersection	3.008	2.991	1.747	2.629
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	61.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.030

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	24.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	220.00	100.00	200.00	530.00	100.00	300.00	100.00	100.00	200.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	60	778	21	276	401	877	613	90	86	136	351	604
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	20	8	0	148	0	0	0	11	28	0	0
Site-Generated Trips [veh/h]	84	308	34	0	1	-235	-72	-12	-3	-9	-41	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	19	0	0	193	0	0	28	0	0	181
Total Hourly Volume [veh/h]	144	1106	44	276	550	449	541	78	66	155	310	423
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	311	12	78	154	126	152	22	19	44	87	119
Total Analysis Volume [veh/h]	162	1243	49	310	618	504	608	88	74	174	348	475
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Maximum Green [s]	30	45	0	25	40	25	25	31	0	20	25	25
Amber [s]	3.0	4.3	0.0	3.0	4.3	3.0	3.0	3.0	0.0	3.5	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.5	0.0	1.5	1.0	1.0
Walk [s]	0	5	0	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	31	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	2.0	2.0	2.5	0.0	3.0	2.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	20.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	245.0	245.0	245.0	0.0	245.0	245.0	245.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	6.0	6.0	6.0	0.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	9	9	0	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	137	137	137	137	137	137	137	137	137	137	137
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	4.00	4.00	4.50	5.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	0.00	2.00	2.50	3.00	2.00	0.00
g_i, Effective Green Time [s]	15	45	45	25	55	86	25	33	15	25	54
g / C, Green / Cycle	0.11	0.33	0.33	0.18	0.40	0.62	0.18	0.24	0.11	0.18	0.39
(v / s)_i Volume / Saturation Flow Rate	0.09	0.35	0.03	0.17	0.17	0.32	0.18	0.09	0.10	0.19	0.30
s, saturation flow rate [veh/h]	1781	3560	1653	1781	3560	1589	3459	1730	1781	1870	1589
c, Capacity [veh/h]	191	1167	542	324	1433	990	630	417	200	341	625
d1, Uniform Delay [s]	60.20	46.17	31.99	55.63	29.67	14.29	55.74	43.62	59.98	56.15	36.03
k, delay calibration	0.11	0.11	0.11	0.41	0.11	0.50	0.11	0.11	0.17	0.46	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.91	34.15	0.07	35.51	0.21	1.87	10.40	0.59	16.38	52.04	8.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	1.07	0.09	0.96	0.43	0.51	0.97	0.39	0.87	1.02	0.76
d, Delay for Lane Group [s/veh]	70.11	80.32	32.06	91.14	29.88	16.16	66.14	44.21	76.36	108.19	44.46
Lane Group LOS	E	F	C	F	C	B	E	D	E	F	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.08	25.28	1.16	13.40	7.05	8.14	11.35	4.73	6.89	16.73	15.19
50th-Percentile Queue Length [ft/ln]	152.10	631.98	29.00	334.97	176.29	203.50	283.83	118.14	172.13	418.30	379.66
95th-Percentile Queue Length [veh/ln]	10.13	34.98	2.09	19.40	11.41	12.82	16.88	8.29	11.19	23.70	21.58
95th-Percentile Queue Length [ft/ln]	253.24	874.39	52.20	485.05	285.16	320.48	421.98	207.26	279.71	592.56	539.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.11	80.32	32.06	91.14	29.88	16.16	66.14	44.21	44.21	76.36	108.19	44.46
Movement LOS	E	F	C	F	C	B	E	D	D	E	F	D
d_A, Approach Delay [s/veh]	77.56			38.31			61.53			72.27		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	61.69											
Intersection LOS	E											
Intersection V/C	1.030											

Emissions

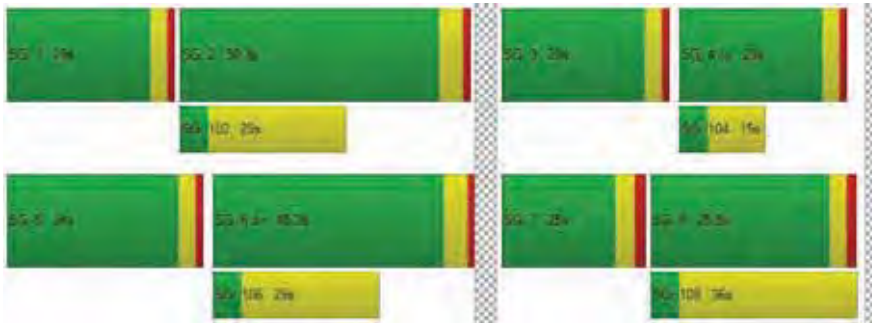
Vehicle Miles Traveled [mph]	93.56	717.86	28.30	216.35	431.30	351.74	45.74	12.19	19.24	38.49	52.53
Stops [stops/h]	159.50	1325.45	30.41	351.26	369.73	213.40	595.28	123.88	180.50	438.65	398.13
Fuel consumption [US gal/h]	7.04	57.19	1.65	19.51	25.05	17.39	13.35	2.64	4.49	11.67	8.66
CO [g/h]	492.36	3997.49	115.52	1363.76	1751.19	1215.37	933.48	184.79	314.06	815.62	605.30
NOx [g/h]	95.79	777.77	22.48	265.34	340.72	236.47	181.62	35.95	61.11	158.69	117.77
VOC [g/h]	114.11	926.46	26.77	316.06	405.85	281.67	216.34	42.83	72.79	189.03	140.28

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.95	59.95	59.95	59.95
l_p,int, Pedestrian LOS Score for Intersectio	2.886	3.980	2.681	2.811
Crosswalk LOS	C	D	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	655	583	452	364
d_b, Bicycle Delay [s]	31.03	34.49	41.16	45.94
l_b,int, Bicycle LOS Score for Intersection	2.775	2.900	2.876	3.503
Bicycle LOS	C	C	C	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.980

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	582	265	358	277	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	44	0	0	155	21	0
Site-Generated Trips [veh/h]	-31	498	229	-240	-72	-10
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	82	0	30
Total Hourly Volume [veh/h]	135	1080	494	191	226	69
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	300	137	53	63	19
Total Analysis Volume [veh/h]	150	1200	549	212	251	77
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	16	54	34	0	56	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	60	40	0	60	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	1.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5	32	23	23	6	6
g / C, Green / Cycle	0.11	0.66	0.47	0.47	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.08	0.64	0.29	0.13	0.09	0.09
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1683
c, Capacity [veh/h]	193	1233	876	745	238	225
d1, Uniform Delay [s]	21.00	7.83	9.68	7.89	20.04	20.05
k, delay calibration	0.04	0.07	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	5.32	0.28	0.08	1.43	1.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.97	0.63	0.28	0.71	0.71
d, Delay for Lane Group [s/veh]	23.55	13.15	9.95	7.96	21.47	21.59
Lane Group LOS	C	B	A	A	C	C
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.44	3.67	2.48	0.78	1.72	1.64
50th-Percentile Queue Length [ft/ln]	35.92	91.63	62.11	19.42	42.91	40.96
95th-Percentile Queue Length [veh/ln]	2.59	6.60	4.47	1.40	3.09	2.95
95th-Percentile Queue Length [ft/ln]	64.65	164.93	111.81	34.96	77.23	73.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.55	13.15	9.95	7.96	21.51	21.59
Movement LOS	C	B	A	A	C	C
d_A, Approach Delay [s/veh]	14.31		9.40		21.53	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	13.75					
Intersection LOS	B					
Intersection V/C	0.980					

Emissions

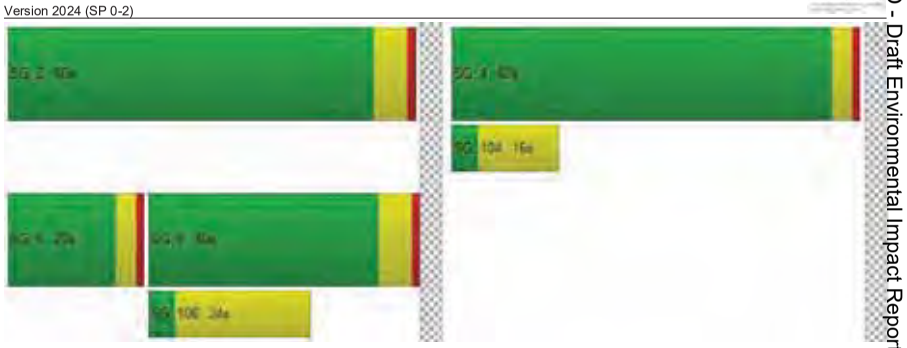
Vehicle Miles Traveled [mph]	18.51	148.06	317.06	122.44	39.50	37.54
Stops [stops/h]	107.15	273.33	185.29	57.94	127.99	122.20
Fuel consumption [US gal/h]	3.33	13.24	15.16	5.52	3.07	2.92
CO [g/h]	232.64	925.57	1059.66	385.53	214.44	204.30
NOx [g/h]	45.26	180.08	206.17	75.01	41.72	39.75
VOC [g/h]	53.92	214.51	245.59	89.35	49.70	47.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.80	0.00	16.80
l_p,int, Pedestrian LOS Score for Intersectio	3.106	0.000	2.214
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2237	1409	2320
d_b, Bicycle Delay [s]	0.34	2.11	0.62
l_b,int, Bicycle LOS Score for Intersection	3.787	2.951	2.150
Bicycle LOS	D	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	47.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.380

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	360	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	13	0	0	0	4	11	0	0	0	0	0
Site-Generated Trips [veh/h]	2	433	0	0	208	12	34	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1104	0	14	568	16	45	0	5	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	300	0	4	154	4	12	0	1	0	0	10
Total Analysis Volume [veh/h]	2	1200	0	14	617	17	49	0	5	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					Yes		No	
Number of Storage Spaces in Median	0		0		1		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.38	0.00	0.01	0.00	0.00	0.17
d_M, Delay for Movement [s/veh]	8.80	0.00	0.00	11.34	0.00	0.00	47.69	40.57	27.20	74.91	59.23	24.27
Movement LOS	A	A	A	B	A	A	E	E	D	F	F	C
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.07	0.00	0.00	1.61	1.61	1.61	0.61	0.61	0.61
95th-Percentile Queue Length [ft/ln]	0.16	0.00	0.00	1.85	0.00	0.00	40.15	40.15	40.15	15.28	15.28	15.28
d_A, Approach Delay [s/veh]	0.01			0.25			45.79			24.27		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	1.85											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	422	48	74	286	0	0	0	0	12	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	-10	0	0	4	141	446	6	51	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	18	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	412	48	74	290	141	483	6	69	12	2	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	111	13	20	78	38	130	2	19	3	1	67
Total Analysis Volume [veh/h]	63	443	52	80	312	152	519	6	74	13	2	269
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	C
C, Cycle Length [s]	68	68	68	68	68	68	68	68	68
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	21	4	21	21	13	13	13	14
g / C, Green / Cycle	0.05	0.30	0.06	0.31	0.31	0.19	0.19	0.19	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.27	0.04	0.17	0.10	0.15	0.15	0.05	0.18
s, saturation flow rate [veh/h]	1781	1836	1781	1870	1589	1781	1783	1589	1599
c, Capacity [veh/h]	91	558	106	584	497	340	340	303	339
d1, Uniform Delay [s]	31.93	22.71	31.68	19.42	17.89	26.28	26.28	23.50	25.85
k, delay calibration	0.11	0.17	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.90	7.45	10.13	0.76	0.35	3.74	3.74	0.41	5.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.89	0.75	0.53	0.31	0.77	0.77	0.24	0.84
d, Delay for Lane Group [s/veh]	40.83	30.15	41.80	20.18	18.24	30.02	30.02	23.92	31.40
Lane Group LOS	D	C	D	C	B	C	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.14	7.37	1.46	3.50	1.56	4.19	4.19	1.00	4.69
50th-Percentile Queue Length [ft/ln]	28.44	184.36	36.39	87.53	39.09	104.65	104.74	25.04	117.15
95th-Percentile Queue Length [veh/ln]	2.05	11.83	2.62	6.30	2.81	7.53	7.54	1.80	8.24
95th-Percentile Queue Length [ft/ln]	51.19	295.70	65.50	157.56	70.37	188.36	188.54	45.07	205.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.83	30.15	30.15	41.80	20.18	18.24	30.02	30.02	23.92	31.40	31.40	31.40
Movement LOS	D	C	C	D	C	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	31.36			22.82			29.27			31.40		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.39											
Intersection LOS	C											
Intersection V/C	0.776											

Emissions

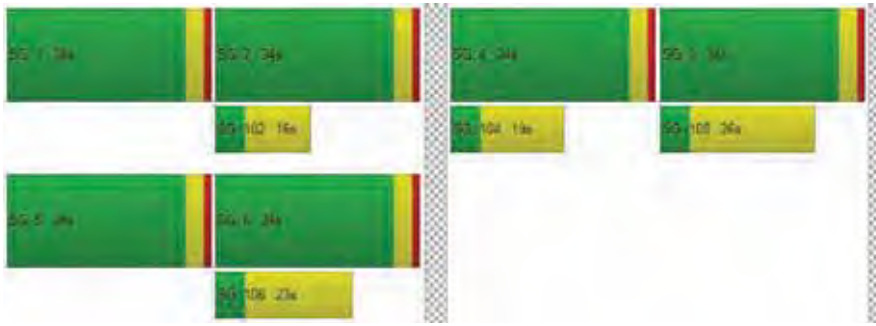
Vehicle Miles Traveled [mph]	21.37	167.93	8.11	31.63	15.41	14.27	14.29	4.03	239.75
Stops [stops/h]	60.02	389.06	76.80	184.73	82.50	220.84	221.04	52.84	247.24
Fuel consumption [US gal/h]	2.35	15.88	2.38	5.77	2.61	3.41	3.41	0.82	13.05
CO [g/h]	164.49	1110.11	166.24	403.37	182.58	238.40	238.62	57.17	912.22
NOx [g/h]	32.00	215.99	32.35	78.48	35.52	46.38	46.43	11.12	177.48
VOC [g/h]	38.12	257.28	38.53	93.49	42.31	55.25	55.30	13.25	211.42

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.71	25.71	25.71	25.71
l_p,int, Pedestrian LOS Score for Intersectio	2.498	2.922	2.317	1.908
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	879	879	879	879
d_b, Bicycle Delay [s]	10.71	10.71	10.71	10.71
l_b,int, Bicycle LOS Score for Intersection	2.480	2.457	2.548	2.028
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	1106	598	39	50
2	1073	580	38	49
3	1051	568	37	48
4	984	532	35	45
5	874	472	31	40
6	863	466	30	39
7	852	460	30	39
8	774	419	27	35
9	763	413	27	35
10	752	407	27	34
11	653	353	23	30
12	608	329	21	28
13	597	323	21	27
14	442	239	16	20
15	442	239	16	20
16	310	167	11	14
17	177	96	6	8
18	177	96	6	8
19	100	54	4	5
20	55	30	2	3
21	33	18	1	2
22	11	6	0	1
23	11	6	0	1
24	11	6	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1704	1	50	No	No	No	No	No	No	No	Yes	No	No
2	2	1653	1	49	No	No	No	No	No	No	No	Yes	No	No
3	2	1619	1	48	No	No	No	No	No	No	No	Yes	No	No
4	2	1516	1	45	No	No	No	No	No	No	No	Yes	No	No
5	2	1346	1	40	No	No	No	No	No	No	No	No	No	No
6	2	1329	1	39	No	No	No	No	No	No	No	No	No	No
7	2	1312	1	39	No	No	No	No	No	No	No	No	No	No
8	2	1193	1	35	No	No	No	No	No	No	No	No	No	No
9	2	1176	1	35	No	No	No	No	No	No	No	No	No	No
10	2	1159	1	34	No	No	No	No	No	No	No	No	No	No
11	2	1006	1	30	No	No	No	No	No	No	No	No	No	No
12	2	937	1	28	No	No	No	No	No	No	No	No	No	No
13	2	920	1	27	No	No	No	No	No	No	No	No	No	No
14	2	681	1	20	No	No	No	No	No	No	No	No	No	No
15	2	681	1	20	No	No	No	No	No	No	No	No	No	No
16	2	477	1	14	No	No	No	No	No	No	No	No	No	No
17	2	273	1	8	No	No	No	No	No	No	No	No	No	No
18	2	273	1	8	No	No	No	No	No	No	No	No	No	No
19	2	154	1	5	No	No	No	No	No	No	No	No	No	No
20	2	85	1	3	No	No	No	No	No	No	No	No	No	No
21	2	51	1	2	No	No	No	No	No	No	No	No	No	No
22	2	17	1	1	No	No	No	No	No	No	No	No	No	No
23	2	17	1	1	No	No	No	No	No	No	No	No	No	No
24	2	17	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	24.3	45.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15	0:38
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	50
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1793	1793
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Cumulative PM plus abated Project

Vistro File: C:\...\PM 918 DU 20240212 - ABATED.vistro Scenario 6 Abated 2040 PM with CCSP, + Project
Report File: C:\...\18 2040 PM plus abated Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.074	70.7	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	NB Thru	1.038	58.9	E
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	0.923	50.1	D
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	SB Thru	1.022	61.4	E
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Left	0.046	90.3	F
12	Latrobe Rd/Royal Oaks Dr	Signalized	HCM 6th Edition	NB Left	0.701	21.9	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Option 1: Copy of Latrobe Rd/US 50 EB

Number	4											
Intersection	Latrobe Rd/US 50 EB											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp	
Approach	Northbound			Southbound				Eastbound			Westbound	
Lane Configuration												
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	2691	613	1	388	1576	0	0	0	1667	0	0	864
Total Analysis Volume [veh/h]	0	2713	488	1	462	1723	0	0	0	1433	0	0	720

Intersection Settings

Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.40	0.31	0.26	0.25	0.34	
so, Base Saturation Flow per Lane [pc/h/ln]	1900	1900	1900	1900	1900	
Arrival type	3		3		3	3
s, saturation flow rate [veh/h]	6702	1589	1781	6702	4220	

s, saturation flow rate [veh/h]	6792	1589	1781	6792	4220	
c, Capacity [veh/h]	3745	876	516	3476	1390	
X, volume / capacity	0.72	0.56	0.90	0.50	1.03	
d, Delay for Lane Group [s/veh]	12.65	12.42	31.97	11.37	39.54	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	5.85	4.07	7.43	3.39	8.91	
50th-Percentile Queue Length [ft/ln]	146.31	101.66	185.84	84.69	222.87	
95th-Percentile Queue Length [veh/ln]	9.82	7.32	11.90	6.10	14.06	
95th-Percentile Queue Length [ft/ln]	245.49	182.99	297.62	152.45	351.53	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.65	12.42	31.97	31.97	11.37	0.00	0.00	0.00	39.54	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
Critical Movement		No	No	No	No	No				Yes			No
d_A, Approach Delay [s/veh]	12.61			15.73			39.54			0.00			
Approach LOS	B			B			D			A			
d_I, Intersection Delay [s/veh]	19.27												
Intersection LOS	B												
Intersection V/C	0.862												

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	70.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.074

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1441	1689	425	0	37	1298	534	306	130	409	257	92	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-61	-43	-10	0	0	41	0	0	0	11	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	125	0	0	0	160	0	0	126	0	0	75
Total Hourly Volume [veh/h]	1	1380	1646	290	0	37	1339	374	306	130	294	266	92	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	345	412	73	0	9	335	94	77	33	74	67	23	44
Total Analysis Volume [veh/h]	1	1380	1646	290	0	37	1339	374	306	130	294	266	92	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	5	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	45	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	3.6	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	2.6	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	50	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	10	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	2.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.40	0.36	0.39	0.02	0.26	0.24	0.12	0.12	0.10	0.10	0.11
s, saturation flow rate [veh/h]	3459	3532	1723	1781	5053	1589	1781	1832	1781	1825	1589
c, Capacity [veh/h]	1155	1913	933	81	1277	684	250	257	223	228	199
d1, Uniform Delay [s]	45.28	22.30	23.31	63.30	50.81	28.83	57.16	57.15	57.81	57.78	58.54
k, delay calibration	0.10	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.17	0.17	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	89.77	1.83	4.66	1.51	38.81	3.12	12.10	11.78	9.80	9.25	23.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.20	0.66	0.71	0.46	1.05	0.55	0.86	0.86	0.80	0.79	0.89
d, Delay for Lane Group [s/veh]	135.05	24.14	27.97	64.81	89.61	31.95	69.26	68.94	67.61	67.03	81.62
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	33.73	14.76	16.88	1.26	18.64	9.37	8.08	8.28	6.54	6.64	7.25
50th-Percentile Queue Length [ft/ln]	843.24	369.06	421.93	31.57	465.98	234.19	201.88	207.06	163.60	165.98	181.14
95th-Percentile Queue Length [veh/ln]	48.39	21.06	23.61	2.27	26.45	14.39	12.74	13.00	10.74	10.86	11.66
95th-Percentile Queue Length [ft/ln]	1209.64	526.59	590.37	56.82	661.37	359.68	318.39	325.05	268.49	271.62	291.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	135.0	135.0	25.01	27.97	64.81	64.81	89.61	31.95	69.17	68.94	0.00	67.41	67.03	81.62
Movement LOS	F	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	71.08				76.77				41.27			72.03		
Approach LOS	E				E				D			E		
d_I, Intersection Delay [s/veh]	70.66													
Intersection LOS	E													
Intersection V/C	1.074													

Emissions

Vehicle Miles Traveled [mph]	236.52	217.40	114.18	6.96	251.99	70.39	9.94	10.23	5.63	5.75	5.60
Stops [stops/h]	1785.68	781.53	446.75	33.42	1480.17	247.97	213.75	219.24	173.23	175.74	191.79
Fuel consumption [US gal/h]	57.55	19.50	10.96	1.14	51.46	7.93	4.62	4.73	3.63	3.67	4.21
CO [g/h]	4022.70	1363.19	766.28	79.84	3596.79	554.12	322.89	330.84	253.53	256.72	294.49
NOx [g/h]	782.67	265.23	149.09	15.53	699.81	107.81	62.82	64.37	49.33	49.95	57.30
VOC [g/h]	932.30	315.93	177.59	18.50	833.59	128.42	74.83	76.68	58.76	59.50	68.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.548
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.452	2.590	2.279	2.062
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	58.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.038

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	160.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	2098	245	3	606	2038	596	508	40	83	1	94	6	695
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	-141	-6	0	0	114	0	0	0	3	0	12	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	72	0	0	0	179	0	0	26	0	0	0	209
Total Hourly Volume [veh/h]	1	21	1957	167	3	606	2152	417	508	40	60	1	106	6	486
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	5	510	43	1	158	560	109	132	10	16	0	28	2	127
Total Analysis Volume [veh/h]	1	22	2039	174	3	631	2242	434	529	42	63	1	110	6	506
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	20	60	0	20	20	0	0	20	20	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	24	66	0	24	24	0	0	24	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	118	118	118	118	118	118	118	118	118	118	118	118
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	42	42	20	60	60	20	20	20	20	20	20
g / C, Green / Cycle	0.02	0.36	0.36	0.17	0.51	0.51	0.17	0.17	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.11	0.18	0.44	0.27	0.15	0.02	0.04	0.06	0.16	0.16
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1595	1589
c, Capacity [veh/h]	67	1818	567	587	2583	806	582	315	268	302	270	270
d1, Uniform Delay [s]	57.10	37.93	27.39	48.97	25.58	19.70	48.15	41.72	42.47	43.37	48.45	48.46
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.05	0.08	0.08	0.08	0.08	0.40	0.40
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.14	55.55	0.11	39.65	0.36	0.24	4.44	0.14	0.33	0.55	37.41	37.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	1.12	0.31	1.08	0.87	0.54	0.91	0.13	0.24	0.37	0.95	0.95
d, Delay for Lane Group [s/veh]	58.24	93.48	27.51	88.62	25.95	19.95	52.59	41.86	42.80	43.92	85.86	86.00
Lane Group LOS	E	F	C	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	26.47	3.57	11.81	17.75	7.95	7.96	1.06	1.62	2.92	10.23	10.21
50th-Percentile Queue Length [ft/ln]	8.72	661.76	89.23	295.16	443.69	198.82	198.97	26.45	40.53	73.04	255.78	255.19
95th-Percentile Queue Length [veh/ln]	0.63	37.66	6.42	18.11	24.66	12.58	12.59	1.90	2.92	5.26	15.48	15.45
95th-Percentile Queue Length [ft/ln]	15.70	941.50	160.62	452.65	616.42	314.45	314.63	47.61	72.95	131.47	386.92	386.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.24	58.24	93.48	27.51	88.62	88.62	25.95	19.95	52.59	41.86	42.80	43.92	43.92	85.86	85.93
Movement LOS	E	E	F	C	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	87.98				37.17				50.91			78.45			
Approach LOS	F				D				D			E			
d_I, Intersection Delay [s/veh]	58.93														
Intersection LOS	E														
Intersection V/C	1.038														

Emissions

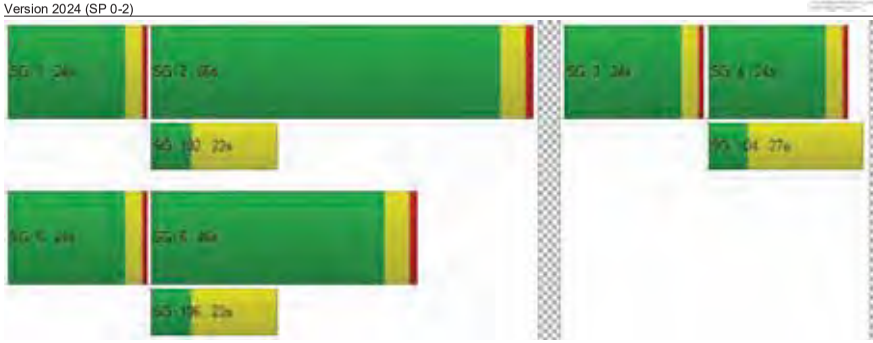
Vehicle Miles Traveled [mph]	5.13	455.18	38.84	91.74	324.41	62.80	67.47	5.36	8.04	38.96	90.00	89.70
Stops [stops/h]	21.33	2426.52	109.06	721.53	1626.93	243.01	486.38	32.33	49.54	89.27	312.63	311.90
Fuel consumption [US gal/h]	0.60	70.93	3.18	19.19	34.18	5.69	11.13	0.76	1.15	3.09	9.91	9.89
CO [g/h]	42.06	4957.78	221.97	1341.70	2389.35	397.69	777.68	52.91	80.60	215.92	692.83	691.18
NOx [g/h]	8.18	964.60	43.19	261.05	464.88	77.38	151.31	10.29	15.68	42.01	134.80	134.48
VOC [g/h]	9.75	1149.01	51.44	310.95	553.75	92.17	180.23	12.26	18.68	50.04	160.57	160.19

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.42	0.00	48.42	48.42
l_p,int, Pedestrian LOS Score for Intersectio	3.479	0.000	2.714	2.951
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	688	1027	348	348
d_b, Bicycle Delay [s]	25.37	13.94	40.19	40.19
l_b,int, Bicycle LOS Score for Intersection	2.828	3.132	2.104	2.751
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	50.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.923

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	24.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	260.00	100.00	200.00	530.00	100.00	300.00	100.00	100.00	200.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	114	590	31	419	446	895	817	306	63	76	201	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	147	17	0	85	0	0	0	6	0	0	0
Site-Generated Trips [veh/h]	11	53	2	0	292	-123	-236	-40	79	30	-21	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	232	0	0	44	0	0	53
Total Hourly Volume [veh/h]	125	790	35	419	823	540	581	266	104	106	180	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	217	10	115	226	148	160	73	29	29	49	34
Total Analysis Volume [veh/h]	137	868	38	460	904	593	638	292	114	116	198	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	5	2	0	1	6	3	3	8	0	7	4	1
Auxiliary Signal Groups						3,6						1,4
Maximum Green [s]	30	45	0	25	40	25	25	31	0	20	25	25
Amber [s]	3.0	4.0	0.0	3.0	4.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	2.0	0.0	1.0	2.0	1.0	1.0	2.0	0.0	1.0	2.0	1.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	2.0	2.0	3.0	0.0	2.0	3.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	20.0	20.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	245.0	245.0	245.0	0.0	245.0	245.0	245.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	6.0	6.0	6.0	0.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	9	9	0	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	5	5	5	0	5	5	5
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No	No	No	No		No	No	No
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	No		No	No	No	No	No		No	No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	116	116	116	116	116	116	116	116	116	116	116
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	4.00	4.00	5.00	4.00	5.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	0.00	2.00	3.00	2.00	3.00	0.00
g_i, Effective Green Time [s]	11	32	32	25	46	77	25	30	9	15	45
g / C, Green / Cycle	0.09	0.28	0.28	0.22	0.40	0.67	0.22	0.26	0.08	0.13	0.39
(v / s)_i Volume / Saturation Flow Rate	0.08	0.24	0.02	0.26	0.25	0.37	0.18	0.23	0.07	0.11	0.09
s, saturation flow rate [veh/h]	1781	3560	1653	1781	3560	1589	3459	1782	1781	1870	1589
c, Capacity [veh/h]	169	984	457	385	1415	1058	747	467	145	238	615
d1, Uniform Delay [s]	51.37	40.08	31.02	45.36	28.15	10.33	43.61	40.79	52.24	49.27	23.82
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.50	0.11	0.32	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.99	2.82	0.08	110.75	0.48	2.15	2.91	13.49	9.75	7.30	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.88	0.08	1.20	0.64	0.56	0.85	0.87	0.80	0.83	0.22
d, Delay for Lane Group [s/veh]	60.35	42.89	31.10	156.11	28.63	12.48	46.52	54.29	61.98	56.57	24.00
Lane Group LOS	E	D	C	F	C	B	D	D	E	E	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.31	12.08	0.80	22.22	9.38	6.98	9.02	12.69	3.70	6.05	2.55
50th-Percentile Queue Length [ft/ln]	107.73	301.88	20.05	555.42	234.47	174.53	225.52	317.30	92.40	151.31	63.79
95th-Percentile Queue Length [veh/ln]	7.71	17.77	1.44	32.88	14.40	11.31	13.95	18.53	6.65	10.09	4.59
95th-Percentile Queue Length [ft/ln]	192.85	444.35	36.09	821.97	360.03	282.85	348.66	463.37	166.33	252.17	114.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.35	42.89	31.10	156.11	28.63	12.48	46.52	54.29	54.29	61.98	56.57	24.00
Movement LOS	E	D	C	F	C	B	D	D	D	E	E	C
d_A, Approach Delay [s/veh]	44.76			53.70			49.54			48.07		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	50.09											
Intersection LOS	D											
Intersection V/C	0.923											

Emissions

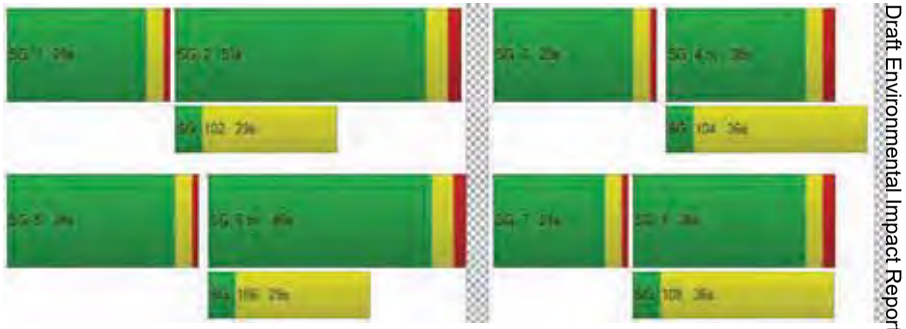
Vehicle Miles Traveled [mph]	79.12	501.29	21.95	319.95	628.78	412.46	48.00	30.54	12.83	21.90	15.15
Stops [stops/h]	134.18	751.93	24.97	691.74	584.03	217.36	561.73	395.18	115.08	188.44	79.45
Fuel consumption [US gal/h]	5.68	32.37	1.28	38.16	37.15	19.34	11.12	7.93	2.63	4.22	1.73
CO [g/h]	397.09	2262.43	89.60	2667.55	2596.69	1351.93	777.17	553.99	183.63	295.10	121.05
NOx [g/h]	77.26	440.19	17.43	519.01	505.22	263.04	151.21	107.79	35.73	57.42	23.55
VOC [g/h]	92.03	524.34	20.77	618.23	601.81	313.32	180.12	128.39	42.56	68.39	28.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.16	49.16	49.16	49.16
l_p,int, Pedestrian LOS Score for Intersectio	2.851	3.954	2.755	2.539
Crosswalk LOS	C	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	778	692	536	432
d_b, Bicycle Delay [s]	21.57	24.73	30.97	35.51
l_b,int, Bicycle LOS Score for Intersection	2.432	3.366	3.355	2.391
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	61.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.022

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	180.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	171	325	456	129	410	157
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	47	209	0
Site-Generated Trips [veh/h]	-15	305	526	-125	-239	-29
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	15	0	38
Total Hourly Volume [veh/h]	156	630	982	36	380	90
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	175	273	11	120	25
Total Analysis Volume [veh/h]	173	700	1091	46	481	100
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	16	54	34	0	56	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	60	40	0	60	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	1.0	1.0	1.0	0.0	1.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	46	34	34	14	14
g / C, Green / Cycle	0.12	0.66	0.49	0.49	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.10	0.37	0.58	0.03	0.17	0.17
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1709
c, Capacity [veh/h]	215	1239	906	770	347	333
d1, Uniform Delay [s]	30.02	6.38	18.07	9.59	27.28	27.29
k, delay calibration	0.04	0.04	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	0.15	102.20	0.01	2.35	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.56	1.20	0.06	0.85	0.86
d, Delay for Lane Group [s/veh]	32.67	6.53	120.27	9.60	29.63	29.75
Lane Group LOS	C	A	F	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.67	2.88	36.25	0.29	4.77	4.60
50th-Percentile Queue Length [ft/ln]	66.65	72.05	906.24	7.15	119.30	114.92
95th-Percentile Queue Length [veh/ln]	4.80	5.19	52.58	0.51	8.35	8.11
95th-Percentile Queue Length [ft/ln]	119.96	129.70	1314.54	12.86	208.86	202.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.67	6.53	120.27	9.60	29.67	29.75
Movement LOS	C	A	F	A	C	C
d_A, Approach Delay [s/veh]	11.71		115.79		29.69	
Approach LOS	B		F		C	
d_I, Intersection Delay [s/veh]	61.42					
Intersection LOS	E					
Intersection V/C	1.022					

Emissions

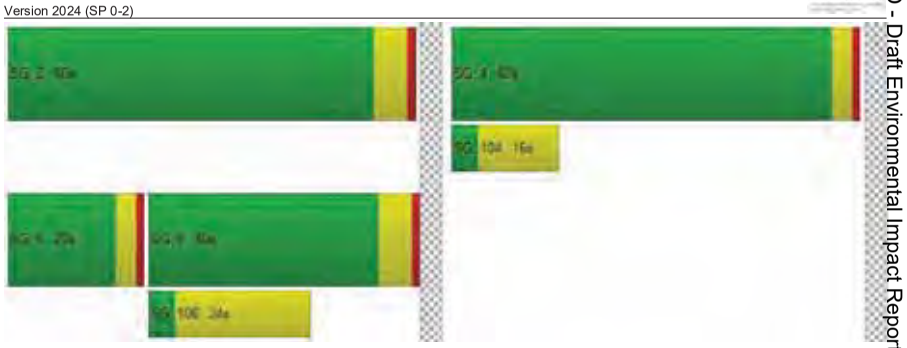
Vehicle Miles Traveled [mph]	21.35	86.37	630.08	26.57	69.59	66.87
Stops [stops/h]	137.09	148.21	1864.10	14.70	245.39	236.39
Fuel consumption [US gal/h]	4.41	6.57	82.40	1.25	6.01	5.78
CO [g/h]	308.30	459.42	5759.83	87.49	419.89	404.19
NOx [g/h]	59.98	89.39	1120.65	17.02	81.70	78.64
VOC [g/h]	71.45	106.47	1334.90	20.28	97.31	93.67

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.46	0.00	27.46
l_p,int, Pedestrian LOS Score for Intersectio	3.183	0.000	2.262
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1543	971	1600
d_b, Bicycle Delay [s]	1.83	9.26	1.40
l_b,int, Bicycle LOS Score for Intersection	3.000	3.460	2.581
Bicycle LOS	C	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	90.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.046

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	438	0	25	588	0	0	0	0	2	0	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	10	6	0	0	0	0	0
Site-Generated Trips [veh/h]	5	267	0	0	455	42	23	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	705	0	25	1043	52	29	0	3	2	0	58
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	192	0	6	283	14	8	0	1	1	0	15
Total Analysis Volume [veh/h]	5	766	0	25	1134	57	32	0	3	2	0	58
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					Yes		No	
Number of Storage Spaces in Median	0		0		1		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.03	0.01	0.00	0.24	0.00	0.01	0.05	0.00	0.14
d_M, Delay for Movement [s/veh]	11.19	0.00	0.00	9.38	0.00	0.00	40.14	35.11	28.01	90.31	70.77	15.55
Movement LOS	B	A	A	A	A	A	E	E	D	F	F	C
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.09	0.00	0.00	0.90	0.90	0.90	0.53	0.53	0.53
95th-Percentile Queue Length [ft/ln]	0.65	0.00	0.00	2.28	0.00	0.00	22.58	22.58	22.58	13.21	13.21	13.21
d_A, Approach Delay [s/veh]	0.07			0.19			39.10			18.04		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	1.32											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	200.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	334	21	144	446	0	0	0	0	59	0	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	2	0	0	-4	434	270	0	31	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	37	0	0	0	0	0	37	0	55	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	336	21	144	442	434	307	0	86	59	5	104
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	90	6	39	119	117	83	0	23	16	1	28
Total Analysis Volume [veh/h]	97	361	23	155	475	467	330	0	92	63	5	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	C
C, Cycle Length [s]	55	55	55	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	17	6	20	20	8	8	8	8
g / C, Green / Cycle	0.07	0.31	0.12	0.35	0.35	0.14	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.05	0.21	0.09	0.25	0.29	0.09	0.09	0.06	0.11
s, saturation flow rate [veh/h]	1781	1850	1781	1870	1589	1781	1781	1589	1659
c, Capacity [veh/h]	130	573	207	660	561	258	258	231	235
d1, Uniform Delay [s]	25.30	16.74	23.82	15.63	16.51	22.44	22.44	21.61	23.02
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.10	1.36	5.33	1.49	3.56	2.62	2.62	1.12	5.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.67	0.75	0.72	0.83	0.64	0.64	0.40	0.77
d, Delay for Lane Group [s/veh]	33.40	18.10	29.16	17.12	20.07	25.06	25.06	22.73	28.21
Lane Group LOS	C	B	C	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.35	3.43	1.94	4.07	4.49	2.06	2.06	1.08	2.43
50th-Percentile Queue Length [ft/ln]	33.67	85.64	48.44	101.70	112.37	51.51	51.51	26.92	60.72
95th-Percentile Queue Length [veh/ln]	2.42	6.17	3.49	7.32	7.97	3.71	3.71	1.94	4.37
95th-Percentile Queue Length [ft/ln]	60.61	154.16	87.20	183.06	199.30	92.72	92.72	48.46	109.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.40	18.10	18.10	29.16	17.12	20.07	25.06	25.06	22.73	28.21	28.21	28.21
Movement LOS	C	B	B	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	21.19			20.08			24.55			28.21		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	21.86											
Intersection LOS	C											
Intersection V/C	0.701											

Emissions

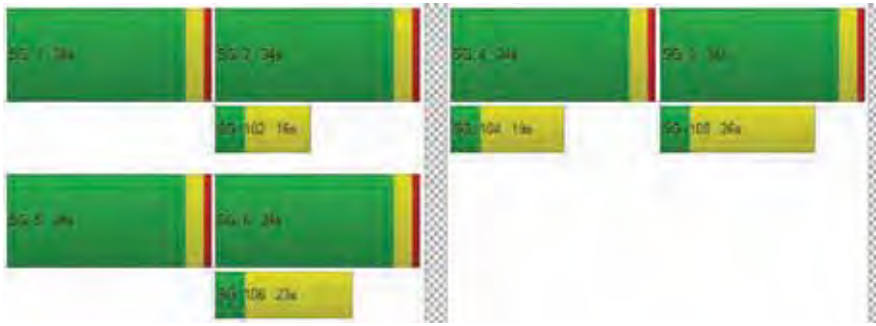
Vehicle Miles Traveled [mph]	32.89	130.22	15.73	48.19	47.38	8.98	8.98	5.00	151.96
Stops [stops/h]	87.38	222.24	125.70	263.90	291.60	133.67	133.67	69.86	157.56
Fuel consumption [US gal/h]	3.38	9.90	3.78	8.17	8.91	1.95	1.95	1.02	8.16
CO [g/h]	236.45	691.90	264.27	571.04	622.72	136.26	136.26	71.12	570.34
NOx [g/h]	46.00	134.62	51.42	111.10	121.16	26.51	26.51	13.84	110.97
VOC [g/h]	54.80	160.36	61.25	132.34	144.32	31.58	31.58	16.48	132.18

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.48	19.48	19.48	19.48
l_p,int, Pedestrian LOS Score for Intersectio	2.579	2.955	2.349	1.866
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1081	1081	1081	1081
d_b, Bicycle Delay [s]	5.86	5.86	5.86	5.86
l_b,int, Bicycle LOS Score for Intersection	2.353	3.370	2.256	1.857
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	710	1120	60	32
2	689	1086	58	31
3	675	1064	57	30
4	632	997	53	28
5	561	885	47	25
6	554	874	47	25
7	547	862	46	25
8	497	784	42	22
9	490	773	41	22
10	483	762	41	22
11	419	661	35	19
12	391	616	33	18
13	383	605	32	17
14	284	448	24	13
15	284	448	24	13
16	199	314	17	9
17	114	179	10	5
18	114	179	10	5
19	64	101	5	3
20	36	56	3	2
21	21	34	2	1
22	7	11	1	0
23	7	11	1	0
24	7	11	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1830	1	60	No	No	No	No	No	Yes	Yes	Yes	No	No
2	2	1775	1	58	No	No	No	No	No	No	Yes	Yes	No	No
3	2	1739	1	57	No	No	No	No	No	No	Yes	Yes	No	No
4	2	1629	1	53	No	No	No	No	No	No	Yes	Yes	No	No
5	2	1446	1	47	No	No	No	No	No	No	No	Yes	No	No
6	2	1428	1	47	No	No	No	No	No	No	No	Yes	No	No
7	2	1409	1	46	No	No	No	No	No	No	No	Yes	No	No
8	2	1281	1	42	No	No	No	No	No	No	No	Yes	No	No
9	2	1263	1	41	No	No	No	No	No	No	No	No	No	No
10	2	1245	1	41	No	No	No	No	No	No	No	No	No	No
11	2	1080	1	35	No	No	No	No	No	No	No	No	No	No
12	2	1007	1	33	No	No	No	No	No	No	No	No	No	No
13	2	988	1	32	No	No	No	No	No	No	No	No	No	No
14	2	732	1	24	No	No	No	No	No	No	No	No	No	No
15	2	732	1	24	No	No	No	No	No	No	No	No	No	No
16	2	513	1	17	No	No	No	No	No	No	No	No	No	No
17	2	293	1	10	No	No	No	No	No	No	No	No	No	No
18	2	293	1	10	No	No	No	No	No	No	No	No	No	No
19	2	165	1	5	No	No	No	No	No	No	No	No	No	No
20	2	92	1	3	No	No	No	No	No	No	No	No	No	No
21	2	55	1	2	No	No	No	No	No	No	No	No	No	No
22	2	18	1	1	No	No	No	No	No	No	No	No	No	No
23	2	18	1	1	No	No	No	No	No	No	No	No	No	No
24	2	18	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	1	4	8	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18	39.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:18	0:20
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	60	32
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1922	1922
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Appendix C: Travel Demand Model Plots

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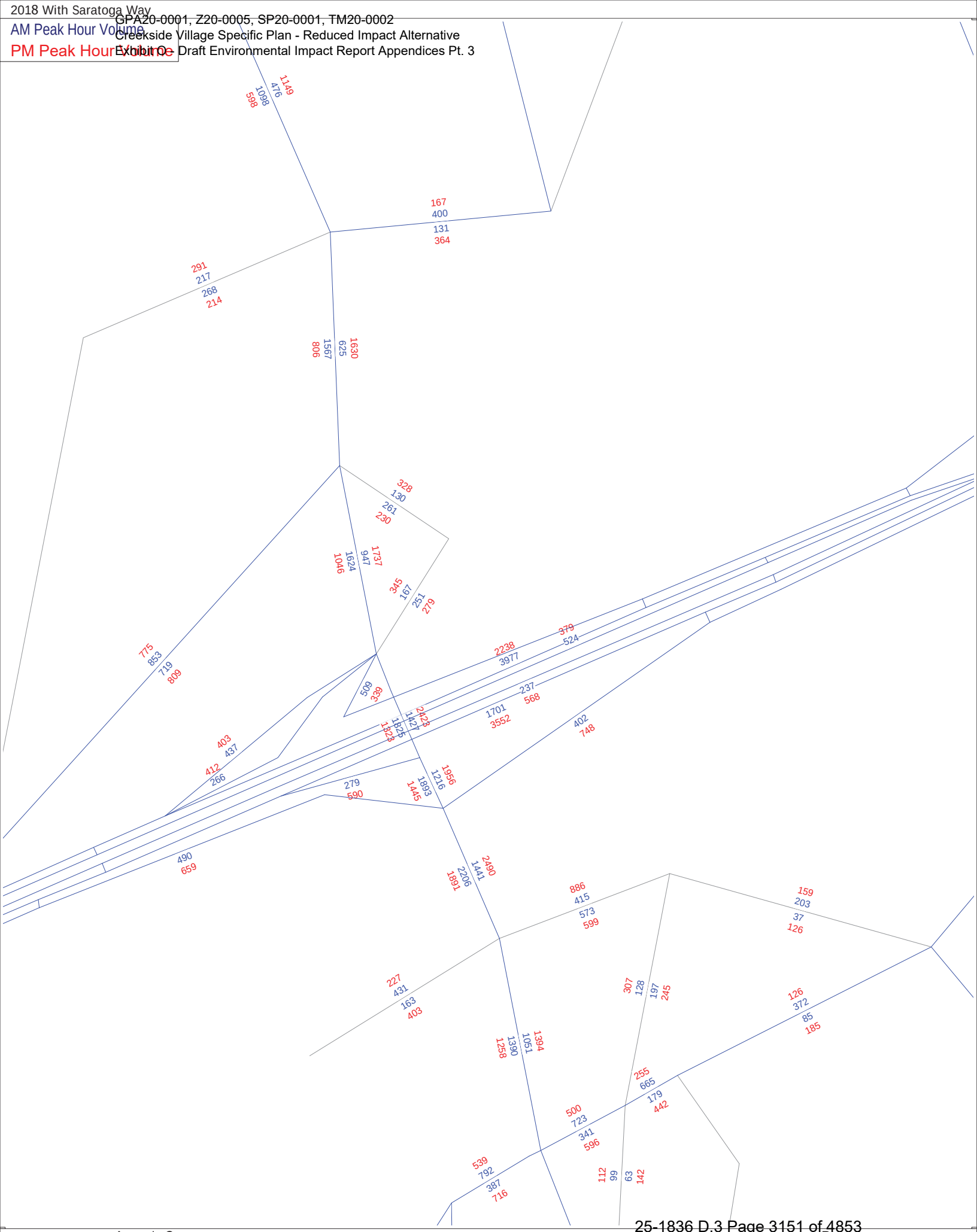
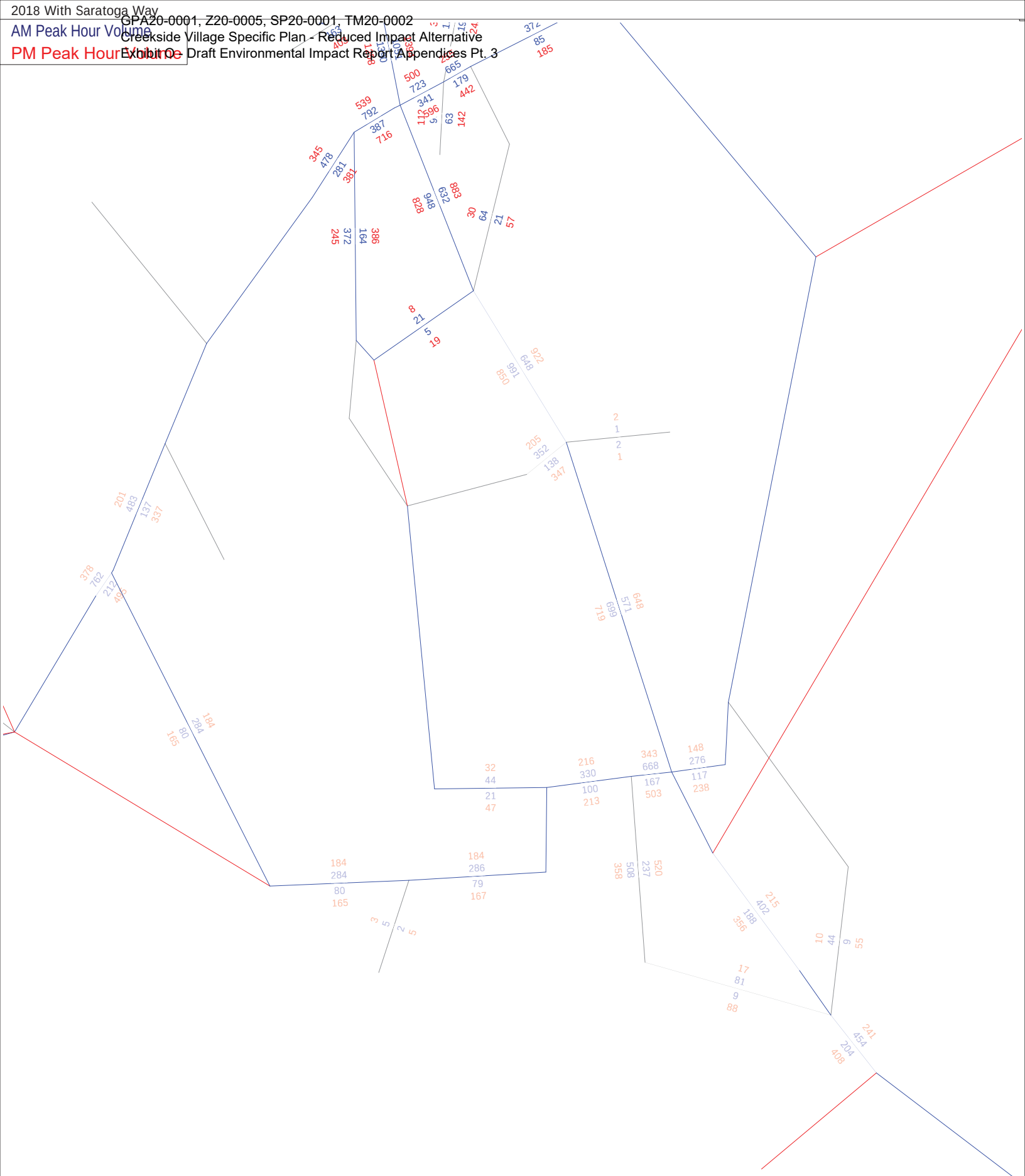


(Licensed to T Kear Transportation Planning and Manag)



(Licensed to T Kear Transportation Planning and Manag)

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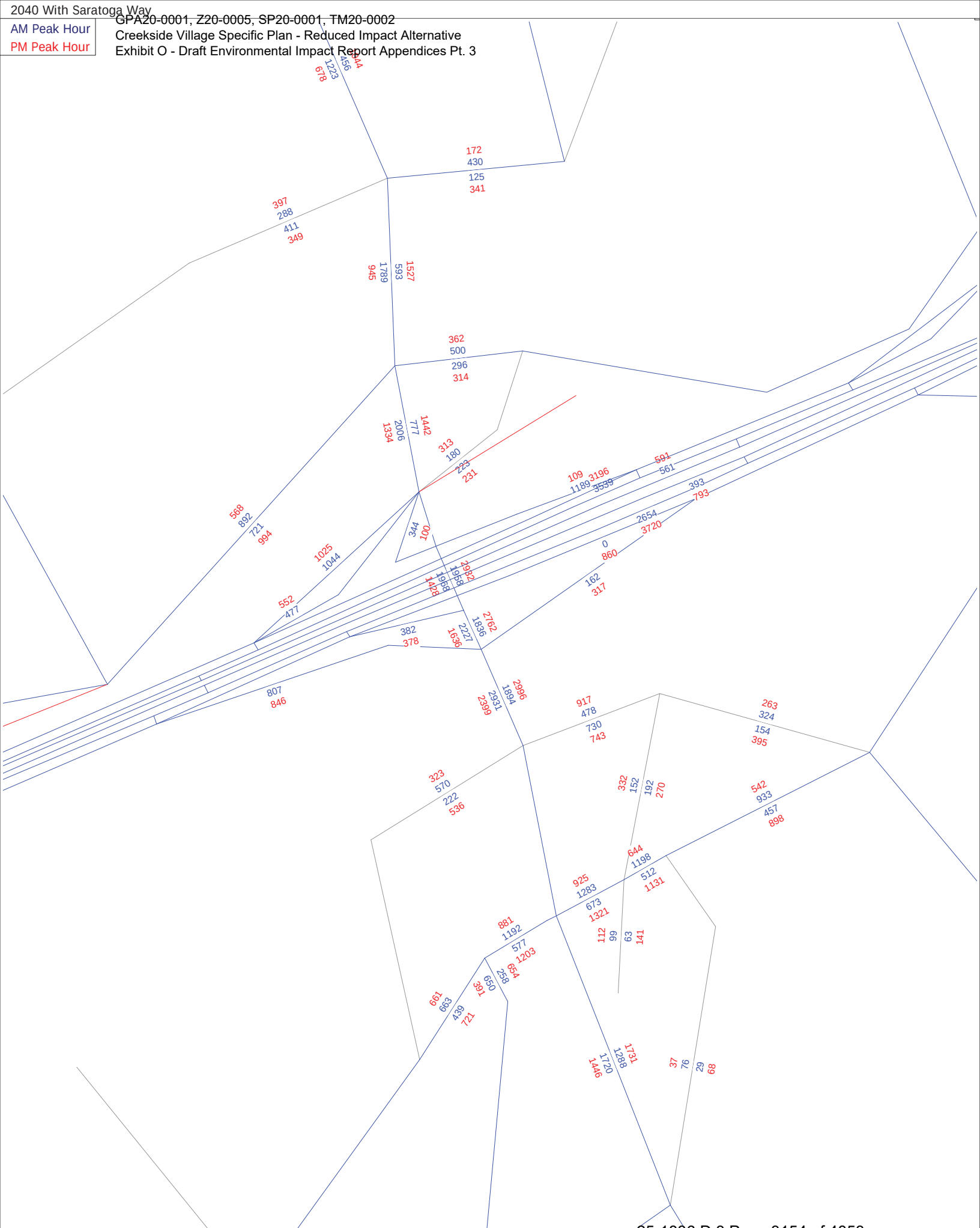
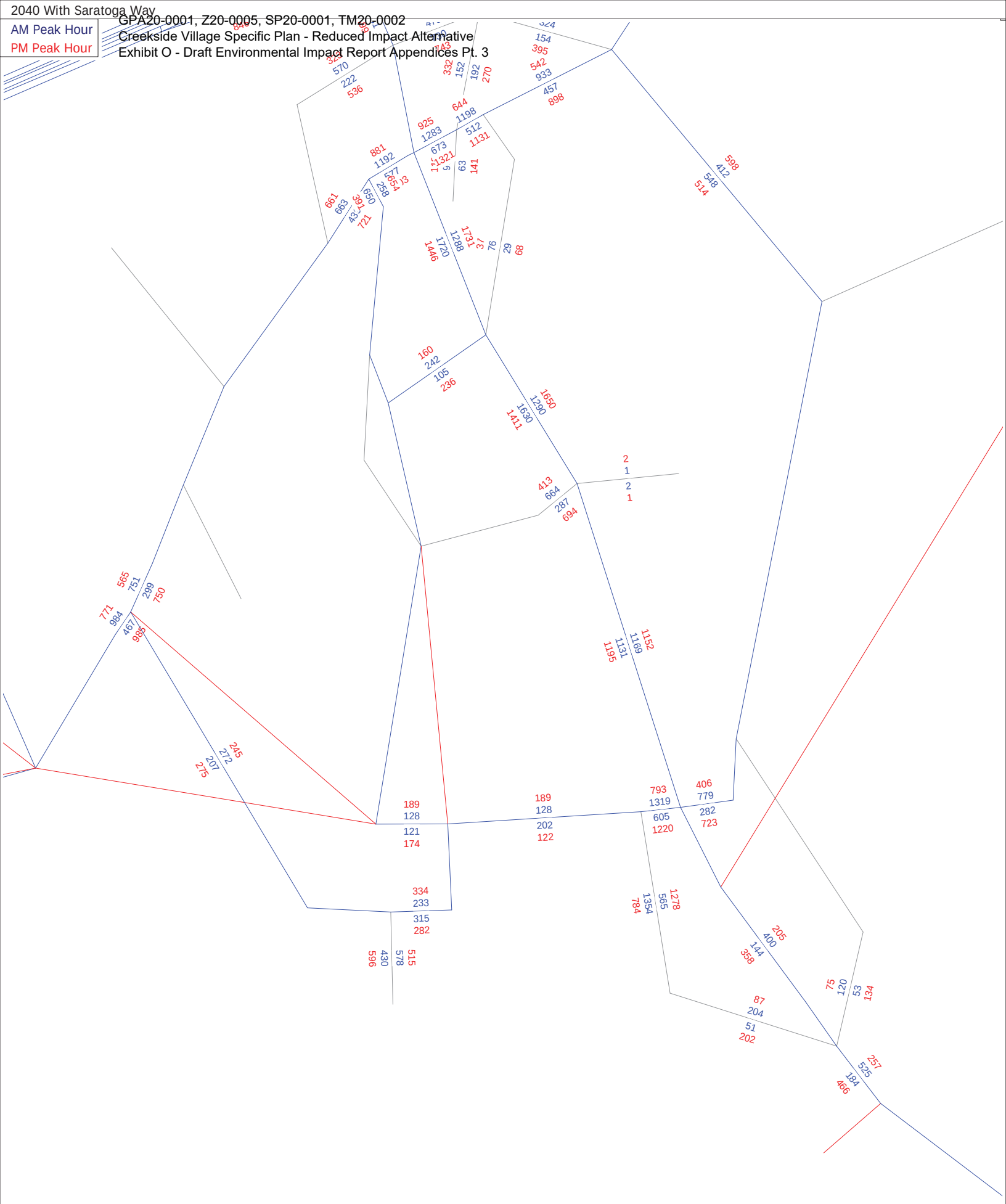
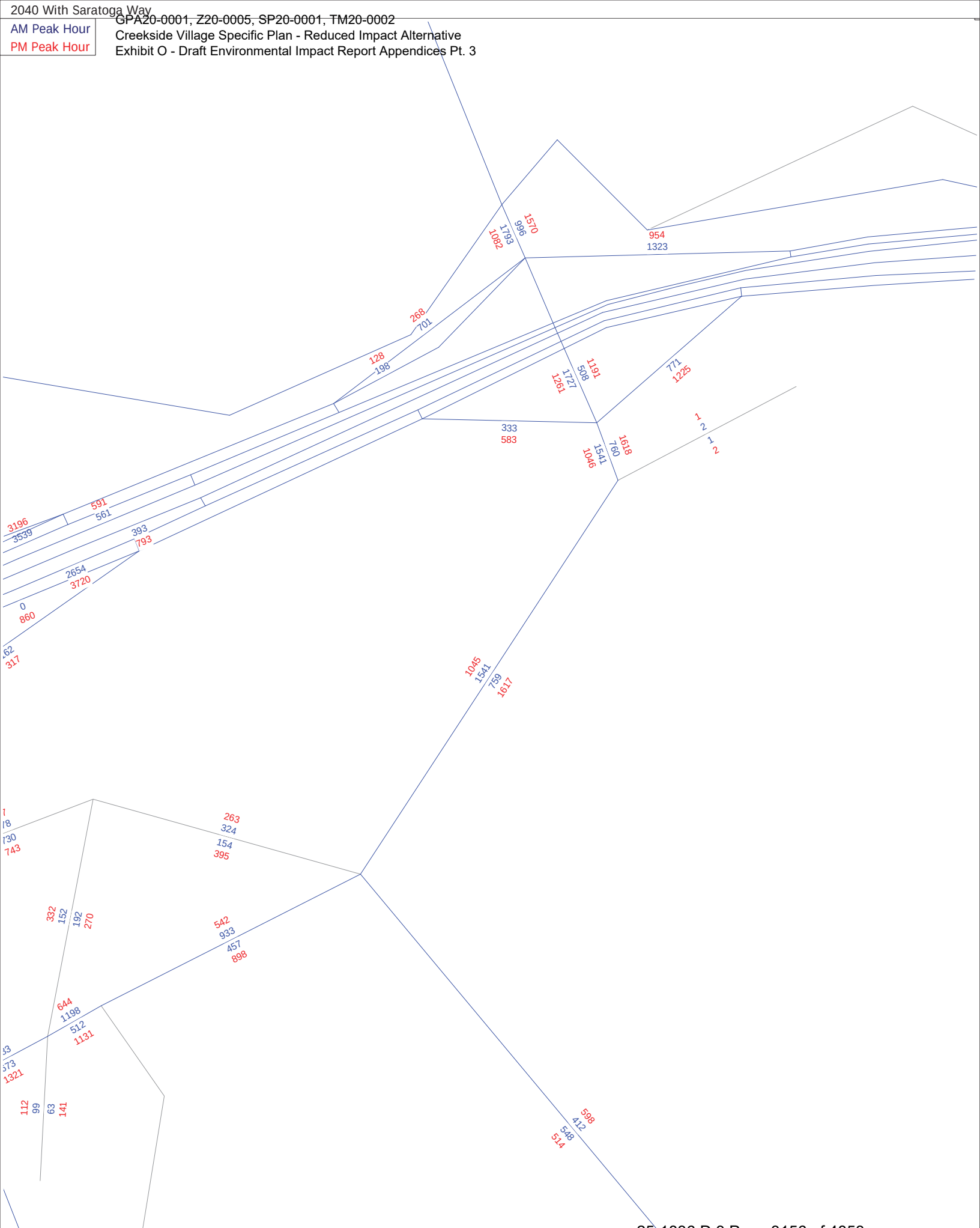


(Licensed to T Kear Transportation Planning and Manag)



(Licensed to T Kear Transportation Planning and Manag)



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Appendix D: NCHRP 255 Calculations

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File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2033 turns.rpt 8/31/2023, 3:32:07 PM

INTERSECTIONNUMBER	NLA	NLD	ELA	ELD	SLA	SLD	WLA	WLD
1	1723	918	511	270	1200	2146	214	314
2	2145	1199	106	305	1483	2301	875	804
3	2302	1484	293	299	2492	2247	1164	2221
4	2247	2492	528	980	2424	2782	1055	0
5	2782	2424	635	733	2104	2060	109	413
6	2060	2104	757	588	1774	1919	738	718
7	1919	1774	24	24	1577	1452	237	507
8	1452	1577	0	0	1542	1157	100	360
9	1157	1542	565	256	821	527	480	698
10	527	821	0	0	587	309	317	301
11	309	587	39	14	548	295	0	0
12	295	548	171	73	419	264	0	0
13	0	0	698	480	328	561	210	195
14	486	87	297	102	104	668	11	41
15	0	0	195	190	139	80	95	159
16	0	0	116	121	88	96	109	96
17	124	85	36	20	77	132	0	0
18	491	311	83	124	317	512	75	19
19	718	738	242	447	664	439	0	0
20	317	356	765	565	84	76	588	757
21	237	528	1077	605	401	382	565	765
22	730	610	4	4	605	1077	358	6
23	917	471	0	0	610	730	189	515
24	813	562	863	0	471	917	0	668
25	295	548	0	0	548	295	0	0
26	264	419	0	0	415	226	4	38
27	188	320	147	165	285	164	116	87
501	1188	1824	356	453	2258	1434	107	198
502	1430	2254	437	280	2133	1652	933	747
503	1657	2138	469	486	2978	1718	726	1488
504	1718	2978	854	926	2733	2884	1483	0
505	2884	2733	701	780	2058	1961	399	568
506	1961	2058	751	941	1950	1805	771	629
507	1805	1950	24	62	1327	1387	653	410
508	1387	1327	0	0	1179	1320	257	176
509	1320	1179	258	369	694	485	638	877
510	485	694	0	0	429	524	457	153
511	524	429	51	25	380	501	0	0
512	501	380	95	110	327	433	0	0
513	0	0	877	638	584	747	223	299
514	366	256	272	107	284	549	58	68
515	0	0	299	223	130	211	245	240
516	0	0	211	130	55	75	125	186
517	152	177	3	39	186	125	0	0
518	474	442	177	152	498	568	29	16
519	629	771	477	249	603	689	0	0
520	429	399	720	899	112	153	941	751
521	388	285	975	1151	408	517	902	720

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522 643 1146 1 0 1151 975 336 10
523 787 1033 0 0 1146 643 566 823
524 589 1079 604 0 1033 787 0 360
525 501 380 0 0 380 501 0 0
526 461 327 0 0 300 441 27 20
527 362 274 136 140 250 334 44 44

| Turning Movement Volumes Report | 01:34p Aug 31, 2023 |

Counts Data

Node	Southbound R	Southbound T	Southbound L	Westbound R	Westbound T	Westbound L	Northbound R	Northbound T	Northbound L	Eastbound R	Eastbound T	Eastbound L
1	40	1615	68	108	57	346	191	792	217	185	11	18
2	391	1608	146	82	13	11	98	985	400	682	61	132
3	948	1285	69	55	92	146	138	1173	1181	816	92	256
4	0	1727	520	528	0	0	460	1964	0	1055	0	0
5	322	1970	490	535	30	70	235	1808	61	20	8	81
6	407	1561	92	232	227	298	173	1517	84	60	323	355
7	462	1439	18	14	7	3	2	1537	38	10	4	223
8	300	1152	0	0	0	0	0	1482	60	5	0	95
9	563	386	208	395	94	76	7	773	41	65	41	374
10	273	254	0	0	0	0	0	559	28	55	0	262
11	0	295	14	39	0	0	0	548	0	0	0	0
12	0	254	41	161	0	10	32	387	0	0	0	0
13	0	0	0	0	182	516	315	0	13	45	165	0
14	13	443	30	46	26	225	63	39	2	0	9	2
15	0	0	0	0	128	67	108	0	31	13	82	0
16	0	0	0	0	51	65	43	0	45	31	78	0
17	0	114	10	18	0	18	10	67	0	0	0	0
18	15	439	37	18	0	65	86	227	4	8	1	66
19	0	386	332		189	53	115	549	0	0	0	0
20	192	11	114	204	508	53	20	7	57	12	431	145
21	46	36	155	262	624	191	256	50	95	155	194	216
22	3	723	4	4	0	0	0	602	3	354	0	4
23	220	697	0	0	0	0	0	315	295	33	0	156
24	590	223	0	169	0	694	0	393	78	0	0	0
25	0	295	0	0	0	0	0	548	0	0	0	0
26	38	226	0	0	0	0	0	415	0	0	0	4
27	9	127	52	38	72	37	41	238	6	0	72	44
501	55	1098	35	22	52	282	401	1766	91	54	17	36
502	198	1068	164	273	107	57	75	1616	442	527	41	365
503	428	1192	37	153	80	236	319	1679	980	290	130	306
504	0	1401	317	854	0	0	609	2124	0	1483	0	0
505	549	1803	532	604	6	91	215	1830	13	67	33	299
506	392	1326	243	194	164	393	362	1515	73	86	336	349

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507	400	1371	34	19	4	1	21	1300	6	15	7	631
508	128	1259	0	0	0	0	0	1131	48	61	0	196
509	686	385	249	110	93	55	21	575	98	45	99	494
510	38	447	0	0	0	0	0	314	115	77	0	380
511	0	499	25	49	0	2	0	380	0	0	0	0
512	0	407	94	69	0	26	16	311	0	0	0	0
513	0	0	0	0	185	692	470	0	114	55	168	0
514	22	319	25	45	16	211	59	195	30	19	23	16
515	0	0	0	0	190	109	80	0	50	102	143	0
516	0	0	0	0	174	37	43	0	12	38	87	0
517	0	125	27	3	0	0	12	174	0	0	0	0
518	11	397	66	27	0	150	85	408	5	21	1	7
519	0	451	178	239	0	238	71	532	0	0	0	0
520	228	15	186	178	456	86	29	16	67	52	684	205
521	58	100	230	158	583	234	268	61	79	183	653	66
522	2	641	0	1	0	0	0	1143	8	334	0	2
523	200	587	0	0	0	0	0	523	623	56	0	510
524	207	382	0	198	1	405	0	881	152	0	0	0
525	0	501	0	0	0	0	0	380	0	0	0	0
526	20	441	0	0	0	0	0	300	0	0	0	27
527	31	288	43	79	13	44	65	185	0	2	32	10

Furness Adjusted Turning Volumes	01:34p Aug 31, 2023

	Southbound			Westbound			Northbound			Eastbound		
Node	R	T	L	R	T	L	R	T	L	R	T	L
1	46	1655	70	111	64	346	183	774	232	234	14	23
2	372	1718	150	191	34	33	109	886	413	708	60	106
3	1044	1353	64	48	99	151	141	1150	1417	801	80	214
4	0	1821	477	493	0	0	403	2219	0	1263	0	0
5	369	2174	537	557	32	72	251	1957	68	24	9	99
6	444	1737	95	248	318	425	238	1681	121	78	391	346
7	532	1699	18	15	9	4	2	1777	57	15	5	257
8	397	1327	0	0	0	0	0	1693	92	9	0	153
9	750	341	249	520	164	88	8	757	53	78	67	514
10	291	220	0	0	0	0	0	575	61	88	0	245
11	0	295	14	39	0	0	0	599	0	0	0	0
12	0	244	49	190	0	11	41	408	0	0	0	0
13	0	0	0	0	104	862	460	0	6	51	201	0
14	37	779	22	62	45	240	80	149	9	0	17	11
15	0	0	0	0	83	26	126	0	110	30	106	0
16	0	0	0	0	95	121	80	0	83	57	145	0
17	0	165	11	16	0	19	8	63	0	0	0	0
18	14	536	50	16	0	61	125	296	4	8	1	66
19	0	442	378	185	0	72	184	632	0	0	0	0
20	203	8	114	205	728	55	19	5	59	12	569	142

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21	46	45	193	307	836	320	383	53	115	224	276	218
22	3	1112	4	5	0	0	0	851	2	354	0	4
23	278	1054	0	0	0	0	0	376	481	64	0	187
24	671	388	0	298	0	941	0	514	51	0	0	0
25	0	295	0	0	0	0	0	599	0	0	0	0
26	38	218	0	0	0	0	0	445	0	0	0	4
27	7	102	50	43	73	36	39	215	4	0	81	47
501	67	1126	33	20	61	278	385	1708	113	85	25	53
502	178	1127	185	286	101	63	81	1544	380	581	48	380
503	493	1252	34	131	88	236	323	1638	1224	272	108	246
504	0	1504	251	733	0	0	495	2456	0	1591	0	0
505	587	1937	570	615	6	92	233	1987	14	76	37	340
506	436	1422	253	190	223	516	518	1668	111	124	471	376
507	454	1590	27	18	6	1	30	1582	11	27	9	703
508	190	1424	0	0	0	0	0	1321	71	93	0	309
509	809	359	352	150	147	68	28	551	108	57	191	686
510	34	452	0	0	0	0	0	303	148	118	0	386
511	0	547	25	49	0	2	0	405	0	0	0	0
512	0	424	123	90	0	32	19	314	0	0	0	0
513	0	0	0	0	174	886	790	0	113	38	146	0
514	32	476	33	66	16	218	87	466	49	32	34	39
515	0	0	0	0	195	92	67	0	109	180	117	0
516	0	0	0	0	103	170	158	0	107	152	18	0
517	0	171	27	3	0	0	11	199	0	0	0	0
518	10	536	81	29	0	172	115	578	5	21	0	6
519	0	542	225	310	0	278	84	663	0	0	0	0
520	238	11	189	177	619	85	29	12	69	55	967	218
521	60	125	315	187	731	350	453	74	102	231	903	66
522	2	937	0	2	0	0	1	1666	8	333	0	2
523	261	861	0	0	0	0	0	672	995	78	0	509
524	236	557	0	263	1	562	0	1034	145	0	0	0
525	0	549	0	0	0	0	0	405	0	0	0	0
526	20	465	0	0	0	0	0	306	0	0	0	27
527	40	261	45	84	20	47	66	162	0	2	37	9

Counts Data Approach & Departure Volumes 01:34p Aug 31, 2023

Node	North Leg App	North Leg Dep	East Leg App	East Leg Dep	South Leg App	South Leg Dep	West Leg App	West Leg Dep
1	1723	918	511	270	1200	2146	214	314
2	2145	1199	106	305	1483	2301	875	804
3	2302	1484	293	299	2492	2247	1164	2221
4	2247	2492	528	980	2424	2782	1055	0
5	2782	2424	635	733	2104	2060	109	413
6	2060	2104	757	588	1774	1919	738	718
7	1919	1774	24	24	1577	1452	237	507

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8	1452	1577	0	0	1542	1157	100	360
9	1157	1542	565	256	821	527	480	698
10	527	821	0	0	587	309	317	301
11	309	587	39	14	548	295	0	0
12	295	548	171	73	419	264	0	0
13	0	0	698	480	328	561	210	195
14	486	87	297	102	104	668	11	41
15	0	0	195	190	139	80	95	159
16	0	0	116	121	88	96	109	96
17	124	85	36	20	77	132	0	0
18	491	311	83	124	317	512	75	19
19	718	738	242	447	664	439	0	0
20	317	356	765	565	84	76	588	757
21	237	528	1077	605	401	382	565	765
22	730	610	4	4	605	1077	358	6
23	917	471	0	0	610	730	189	515
24	813	562	863	0	471	917	0	668
25	295	548	0	0	548	295	0	0
26	264	419	0	0	415	226	4	38
27	188	320	147	165	285	164	116	87
501	1188	1824	356	453	2258	1434	107	198
502	1430	2254	437	280	2133	1652	933	747
503	1657	2138	469	486	2978	1718	726	1488
504	1718	2978	854	926	2733	2884	1483	0
505	2884	2733	701	780	2058	1961	399	568
506	1961	2058	751	941	1950	1805	771	629
507	1805	1950	24	62	1327	1387	653	410
508	1387	1327	0	0	1179	1320	257	176
509	1320	1179	258	369	694	485	638	877
510	485	694	0	0	429	524	457	153
511	524	429	51	25	380	501	0	0
512	501	380	95	110	327	433	0	0
513	0	0	877	638	584	747	223	299
514	366	256	272	107	284	549	58	68
515	0	0	299	223	130	211	245	240
516	0	0	211	130	55	75	125	186
517	152	177	3	39	186	125	0	0
518	474	442	177	152	498	568	29	16
519	629	771	477	249	603	689	0	0
520	429	399	720	899	112	153	941	751
521	388	285	975	1151	408	517	902	720
522	643	1146	1	1	1152	975	336	10
523	787	1033	0	0	1146	643	566	823
524	589	1079	604	0	1033	787	0	360
525	501	380	0	0	380	501	0	0
526	461	327	0	0	300	441	27	20
527	362	274	136	140	250	334	44	44

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| Model Future Year Approach & Departure Volumes 01:34p Aug 31, 2023 |

	North Leg		East Leg		South Leg		West Leg	
Node	App	Dep	App	Dep	App	Dep	App	Dep
1	1776	910	523	268	1186	2237	273	343
2	2238	1185	260	320	1413	2460	875	821
3	2461	1414	299	286	2713	2306	1095	2562
4	2306	2713	491	880	2613	3085	1268	0
5	3083	2615	662	798	2275	2271	134	470
6	2270	2276	991	726	2048	2241	818	884
7	2241	2049	29	27	1845	1719	279	599
8	1718	1846	0	0	1792	1337	163	490
9	1338	1792	774	325	821	509	662	969
10	509	821	0	0	638	309	335	352
11	309	638	39	14	599	295	0	0
12	295	599	202	91	449	256	0	0
13	0	0	970	662	464	913	252	111
14	838	223	348	120	240	1020	29	92
15	0	0	110	233	237	57	137	194
16	0	0	93	219	329	274	162	91
17	177	80	36	20	72	185	0	0
18	603	379	78	177	424	605	75	19
19	885	818	281	563	730	515	0	0
20	326	353	988	704	84	76	726	991
21	285	579	1466	854	552	591	720	999
22	1119	860	5	4	854	1466	358	6
23	1330	564	0	0	860	1119	253	760
24	1062	813	1240	0	564	1330	0	723
25	295	599	0	0	599	295	0	0
26	256	449	0	0	445	218	4	38
27	161	306	154	171	259	139	128	86
501	1222	1782	359	444	2214	1491	164	242
502	1487	2211	451	315	2011	1772	1009	660
503	1777	2016	456	467	3190	1761	627	1806
504	1761	3190	731	747	2944	3096	1597	0
505	3096	2943	714	841	2235	2107	454	608
506	2107	2235	928	1244	2304	2063	974	771
507	2063	2304	27	67	1631	1620	743	473
508	1620	1631	0	0	1389	1518	402	262
509	1518	1389	366	572	690	485	937	1065
510	485	690	0	0	454	571	505	183
511	572	454	51	25	405	549	0	0
512	550	405	122	143	333	457	0	0
513	0	0	1065	937	900	925	185	288
514	544	572	302	155	600	727	106	98
515	0	0	288	185	177	273	298	305
516	0	0	273	177	267	323	171	211

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517	198	202	3	39	211	171	0	0
518	627	615	202	198	702	731	29	16
519	771	974	589	310	745	821	0	0
520	440	409	883	1187	111	153	1243	928
521	501	328	1272	1673	630	707	1199	894
522	940	1670	2	1	1674	1271	336	10
523	1120	1182	0	0	1670	940	589	1257
524	793	1298	826	0	1182	1120	0	383
525	549	405	0	0	405	549	0	0
526	485	333	0	0	306	465	27	20
527	347	257	152	149	230	311	49	61

Computed Approach & Departure Volumes 01:34p Aug 31, 2023

Node	North Leg App	North Leg Dep	East Leg App	East Leg Dep	South Leg App	South Leg Dep	West Leg App	West Leg Dep
1	1776	910	523	268	1186	2237	273	343
2	2238	1185	260	320	1413	2460	875	821
3	2461	1414	299	286	2713	2306	1095	2562
4	2306	2713	491	880	2613	3085	1268	0
5	3083	2615	662	798	2275	2271	134	470
6	2270	2276	991	726	2048	2241	818	884
7	2241	2049	29	27	1845	1719	279	599
8	1718	1846	0	0	1792	1337	163	490
9	1338	1792	774	325	821	509	662	969
10	509	821	0	0	638	309	335	352
11	309	638	39	14	599	295	0	0
12	295	599	202	91	449	256	0	0
13	0	0	970	662	464	913	252	111
14	838	223	348	120	240	1020	29	92
15	0	0	110	233	237	57	137	194
16	0	0	217	226	164	179	203	179
17	177	80	36	20	72	185	0	0
18	603	379	78	177	424	605	75	19
19	818	818	259	563	818	515	0	0
20	326	353	988	704	84	76	726	991
21	285	579	1466	854	552	591	720	999
22	1119	860	5	4	854	1466	358	6
23	1330	564	0	0	860	1119	253	760
24	1062	813	1240	0	564	1330	0	723
25	295	599	0	0	599	295	0	0
26	256	449	0	0	445	218	4	38
27	161	306	154	171	259	139	128	86
501	1222	1782	359	444	2214	1491	164	242
502	1487	2211	451	315	2011	1772	1009	660
503	1777	2016	456	467	3190	1761	627	1806

File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2033 turns.rpt 8/31/2023, 3:32:07 PM

504	1761	3190	731	747	2944	3096	1597	0
505	3096	2943	714	841	2235	2107	454	608
506	2107	2235	928	1244	2304	2063	974	771
507	2063	2304	27	67	1631	1620	743	473
508	1620	1631	0	0	1389	1518	402	262
509	1518	1389	366	572	690	485	937	1065
510	485	690	0	0	454	571	505	183
511	572	454	51	25	405	549	0	0
512	550	405	122	143	333	457	0	0
513	0	0	1065	937	900	925	185	288
514	544	572	302	155	600	727	106	98
515	0	0	288	185	177	273	298	305
516	0	0	273	177	267	323	171	211
517	198	202	3	39	211	171	0	0
518	627	615	202	198	702	731	29	16
519	771	974	589	310	745	821	0	0
520	440	409	883	1187	111	153	1243	928
521	501	328	1272	1673	630	707	1199	894
522	940	1670	2	1	1674	1271	336	10
523	1120	1182	0	0	1670	940	589	1257
524	793	1298	826	0	1182	1120	0	383
525	549	405	0	0	405	549	0	0
526	485	333	0	0	306	465	27	20
527	347	257	152	149	230	311	49	61

Nodes Report 01:34p Aug 31, 2023

Project Nodes

Node	North Link	East Link	South Link	West Link
1				
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File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2040 turns.rpt 8/31/2023, 3:53:54 PM

INTERSECTIONNUMBER	NLA	NLD	ELA	ELD	SLA	SLD	WLA	WLD
1	1812	904	532	266	1177	2302	315	364
2	2302	1176	368	330	1363	2571	876	832
3	2572	1364	303	278	2868	2348	1047	2800
4	2348	2868	465	810	2745	3296	1416	0
5	3294	2745	680	844	2394	2419	151	511
6	2418	2394	1154	823	2239	2466	873	1001
7	2466	2239	32	30	2032	1905	308	664
8	1904	2032	0	0	1966	1463	206	581
9	1463	1966	921	373	820	496	790	1159
10	496	820	0	0	673	308	347	388
11	308	673	39	14	634	294	0	0
12	294	634	224	104	470	250	0	0
13	0	0	1160	790	560	1160	282	52
14	1085	319	384	132	336	1267	41	128
15	0	0	51	262	306	42	166	219
16	0	0	78	288	496	398	199	87
17	214	76	36	20	68	222	0	0
18	681	426	74	214	498	669	75	19
19	1001	873	309	644	776	569	0	0
20	333	352	1143	801	84	76	823	1154
21	319	614	1738	1029	658	738	828	1162
22	1391	1035	5	4	1029	1738	358	6
23	1620	630	0	0	1035	1391	297	931
24	1237	989	1503	0	630	1620	0	761
25	294	634	0	0	634	294	0	0
26	250	470	0	0	466	212	4	38
27	141	295	159	175	241	121	136	86
501	1245	1750	360	437	2184	1532	203	273
502	1528	2181	461	339	1924	1856	1063	600
503	1861	1929	446	453	3338	1792	557	2028
504	1792	3338	644	621	3091	3244	1676	0
505	3244	3091	723	883	2359	2209	493	636
506	2209	2359	1052	1455	2551	2243	1116	871
507	2243	2551	29	70	1843	1784	807	517
508	1784	1843	0	0	1536	1657	503	323
509	1657	1536	441	713	687	486	1146	1196
510	486	687	0	0	471	605	538	203
511	606	471	51	25	422	583	0	0
512	583	422	141	166	338	474	0	0
513	0	0	1196	1146	1121	1049	158	280
514	668	793	322	188	821	851	139	118
515	0	0	280	158	211	317	335	351
516	0	0	317	211	416	496	203	229
517	230	220	3	39	229	203	0	0
518	733	735	220	230	845	846	29	16
519	871	1116	667	353	844	913	0	0
520	447	416	996	1387	111	153	1454	1052
521	579	358	1479	2039	786	839	1407	1015

File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2040 turns.rpt 8/31/2023, 3:53:54 PM

522 1148 2036 2 1 2040 1479 336 10
523 1354 1286 0 0 2036 1148 605 1561
524 936 1452 982 0 1286 1354 0 398
525 583 422 0 0 422 583 0 0
526 502 338 0 0 311 482 27 20
527 336 245 163 156 215 294 53 72

| Turning Movement Volumes Report | 03:38p Aug 31, 2023 |

Counts Data

	Southbound			Westbound			Northbound			Eastbound		
Node	R	T	L	R	T	L	R	T	L	R	T	L
1	40	1615	68	108	57	346	191	792	217	185	11	18
2	391	1608	146	82	13	11	98	985	400	682	61	132
3	948	1285	69	55	92	146	138	1173	1181	816	92	256
4	0	1727	520	528	0	0	460	1964	0	1055	0	0
5	322	1970	490	535	30	70	235	1808	61	20	8	81
6	407	1561	92	232	227	298	173	1517	84	60	323	355
7	462	1439	18	14	7	3	2	1537	38	10	4	223
8	300	1152	0	0	0	0	0	1482	60	5	0	95
9	563	386	208	395	94	76	7	773	41	65	41	374
10	273	254	0	0	0	0	0	559	28	55	0	262
11	0	295	14	39	0	0	0	548	0	0	0	0
12	0	254	41	161	0	10	32	387	0	0	0	0
13	0	0	0	0	182	516	315	0	13	45	165	0
14	13	443	30	46	26	225	63	39	2	0	9	2
15	0	0	0	0	128	67	108	0	31	13	82	0
16	0	0	0	0	51	65	43	0	45	31	78	0
17	0	114	10	18	0	18	10	67	0	0	0	0
18	15	439	37	18	0	65	86	227	4	8	1	66
19	0	386	332		189	53	115	549	0	0	0	0
20	192	11	114	204	508	53	20	7	57	12	431	145
21	46	36	155	262	624	191	256	50	95	155	194	216
22	3	723	4	4	0	0	0	602	3	354	0	4
23	220	697	0	0	0	0	0	315	295	33	0	156
24	590	223	0	169	0	694	0	393	78	0	0	0
25	0	295	0	0	0	0	0	548	0	0	0	0
26	38	226	0	0	0	0	0	415	0	0	0	4
27	9	127	52	38	72	37	41	238	6	0	72	44
501	55	1098	35	22	52	282	401	1766	91	54	17	36
502	198	1068	164	273	107	57	75	1616	442	527	41	365
503	428	1192	37	153	80	236	319	1679	980	290	130	306
504	0	1401	317	854	0	0	609	2124	0	1483	0	0
505	549	1803	532	604	6	91	215	1830	13	67	33	299
506	392	1326	243	194	164	393	362	1515	73	86	336	349

File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2040 turns.rpt 8/31/2023, 3:53:54 PM

507	400	1371	34	19	4	1	21	1300	6	15	7	631
508	128	1259	0	0	0	0	0	1131	48	61	0	196
509	686	385	249	110	93	55	21	575	98	45	99	494
510	38	447	0	0	0	0	0	314	115	77	0	380
511	0	499	25	49	0	2	0	380	0	0	0	0
512	0	407	94	69	0	26	16	311	0	0	0	0
513	0	0	0	0	185	692	470	0	114	55	168	0
514	22	319	25	45	16	211	59	195	30	19	23	16
515	0	0	0	0	190	109	80	0	50	102	143	0
516	0	0	0	0	174	37	43	0	12	38	87	0
517	0	125	27	3	0	0	12	174	0	0	0	0
518	11	397	66	27	0	150	85	408	5	21	1	7
519	0	451	178	239	0	238	71	532	0	0	0	0
520	228	15	186	178	456	86	29	16	67	52	684	205
521	58	100	230	158	583	234	268	61	79	183	653	66
522	2	641	0	1	0	0	0	1143	8	334	0	2
523	200	587	0	0	0	0	0	523	623	56	0	510
524	207	382	0	198	1	405	0	881	152	0	0	0
525	0	501	0	0	0	0	0	380	0	0	0	0
526	20	441	0	0	0	0	0	300	0	0	0	27
527	31	288	43	79	13	44	65	185	0	2	32	10

Furness Adjusted Turning Volumes	03:38p Aug 31, 2023

	Southbound			Westbound			Northbound			Eastbound		
Node	R	T	L	R	T	L	R	T	L	R	T	L
1	51	1684	72	114	70	347	177	761	242	270	16	27
2	359	1793	152	261	52	53	116	822	420	724	60	92
3	1107	1406	62	44	104	154	142	1130	1588	787	73	189
4	0	1886	454	467	0	0	356	2400	0	1410	0	0
5	403	2317	570	572	33	74	262	2060	73	27	10	112
6	469	1858	98	257	381	517	287	1794	150	90	437	342
7	577	1879	19	15	11	5	3	1944	74	20	6	279
8	462	1449	0	0	0	0	0	1839	118	13	0	192
9	877	315	276	604	221	93	8	747	60	86	88	613
10	298	198	0	0	0	0	0	582	89	109	0	237
11	0	294	14	39	0	0	0	634	0	0	0	0
12	0	237	55	211	0	12	48	422	0	0	0	0
13	0	0	0	0	49	1106	560	0	2	53	229	0
14	55	1009	21	70	55	258	88	229	16	0	21	19
15	0	0	0	0	43	7	130	0	175	34	131	0
16	0	0	0	0	152	194	128	0	134	92	233	0
17	0	202	12	16	0	20	7	60	0	0	0	0
18	14	603	60	16	0	57	152	343	4	7	1	66
19	0	504	499	243	0	65	144	629	0	0	0	0
20	210	7	115	206	883	56	19	4	60	12	666	141

File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2040 turns.rpt 8/31/2023, 3:53:54 PM

21	48	51	219	335	984	414	474	55	129	271	334	223
22	3	1384	4	5	0	0	0	1026	2	354	0	4
23	320	1303	0	0	0	0	0	421	610	87	0	208
24	719	514	0	398	0	1105	0	590	41	0	0	0
25	0	294	0	0	0	0	0	634	0	0	0	0
26	38	212	0	0	0	0	0	466	0	0	0	4
27	6	85	49	47	75	36	38	199	4	0	87	48
501	74	1144	30	18	66	276	376	1668	131	110	29	62
502	163	1168	200	295	96	67	85	1494	339	619	53	390
503	534	1298	33	117	92	237	325	1604	1401	256	94	207
504	0	1576	208	646	0	0	412	2691	0	1667	0	0
505	615	2032	596	623	6	94	245	2098	14	82	40	369
506	465	1490	259	189	264	600	629	1774	141	152	566	395
507	490	1740	23	18	8	2	36	1780	18	41	10	751
508	235	1541	0	0	0	0	0	1454	88	115	0	388
509	895	346	419	178	186	76	31	539	114	63	262	817
510	32	456	0	0	0	0	0	298	171	148	0	388
511	0	581	25	49	0	2	0	422	0	0	0	0
512	0	437	144	104	0	36	21	317	0	0	0	0
513	0	0	0	0	171	1019	1017	0	108	29	129	0
514	40	585	40	79	17	225	105	657	60	40	42	56
515	0	0	0	0	196	83	56	0	154	233	101	0
516	0	0	0	0	23	294	208	0	205	201	2	0
517	0	203	28	3	0	0	11	217	0	0	0	0
518	10	634	90	30	0	189	138	697	5	21	0	6
519	0	607	260	361	0	305	92	754	0	0	0	0
520	246	10	191	177	734	85	29	10	71	57	1166	227
521	63	142	373	207	834	432	587	83	117	264	1078	67
522	2	1145	0	2	0	0	1	2032	8	333	0	2
523	301	1056	0	0	0	0	0	773	1259	91	0	512
524	254	682	0	310	1	671	0	1141	142	0	0	0
525	0	583	0	0	0	0	0	422	0	0	0	0
526	20	482	0	0	0	0	0	311	0	0	0	27
527	46	242	47	87	25	49	67	147	0	2	41	9

Counts Data Approach & Departure Volumes								03:38p Aug 31, 2023	
!	North Leg		East Leg		South Leg		West Leg	
!Node	App	Dep	App	Dep	App	Dep	App	Dep
1	1723	918	511	270	1200	2146	214	314
2	2145	1199	106	305	1483	2301	875	804
3	2302	1484	293	299	2492	2247	1164	2221
4	2247	2492	528	980	2424	2782	1055	0
5	2782	2424	635	733	2104	2060	109	413
6	2060	2104	757	588	1774	1919	738	718
7	1919	1774	24	24	1577	1452	237	507

File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2040 turns.rpt 8/31/2023, 3:53:54 PM

8	1452	1577	0	0	1542	1157	100	360
9	1157	1542	565	256	821	527	480	698
10	527	821	0	0	587	309	317	301
11	309	587	39	14	548	295	0	0
12	295	548	171	73	419	264	0	0
13	0	0	698	480	328	561	210	195
14	486	87	297	102	104	668	11	41
15	0	0	195	190	139	80	95	159
16	0	0	116	121	88	96	109	96
17	124	85	36	20	77	132	0	0
18	491	311	83	124	317	512	75	19
19	718	738	242	447	664	439	0	0
20	317	356	765	565	84	76	588	757
21	237	528	1077	605	401	382	565	765
22	730	610	4	4	605	1077	358	6
23	917	471	0	0	610	730	189	515
24	813	562	863	0	471	917	0	668
25	295	548	0	0	548	295	0	0
26	264	419	0	0	415	226	4	38
27	188	320	147	165	285	164	116	87
501	1188	1824	356	453	2258	1434	107	198
502	1430	2254	437	280	2133	1652	933	747
503	1657	2138	469	486	2978	1718	726	1488
504	1718	2978	854	926	2733	2884	1483	0
505	2884	2733	701	780	2058	1961	399	568
506	1961	2058	751	941	1950	1805	771	629
507	1805	1950	24	62	1327	1387	653	410
508	1387	1327	0	0	1179	1320	257	176
509	1320	1179	258	369	694	485	638	877
510	485	694	0	0	429	524	457	153
511	524	429	51	25	380	501	0	0
512	501	380	95	110	327	433	0	0
513	0	0	877	638	584	747	223	299
514	366	256	272	107	284	549	58	68
515	0	0	299	223	130	211	245	240
516	0	0	211	130	55	75	125	186
517	152	177	3	39	186	125	0	0
518	474	442	177	152	498	568	29	16
519	629	771	477	249	603	689	0	0
520	429	399	720	899	112	153	941	751
521	388	285	975	1151	408	517	902	720
522	643	1146	1	1	1152	975	336	10
523	787	1033	0	0	1146	643	566	823
524	589	1079	604	0	1033	787	0	360
525	501	380	0	0	380	501	0	0
526	461	327	0	0	300	441	27	20
527	362	274	136	140	250	334	44	44

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File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2040 turns.rpt 8/31/2023, 3:53:54 PM

| Model Future Year Approach & Departure Volumes 03:38p Aug 31, 2023 |

Node	North Leg App	North Leg Dep	East Leg App	East Leg Dep	South Leg App	South Leg Dep	West Leg App	West Leg Dep
1	1812	904	532	266	1177	2302	315	364
2	2302	1176	368	330	1363	2571	876	832
3	2572	1364	303	278	2868	2348	1047	2800
4	2348	2868	465	810	2745	3296	1416	0
5	3294	2745	680	844	2394	2419	151	511
6	2418	2394	1154	823	2239	2466	873	1001
7	2466	2239	32	30	2032	1905	308	664
8	1904	2032	0	0	1966	1463	206	581
9	1463	1966	921	373	820	496	790	1159
10	496	820	0	0	673	308	347	388
11	308	673	39	14	634	294	0	0
12	294	634	224	104	470	250	0	0
13	0	0	1160	790	560	1160	282	52
14	1085	319	384	132	336	1267	41	128
15	0	0	51	262	306	42	166	219
16	0	0	78	288	496	398	199	87
17	214	76	36	20	68	222	0	0
18	681	426	74	214	498	669	75	19
19	1001	873	309	644	776	569	0	0
20	333	352	1143	801	84	76	823	1154
21	319	614	1738	1029	658	738	828	1162
22	1391	1035	5	4	1029	1738	358	6
23	1620	630	0	0	1035	1391	297	931
24	1237	989	1503	0	630	1620	0	761
25	294	634	0	0	634	294	0	0
26	250	470	0	0	466	212	4	38
27	141	295	159	175	241	121	136	86
501	1245	1750	360	437	2184	1532	203	273
502	1528	2181	461	339	1924	1856	1063	600
503	1861	1929	446	453	3338	1792	557	2028
504	1792	3338	644	621	3091	3244	1676	0
505	3244	3091	723	883	2359	2209	493	636
506	2209	2359	1052	1455	2551	2243	1116	871
507	2243	2551	29	70	1843	1784	807	517
508	1784	1843	0	0	1536	1657	503	323
509	1657	1536	441	713	687	486	1146	1196
510	486	687	0	0	471	605	538	203
511	606	471	51	25	422	583	0	0
512	583	422	141	166	338	474	0	0
513	0	0	1196	1146	1121	1049	158	280
514	668	793	322	188	821	851	139	118
515	0	0	280	158	211	317	335	351
516	0	0	317	211	416	496	203	229

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517	230	220	3	39	229	203	0	0
518	733	735	220	230	845	846	29	16
519	871	1116	667	353	844	913	0	0
520	447	416	996	1387	111	153	1454	1052
521	579	358	1479	2039	786	839	1407	1015
522	1148	2036	2	1	2040	1479	336	10
523	1354	1286	0	0	2036	1148	605	1561
524	936	1452	982	0	1286	1354	0	398
525	583	422	0	0	422	583	0	0
526	502	338	0	0	311	482	27	20
527	336	245	163	156	215	294	53	72

Computed Approach & Departure Volumes 03:38p Aug 31, 2023

Node	North Leg App	North Leg Dep	East Leg App	East Leg Dep	South Leg App	South Leg Dep	West Leg App	West Leg Dep
1	1812	904	532	266	1177	2302	315	364
2	2302	1176	368	330	1363	2571	876	832
3	2572	1364	303	278	2868	2348	1047	2800
4	2348	2868	465	810	2745	3296	1416	0
5	3294	2745	680	844	2394	2419	151	511
6	2418	2394	1154	823	2239	2466	873	1001
7	2466	2239	32	30	2032	1905	308	664
8	1904	2032	0	0	1966	1463	206	581
9	1463	1966	921	373	820	496	790	1159
10	496	820	0	0	673	308	347	388
11	308	673	39	14	634	294	0	0
12	294	634	224	104	470	250	0	0
13	0	0	1160	790	560	1160	282	52
14	1085	319	384	132	336	1267	41	128
15	0	0	51	262	306	42	166	219
16	0	0	347	362	263	287	326	287
17	214	76	36	20	68	222	0	0
18	681	426	74	214	498	669	75	19
19	1001	873	309	644	776	569	0	0
20	333	352	1143	801	84	76	823	1154
21	319	614	1738	1029	658	738	828	1162
22	1391	1035	5	4	1029	1738	358	6
23	1620	630	0	0	1035	1391	297	931
24	1237	989	1503	0	630	1620	0	761
25	294	634	0	0	634	294	0	0
26	250	470	0	0	466	212	4	38
27	141	295	159	175	241	121	136	86
501	1245	1750	360	437	2184	1532	203	273
502	1528	2181	461	339	1924	1856	1063	600
503	1861	1929	446	453	3338	1792	557	2028

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504	1792	3338	644	621	3091	3244	1676	0
505	3244	3091	723	883	2359	2209	493	636
506	2209	2359	1052	1455	2551	2243	1116	871
507	2243	2551	29	70	1843	1784	807	517
508	1784	1843	0	0	1536	1657	503	323
509	1657	1536	441	713	687	486	1146	1196
510	486	687	0	0	471	605	538	203
511	606	471	51	25	422	583	0	0
512	583	422	141	166	338	474	0	0
513	0	0	1196	1146	1121	1049	158	280
514	668	793	322	188	821	851	139	118
515	0	0	280	158	211	317	335	351
516	0	0	317	211	416	496	203	229
517	230	220	3	39	229	203	0	0
518	733	735	220	230	845	846	29	16
519	871	1116	667	353	844	913	0	0
520	447	416	996	1387	111	153	1454	1052
521	579	358	1479	2039	786	839	1407	1015
522	1148	2036	2	1	2040	1479	336	10
523	1354	1286	0	0	2036	1148	605	1561
524	936	1452	982	0	1286	1354	0	398
525	583	422	0	0	422	583	0	0
526	502	338	0	0	311	482	27	20
527	336	245	163	156	215	294	53	72

Nodes Report 03:38p Aug 31, 2023

Project Nodes

Node	North Link	East Link	South Link	West Link
1				
2				
3				
4				
5				
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Appendix E: VMT Estimation Scripts

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```
;--------------------------------------------------------------------------
;
; Step 1: Skim the loaded networks for each period to get TAZ-to-TAZ
;         distances. Use half of the shortest centroid connector
;         length for the intrazonal distance. Adjust gateway trip lengths.
;
;         Inputs: loaded networks and final OD tables for each period.
;         Outputs: total TAZ-to-TAZ VMT by DA, SR, C2 and C3 for each period.
;
;--------------------------------------------------------------------------
; Input networks
;--------------------------------------------------------------------------
AMNET='.\Loaded_Networks\2040A3VS.NET'
MIDDAYNET='.\Loaded_Networks\2040MDVS.NET'
PMNET='.\Loaded_Networks\2040P3V.NET'
EVVNET='.\Loaded_Networks\2040EVV.NET'
;--------------------------------------------------------------------------
; Input OD
;--------------------------------------------------------------------------
AMOD='.\OD_Tables\2040A3VS.MAT'
MDOD='.\OD_Tables\2040MDVS.MAT'
PMOD='.\OD_Tables\2040P3V.MAT'
EVVOD='.\OD_Tables\2040EVV.MAT'
;--------------------------------------------------------------------------
; Output distance skims
;--------------------------------------------------------------------------
AMDIST='.\Temp_Files\2040A3VS_Distance.MAT'
MDDIST='.\Temp_Files\2040MDVS_Distance.MAT'
PMDIST='.\Temp_Files\2040P3V_Distance.MAT'
EVVDIST='.\Temp_Files\2040EVV_Distance.MAT'
;--------------------------------------------------------------------------
; Output VMT matrices
;--------------------------------------------------------------------------
AMVMT='2040A3VS_vmt_6_Class.MAT'
MDVMT='2040MDVS_VMT_6_Class.MAT'
PMVMT='2040P3V_VMT_6_Class.MAT'
EVVVMT='2040EVV_VMT_6_Class.MAT'
;
AMVMTSIMP='2040A3VS_vmt_4_Class.MAT'
MDVMTSIMP='2040MDVS_VMT_4_Class.MAT'
PMVMTSIMP='2040P3V_VMT_4_Class.MAT'
EVVVMTSIMP='2040EVV_VMT_4_Class.MAT'
;--------------------------------------------------------------------------
; Temp Output VMT matrices files
;--------------------------------------------------------------------------
TEMP='.\Temp_Files\TEMP.MAT'
TEMP2='.\Temp_Files\TEMP2.MAT'
;
;
;
;--------------------------------------------------------------------------
; Run a distance skim for each time period
;--------------------------------------------------------------------------
; AM peak period enterzonal distance skim
RUN PGM=HWYLOAD
FILEI NETI = "@AMNET@"
FILEO MATO[1] = "@TEMP@",
 MO=1 FORMAT=tpp                                  ; output skim matrix
 PHASE=LINKREAD                                   ; define link groups
  IF (LI.HOVLINK=0) ADDTOGROUP=1                  ; no restriction
  IF (LI.HOVLINK=1) ADDTOGROUP=2                  ; walk
```

```
   IF (LI.HOVLINK=2) ADDTOGROUP=3                    ; HOV lanes
   IF (LI.HOVLINK=3) ADDTOGROUP=4                    ; HOV bypassses
   IF (LI.CAPCLASS=99) ADDTOGROUP=5                  ; switched off links
  endphase
  PHASE=ILOOP                                        ; skim path building
     PATHLOAD PATH=li.TIME_1,EXCLUDEGRP=2,5,         ; pathload without HOV links
        MW[1]=PATHTRACE(LI.DISTANCE),SELECTGROUP=1   ; select links used by all
veh
  endphase
ENDRUN
; intrazonals - fill the diagonal element with half of the rowmin value
RUN PGM=MATRIX
FILEI MATI[1] = "@TEMP@"
FILEO MATO[1] = "@TEMP2@",
 MO=1
 MW[1]=MI.1.1
 iz1 = lowest(1,1,0.5,32700)*0.5
 jloop j=i
    mw[1] = iz1
 endjloop
ENDRUN
;
; Adjust gateway distnaces
;(Note: these values come from the 1/5/2021 Central El Dorado Hills Specific
Plan VMT Analysis memorandom)
RUN PGM=MATRIX
FILEI MATI[1] = "@TEMP2@"
FILEO MATO[1] = "@AMDIST@",
 MO=1
 MW[1]=MI.1.1
;
;Adjust external to internal (XI) gateway distance
 IF (I=650) mw[1]=mw[1]+13.08
 IF (I=651) mw[1]=mw[1]+3.96
 IF (I=652) mw[1]=mw[1]+0
 IF (I=653) mw[1]=mw[1]+20.39
 IF (I=654) mw[1]=mw[1]+10.38
 IF (I=655) mw[1]=mw[1]+8.80
 IF (I=656) mw[1]=mw[1]+0
 IF (I=657) mw[1]=mw[1]+6.4
 IF (I=658) mw[1]=mw[1]+0
 IF (I=659) mw[1]=mw[1]+0
 IF (I=660) mw[1]=mw[1]+7.19
 IF (I=661) mw[1]=mw[1]+8.54
 IF (I=662) mw[1]=mw[1]+6.14
 IF (I=663) mw[1]=mw[1]+5.41
 IF (I=664) mw[1]=mw[1]+12.66
 IF (I=665) mw[1]=mw[1]+5.17
 IF (I=666) mw[1]=mw[1]+7.44
 IF (I=667) mw[1]=mw[1]+0
 IF (I=668) mw[1]=mw[1]+14.21
 IF (I=669) mw[1]=mw[1]+0
 IF (I=670) mw[1]=mw[1]+0
 IF (I=671) mw[1]=mw[1]+16.28
 IF (I=672) mw[1]=mw[1]+0
 IF (I=673) mw[1]=mw[1]+3.82
 IF (I=674) mw[1]=mw[1]+18.38
;
;Adjust internal to external (IX) gateway distance
 jloop j=650
    mw[1] = mw[1]+12.41
```

```
 endjloop
;
 jloop j=651
    mw[1] = mw[1]+4.11
 endjloop
;
 jloop j=652
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=653
    mw[1] = mw[1]+31.33
 endjloop
;
 jloop j=654
    mw[1] = mw[1]+11.07
 endjloop
;
 jloop j=655
    mw[1] = mw[1]+11.32
 endjloop
;
 jloop j=656
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=657
    mw[1] = mw[1]+6.91
 endjloop
;
 jloop j=658
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=659
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=660
    mw[1] = mw[1]+7.73
 endjloop
;
 jloop j=661
    mw[1] = mw[1]+8.88
 endjloop
;
 jloop j=662
    mw[1] = mw[1]+5.47
 endjloop
;
 jloop j=663
    mw[1] = mw[1]+8.16
 endjloop
;
 jloop j=664
    mw[1] = mw[1]+10.17
 endjloop
;
 jloop j=665
    mw[1] = mw[1]+5.43
 endjloop
```

```
182   ;
183    jloop j=666
184       mw[1] = mw[1]+6.97
185    endjloop
186   ;
187    jloop j=667
188       mw[1] = mw[1]+0
189    endjloop
190   ;
191    jloop j=668
192       mw[1] = mw[1]+15.96
193    endjloop
194   ;
195    jloop j=669
196       mw[1] = mw[1]+0
197    endjloop
198   ;
199    jloop j=670
200       mw[1] = mw[1]+0
201    endjloop
202   ;
203    jloop j=671
204       mw[1] = mw[1]+18.61
205    endjloop
206   ;
207    jloop j=672
208       mw[1] = mw[1]+0
209    endjloop
210   ;
211    jloop j=673
212       mw[1] = mw[1]+3.73
213    endjloop
214   ;
215    jloop j=674
216       mw[1] = mw[1]+19.21
217    endjloop
218   ;
219   ENDRUN
220   ;
221   ;
222   ; mid day enterzonal distance skim
223   RUN PGM=HWYLOAD
224   FILEI NETI = "@MIDDAYNET@"
225   FILEO MATO[1] = "@TEMP@",
226    MO=1 FORMAT=tpp                                  ; output skim matrix
227    PHASE=LINKREAD                                   ; define link groups
228     IF (LI.HOVLINK=0) ADDTOGROUP=1                  ; no restriction
229     IF (LI.HOVLINK=1) ADDTOGROUP=2                  ; walk
230     IF (LI.HOVLINK=2) ADDTOGROUP=3                  ; HOV lanes
231     IF (LI.HOVLINK=3) ADDTOGROUP=4                  ; HOV bypassses
232     IF (LI.CAPCLASS=99) ADDTOGROUP=5                ; switched off links
233    endphase
234    PHASE=ILOOP                                      ; skim path building
235       PATHLOAD PATH=li.TIME_1,EXCLUDEGRP=2,5,       ; pathload without HOV links
236          MW[1]=PATHTRACE(LI.DISTANCE),SELECTGROUP=1 ; select links used by all
    veh
237    endphase
238   ENDRUN
239   ; intrazonals - fill the diagonal element with half of the rowmin value
240   RUN PGM=MATRIX
241   FILEI MATI[1] = "@TEMP@"
```

```
  FILEO MATO[1] = "@TEMP2@",
   MO=1
   MW[1]=MI.1.1
   iz1 = lowest(1,1,0.5,32700)*0.5
   jloop j=i
      mw[1] = iz1
   endjloop
  ENDRUN
  ;
  ; Adjust gateway distnaces
  ;(Note: these values come from the 1/5/2021 Central El Dorado Hills Specific
  Plan VMT Analysis memorandom)
  RUN PGM=MATRIX
  FILEI MATI[1] = "@TEMP2@"
  FILEO MATO[1] = "@MDDIST@",
   MO=1
   MW[1]=MI.1.1
  ;
  ;Adjust external to internal (XI) gateway distance
   IF (I=650) mw[1]=mw[1]+13.08
   IF (I=651) mw[1]=mw[1]+3.96
   IF (I=652) mw[1]=mw[1]+0
   IF (I=653) mw[1]=mw[1]+20.39
   IF (I=654) mw[1]=mw[1]+10.38
   IF (I=655) mw[1]=mw[1]+8.80
   IF (I=656) mw[1]=mw[1]+0
   IF (I=657) mw[1]=mw[1]+6.4
   IF (I=658) mw[1]=mw[1]+0
   IF (I=659) mw[1]=mw[1]+0
   IF (I=660) mw[1]=mw[1]+7.19
   IF (I=661) mw[1]=mw[1]+8.54
   IF (I=662) mw[1]=mw[1]+6.14
   IF (I=663) mw[1]=mw[1]+5.41
   IF (I=664) mw[1]=mw[1]+12.66
   IF (I=665) mw[1]=mw[1]+5.17
   IF (I=666) mw[1]=mw[1]+7.44
   IF (I=667) mw[1]=mw[1]+0
   IF (I=668) mw[1]=mw[1]+14.21
   IF (I=669) mw[1]=mw[1]+0
   IF (I=670) mw[1]=mw[1]+0
   IF (I=671) mw[1]=mw[1]+16.28
   IF (I=672) mw[1]=mw[1]+0
   IF (I=673) mw[1]=mw[1]+3.82
   IF (I=674) mw[1]=mw[1]+18.38
  ;
  ;Adjust internal to external (IX) gateway distance
   jloop j=650
      mw[1] = mw[1]+12.41
   endjloop
  ;
   jloop j=651
      mw[1] = mw[1]+4.11
   endjloop
  ;
   jloop j=652
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=653
      mw[1] = mw[1]+31.33
   endjloop
```

```
302   ;
303    jloop j=654
304       mw[1] = mw[1]+11.07
305    endjloop
306   ;
307    jloop j=655
308       mw[1] = mw[1]+11.32
309    endjloop
310   ;
311    jloop j=656
312       mw[1] = mw[1]+0
313    endjloop
314   ;
315    jloop j=657
316       mw[1] = mw[1]+6.91
317    endjloop
318   ;
319    jloop j=658
320       mw[1] = mw[1]+0
321    endjloop
322   ;
323    jloop j=659
324       mw[1] = mw[1]+0
325    endjloop
326   ;
327    jloop j=660
328       mw[1] = mw[1]+7.73
329    endjloop
330   ;
331    jloop j=661
332       mw[1] = mw[1]+8.88
333    endjloop
334   ;
335    jloop j=662
336       mw[1] = mw[1]+5.47
337    endjloop
338   ;
339    jloop j=663
340       mw[1] = mw[1]+8.16
341    endjloop
342   ;
343    jloop j=664
344       mw[1] = mw[1]+10.17
345    endjloop
346   ;
347    jloop j=665
348       mw[1] = mw[1]+5.43
349    endjloop
350   ;
351    jloop j=666
352       mw[1] = mw[1]+6.97
353    endjloop
354   ;
355    jloop j=667
356       mw[1] = mw[1]+0
357    endjloop
358   ;
359    jloop j=668
360       mw[1] = mw[1]+15.96
361    endjloop
362   ;
```

```
 jloop j=669
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=670
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=671
    mw[1] = mw[1]+18.61
 endjloop
;
 jloop j=672
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=673
    mw[1] = mw[1]+3.73
 endjloop
;
 jloop j=674
    mw[1] = mw[1]+19.21
 endjloop
;
ENDRUN
;
;
; PM peak period enterzonal distance skim
RUN PGM=HWYLOAD
FILEI NETI = "@PMNET@"
FILEO MATO[1] = "@TEMP@",
 MO=1 FORMAT=tpp                                    ; output skim matrix
 PHASE=LINKREAD                                     ; define link groups
  IF (LI.HOVLINK=0) ADDTOGROUP=1                    ; no restriction
  IF (LI.HOVLINK=1) ADDTOGROUP=2                    ; walk
  IF (LI.HOVLINK=2) ADDTOGROUP=3                    ; HOV lanes
  IF (LI.HOVLINK=3) ADDTOGROUP=4                    ; HOV bypassses
  IF (LI.CAPCLASS=99) ADDTOGROUP=5                  ; switched off links
 endphase
 PHASE=ILOOP                                        ; skim path building
    PATHLOAD PATH=li.TIME_1,EXCLUDEGRP=2,5,         ; pathload without HOV links
       MW[1]=PATHTRACE(LI.DISTANCE),SELECTGROUP=1   ; select links used by all
veh
 endphase
ENDRUN
; intrazonals - fill the diagonal element with half of the rowmin value
RUN PGM=MATRIX
FILEI MATI[1] = "@TEMP@"
FILEO MATO[1] = "@TEMP2@",
 MO=1
 MW[1]=MI.1.1
 iz1 = lowest(1,1,0.5,32700)*0.5
 jloop j=i
    mw[1] = iz1
 endjloop
ENDRUN
;
; Adjust gateway distnaces
;(Note: these values come from the 1/5/2021 Central El Dorado Hills Specific
Plan VMT Analysis memorandom)
RUN PGM=MATRIX
```

```
  FILEI MATI[1] = "@TEMP2@"
  FILEO MATO[1] = "@PMDIST@",
   MO=1
   MW[1]=MI.1.1
  ;
  ;Adjust external to internal (XI) gateway distance
   IF (I=650) mw[1]=mw[1]+13.08
   IF (I=651) mw[1]=mw[1]+3.96
   IF (I=652) mw[1]=mw[1]+0
   IF (I=653) mw[1]=mw[1]+20.39
   IF (I=654) mw[1]=mw[1]+10.38
   IF (I=655) mw[1]=mw[1]+8.80
   IF (I=656) mw[1]=mw[1]+0
   IF (I=657) mw[1]=mw[1]+6.4
   IF (I=658) mw[1]=mw[1]+0
   IF (I=659) mw[1]=mw[1]+0
   IF (I=660) mw[1]=mw[1]+7.19
   IF (I=661) mw[1]=mw[1]+8.54
   IF (I=662) mw[1]=mw[1]+6.14
   IF (I=663) mw[1]=mw[1]+5.41
   IF (I=664) mw[1]=mw[1]+12.66
   IF (I=665) mw[1]=mw[1]+5.17
   IF (I=666) mw[1]=mw[1]+7.44
   IF (I=667) mw[1]=mw[1]+0
   IF (I=668) mw[1]=mw[1]+14.21
   IF (I=669) mw[1]=mw[1]+0
   IF (I=670) mw[1]=mw[1]+0
   IF (I=671) mw[1]=mw[1]+16.28
   IF (I=672) mw[1]=mw[1]+0
   IF (I=673) mw[1]=mw[1]+3.82
   IF (I=674) mw[1]=mw[1]+18.38
  ;
  ;Adjust internal to external (IX) gateway distance
   jloop j=650
      mw[1] = mw[1]+12.41
   endjloop
  ;
   jloop j=651
      mw[1] = mw[1]+4.11
   endjloop
  ;
   jloop j=652
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=653
      mw[1] = mw[1]+31.33
   endjloop
  ;
   jloop j=654
      mw[1] = mw[1]+11.07
   endjloop
  ;
   jloop j=655
      mw[1] = mw[1]+11.32
   endjloop
  ;
   jloop j=656
      mw[1] = mw[1]+0
   endjloop
  ;
```

```
 jloop j=657
    mw[1] = mw[1]+6.91
 endjloop
;
 jloop j=658
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=659
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=660
    mw[1] = mw[1]+7.73
 endjloop
;
 jloop j=661
    mw[1] = mw[1]+8.88
 endjloop
;
 jloop j=662
    mw[1] = mw[1]+5.47
 endjloop
;
 jloop j=663
    mw[1] = mw[1]+8.16
 endjloop
;
 jloop j=664
    mw[1] = mw[1]+10.17
 endjloop
;
 jloop j=665
    mw[1] = mw[1]+5.43
 endjloop
;
 jloop j=666
    mw[1] = mw[1]+6.97
 endjloop
;
 jloop j=667
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=668
    mw[1] = mw[1]+15.96
 endjloop
;
 jloop j=669
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=670
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=671
    mw[1] = mw[1]+18.61
 endjloop
;
 jloop j=672
```

```
      mw[1] = mw[1]+0
    endjloop
  ;
    jloop j=673
      mw[1] = mw[1]+3.73
    endjloop
  ;
    jloop j=674
      mw[1] = mw[1]+19.21
    endjloop
  ;
  ENDRUN
  ;
  ;
  ; Evening enterzonal distance skim
  RUN PGM=HWYLOAD
  FILEI NETI = "@EVVNET@"
  FILEO MATO[1] = "@TEMP@",
    MO=1 FORMAT=tpp                                    ; output skim matrix
    PHASE=LINKREAD                                     ; define link groups
     IF (LI.HOVLINK=0) ADDTOGROUP=1                    ; no restriction
     IF (LI.HOVLINK=1) ADDTOGROUP=2                    ; walk
     IF (LI.HOVLINK=2) ADDTOGROUP=3                    ; HOV lanes
     IF (LI.HOVLINK=3) ADDTOGROUP=4                    ; HOV bypassses
     IF (LI.CAPCLASS=99) ADDTOGROUP=5                  ; switched off links
    endphase
    PHASE=ILOOP                                        ; skim path building
      PATHLOAD PATH=li.TIME_1,EXCLUDEGRP=2,5,          ; pathload without HOV links
        MW[1]=PATHTRACE(LI.DISTANCE),SELECTGROUP=1     ; select links used by all
  veh
    endphase
  ENDRUN
  ; intrazonals - fill the diagonal element with half of the rowmin value
  RUN PGM=MATRIX
  FILEI MATI[1] = "@TEMP@"
  FILEO MATO[1] = "@TEMP2@",
    MO=1
    MW[1]=MI.1.1
    iz1 = lowest(1,1,0.5,32700)*0.5
    jloop j=i
      mw[1] = iz1
    endjloop
  ENDRUN
  ;
  ; Adjust gateway distnaces
  ;(Note: these values come from the 1/5/2021 Central El Dorado Hills Specific
  Plan VMT Analysis memorandom)
  RUN PGM=MATRIX
  FILEI MATI[1] = "@TEMP2@"
  FILEO MATO[1] = "@EVVDIST@",
    MO=1
    MW[1]=MI.1.1
  ;
  ;Adjust external to internal (XI) gateway distance
    IF (I=650) mw[1]=mw[1]+13.08
    IF (I=651) mw[1]=mw[1]+3.96
    IF (I=652) mw[1]=mw[1]+0
    IF (I=653) mw[1]=mw[1]+20.39
    IF (I=654) mw[1]=mw[1]+10.38
    IF (I=655) mw[1]=mw[1]+8.80
    IF (I=656) mw[1]=mw[1]+0
```

```
   IF (I=657) mw[1]=mw[1]+6.4
   IF (I=658) mw[1]=mw[1]+0
   IF (I=659) mw[1]=mw[1]+0
   IF (I=660) mw[1]=mw[1]+7.19
   IF (I=661) mw[1]=mw[1]+8.54
   IF (I=662) mw[1]=mw[1]+6.14
   IF (I=663) mw[1]=mw[1]+5.41
   IF (I=664) mw[1]=mw[1]+12.66
   IF (I=665) mw[1]=mw[1]+5.17
   IF (I=666) mw[1]=mw[1]+7.44
   IF (I=667) mw[1]=mw[1]+0
   IF (I=668) mw[1]=mw[1]+14.21
   IF (I=669) mw[1]=mw[1]+0
   IF (I=670) mw[1]=mw[1]+0
   IF (I=671) mw[1]=mw[1]+16.28
   IF (I=672) mw[1]=mw[1]+0
   IF (I=673) mw[1]=mw[1]+3.82
   IF (I=674) mw[1]=mw[1]+18.38
  ;
  ;Adjust internal to external (IX) gateway distance
   jloop j=650
      mw[1] = mw[1]+12.41
   endjloop
  ;
   jloop j=651
      mw[1] = mw[1]+4.11
   endjloop
  ;
   jloop j=652
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=653
      mw[1] = mw[1]+31.33
   endjloop
  ;
   jloop j=654
      mw[1] = mw[1]+11.07
   endjloop
  ;
   jloop j=655
      mw[1] = mw[1]+11.32
   endjloop
  ;
   jloop j=656
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=657
      mw[1] = mw[1]+6.91
   endjloop
  ;
   jloop j=658
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=659
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=660
```

```
664         mw[1] = mw[1]+7.73
665       endjloop
666     ;
667       jloop j=661
668         mw[1] = mw[1]+8.88
669       endjloop
670     ;
671       jloop j=662
672         mw[1] = mw[1]+5.47
673       endjloop
674     ;
675       jloop j=663
676         mw[1] = mw[1]+8.16
677       endjloop
678     ;
679       jloop j=664
680         mw[1] = mw[1]+10.17
681       endjloop
682     ;
683       jloop j=665
684         mw[1] = mw[1]+5.43
685       endjloop
686     ;
687       jloop j=666
688         mw[1] = mw[1]+6.97
689       endjloop
690     ;
691       jloop j=667
692         mw[1] = mw[1]+0
693       endjloop
694     ;
695       jloop j=668
696         mw[1] = mw[1]+15.96
697       endjloop
698     ;
699       jloop j=669
700         mw[1] = mw[1]+0
701       endjloop
702     ;
703       jloop j=670
704         mw[1] = mw[1]+0
705       endjloop
706     ;
707       jloop j=671
708         mw[1] = mw[1]+18.61
709       endjloop
710     ;
711       jloop j=672
712         mw[1] = mw[1]+0
713       endjloop
714     ;
715       jloop j=673
716         mw[1] = mw[1]+3.73
717       endjloop
718     ;
719       jloop j=674
720         mw[1] = mw[1]+19.21
721       endjloop
722     ;
723     ENDRUN
724     ;
```

```
;-------------------------------------------------------------------------------
; Combine distance skimes and OD DAta to get VMT (6 classes)
;-------------------------------------------------------------------------------
/*
; AM peak period VMT
RUN PGM=MATRIX
FILEI MATI[1] = "@AMOD@"                                ; OD Tables
; There are 6 tables in the OD file
;   1 = drive alone, no HOV lane use
;   2 = shared ride, no HOV lane use
;   3 = drive alone, with HOV lane use
;   4 = shared ride, with HOV lane use
;   5 = comercial vehicle 2 axles
;   6 = comercial vehicle 3+ axles
FILEI MATI[2] = "@AMDIST@"
; Note: Gateway TAZs are 650-674
FILEO MATO[1] = "@AMVMT@", MO=1-6, NAME= DA, SR, DA_HOV, SR_HOV, C2, C3
  MW[11]=MI.1.1
  MW[12]=MI.1.2
  MW[13]=MI.1.3
  MW[14]=MI.1.4
  MW[15]=MI.1.5
  MW[16]=MI.1.6
  MW[17]=MI.2.1
;
  JLOOP
    MW[1]=MW[11]*MW[17]
    MW[2]=MW[12]*MW[17]
    MW[3]=MW[13]*MW[17]
    MW[4]=MW[14]*MW[17]
    MW[5]=MW[15]*MW[17]
    MW[6]=MW[16]*MW[17]
  ENDJLOOP
ENDRUN
;
;
; Mid day period VMT
RUN PGM=MATRIX
FILEI MATI[1] = "@MDOD@"                                ; OD Tables
; There are 6 tables in the OD file
;   1 = drive alone, no HOV lane use
;   2 = shared ride, no HOV lane use
;   3 = drive alone, with HOV lane use
;   4 = shared ride, with HOV lane use
;   5 = comercial vehicle 2 axles
;   6 = comercial vehicle 3+ axles
FILEI MATI[2] = "@MDDIST@"
; Note: Gateway TAZs are 650-674
FILEO MATO[1] = "@MDVMT@", MO=1-6, NAME= DA, SR, DA_HOV, SR_HOV, C2, C3
  MW[11]=MI.1.1
  MW[12]=MI.1.2
  MW[13]=MI.1.3
  MW[14]=MI.1.4
  MW[15]=MI.1.5
  MW[16]=MI.1.6
  MW[17]=MI.2.1
;
  JLOOP
    MW[1]=MW[11]*MW[17]
    MW[2]=MW[12]*MW[17]
    MW[3]=MW[13]*MW[17]
```

```
      MW[4]=MW[14]*MW[17]
      MW[5]=MW[15]*MW[17]
      MW[6]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ;
  ; PM peak period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@PMOD@"                                ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@PMDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@PMVMT@", MO=1-6, NAME= DA, SR, DA_HOV, SR_HOV, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
      MW[1]=MW[11]*MW[17]
      MW[2]=MW[12]*MW[17]
      MW[3]=MW[13]*MW[17]
      MW[4]=MW[14]*MW[17]
      MW[5]=MW[15]*MW[17]
      MW[6]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ;
  ; Evening period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@EVVOD@"                                ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@EVVDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@EVVVMT@", MO=1-6, NAME= DA, SR, DA_HOV, SR_HOV, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
```

```
      MW[1]=MW[11]*MW[17]
      MW[2]=MW[12]*MW[17]
      MW[3]=MW[13]*MW[17]
      MW[4]=MW[14]*MW[17]
      MW[5]=MW[15]*MW[17]
      MW[6]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  */
  ;
  ;-------------------------------------------------------------------------------
  ; ombine distance skimes and OD DAta to get VMT.
  ; Simplify VMT tables to 4 classes: DA, SR, C2, and C3
  ;-------------------------------------------------------------------------------
  ; AM peak period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@AMOD@"                              ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@AMDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@AMVMTSIMP@", MO=1-4, NAME= DA, SR, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
      MW[1]=MW[11]*MW[17]+MW[13]*MW[17]
      MW[2]=MW[12]*MW[17]+MW[14]*MW[17]
      MW[3]=MW[15]*MW[17]
      MW[4]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ; Mid day period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@MDOD@"                              ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@MDDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@MDVMTSIMP@", MO=1-4, NAME= DA, SR, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
```

```
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
      MW[1]=MW[11]*MW[17]+MW[13]*MW[17]
      MW[2]=MW[12]*MW[17]+MW[14]*MW[17]
      MW[3]=MW[15]*MW[17]
      MW[4]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ; PM peak period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@PMOD@"                              ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@PMDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@PMVMTSIMP@", MO=1-4, NAME= DA, SR, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
      MW[1]=MW[11]*MW[17]+MW[13]*MW[17]
      MW[2]=MW[12]*MW[17]+MW[14]*MW[17]
      MW[3]=MW[15]*MW[17]
      MW[4]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ; Evening period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@EVVOD@"                              ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@EVVDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@EVVVMTSIMP@", MO=1-4, NAME= DA, SR, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
```

```
969     JLOOP
970       MW[1]=MW[11]*MW[17]+MW[13]*MW[17]
971       MW[2]=MW[12]*MW[17]+MW[14]*MW[17]
972       MW[3]=MW[15]*MW[17]
973       MW[4]=MW[16]*MW[17]
974     ENDJLOOP
975   ENDRUN
976   ;
977   ;
978   ;
```

```
;-------------------------------------------------------------------------
;
; Step 2: Determine trips by purpose for each time period.
;
;         Inputs: PA tables for HBW, HBS, HBSc, HBO, WO, OO, Commercial,
;                 transit access, and Thru trips by class
;
;         Output for each period: Production to Attraction (PA) and
;                 Attraction to Production (AP) trip tables for
;                    (File 1) drive alone (HBW, HBS, HBSc, HBO, WO,and OO)
;                    (File 2) shared ride (HBW, HBS, HBSc, HBO, WO,and OO)
;                    (File 3) C2
;                    (File 4) C3
;        these are then  further processed to multiclass OD tables and
;        multiclass OD percentage tables.
;
;        Combine multiclass PA and AP tables to true OD tables for C2, C3, and
;        by purpose for drive alone and shared ride. Then estiumate the
;        percentage of each trip...all by period.
;
;        Inputs: PA and AP tables by purpose for DA, SR, C2 and C3 for each
;                 time period.
;        Outputs: Fraction of trips for DA (by purpose), SR (by purpose)
;                  C2, and C3.
;        These outputs from step 2 will be combined with VMT by class from
;        step 1 to estimate total VMT by trip purpose in step 3.
;
;-------------------------------------------------------------------------
; Note This is addopted from the script that parse the daily PA's to OD pairs
; by time-of-day (i.e., "EDC_CAT_082118C\APPLICATIONS1\03_ASSIGN\3AMAT00C.S")
; and from 3AMAT00D.S which is under the first highway assignment step in
; the assenment portion of the catalog.
;-------------------------------------------------------------------------
;    We have TAZ-to-TAZ VMT for DA, SR C2 and C3.
;
;   For residential we want want HBW, HBS, HBSc, and HBO trips for DA and SR.
;   For office we want HBW.
;   To derive percentages, we also want total OD pairs across HBW, HBS, HBS, HBO,
;   WO, OO, C2, and C3.
;-------------------------------------------------------------------------
;-------------------------------------------------------------------------
; Input daily PA tables (sub tables in parentheses)
;-------------------------------------------------------------------------
HBW='.\PA_Tables\2040HBWM.MAT'    ;home based work
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
HBS='.\PA_Tables\2040HBSM.MAT'    ;home based shop
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
HBSC='.\PA_Tables\2040HSCM.MAT'   ;home based school
;                         (1)m1, (2)m2 ???
HBO='.\PA_Tables\2040HBOM.MAT'     ;home based other
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
WO='.\PA_Tables\2040WOM.MAT'       ;work-other
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
OO='.\PA_Tables\2040OOM.MAT'       ;other-other
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
NWTD='.\PA_Tables\2040NWTD.MAT'   ;used for commercial vehicle trips (???)
```

```
;                       (1)HBS, (2)HBSC, (3)HBO, (4)WO, (5)OO,
;                       (6)C2, (7)C3
TDVT='.\PA_Tables\TDVT.MAT'       ;transit access
;                       (1)HBW DA, (2)HBW SR, (3)HBS DA, (4)HBS SR,
;                       (5)HBO DA, (6)HBO SR, (7)WO DA, (8)WO SR,
;                       (9)OO DA, (10)OO SR)
THRU='.\PA_Tables\2040THRU.MAT'   ;through trips
;                       (1)auto, (2)C3
;
;-------------------------------------------------------------------------------
; Temp output trips by purpose
;-------------------------------------------------------------------------------
; AM Peak Period
DA_AM='.\Temp_Files\DA_AM_Trips_by_Purpose.mat'
SR_AM='.\Temp_Files\SR_AM_Trips_by_Purpose.mat'
C2_AM='.\Temp_Files\C2_AM_Trips_by_Purpose.mat'
C3_AM='.\Temp_Files\C3_AM_Trips_by_Purpose.mat'
;
; mid day Period
DA_MD='.\Temp_Files\DA_MD_Trips_by_Purpose.mat'
SR_MD='.\Temp_Files\SR_MD_Trips_by_Purpose.mat'
C2_MD='.\Temp_Files\C2_MD_Trips_by_Purpose.mat'
C3_MD='.\Temp_Files\C3_MD_Trips_by_Purpose.mat'
;
; PM Peak Period
DA_PM='.\Temp_Files\DA_PM_Trips_by_Purpose.mat'
SR_PM='.\Temp_Files\SR_PM_Trips_by_Purpose.mat'
C2_PM='.\Temp_Files\C2_PM_Trips_by_Purpose.mat'
C3_PM='.\Temp_Files\C3_PM_Trips_by_Purpose.mat'
;
; Evening Peak Period
DA_EV='.\Temp_Files\DA_EV_Trips_by_Purpose.mat'
SR_EV='.\Temp_Files\SR_EV_Trips_by_Purpose.mat'
C2_EV='.\Temp_Files\C2_EV_Trips_by_Purpose.mat'
C3_EV='.\Temp_Files\C3_EV_Trips_by_Purpose.mat'
;
;-------------------------------------------------------------------------------
; Output multi-class OD tables
;-------------------------------------------------------------------------------
AM_OD=  '.\Temp_Files\AM_MULTICLASS.MAT'
AM_FRAC='AM_FRACTIONS_BY_PURPOSE.MAT'
MD_OD=  '.\Temp_Files\MD_MULTICLASS.MAT'
MD_FRAC='MD_FRACTIONS_BY_PURPOSE.MAT'
PM_OD=  '.\Temp_Files\PM_MULTICLASS.MAT'
PM_FRAC='PM_FRACTIONS_BY_PURPOSE.MAT'
EV_OD=  '.\Temp_Files\EV_MULTICLASS.MAT'
EV_FRAC='EV_FRACTIONS_BY_PURPOSE.MAT'
DAILY_OD='Daily_multiclass_OD.MAT'
;
;-------------------------------------------------------------------------------
; Estimate trip purposes for AM3
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; Inputs
FILEI MATI[1] = "@HBW@"
FILEI MATI[2] = "@HBS@"
FILEI MATI[3] = "@HBSC@"
FILEI MATI[4] = "@HBO@"
FILEI MATI[5] = "@WO@"
FILEI MATI[6] = "@OO@"
FILEI MATI[7] = "@nwtd@"
```

```
  FILEI MATI[8] = "@TDVT@"
  FILEI MATI[9] = "@THRU@"
  ;
  ; Outputs
  FILEO MATO[1] = "@DA_AM@", MO=21-34,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[2] = "@SR_AM@", MO=41-54,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[3] = "@C2_AM@", MO=55-56, NAME= C2_PA, C2_AP
  FILEO MATO[4] = "@C3_AM@", MO=57-58, NAME= C3_PA, C3_AP
  ;
  ; Input DA trips
    MW[1] = mi.1.1 *0.01                        ; HBW (scaled by 100)
    MW[2] = mi.2.1                              ; HBS (unscaled)
    MW[3] = (mi.3.1*0.06 + mi.3.1.t*0.22)       ; HBSc (unscaled)
    MW[4] = mi.4.1                              ; HBO (unscaled)
    MW[5] = mi.5.1                              ; WO (unscaled)
    MW[6] = mi.6.1                              ; OO (unscaled)
  ;
  ; Input and convert SR to Vehicle Trips
    MW[11] = (mi.1.2*0.50 + mi.1.3*0.302)*0.01 ; HBW SR (scaled by 100)
    MW[12] = (mi.2.2*0.50 + mi.2.3*0.272)       ; HBS (unscaled)
    MW[13] = (mi.3.1*0.34)                      ; HBSc (unscaled)
    MW[14] = (mi.4.2*0.50 + mi.4.3*0.287)       ; HBO (unscaled)
    MW[15] = (mi.5.2*0.50 + mi.5.3*0.279)       ; WO (unscaled)
    MW[16] = (mi.6.2*0.50 + mi.6.3*0.272)       ; OO (unscaled)
  ;
  ; Drive Alone P-A to O-D factoring
  ; P-A
    MW[21] = 0.330 *MW[1] + 0.406 *mi.8.1       ;HBW + HBW TD access
    MW[23] = 0.052 *MW[2] + 0.185 *mi.8.3       ;HBS + HBS TD access
    MW[25] = 0.523 *MW[3]                       ;HBSc
    MW[27] = 0.147 *MW[4] + 0.108 *mi.8.5       ;HBO + HBO TD access
    MW[29] = 0.146 *MW[5] + 0.075 *mi.8.7       ;WO + WO TD access
    MW[31] = 0.063 *MW[6] + 0.1675*mi.8.9       ;OO + OO TD access
    MW[33] = 0.090 *mi.9.1*0.8                  ;Thru
  ;
  ; A-P
    MW[22] = 0.014 *MW[1] + 0.0   *mi.8.1       ;HBW + HBW TD access
    MW[24] = 0.026 *MW[2] + 0.004 *mi.8.3       ;HBS + HBS TD access
    MW[26] = 0.006 *MW[3]                       ;HBSc
    MW[28] = 0.045 *MW[4] + 0.004 *mi.8.5       ;HBO + HBO TD access
    MW[30] = 0.040 *MW[5] + 0.093 *mi.8.7       ;WO + WO TD access
    MW[32] = 0.063 *MW[6] + 0.1675*mi.8.9       ;OO + OO TD access
    MW[34] = 0.090 *mi.9.1*0.8                  ;Thru
  ;
  ; Shared Ride  P-A to O-D factoring
  ; P-A
    MW[41] = 0.365 *MW[11] + 0.406 *mi.8.2       ;HBW + HBW TD access
    MW[43] = 0.052 *MW[12] + 0.185 *mi.8.4       ;HBS + HBS TD access
    MW[45] = 0.523 *MW[13]                       ;HBSc
    MW[47] = 0.147 *MW[14] + 0.108 *mi.8.6       ;HBO + HBO TD access
    MW[49] = 0.146 *MW[15] + 0.075 *mi.8.8       ;WO + WO TD access
    MW[51] = 0.063 *MW[16] + 0.1675*mi.8.10      ;OO + OO TD access
    MW[53] = 0.090 *mi.9.1*0.2                   ;Thru
  ;
  ; A-P
```

```
    MW[42] = 0.009 *MW[11] + 0.0   *mi.8.2       ;HBW + HBW TD access
    MW[43] = 0.026 *MW[12] + 0.004 *mi.8.4       ;HBS + HBS TD access
    MW[46] = 0.006 *MW[13]                       ;HBSc
    MW[48] = 0.045 *MW[14] + 0.004 *mi.8.6       ;HBO + HBO TD access
    MW[50] = 0.040 *MW[15] + 0.093 *mi.8.8       ;WO + WO TD access
    MW[52] = 0.063 *MW[16] + 0.1675*mi.8.10      ;OO + OO TD access
    MW[54] = 0.090 *MI.9.1*0.2                   ;Thru
  ;
  ; C2  P-A to O-D factoring
    MW[55] = 0.091*mi.7.6                        ; P-A
    MW[56] = MW[55]                              ; A-P
  ;
  ; C3  P-A to O-D factoring
    MW[57] = 0.091*mi.7.7 + 0.91*mi.9.2          ; P-A (with XX commercial)
    MW[58] = MW[57]                              ; A-P
  ENDRUN
  ;
  ;
  ;
  ;-------------------------------------------------------------------------------
  ; Estimate trip purposes for mid day
  ;-------------------------------------------------------------------------------
  RUN PGM=MATRIX
  ; Inputs
  FILEI MATI[1] = "@HBW@"
  FILEI MATI[2] = "@HBS@"
  FILEI MATI[3] = "@HBSC@"
  FILEI MATI[4] = "@HBO@"
  FILEI MATI[5] = "@WO@"
  FILEI MATI[6] = "@OO@"
  FILEI MATI[7] = "@nwtd@"
  FILEI MATI[8] = "@TDVT@"
  FILEI MATI[9] = "@THRU@"
  ;
  ; Outputs
  FILEO MATO[1] = "@DA_MD@", MO=21-34,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[2] = "@SR_MD@", MO=41-54,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[3] = "@C2_MD@", MO=55-56, NAME= C2_PA, C2_AP
  FILEO MATO[4] = "@C3_MD@", MO=57-78, NAME= C3_PA, C3_AP
  ;
  ; Input DA trips
    MW[1] = mi.1.1 *0.01                         ; HBW (scaled by 100)
    MW[2] = mi.2.1                               ; HBS (unscaled)
    MW[3] = (mi.3.1*0.06 + mi.3.1.t*0.22)        ; HBSc (unscaled)
    MW[4] = mi.4.1                               ; HBO (unscaled)
    MW[5] = mi.5.1                               ; WO (unscaled)
    MW[6] = mi.6.1                               ; OO (unscaled)
  ;
  ; Input and convert SR to Vehicle Trips
    MW[11] = (mi.1.2*0.50 + mi.1.3*0.302)*0.01 ; HBW SR (scaled by 100)
    MW[12] = (mi.2.2*0.50 + mi.2.3*0.272)        ; HBS (unscaled)
    MW[13] = (mi.3.1*0.34)                       ; HBSc (unscaled)
    MW[14] = (mi.4.2*0.50 + mi.4.3*0.287)        ; HBO (unscaled)
    MW[15] = (mi.5.2*0.50 + mi.5.3*0.279)        ; WO (unscaled)
    MW[16] = (mi.6.2*0.50 + mi.6.3*0.272)        ; OO (unscaled)
```

```
;
; Drive Alone P-A to O-D factoring
; P-A
  MW[21] = 0.082 *MW[1] + 0.044 *mi.8.1      ;HBW + HBW TD access
  MW[23] = 0.145 *MW[2] + 0.015 *mi.8.3      ;HBS + HBS TD access
  MW[25] = 0.028 *MW[3]                      ;HBSc
  MW[27] = 0.135 *MW[4] + 0.131 *mi.8.5      ;HBO + HBO TD access
  MW[29] = 0.219 *MW[5] + 0.394 *mi.8.7      ;WO + WO TD access
  MW[31] = 0.194 *MW[6] + 0.1295*mi.8.9      ;OO + OO TD access
  MW[33] = 0.180 *mi.9.1*0.8                 ;Thru
;
; A-P
  MW[22] = 0.076 *MW[1] + 0.0   *mi.8.1      ;HBW + HBW TD access
  MW[24] = 0.189 *MW[2] + 0.311 *mi.8.3      ;HBS + HBS TD access
  MW[26] = 0.119 *MW[3]                      ;HBSc
  MW[28] = 0.109 *MW[4] + 0.138 *mi.8.5      ;HBO + HBO TD access
  MW[30] = 0.203 *MW[5] + 0.309 *mi.8.7      ;WO + WO TD access
  MW[32] = 0.194 *MW[6] + 0.1295*mi.8.9      ;OO + OO TD access
  MW[34] = 0.180 *mi.9.1*0.8                 ;Thru
;
; Shared Ride  P-A to O-D factoring
; P-A
  MW[41] = 0.083 *MW[11] + 0.044 *mi.8.2      ;HBW + HBW TD access
  MW[43] = 0.145 *MW[12] + 0.015 *mi.8.4      ;HBS + HBS TD access
  MW[45] = 0.028 *MW[13]                      ;HBSc
  MW[47] = 0.135 *MW[14] + 0.131 *mi.8.6      ;HBO + HBO TD access
  MW[49] = 0.219 *MW[15] + 0.394 *mi.8.8      ;WO + WO TD access
  MW[51] = 0.194 *MW[16] + 0.129*mi.8.10      ;OO + OO TD access
  MW[53] = 0.180 *mi.9.1*0.2                  ;Thru
;
; A-P
  MW[42] = 0.064 *MW[11] + 0.0   *mi.8.2      ;HBW + HBW TD access
  MW[42] = 0.189 *MW[12] + 0.311 *mi.8.4      ;HBS + HBS TD access
  MW[46] = 0.119 *MW[13]                      ;HBSc
  MW[48] = 0.109 *MW[14] + 0.138 *mi.8.6      ;HBO + HBO TD access
  MW[50] = 0.203 *MW[15] + 0.309 *mi.8.8      ;WO + WO TD access
  MW[52] = 0.194 *MW[16] + 0.129 *mi.8.10     ;OO + OO TD access
  MW[54] = 0.180 *MI.9.1*0.2                  ;Thru
;
; C2  P-A to O-D factoring
  MW[55] = 0.144*mi.7.6                       ; P-A
  MW[56] = MW[55]                             ; A-P
;
; C3  P-A to O-D factoring
  MW[57] = 0.1625*mi.7.7 + 0.1625*mi.9.2      ; P-A (with XX commercial)
  MW[58] = MW[57]                             ; A-P
ENDRUN
;
;
;
;-------------------------------------------------------------------------------
; Estimate trip purposes for PM3
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; Inputs
FILEI MATI[1] = "@HBW@"
FILEI MATI[2] = "@HBS@"
FILEI MATI[3] = "@HBSC@"
FILEI MATI[4] = "@HBO@"
FILEI MATI[5] = "@WO@"
FILEI MATI[6] = "@OO@"
```

```
  FILEI MATI[7] = "@nwtd@"
  FILEI MATI[8] = "@TDVT@"
  FILEI MATI[9] = "@THRU@"
  ;
  ; Outputs
  FILEO MATO[1] = "@DA_PM@", MO=21-34,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[2] = "@SR_PM@", MO=41-54,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[3] = "@C2_PM@", MO=55-56, NAME= C2_PA, C2_AP
  FILEO MATO[4] = "@C3_PM@", MO=57-78, NAME= C3_PA, C3_AP
  ;
  ; Input DA trips
    MW[1] = mi.1.1 *0.01                        ; HBW (scaled by 100)
    MW[2] = mi.2.1                              ; HBS (unscaled)
    MW[3] = (mi.3.1*0.06 + mi.3.1.t*0.22)       ; HBSc (unscaled)
    MW[4] = mi.4.1                              ; HBO (unscaled)
    MW[5] = mi.5.1                              ; WO (unscaled)
    MW[6] = mi.6.1                              ; OO (unscaled)
  ;
  ; Input and convert SR to Vehicle Trips
    MW[11] = (mi.1.2*0.50 + mi.1.3*0.302)*0.01 ; HBW SR (scaled by 100)
    MW[12] = (mi.2.2*0.50 + mi.2.3*0.272)       ; HBS (unscaled)
    MW[13] = (mi.3.1*0.34)                      ; HBSc (unscaled)
    MW[14] = (mi.4.2*0.50 + mi.4.3*0.287)       ; HBO (unscaled)
    MW[15] = (mi.5.2*0.50 + mi.5.3*0.279)       ; WO (unscaled)
    MW[16] = (mi.6.2*0.50 + mi.6.3*0.272)       ; OO (unscaled)
  ;
  ; Drive Alone P-A to O-D factoring
  ; P-A
    MW[21] = 0.026 *MW[1] + 0.0 *mi.8.1         ;HBW + HBW TD access
    MW[23] = 0.093 *MW[2] + 0.069 *mi.8.3       ;HBS + HBS TD access
    MW[25] = 0.023 *MW[3]                       ;HBSc
    MW[27] = 0.088 *MW[4] + 0.154 *mi.8.5       ;HBO + HBO TD access
    MW[29] = 0.075 *MW[5] + 0.039 *mi.8.7       ;WO + WO TD access
    MW[31] = 0.142 *MW[6] + 0.146*mi.8.9        ;OO + OO TD access
    MW[33] = 0.090 *mi.9.1*0.8                  ;Thru
  ;
  ; A-P
    MW[22] = 0.226 *MW[1] + 0.465 *mi.8.1       ;HBW + HBW TD access
    MW[24] = 0.213 *MW[2] + 0.171 *mi.8.3       ;HBS + HBS TD access
    MW[26] = 0.246 *MW[3]                       ;HBSc
    MW[28] = 0.133 *MW[4] + 0.176 *mi.8.5       ;HBO + HBO TD access
    MW[30] = 0.207 *MW[5] + 0.064 *mi.8.7       ;WO + WO TD access
    MW[32] = 0.142 *MW[6] + 0.146 *mi.8.9       ;OO + OO TD access
    MW[34] = 0.090 *mi.9.1*0.8                  ;Thru
  ;
  ; Shared Ride  P-A to O-D factoring
  ; P-A
    MW[41] = 0.037 *MW[11] + 0.0 *mi.8.2         ;HBW + HBW TD access
    MW[43] = 0.093 *MW[12] + 0.069 *mi.8.4       ;HBS + HBS TD access
    MW[45] = 0.023 *MW[13]                       ;HBSc
    MW[47] = 0.088 *MW[14] + 0.154 *mi.8.6       ;HBO + HBO TD access
    MW[49] = 0.075 *MW[15] + 0.039 *mi.8.8       ;WO + WO TD access
    MW[51] = 0.142 *MW[16] + 0.146 *mi.8.10      ;OO + OO TD access
    MW[53] = 0.090 *mi.9.1*0.2                   ;Thru
  ;
```

```
  ; A-P
    MW[42] = 0.211 *MW[11] + 0.465 *mi.8.2      ;HBW + HBW TD access
    MW[44] = 0.213 *MW[12] + 0.171 *mi.8.4      ;HBS + HBS TD access
    MW[46] = 0.246 *MW[13]                      ;HBSc
    MW[48] = 0.133 *MW[14] + 0.176 *mi.8.6      ;HBO + HBO TD access
    MW[50] = 0.207 *MW[15] + 0.064 *mi.8.8      ;WO + WO TD access
    MW[52] = 0.142 *MW[16] + 0.146 *mi.8.10     ;OO + OO TD access
    MW[54] = 0.090 *MI.9.1*0.2                  ;Thru
  ;
  ; C2  P-A to O-D factoring
    MW[55] = 0.1175*mi.7.6                       ; P-A
    MW[56] = MW[55]                             ; A-P
  ;
  ; C3  P-A to O-D factoring
    MW[57] = 0.072*mi.7.7 + 0.072*mi.9.2        ; P-A (with XX commercial)
    MW[58] = MW[57]                             ; A-P
  ENDRUN
  ;
  ;
  ;
  ;-------------------------------------------------------------------------------
  ; Estimate trip purposes for evening
  ;-------------------------------------------------------------------------------
  RUN PGM=MATRIX
  ; Inputs
  FILEI MATI[1] = "@HBW@"
  FILEI MATI[2] = "@HBS@"
  FILEI MATI[3] = "@HBSC@"
  FILEI MATI[4] = "@HBO@"
  FILEI MATI[5] = "@WO@"
  FILEI MATI[6] = "@OO@"
  FILEI MATI[7] = "@nwtd@"
  FILEI MATI[8] = "@TDVT@"
  FILEI MATI[9] = "@THRU@"
  ;
  ; Outputs
  FILEO MATO[1] = "@DA_EV@", MO=21-34,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[2] = "@SR_EV@", MO=41-54,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[3] = "@C2_EV@", MO=55-56, NAME= C2_PA, C2_AP
  FILEO MATO[4] = "@C3_EV@", MO=57-78, NAME= C3_PA, C3_AP
  ;
  ; Input DA trips
    MW[1] = mi.1.1 *0.01                        ; HBW (scaled by 100)
    MW[2] = mi.2.1                              ; HBS (unscaled)
    MW[3] = (mi.3.1*0.06 + mi.3.1.t*0.22)       ; HBSc (unscaled)
    MW[4] = mi.4.1                              ; HBO (unscaled)
    MW[5] = mi.5.1                              ; WO (unscaled)
    MW[6] = mi.6.1                              ; OO (unscaled)
  ;
  ; Input and convert SR to Vehicle Trips
    MW[11] = (mi.1.2*0.50 + mi.1.3*0.302)*0.01 ; HBW SR (scaled by 100)
    MW[12] = (mi.2.2*0.50 + mi.2.3*0.272)       ; HBS (unscaled)
    MW[13] = (mi.3.1*0.34)                      ; HBSc (unscaled)
    MW[14] = (mi.4.2*0.50 + mi.4.3*0.287)       ; HBO (unscaled)
    MW[15] = (mi.5.2*0.50 + mi.5.3*0.279)       ; WO (unscaled)
```

```
  MW[16] = (mi.6.2*0.50 + mi.6.3*0.272)      ; OO (unscaled)
;
; Drive Alone P-A to O-D factoring
; P-A
  MW[21] = 0.098 *MW[1] + 0.048 *mi.8.1      ;HBW + HBW TD access
  MW[23] = 0.089 *MW[2] + 0.136 *mi.8.3      ;HBS + HBS TD access
  MW[25] = 0.018 *MW[3]                      ;HBSc
  MW[27] = 0.140 *MW[4] + 0.128 *mi.8.5      ;HBO + HBO TD access
  MW[29] = 0.036 *MW[5] + 0.0 *mi.8.7        ;WO + WO TD access
  MW[31] = 0.101 *MW[6] + 0.057*mi.8.9       ;OO + OO TD access
  MW[33] = 0.140 *mi.9.1*0.8                 ;Thru
;
; A-P
  MW[22] = 0.149 *MW[1] + 0.037 *mi.8.1      ;HBW + HBW TD access
  MW[24] = 0.194 *MW[2] + 0.109 *mi.8.3      ;HBS + HBS TD access
  MW[26] = 0.036 *MW[3]                      ;HBSc
  MW[28] = 0.204 *MW[4] + 0.161 *mi.8.5      ;HBO + HBO TD access
  MW[30] = 0.072 *MW[5] + 0.026 *mi.8.7      ;WO + WO TD access
  MW[32] = 0.101 *MW[6] + 0.057 *mi.8.9      ;OO + OO TD access
  MW[34] = 0.140 *mi.9.1*0.8                 ;Thru
;
; Shared Ride  P-A to O-D factoring
; P-A
  MW[41] = 0.082 *MW[11] + 0.048 *mi.8.2      ;HBW + HBW TD access
  MW[43] = 0.089 *MW[12] + 0.136 *mi.8.4      ;HBS + HBS TD access
  MW[45] = 0.018 *MW[13]                      ;HBSc
  MW[47] = 0.140 *MW[14] + 0.128 *mi.8.6      ;HBO + HBO TD access
  MW[49] = 0.036 *MW[15] + 0.0 *mi.8.8        ;WO + WO TD access
  MW[51] = 0.101 *MW[16] + 0.057 *mi.8.10     ;OO + OO TD access
  MW[53] = 0.140 *mi.9.1*0.2                  ;Thru
;
; A-P
  MW[42] = 0.148 *MW[11] + 0.037 *mi.8.2      ;HBW + HBW TD access
  MW[44] = 0.194 *MW[12] + 0.109 *mi.8.4      ;HBS + HBS TD access
  MW[46] = 0.036 *MW[13]                      ;HBSc
  MW[48] = 0.204 *MW[14] + 0.161 *mi.8.6      ;HBO + HBO TD access
  MW[50] = 0.072 *MW[15] + 0.026 *mi.8.8      ;WO + WO TD access
  MW[52] = 0.101 *MW[16] + 0.057 *mi.8.10     ;OO + OO TD access
  MW[54] = 0.140 *MI.9.1*0.2                  ;Thru
;
; C2  P-A to O-D factoring
  MW[55] = 0.1475*mi.7.6                      ; P-A
  MW[56] = MW[55]                             ; A-P
;
; C3  P-A to O-D factoring
  MW[57] = 0.1745*mi.7.7 + 0.1745*mi.9.2      ; P-A (with XX commercial)
  MW[58] = MW[57]                             ; A-P
ENDRUN
;*************************************************************************
;
;-------------------------------------------------------------------------
;  Combine P-A and A-P into assignable vehicle trips and estimate percentages
;-------------------------------------------------------------------------
;
;-------------------------------------------------------------------------
; For A3 period,
;-------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@DA_AM@"
FILEI MATI[2] = "@SR_AM@"
```

```
  FILEI MATI[3] = "@C2_AM@"
  FILEI MATI[4] = "@C3_AM@"
  ;
  ; OUTPUTS
  FILEO MATO[1] = "@AM_OD@'", mo=1-17, name=
                  DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                  DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                  DA_WO, SR_WO, DA_OO, SR_OO,
                  DA_THRU, SR_THRU, C2, C3, TOT
  FILEO MATO[2] = "@AM_FRAC@'", mo=21-37, name=
                  DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                  DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                  DA_WO, SR_WO, DA_OO, SR_OO,
                  DA_THRU, SR_THRU, C2, C3, TOT
  ;
  ; TRIPS
  ; HBW
    MW[1] = mi.1.1 + mi.1.2.t                                   ;DA_HBW
    MW[2] = mi.2.1 + mi.2.2.t                                   ;SR_HBW
  ; HBS
    MW[3] = mi.1.3 + mi.1.4.t                                   ;DA_HBS
    MW[4] = mi.2.3 + mi.2.4.t                                   ;SR_HBS
  ; HBSC
    MW[5] = mi.1.5 + mi.1.6.t                                   ;DA_HBSC
    MW[6] = mi.2.5 + mi.2.6.t                                   ;SR_HBSC
  ; HBO
    MW[7] = mi.1.7 + mi.1.8.t                                   ;DA_HBO
    MW[8] = mi.2.7 + mi.2.8.t                                   ;SR_HBO
  ; WO
    MW[9] = mi.1.9 + mi.1.10.t                                  ;DA_WO
    MW[10] = mi.2.9 + mi.2.10.t                                 ;SR_WO
  ; OO
    MW[11] = mi.1.11 + mi.1.12.t                                ;DA_OO
    MW[12] = mi.2.11 + mi.2.12.t                                ;SR_OO
  ; THRU
    MW[13] = mi.1.13 + mi.1.14.t                                ;DA_THRU
    MW[14] = mi.2.13 + mi.2.14.t                                ;SR_THRU
  ; C2
    MW[15] = mi.3.1 + mi.3.2.t                                  ;C2
  ; C3
    MW[16] = mi.4.1 + mi.4.2.t                                  ;C2
  ; TOTAL
    MW[17]=MW[1] +MW[2] +MW[3] +MW[4] +MW[5] +MW[6] +           ;TOTAL
           MW[7] +MW[8] +MW[9] +MW[10]+MW[11]+MW[12]+
           MW[13]+MW[14]+MW[15]+MW[16]
  ;
  ; fRACTIONS
  ; HBW
    JLOOP
      IF (MW[17] == 0)
        MW[21] = 0
        MW[22] = 0
        MW[23] = 0
        MW[24] = 0
        MW[25] = 0
        MW[26] = 0
        MW[27] = 0
        MW[28] = 0
        MW[29] = 0
        MW[30] = 0
        MW[31] = 0
```

```
        MW[32] = 0
        MW[33] = 0
        MW[34] = 0
        MW[35] = 0
        MW[36] = 0
      ELSE
        MW[21] = MW[1] / MW[17]                                  ;DA_HBW
        MW[22] = MW[2] / MW[17]                                  ;SR_HBW
  ;
        MW[23] = MW[3] / MW[17]                                  ;DA_HBS
        MW[24] = MW[4] / MW[17]                                  ;SR_HBS
  ;
        MW[25] = MW[5] / MW[17]                                  ;DA_HBSC
        MW[26] = MW[6] / MW[17]                                  ;SR_HBSC
  ;
        MW[27] = MW[7] / MW[17]                                  ;DA_HBO
        MW[28] = MW[8] / MW[17]                                  ;SR_HBO
  ;
        MW[29] = MW[9] / MW[17]                                  ;DA_WO
        MW[30] = MW[10] / MW[17]                                 ;SR_WO
  ;
        MW[31] = MW[11] / MW[17]                                 ;DA_OO
        MW[32] = MW[12] / MW[17]                                 ;SR_OO
  ;
        MW[33] = MW[13] / MW[17]                                 ;DA_THRU
        MW[34] = MW[14] / MW[17]                                 ;SR_THRY
  ;
        MW[35] = MW[15] / MW[17]                                 ;C2
        MW[36] = MW[16] / MW[17]                                 ;C3
      ENDIF
    ENDJLOOP
    MW[37]=MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26] +           ;TOTAL
           MW[27]+MW[28]+MW[29]+ MW[30]+MW[31]+MW[32]+
           MW[33]+MW[34]+MW[35]+MW[36]
ENDRUN
;
;-------------------------------------------------------------------------------
; For mid day period,
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@DA_MD@"
FILEI MATI[2] = "@SR_MD@"
FILEI MATI[3] = "@C2_MD@"
FILEI MATI[4] = "@C3_MD@"
;
; OUTPUTS
FILEO MATO[1] = "@MD_OD@'", mo=1-17, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
FILEO MATO[2] = "@MD_FRAC@'", mo=21-37, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
;
; TRIPS
; HBW
  MW[1] = mi.1.1 + mi.1.2.t                                      ;DA_HBW
```

```
611     MW[2] = mi.2.1 + mi.2.2.t                                   ;SR_HBW
612   ; HBS
613     MW[3] = mi.1.3 + mi.1.4.t                                   ;DA_HBS
614     MW[4] = mi.2.3 + mi.2.4.t                                   ;SR_HBS
615   ; HBSC
616     MW[5] = mi.1.5 + mi.1.6.t                                   ;DA_HBSC
617     MW[6] = mi.2.5 + mi.2.6.t                                   ;SR_HBSC
618   ; HBO
619     MW[7] = mi.1.7 + mi.1.8.t                                   ;DA_HBO
620     MW[8] = mi.2.7 + mi.2.8.t                                   ;SR_HBO
621   ; WO
622     MW[9] = mi.1.9 + mi.1.10.t                                  ;DA_WO
623     MW[10] = mi.2.9 + mi.2.10.t                                 ;SR_WO
624   ; OO
625     MW[11] = mi.1.11 + mi.1.12.t                                ;DA_OO
626     MW[12] = mi.2.11 + mi.2.12.t                                ;SR_OO
627   ; THRU
628     MW[13] = mi.1.13 + mi.1.14.t                                ;DA_THRU
629     MW[14] = mi.2.13 + mi.2.14.t                                ;SR_THRU
630   ; C2
631     MW[15] = mi.3.1 + mi.3.2.t                                  ;C2
632   ; C3
633     MW[16] = mi.4.1 + mi.4.2.t                                  ;C2
634   ; TOTAL
635     MW[17]=MW[1] +MW[2] +MW[3] +MW[4] +MW[5] +MW[6] +           ;TOTAL
636            MW[7] +MW[8] +MW[9] +MW[10]+MW[11]+MW[12]+
637            MW[13]+MW[14]+MW[15]+MW[16]
638   ;
639   ; fRACTIONS
640   ; HBW
641     JLOOP
642       IF (MW[17] == 0)
643         MW[21] = 0
644         MW[22] = 0
645         MW[23] = 0
646         MW[24] = 0
647         MW[25] = 0
648         MW[26] = 0
649         MW[27] = 0
650         MW[28] = 0
651         MW[29] = 0
652         MW[30] = 0
653         MW[31] = 0
654         MW[32] = 0
655         MW[33] = 0
656         MW[34] = 0
657         MW[35] = 0
658         MW[36] = 0
659       ELSE
660         MW[21] = MW[1] / MW[17]                                 ;DA_HBW
661         MW[22] = MW[2] / MW[17]                                 ;SR_HBW
662    ;
663         MW[23] = MW[3] / MW[17]                                 ;DA_HBS
664         MW[24] = MW[4] / MW[17]                                 ;SR_HBS
665    ;
666         MW[25] = MW[5] / MW[17]                                 ;DA_HBSC
667         MW[26] = MW[6] / MW[17]                                 ;SR_HBSC
668    ;
669         MW[27] = MW[7] / MW[17]                                 ;DA_HBO
670         MW[28] = MW[8] / MW[17]                                 ;SR_HBO
671    ;
```

```
        MW[29] = MW[9] / MW[17]                                    ;DA_WO
        MW[30] = MW[10] / MW[17]                                   ;SR_WO
    ;
        MW[31] = MW[11] / MW[17]                                   ;DA_OO
        MW[32] = MW[12] / MW[17]                                   ;SR_OO
    ;
        MW[33] = MW[13] / MW[17]                                   ;DA_THRU
        MW[34] = MW[14] / MW[17]                                   ;SR_THRY
    ;
        MW[35] = MW[15] / MW[17]                                   ;C2
        MW[36] = MW[16] / MW[17]                                   ;C3
      ENDIF
    ENDJLOOP
    MW[37]=MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26] +             ;TOTAL
           MW[27]+MW[28]+MW[29]+ MW[30]+MW[31]+MW[32]+
           MW[33]+MW[34]+MW[35]+MW[36]
ENDRUN
;
;-------------------------------------------------------------------------------
; For P3 period,
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@DA_PM@"
FILEI MATI[2] = "@SR_PM@"
FILEI MATI[3] = "@C2_PM@"
FILEI MATI[4] = "@C3_PM@"
;
; OUTPUTS
FILEO MATO[1] = "@PM_OD@'", mo=1-17, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
FILEO MATO[2] = "@PM_FRAC@'", mo=21-37, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
;
; TRIPS
; HBW
  MW[1] = mi.1.1 + mi.1.2.t                                        ;DA_HBW
  MW[2] = mi.2.1 + mi.2.2.t                                        ;SR_HBW
; HBS
  MW[3] = mi.1.3 + mi.1.4.t                                        ;DA_HBS
  MW[4] = mi.2.3 + mi.2.4.t                                        ;SR_HBS
; HBSC
  MW[5] = mi.1.5 + mi.1.6.t                                        ;DA_HBSC
  MW[6] = mi.2.5 + mi.2.6.t                                        ;SR_HBSC
; HBO
  MW[7] = mi.1.7 + mi.1.8.t                                        ;DA_HBO
  MW[8] = mi.2.7 + mi.2.8.t                                        ;SR_HBO
; WO
  MW[9] = mi.1.9 + mi.1.10.t                                       ;DA_WO
  MW[10] = mi.2.9 + mi.2.10.t                                      ;SR_WO
; OO
  MW[11] = mi.1.11 + mi.1.12.t                                     ;DA_OO
  MW[12] = mi.2.11 + mi.2.12.t                                     ;SR_OO
; THRU
  MW[13] = mi.1.13 + mi.1.14.t                                     ;DA_THRU
```

```
    MW[14] = mi.2.13 + mi.2.14.t                                    ;SR_THRU
  ; C2
    MW[15] = mi.3.1 + mi.3.2.t                                      ;C2
  ; C3
    MW[16] = mi.4.1 + mi.4.2.t                                      ;C2
  ; TOTAL
    MW[17]=MW[1] +MW[2] +MW[3] +MW[4] +MW[5] +MW[6] +               ;TOTAL
           MW[7] +MW[8] +MW[9] +MW[10]+MW[11]+MW[12]+
           MW[13]+MW[14]+MW[15]+MW[16]
  ;
  ; fRACTIONS
  ; HBW
    JLOOP
      IF (MW[17] == 0)
        MW[21] = 0
        MW[22] = 0
        MW[23] = 0
        MW[24] = 0
        MW[25] = 0
        MW[26] = 0
        MW[27] = 0
        MW[28] = 0
        MW[29] = 0
        MW[30] = 0
        MW[31] = 0
        MW[32] = 0
        MW[33] = 0
        MW[34] = 0
        MW[35] = 0
        MW[36] = 0
      ELSE
        MW[21] = MW[1] / MW[17]                                     ;DA_HBW
        MW[22] = MW[2] / MW[17]                                     ;SR_HBW
   ;
        MW[23] = MW[3] / MW[17]                                     ;DA_HBS
        MW[24] = MW[4] / MW[17]                                     ;SR_HBS
   ;
        MW[25] = MW[5] / MW[17]                                     ;DA_HBSC
        MW[26] = MW[6] / MW[17]                                     ;SR_HBSC
   ;
        MW[27] = MW[7] / MW[17]                                     ;DA_HBO
        MW[28] = MW[8] / MW[17]                                     ;SR_HBO
   ;
        MW[29] = MW[9] / MW[17]                                     ;DA_WO
        MW[30] = MW[10] / MW[17]                                    ;SR_WO
   ;
        MW[31] = MW[11] / MW[17]                                    ;DA_OO
        MW[32] = MW[12] / MW[17]                                    ;SR_OO
   ;
        MW[33] = MW[13] / MW[17]                                    ;DA_THRU
        MW[34] = MW[14] / MW[17]                                    ;SR_THRY
   ;
        MW[35] = MW[15] / MW[17]                                    ;C2
        MW[36] = MW[16] / MW[17]                                    ;C3
       ENDIF
    ENDJLOOP
    MW[37]=MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26] +              ;TOTAL
           MW[27]+MW[28]+MW[29]+ MW[30]+MW[31]+MW[32]+
           MW[33]+MW[34]+MW[35]+MW[36]
ENDRUN
;
```

```
;-------------------------------------------------------------------------
; For EVENING period,
;-------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@DA_EV@"
FILEI MATI[2] = "@SR_EV@"
FILEI MATI[3] = "@C2_EV@"
FILEI MATI[4] = "@C3_EV@"
;
; OUTPUTS
FILEO MATO[1] = "@EV_OD@'", mo=1-17, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
FILEO MATO[2] = "@EV_FRAC@'", mo=21-37, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
;
; TRIPS
; HBW
  MW[1] = mi.1.1 + mi.1.2.t                                   ;DA_HBW
  MW[2] = mi.2.1 + mi.2.2.t                                   ;SR_HBW
; HBS
  MW[3] = mi.1.3 + mi.1.4.t                                   ;DA_HBS
  MW[4] = mi.2.3 + mi.2.4.t                                   ;SR_HBS
; HBSC
  MW[5] = mi.1.5 + mi.1.6.t                                   ;DA_HBSC
  MW[6] = mi.2.5 + mi.2.6.t                                   ;SR_HBSC
; HBO
  MW[7] = mi.1.7 + mi.1.8.t                                   ;DA_HBO
  MW[8] = mi.2.7 + mi.2.8.t                                   ;SR_HBO
; WO
  MW[9] = mi.1.9 + mi.1.10.t                                  ;DA_WO
  MW[10] = mi.2.9 + mi.2.10.t                                 ;SR_WO
; OO
  MW[11] = mi.1.11 + mi.1.12.t                                ;DA_OO
  MW[12] = mi.2.11 + mi.2.12.t                                ;SR_OO
; THRU
  MW[13] = mi.1.13 + mi.1.14.t                                ;DA_THRU
  MW[14] = mi.2.13 + mi.2.14.t                                ;SR_THRU
; C2
  MW[15] = mi.3.1 + mi.3.2.t                                  ;C2
; C3
  MW[16] = mi.4.1 + mi.4.2.t                                  ;C2
; TOTAL
  MW[17]=MW[1] +MW[2] +MW[3] +MW[4] +MW[5] +MW[6] +           ;TOTAL
         MW[7] +MW[8] +MW[9] +MW[10]+MW[11]+MW[12]+
         MW[13]+MW[14]+MW[15]+MW[16]
;
; fRACTIONS
; HBW
  JLOOP
    IF (MW[17] == 0)
      MW[21] = 0
      MW[22] = 0
      MW[23] = 0
      MW[24] = 0
```

```
        MW[25] = 0
        MW[26] = 0
        MW[27] = 0
        MW[28] = 0
        MW[29] = 0
        MW[30] = 0
        MW[31] = 0
        MW[32] = 0
        MW[33] = 0
        MW[34] = 0
        MW[35] = 0
        MW[36] = 0
      ELSE
        MW[21] = MW[1] / MW[17]                                    ;DA_HBW
        MW[22] = MW[2] / MW[17]                                    ;SR_HBW
  ;
        MW[23] = MW[3] / MW[17]                                    ;DA_HBS
        MW[24] = MW[4] / MW[17]                                    ;SR_HBS
  ;
        MW[25] = MW[5] / MW[17]                                    ;DA_HBSC
        MW[26] = MW[6] / MW[17]                                    ;SR_HBSC
  ;
        MW[27] = MW[7] / MW[17]                                    ;DA_HBO
        MW[28] = MW[8] / MW[17]                                    ;SR_HBO
  ;
        MW[29] = MW[9] / MW[17]                                    ;DA_WO
        MW[30] = MW[10] / MW[17]                                   ;SR_WO
  ;
        MW[31] = MW[11] / MW[17]                                   ;DA_OO
        MW[32] = MW[12] / MW[17]                                   ;SR_OO
  ;
        MW[33] = MW[13] / MW[17]                                   ;DA_THRU
        MW[34] = MW[14] / MW[17]                                   ;SR_THRY
  ;
        MW[35] = MW[15] / MW[17]                                   ;C2
        MW[36] = MW[16] / MW[17]                                   ;C3
      ENDIF
    ENDJLOOP
    MW[37]=MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26] +             ;TOTAL
           MW[27]+MW[28]+MW[29]+ MW[30]+MW[31]+MW[32]+
           MW[33]+MW[34]+MW[35]+MW[36]
ENDRUN
;
;-------------------------------------------------------------------------------
; Save daily trips by purpose in case we want to estimate avarage trip.
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@AM_OD@"
FILEI MATI[2] = "@MD_OD@"
FILEI MATI[3] = "@PM_OD@"
FILEI MATI[4] = "@EV_OD@"
;
; OUTPUTS
FILEO MATO[1] = "@DAILY_OD@'", mo=1-9, name=
                HBW, HBS, HBSC, HBO,
                DWO, OO,THRU, Comercial, TOT
;
  MW[1]=(mi.1.1 +mi.1.2 )+(mi.2.1 +mi.2.2 )+                       ;HBW (DA+SR)
        (mi.3.1 +mi.3.2 )+(mi.4.1 +mi.4.2 )
;
```

```
916     MW[2]=(mi.1.3 +mi.1.4 )+(mi.2.3 +mi.2.4 )+              ;HBS (DA+SR)
917           (mi.3.3 +mi.3.4 )+(mi.4.3 +mi.4.4 )
918   ;
919     MW[3]=(mi.1.5 +mi.1.6 )+(mi.2.5 +mi.2.6 )+              ;HBSC (DA+SR)
920           (mi.3.5 +mi.3.6 )+(mi.4.5 +mi.4.6 )
921   ;
922     MW[4]=(mi.1.7 +mi.1.8 )+(mi.2.7 +mi.2.8 )+              ;HBO (DA+SR)
923           (mi.3.7 +mi.3.8 )+(mi.4.7 +mi.4.8 )
924   ;
925     MW[5]=(mi.1.9 +mi.1.10)+(mi.2.9 +mi.2.10)+              ;WO (DA+SR)
926           (mi.3.9 +mi.3.10)+(mi.4.9 +mi.4.10)
927   ;
928     MW[6]=(mi.1.11+mi.1.12)+(mi.2.11+mi.2.12)+              ;OO (DA+SR)
929           (mi.3.11+mi.3.12)+(mi.4.11+mi.4.12)
930   ;
931     MW[7]=(mi.1.13+mi.1.14)+(mi.2.13+mi.2.14)+              ;THRU (DA+SR)
932           (mi.3.13+mi.3.14)+(mi.4.13+mi.4.14)
933   ;
934     MW[8]=(mi.1.15+mi.1.16)+(mi.2.15+mi.2.16)+              ;COMMERCIAL  (C2+C3)
935           (mi.3.15+mi.3.16)+(mi.4.15+mi.4.16)
936   ;
937     MW[9]=MW[1]+MW[2]+MW[3]+MW[4]+                          ;TOTAL
938           MW[5]+MW[6]+MW[7]+MW[8]
939   ;
940   ENDRUN
```

```
;-------------------------------------------------------------------------
;
; Step 3: Combine the 4 class VMT tables from step 1 with the fraction of
;         trips by class and purpose from step 2 to estimate VMT by class
;         and pupurose for each TAZ.
;
;         These data can then be postprocessed with pop and employment data to
;         derive VMT per capita/service pop data for comparison to thresholds.
;
;-------------------------------------------------------------------------
; Input VMT matrices
;-------------------------------------------------------------------------
AMVMTSIMP='2040A3VS_vmt_4_Class.MAT'
MDVMTSIMP='2040MDVS_VMT_4_Class.MAT'
PMVMTSIMP='2040P3V_VMT_4_Class.MAT'
EVVVMTSIMP='2040EVV_VMT_4_Class.MAT'
; Note: VMT is provided for 4 classes: DA, SR, C2 and C3
;-------------------------------------------------------------------------
; Input multi-class OD table fractions
;-------------------------------------------------------------------------
AM_FRAC='AM_FRACTIONS_BY_PURPOSE.MAT'
MD_FRAC='MD_FRACTIONS_BY_PURPOSE.MAT'
PM_FRAC='PM_FRACTIONS_BY_PURPOSE.MAT'
EV_FRAC='EV_FRACTIONS_BY_PURPOSE.MAT'
; Note 16 fractions, when sumed =1.0 for each TAZ:
;    DA (HBW, HBS, HBSC, HBO, WO, OO, and Thru)
;    SR (HBW, HBS, HBSC, HBO, WO, OO, and Thru)
;    C2 (all)
;    C3 (all)
;-------------------------------------------------------------------------
; Input multi-class TRIP table fractions (FOR TRIP TOTALS TO EST TRIP LENGTH)
;-------------------------------------------------------------------------
TRIPS_BY_PURPOSE='Daily_multiclass_OD.MAT'
;    HBW, HBS, HBSC, HBO, WO, OO, THRU, COMMERCIAL, TOTAL
;
;-------------------------------------------------------------------------
; Output VMT by purpose and each TAZ
;-------------------------------------------------------------------------
VMT_BY_PURPOSE='DAILY_VMT_BY_PURPOSE.MAT'
; Daily HBW, HBS, HBSC, HBO, WO, OO, THRU, COMMERCIAL
;-------------------------------------------------------------------------
; Temp output VMT by class and purpose and each TAZ and period
;-------------------------------------------------------------------------
AM_VMT_BY_PURPOSE=     '.\Temp_Files\AM_VMT_BY_PURPOSE.MAT'
MD_VMT_BY_PURPOSE=     '.\Temp_Files\MD_VMT_BY_PURPOSE.MAT'
PM_VMT_BY_PURPOSE=     '.\Temp_Files\PM_VMT_BY_PURPOSE.MAT'
EV_VMT_BY_PURPOSE=     '.\Temp_Files\EV_VMT_BY_PURPOSE.MAT'
;
;-------------------------------------------------------------------------
; For AM period,
;-------------------------------------------------------------------------
RUN PGM=MATRIX
; VMT inputs
FILEI MATI[1] = "@AMVMTSIMP@"                       ;AM VMT by TAZ
; Trip fraction inputs
FILEI MATI[2] = "@AM_FRAC@"                         ;AM Fraction by trip purpose
; OUTPUTS
FILEO MATO[1] = "@AM_VMT_BY_PURPOSE@", mo=21-29,
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
```

```
  MW[1]=mi.1.1                                          ;DA VMT
  MW[2]=mi.1.2                                          ;SR VMT
  MW[3]=mi.1.3                                          ;C2 VMT
  MW[4]=mi.1.4                                          ;C3 VMT
;
  MW[5]=mi.2.1                                          ;DA HBW FRACTION
  MW[6]=mi.2.2                                          ;SR HBW FRACTION
;
  MW[7]=mi.2.3                                          ;DA HBS FRACTION
  MW[8]=mi.2.4                                          ;SR HBS FRACTION
;
  MW[9]=mi.2.5                                          ;DA HBSC FRACTION
  MW[10]=mi.2.6                                         ;SR HBSC FRACTION
;
  MW[11]=mi.2.7                                         ;DA HBO FRACTION
  MW[12]=mi.2.8                                         ;SR HBO FRACTION
;
  MW[13]=mi.2.9                                         ;DA WO FRACTION
  MW[14]=mi.2.10                                        ;SR WO FRACTION
;
  MW[15]=mi.2.11                                        ;DA OO FRACTION
  MW[16]=mi.2.12                                        ;SR OO FRACTION
;
  MW[17]=mi.2.13                                        ;DA THRU FRACTION
  MW[18]=mi.2.14                                        ;SR THRU FRACTION
;
  MW[19]=mi.2.15                                        ;C2 FRACTION
  MW[20]=mi.2.16                                        ;C3 FRACTION
;
  MW[21]= MW[1]*MW[5] +  MW[2]*MW[6]                    ;HBW
  MW[22]= MW[1]*MW[7] +  MW[2]*MW[8]                    ;HBS
  MW[23]= MW[1]*MW[9] +  MW[2]*MW[10]                   ;HBSC
  MW[24]= MW[1]*MW[11] + MW[2]*MW[12]                   ;HB0
  MW[25]= MW[1]*MW[13] + MW[2]*MW[14]                   ;WO
  MW[26]= MW[1]*MW[15] + MW[2]*MW[16]                   ;OO
  MW[27]= MW[1]*MW[17] + MW[2]*MW[18]                   ;THRU
  MW[28]= MW[3]*MW[19] + MW[4]*MW[20]                   ;COMMERCIAL
  MW[29]=MW[21]+MW[22]+MW[23]+MW[24]+                   ;TOTAL
         MW[25]+MW[26]+MW[27]+MW[28]
ENDRUN
;
;-------------------------------------------------------------------------
; For MD period,
;-------------------------------------------------------------------------
RUN PGM=MATRIX
; VMT inputs
FILEI MATI[1] = "@MDVMTSIMP@"                           ;AM VMT by TAZ
; Trip fraction inputs
FILEI MATI[2] = "@MD_FRAC@"                             ;AM Fraction by trip purpose
; OUTPUTS
FILEO MATO[1] = "@MD_VMT_BY_PURPOSE@", mo=21-29,
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
;
  MW[1]=mi.1.1                                          ;DA VMT
  MW[2]=mi.1.2                                          ;SR VMT
  MW[3]=mi.1.3                                          ;C2 VMT
  MW[4]=mi.1.4                                          ;C3 VMT
;
  MW[5]=mi.2.1                                          ;DA HBW FRACTION
```

```
  MW[6]=mi.2.2                                          ;SR HBW FRACTION
;
  MW[7]=mi.2.3                                          ;DA HBS FRACTION
  MW[8]=mi.2.4                                          ;SR HBS FRACTION
;
  MW[9]=mi.2.5                                          ;DA HBSC FRACTION
  MW[10]=mi.2.6                                         ;SR HBSC FRACTION
;
  MW[11]=mi.2.7                                         ;DA HBO FRACTION
  MW[12]=mi.2.8                                         ;SR HBO FRACTION
;
  MW[13]=mi.2.9                                         ;DA WO FRACTION
  MW[14]=mi.2.10                                        ;SR WO FRACTION
;
  MW[15]=mi.2.11                                        ;DA OO FRACTION
  MW[16]=mi.2.12                                        ;SR OO FRACTION
;
  MW[17]=mi.2.13                                        ;DA THRU FRACTION
  MW[18]=mi.2.14                                        ;SR THRU FRACTION
;
  MW[19]=mi.2.15                                        ;C2 FRACTION
  MW[20]=mi.2.16                                        ;C3 FRACTION
;
  MW[21]= MW[1]*MW[5] +  MW[2]*MW[6]                    ;HBW
  MW[22]= MW[1]*MW[7] +  MW[2]*MW[8]                    ;HBS
  MW[23]= MW[1]*MW[9] +  MW[2]*MW[10]                   ;HBSC
  MW[24]= MW[1]*MW[11] + MW[2]*MW[12]                   ;HB0
  MW[25]= MW[1]*MW[13] + MW[2]*MW[14]                   ;WO
  MW[26]= MW[1]*MW[15] + MW[2]*MW[16]                   ;OO
  MW[27]= MW[1]*MW[17] + MW[2]*MW[18]                   ;THRU
  MW[28]= MW[3]*MW[19] + MW[4]*MW[20]                   ;COMMERCIAL
  MW[29]=MW[21]+MW[22]+MW[23]+MW[24]+                   ;TOTAL
         MW[25]+MW[26]+MW[27]+MW[28]
ENDRUN
;
;-------------------------------------------------------------------------------
; For PM period,
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; VMT inputs
FILEI MATI[1] = "@PMVMTSIMP@"                           ;AM VMT by TAZ
; Trip fraction inputs
FILEI MATI[2] = "@PM_FRAC@"                             ;AM Fraction by trip purpose
; OUTPUTS
FILEO MATO[1] = "@PM_VMT_BY_PURPOSE@", mo=21-29,
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
;
  MW[1]=mi.1.1                                          ;DA VMT
  MW[2]=mi.1.2                                          ;SR VMT
  MW[3]=mi.1.3                                          ;C2 VMT
  MW[4]=mi.1.4                                          ;C3 VMT
;
  MW[5]=mi.2.1                                          ;DA HBW FRACTION
  MW[6]=mi.2.2                                          ;SR HBW FRACTION
;
  MW[7]=mi.2.3                                          ;DA HBS FRACTION
  MW[8]=mi.2.4                                          ;SR HBS FRACTION
;
  MW[9]=mi.2.5                                          ;DA HBSC FRACTION
```

```
  MW[10]=mi.2.6                                          ;SR HBSC FRACTION
;
  MW[11]=mi.2.7                                          ;DA HBO FRACTION
  MW[12]=mi.2.8                                          ;SR HBO FRACTION
;
  MW[13]=mi.2.9                                          ;DA WO FRACTION
  MW[14]=mi.2.10                                         ;SR WO FRACTION
;
  MW[15]=mi.2.11                                         ;DA OO FRACTION
  MW[16]=mi.2.12                                         ;SR OO FRACTION
;
  MW[17]=mi.2.13                                         ;DA THRU FRACTION
  MW[18]=mi.2.14                                         ;SR THRU FRACTION
;
  MW[19]=mi.2.15                                         ;C2 FRACTION
  MW[20]=mi.2.16                                         ;C3 FRACTION
;
  MW[21]= MW[1]*MW[5] +  MW[2]*MW[6]                     ;HBW
  MW[22]= MW[1]*MW[7] +  MW[2]*MW[8]                     ;HBS
  MW[23]= MW[1]*MW[9] +  MW[2]*MW[10]                    ;HBSC
  MW[24]= MW[1]*MW[11] + MW[2]*MW[12]                    ;HB0
  MW[25]= MW[1]*MW[13] + MW[2]*MW[14]                    ;WO
  MW[26]= MW[1]*MW[15] + MW[2]*MW[16]                    ;OO
  MW[27]= MW[1]*MW[17] + MW[2]*MW[18]                    ;THRU
  MW[28]= MW[3]*MW[19] + MW[4]*MW[20]                    ;COMMERCIAL
  MW[29]=MW[21]+MW[22]+MW[23]+MW[24]+                    ;TOTAL
         MW[25]+MW[26]+MW[27]+MW[28]
ENDRUN
;
;-------------------------------------------------------------------------------
; For EV period,
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; VMT inputs
FILEI MATI[1] = "@EVVVMTSIMP@"                          ;AM VMT by TAZ
; Trip fraction inputs
FILEI MATI[2] = "@EV_FRAC@"                            ;AM Fraction by trip purpose
; OUTPUTS
FILEO MATO[1] = "@EV_VMT_BY_PURPOSE@", mo=21-29,
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
;
  MW[1]=mi.1.1                                           ;DA VMT
  MW[2]=mi.1.2                                           ;SR VMT
  MW[3]=mi.1.3                                           ;C2 VMT
  MW[4]=mi.1.4                                           ;C3 VMT
;
  MW[5]=mi.2.1                                           ;DA HBW FRACTION
  MW[6]=mi.2.2                                           ;SR HBW FRACTION
;
  MW[7]=mi.2.3                                           ;DA HBS FRACTION
  MW[8]=mi.2.4                                           ;SR HBS FRACTION
;
  MW[9]=mi.2.5                                           ;DA HBSC FRACTION
  MW[10]=mi.2.6                                          ;SR HBSC FRACTION
;
  MW[11]=mi.2.7                                          ;DA HBO FRACTION
  MW[12]=mi.2.8                                          ;SR HBO FRACTION
;
  MW[13]=mi.2.9                                          ;DA WO FRACTION
```

```
  MW[14]=mi.2.10                                    ;SR WO FRACTION
;
  MW[15]=mi.2.11                                    ;DA OO FRACTION
  MW[16]=mi.2.12                                    ;SR OO FRACTION
;
  MW[17]=mi.2.13                                    ;DA THRU FRACTION
  MW[18]=mi.2.14                                    ;SR THRU FRACTION
;
  MW[19]=mi.2.15                                    ;C2 FRACTION
  MW[20]=mi.2.16                                    ;C3 FRACTION
;
  MW[21]= MW[1]*MW[5] +  MW[2]*MW[6]                ;HBW
  MW[22]= MW[1]*MW[7] +  MW[2]*MW[8]                ;HBS
  MW[23]= MW[1]*MW[9] +  MW[2]*MW[10]               ;HBSC
  MW[24]= MW[1]*MW[11] + MW[2]*MW[12]               ;HB0
  MW[25]= MW[1]*MW[13] + MW[2]*MW[14]               ;WO
  MW[26]= MW[1]*MW[15] + MW[2]*MW[16]               ;OO
  MW[27]= MW[1]*MW[17] + MW[2]*MW[18]               ;THRU
  MW[28]= MW[3]*MW[19] + MW[4]*MW[20]               ;COMMERCIAL
  MW[29]=MW[21]+MW[22]+MW[23]+MW[24]+               ;TOTAL
         MW[25]+MW[26]+MW[27]+MW[28]
ENDRUN
;
;-------------------------------------------------------------------------------
; DAILY TOTALS
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; Inputs
FILEI MATI[1] = "@AM_VMT_BY_PURPOSE@"               ;AM
FILEI MATI[2] = "@MD_VMT_BY_PURPOSE@"               ;Md
FILEI MATI[3] = "@PM_VMT_BY_PURPOSE@"               ;PM
FILEI MATI[4] = "@EV_VMT_BY_PURPOSE@"               ;EV
; Outputs
FILEO MATO[1] = "@VMT_BY_PURPOSE@", mo=1-9,         ;daily
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
  MW[1]=mi.1.1+mi.2.1+mi.3.1+mi.4.1                 ;hbw
  MW[2]=mi.1.2+mi.2.2+mi.3.2+mi.4.2                 ;hbs
  MW[3]=mi.1.3+mi.2.3+mi.3.3+mi.4.3                 ;hbsc
  MW[4]=mi.1.4+mi.2.4+mi.3.4+mi.4.4                 ;hbo
  MW[5]=mi.1.5+mi.2.5+mi.3.5+mi.4.5                 ;wo
  MW[6]=mi.1.6+mi.2.6+mi.3.6+mi.4.6                 ;oo
  MW[7]=mi.1.7+mi.2.7+mi.3.7+mi.4.7                 ;thru
  MW[8]=mi.1.8+mi.2.8+mi.3.8+mi.4.8                 ;commercial
  mw[9]=mw[1]+mw[2]+mw[3]+mw[4]+                    ;Total
        mw[5]+mw[6]+mw[7]+mw[8]
;
ENDRUN
;
RUN PGM=MATRIX
;-------------------------------------------------------------------------------
; Print VMT - Rows & Columns
;-------------------------------------------------------------------------------
  MATI="@VMT_BY_PURPOSE@"
  ZONES=4023
  mw[1]=mi.1.1                                      ;HBW
  mw[2]=mi.1.2                                      ;HBS
  mw[3]=mi.1.3                                      ;HBSC
  mw[4]=mi.1.4                                      ;HBO
  mw[5]=mi.1.5                                      ;WO
```

```
  mw[6]=mi.1.6                                          ;00
  mw[7]=mi.1.7                                          ;THRU
  mw[8]=mi.1.8                                          ;COMMERCIAL
  mw[9]=mi.1.9                                          ;Total
;
  REPORT  MARGINS=1      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R1,C1,FILE=HBW_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=2      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R2,C2,FILE=HBS_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=3      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R3,C3,FILE=HBSc_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=4      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R4,C4,FILE=HBO_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=5      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R5,C5,FILE=WO_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=6      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R6,C6,FILE=OO_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=7      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R7,C7,FILE=THRU_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=8      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R8,C8,FILE=COMMERCIAL_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=9      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R9,C9,FILE=Total_VMT_from_to.txt,PRINT=N
;
;
  ENDRUN
;
RUN PGM=MATRIX
;-------------------------------------------------------------------------------
; Print Trips - Rows & Columns
;-------------------------------------------------------------------------------
  MATI="@TRIPS_BY_PURPOSE@"
  ZONES=4023
  mw[1]=mi.1.1                                          ;HBW
  mw[2]=mi.1.2                                          ;HBS
  mw[3]=mi.1.3                                          ;HBSC
  mw[4]=mi.1.4                                          ;HBO
  mw[5]=mi.1.5                                          ;WO
  mw[6]=mi.1.6                                          ;00
  mw[7]=mi.1.7                                          ;THRU
  mw[8]=mi.1.8                                          ;COMMERCIAL
  mw[9]=mi.1.9                                          ;Total
;
  REPORT  MARGINS=1      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R1,C1,FILE=HBW_TRIPS_from_to.txt,PRINT=N
;
  REPORT  MARGINS=2      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R2,C2,FILE=HBS_TRIPS_from_to.txt,PRINT=N
;
  REPORT  MARGINS=3      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R3,C3,FILE=HBSc_TRIPS_from_to.txt,PRINT=N
;
  REPORT  MARGINS=4      ; request margins summaries
```

```
367     MARGINREC=Y FORM=8.0,LIST=J(5.0),R4,C4,FILE=HBO_TRIPS_from_to.txt,PRINT=N
368   ;
369     REPORT  MARGINS=5       ; request margins summaries
370     MARGINREC=Y FORM=8.0,LIST=J(5.0),R5,C5,FILE=WO_TRIPS_from_to.txt,PRINT=N
371   ;
372     REPORT  MARGINS=6       ; request margins summaries
373     MARGINREC=Y FORM=8.0,LIST=J(5.0),R6,C6,FILE=OO_TRIPS_from_to.txt,PRINT=N
374   ;
375     REPORT  MARGINS=7       ; request margins summaries
376     MARGINREC=Y FORM=8.0,LIST=J(5.0),R7,C7,FILE=THRU_TRIPS_from_to.txt,PRINT=N
377   ;
378     REPORT  MARGINS=8       ; request margins summaries
379     MARGINREC=Y FORM=8.0,LIST=J(5.0),R8,C8,FILE=COMMERCIAL_TRIPS_from_to.txt,PRINT
      =N
380   ;
381     REPORT  MARGINS=9       ; request margins summaries
382     MARGINREC=Y FORM=8.0,LIST=J(5.0),R9,C9,FILE=Total_TRIPS_from_to.txt,PRINT=N
383   ;
384   ;
385     ENDRUN
386
```

Appendix F: Business Park Land Uses

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EXISTING USES IN THE EDH BUSINESS PARK

Schools:
John Adams Academy
Marble Valley Academy
Golden Hills School
The Gift of Kids Daycare & Preschool
Madrone Montessori School
Praiseland Academy of EDH
Busy Bees Preschool
SUM Bible College & Theological Seminary
Suzuki Piano Academy
Avicenna Academy Farsi School
Buckeye Union School District Offices
The FADE Institute (dental education)

Churches:
Rolling Hills Church
Sun Hills Church
Congregation of Jehovah's Witnesses

Retail/Commercial:
El Dorado Hills Florist
CVS Drugstore
ClearBags (package supply store)
Cartridge World
Colorado Federal Savings Bank
Yellow Book (bookstore)
Connect one Computers
Executive Style Boat Club (boat sales)
GoldKey Boathouse (boat sales)
Kratos Defense & Security Systems
Alpha Research & Technology, Inc.
USA Student Travel
Ewing Irrigation & Landscape Supply
Soulstice Juice (juice bar & shop)
Accent Bead Design (craft store)
Fastenal

Gym/Fitness Centers:
El Dorado Hills CrossFit
Kaia FIT El Dorado Hills
Kinetic Dance
El Dorado Dance Academy
Flip & Twist Tumbling (gymnastics)
West Coast Martial Arts
El Dorado Hills Brazilian Jiu Jitsu & Self Defense
Steve Wallen Swim School

JJ PilatesXercise
Mini's House of Pain
Urban Sprawl Fitness
Hard 90 Baseball Academy

Services:
America's Best – Contacts & Eyeglasses
Business Workspaces (coworking office space)
Absolut Office Solutions (office furniture store)
Grapevine Apparel (embroidery)
Lavish Wax (personal care)
Personal Management Consultant (financial planner)
GoldKey Storage – El Dorado Hills
iStorage Self Storage
Palms Commerce Center Self-Storage
El Dorado Hills Party Rentals
Fortis – El Dorado Hills (telecom)
V3 Electric (solar)
Gold Rush Energy Solutions (solar)
Sierra Mountain Insurance Agency: Allstate Insurance
Farmers Insurance
Premier Business Lending
Davis & Amaral Mortgage Inc
El Dorado Hills Realty
American Commercial Real Estate
Navigate Realty
Wallen Realty
Youngdahl Consulting Group
Burne Engineering Services
Cason Engineering
Warren Consulting Engineers
National Analytic Laboratories (env consultant)
Nor-Cal Controls ES, Inc. (energy solutions)
D. Marel Plumbing Service & Repair
Dorado Software
El Dorado Hills Musical Theatre
RCP Construction, Inc
Coffey Building Group, Inc. (construction)
Bayview Engineering & Construction
Tri-Square Construction Company, Inc
Heaven' Best Carpet Cleaning
Carter's Carpet Restoration
Wester Water Features (swimming pools)
Gregg's Pool Works
Premier Auto Tint
Norcal Mechanical Heating and Cooling
Inventx (equipment rental)
Central Valley Floor Design

JB Developers, Inc
Grigsby Label (label maker)
Sign Chef (sign maker)
RTS Computers (consultant)
School Innovations & Achievements (school software)
R Systems International (software)
RFgen Software
Wavelength Photography
Front Street Media (web design)
American Recovery Service (repo service)
USA Recovery Solutions (financial consultant)

Law Offices:
Pat A. Turner, CPA
The Gordon Law Firm
Law Office of David J. Cramer
Forethough Law, PC
Clemons & Jaquish
Weiner Law Offices

Doctor/Dental Offices:
Aloha Family Dental
Golden Foothills Oral & Facial Surgery Center
Healthy Eyes Optometry of El Dorado Hills
True Health Center for Functional Medicine
Harmony Home Care
Synergy Dental
Magic Smiles – Dentistry for Children
Beretta Physical Therapy
Marshall Family Medicine
Marshall Physical and Speech Therapy

Employers:
Broadridge
DST Output
Envision
Frontier Dental Labs
Ansync Labs
ITW Rippey (manufacturer)
Aerometals
Digital Doc (medical manufacturer)
Emed Technologies Corporation (medical products)
Consensus Orthopedics (medical equipment)
Ampac Analytical (laboratory)
Vista Analytical Laboratory (medical)

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Active Adult Option VMT Addendum (June 2024)

Memorandum

TO: Mr. Anthony Gon, Winn Ridge Investments, LLC

FROM: Tom Kear

Date: June 4, 2024

RE: Creekside Village Project Active Adult (Age-Restricted) Housing Option, CEQA VMT Addendum

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Introduction

This memorandum is an addendum to the Transportation Impact Study (TIS) prepared by T. Kear Transportation Planning and Management, Inc. (TKTPM) for the Creekside Village Project[1] (the Project). The original TIS analyzed the Project as 918 traditional single-family households and 5,400 sqft of commercial space and found that the Project was anticipated to have a less-than-significant impact on VMT under the California Environmental Quality Act (CEQA). This addendum addresses anticipated Vehicle Miles of Travel (VMT) impacts under CEQA for a partially active adult/age-restricted housing land use project option.

Subsequent to the original analysis, the age-restricted housing project option was introduced as a means to minimize impacts on student numbers at Latrobe Elementary and reduce the number of vehicle trips generated from the Project, which is not a consideration under CEQA. The age-restricted project option is also based on 918 dwelling units, however, all but 150 of those would be age-restricted. The proposed 5,400 sqft of commercial would remain with the age-restricted project option. The proposed Project and the age-restricted project option are compared in **Table 1** below.

Table 1. Comparison of land use alternatives

Land Use	Proposed Project	Age-Restricted Option
Traditional single-family housing	918 dwelling units	150 dwelling units
Age-restricted detached housing	0 dwelling units	768 dwelling units
Commercial	5,400 sqft	5,400 sqft
Total	918 dwelling units, and 5,400 sqft of commercial	918 dwelling units, and 5,400 sqft of commercial

[1] TKTPM (2024) Transportation Impact Study: Creekside Village: El Dorado Hills, California, currently in draft form dated April 25, 2024.

Traditional vs Age Restricted Housing

There is limited information published on how the travel characteristics of age-restricted housing and traditional housing differ. The best available data comes from the published ITE trip generation rates for traditional and age-restricted housing and the 2017 National Household Travel Survey.

ITE Trip Generation Rates

Age-restricted households generate fewer trips than traditional households. Published Institute of Traffic Engineers (ITE) trip generation rates[2] anticipate that traditional housing has a daily trip generation rate of 9.43 trips per household, while age-restricted housing generates less than half of that at 4.31 trips per household. This supports the suspected result of lower VMT per capita from age-restricted housing but is not proof as changes in household size are not addressed. Anticipated trip generation for the proposed Project and the age-restricted option are provided in **Table 2** and **Table 3**, respectively.

National Household Travel Survey Person Miles of Travel (PMT)

The 2017 National Household Travel Survey[3] estimated PMT and person trips for both the population (as a whole) and for several subgroups, including those 65[4] and older. Those data show that the older drivers had 19% less PMT and took 5% fewer trips than the population as a whole. PMT being reduced at a greater rate than person trips indicates that the older population is taking fewer and shorter trips, leading to the 19% reduction in PMT.

[2] ITE (2021) Trip Generation Manual 11th Edition, Institute of Transportation Engineers, Washington DC
[3] FHWA (2018) Summary of Travel Trends: 2017 National Household Travel Survey (Tables 11 and 31), Federal Highway Administration, report FHWA-PL-18_019, https://nhts.ornl.gov/assets/2017_nhts_summary_travel_trends.pdf.
[4] Note that active adult/age-restricted housing is defined as 55 and older rather than 65 and older.

Table 2. Anticipated Project trip generation with 918 traditional single-family dwelling units and 5,400 sqft of local serving retail

Land Use	Quantity	Metric	Daily	AM Peak Hour			PM Peak Hour		
				Total	Inbound	Outbound	Total	Inbound	Outbound
Single Family Detached Housing (ITE Use 210)	918 DU (1)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	9.43	0.75	26%	74%	0.99	64%	36%
		Trips	8657	689	179	510	909	582	327
Coffee/Donut Shop with Drive-Thru Window (ITE Use 937)	2.4 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	533.57	101.27	50%	50%	43.65	50%	50%
		Trips	1281	243	122	121	105	52	53
		Pass-by (3)	0	-110	-55	-55	-70	-35	-35
Fast Casual Restaurant (ITE Use 930)	1.5 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	97.14	5.71	63%	37%	18.57	62%	38%
		Trips	146	9	5	4	28	17	11
		Pass-by (4)	0	0	0	0	-12	-6	-6
High-Turnover (Sit-Down) Restaurant (ITE Use 932)	1.5 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	107.2	13.68	57%	43%	16.35	51%	49%
		Trips	161	21	12	9	25	13	12
		Pass-by (4)	0	0	0	0	-10	-5	-5
Total residential trips			8657	689	179	510	909	582	327
Less 2% internalization based on Travel Demand Model			-173	-14	-4	-10	-18	-12	-7
Net new residential trips to assign			**8484**	**675**	**175**	**500**	**891**	**570**	**321**
Total commercial trips			1588	163	84	79	66	36	30
Less 2% internalization based on Travel Demand Model			-32	-4	-2	-2	-2	-1	-1
Net new commercial trips to assign			**1556**	**159**	**82**	**77**	**64**	**35**	**29**
Total New Project Trips			**10040**	**834**	**257**	**577**	**955**	**605**	**350**
Commercial pass by trips from Latrobe Road (for assignment to commercial driveways)			**0**	**110**	**55**	**55**	**92**	**46**	**46**

(1) DU = Dwelling unit
(2) ksf = 1000 square feet
(3) Pass-by trips based on land use 934 (fast food with drive-thru) which has an average 45.4% pass-by rate in the AM and 68% in the PM.
(4) Pass-by trips based on land use 932 (high-turnover (sit-down) restaurant) which has an average 43% pass-by rate.
Source: ITE (2021) Trip Generation Manual, 11th Ed., Institute of Transportation Engineers, Washington DC.

Table 3. Anticipated Project trip generation with 150 traditional single-family dwelling units, 768 age-restricted detached dwelling units, and 5,400 sqft of local serving retail

Land Use	Quantity	Metric	Daily	AM Peak Hour			PM Peak Hour		
				Total	Inbound	Outbound	Total	Inbound	Outbound
Single Family Detached Housing (ITE Use 210)	150 DU (1)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	9.43	0.75	26%	74%	0.99	64%	36%
		Trips	1415	113	29	84	149	95	54
Age Restricted Single Family Detached Housing (ITE Use 251)	768 DU (1)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	4.31	0.34	43%	57%	0.38	56%	44%
		Trips	3310	261	112	149	300	168	132
Coffee/Donut Shop with Drive-Thru Window (ITE Use 937)	2.4 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	533.57	101.27	50%	50%	43.65	50%	50%
		Trips	1281	243	122	121	105	52	53
		Pass-by (3)	0	-110	-55	-55	-70	-35	-35
Fast Casual Restaurant (ITE Use 930)	1.5 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	97.14	5.71	63%	37%	18.57	62%	38%
		Trips	146	9	5	4	28	17	11
		Pass-by (4)	0	0	0	0	-12	-6	-6
High-Turnover (Sit-Down) Restaurant (ITE Use 932)	1.5 ksf (2)	Notes	Average Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	107.2	13.68	57%	43%	16.35	51%	49%
		Trips	161	21	12	9	25	13	12
		Pass-by (4)	0	0	0	0	-10	-5	-5
Total residential trips			4725	374	141	233	449	263	186
Less 2% internalization based on Travel Demand Model			-95	-7	-3	-5	-9	-5	-4
Net new residential trips to assign			**4630**	**367**	**138**	**228**	**440**	**258**	**183**
Total commercial trips			1588	163	84	79	66	36	30
Less 2% internalization based on Travel Demand Model			-32	-4	-2	-2	-2	-1	-1
Net new commercial trips to assign			**1556**	**159**	**82**	**77**	**64**	**35**	**29**
Total New Project Trips			**6186**	**526**	**220**	**305**	**504**	**293**	**212**
Commercial pass by trips from Latrobe Road (for assignment to commercial driveways)			**0**	**110**	**55**	**55**	**92**	**46**	**46**

(1) DU = Dwelling unit
(2) ksf = 1000 square feet
(3) Pass-by trips based on land use 934 (fast food with drive-thru) which has an average 45.4% pass-by rate in the AM and 68% in the PM.
(4) Pass-by trips based on land use 932 (high-turnover (sit-down) restaurant) which has an average 43% pass-by rate.
Source: ITE (2021) Trip Generation Manual, 11th Ed., Institute of Transportation Engineers, Washington DC.

CEQA VMT thresholds

The County's VMT thresholds set an identifiable metric by which the Project's effect on VMT will be determined to be significant or less-than-significant. Land use specific thresholds have been adopted as follows[5]:

- Residential: 15% below baseline unincorporated countywide VMT per capita,
- Office: 15% below baseline unincorporated countywide VMT per capita,
- Retail: no net increase in VMT.

As noted by the Governor's Office of Planning and Research (OPR), adding local-serving retail into the urban fabric improves retail destination proximity.[6] Local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies may presume such development creates a less-than-significant impact. (Regional serving retail on the other hand can substitute longer trips for shorter ones, which may lead to a significant impact.) The El Dorado County Board of Supervisors did not explicitly adopt the local serving retail as a screening criteria. However, the Board of Supervisors allowed that a different method of calculating VMT may be used if, in the exercise of sound engineering judgment, a different method is determined to be more accurate because the unique circumstances of a particular project or particular use that are not captured in the El Dorado County Travel Demand Model resulting in an underestimation or overestimation of VMT.

OPR defined local serving retail as less than 50,000 sqft, significantly greater than the 5,400 sqft commercial component of the Project. Additionally, the El Dorado County travel demand model does not differentiate between local serving and regional retail and therefore is not anticipated to be able to capture the shorter trip lengths associated with the local serving retail component of the Project. Because the travel demand model cannot distinguish between a large regional commercial center (i.e., Costco) and a small local coffee shop, the OPR guidance and methodology was applied for the local serving retail component of the Project, and the 15% reduction threshold was applied for the housing component of the Project[7]. Consistent with OPR guidance, it is unlikely that the neighborhood retail with relatively small footprints for commercial and retail spaces will attract customers beyond the surrounding community, especially when numerous offerings are available closer to Highway 50 at Town Center. It is also unlikely a potential customer would drive past Town Center to seek out the relatively smaller commercial and retail offerings at Creekside Village. Instead, given the scale of the

[5] EDC (2020) Resolution 141-2020, Adopting the El Dorado County "Vehicle Miles Traveled" Thresholds of Significance for Purposes of Analyzing Transportation Impacts Under the California Environmental Quality Act, https://www.eldoradocounty.ca.gov/files/assets/county/v/1/documents/government/transportation/executed-resolution-141-2020.pdf.

[6] OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (April 2018), https://opr.ca.gov/docs/20180416-743_Technical_Advisory_4.16.18.pdf.

[7] The Governor's Office of Planning and Research advises lead agencies evaluate each component of a mixed-use project independently and apply the significance threshold for each project type included (e.g., residential and retail).

commercial component, location of Creekside Village, park amenities surrounding the commercial component, and interconnected trails developed with the project, it is anticipated that the neighborhood commercial offerings will primarily attract surrounding residents and many of those residents can walk or bike to the commercial component.

The Governor's Office of Planning and Research advises lead agencies to evaluate each component of a mixed-use project independently and apply the significance threshold for each project type included (e.g., residential and retail). Alternatively, a lead agency may consider only the project's dominant use. In the analysis of each use, a project should take credit for internal capture. Combining different land uses and applying one threshold to those land uses may result in an inaccurate impact assessment.

For Creekside Village, the residential portion of the Project was evaluated based on the 15% reduction from the baseline threshold listed above. The retail portion of the Project is considered local-serving retail and presumed to have a less-than-significant impact on VMT per OPR guidance as allowed by El Dorado County Board of Supervisors resolution 141-2020.

Discussion and findings

The original TIS found that the 918 traditional housing units were anticipated to have a less-than-significant impact on VMT per capita under CEQA. The implementation of the age-restricted housing option (with 768 or more age restricted dwelling units and 150 or fewer traditional dwelling units) is anticipated to produce fewer trips per household, fewer trips per capita, and less VMT per capita than the 918 traditional households analyzed in the original TIS. Therefore, the age-restricted housing project option is also anticipated to have a less-than-significant impact on VMT under CEQA.

Reduced Impact Alternative Transportation Impact Study (2025)

P23160

Transportation Impact Study (Reduced Impact Alternative)

Creekside Village
El Dorado Hills, California

Prepared for:
Winn Ridge Investments, LLC
and
County of El Dorado, California

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December 12, 2024
Revised April 15, 2025 and May 20, 2025

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REVISION HISTORY

Description	Date	Notes
Admin Draft	Feb 22, 2024	
Public Report	April 25, 2024	Added EBL queue data at intersection 3, clarified abatement 18A.
Revised Report	Dec 12, 2024	Updated to reflect age restricted housing, and removal of commercial component.
Revised Report	April 15, 2025	Addressed peer review comments related to presentation
Revised Report	May 20, 2025	Updated description of community input on Avanti Dr intersection and fixed minor typos.

EXECUTIVE SUMMARY

This transportation impact study (TIS) analyzes the Reduced Impact Alternative for the Creekside Village Specific Plan (referred to herein as the "Project") for consistency with the El Dorado County General Plan level-of-service policies and for vehicle miles of travel (VMT) impacts under the California Environmental Quality Act (CEQA). Where appropriate, abatement measures are provided to address any deficiencies relative to adopted General Plan policies and mitigation measures are provided to address any potentially significant impacts under CEQA. Creekside Village was previously analyzed as a 918 dwelling unit project with 5,400 sqft of neighborhood commercial in an April 2024 transportation impact study, which is the proposed project analyzed in the Draft EIR. Subsequent to that analysis, a variety of constraints were identified which resulted in the Reduced Impact Alternative that is analyzed at a project-specific level. This transportation impact study addresses the Reduced Impact Alternative relative to what was considered in the April 2024 analysis. For ease of reading, the Reduced Impact Alternative analyzed herein is referred to as the "Project."

Creekside Village (the Project) is a planned community with housing, parks, and open space located in the El Dorado Hills community region of El Dorado County. Requested entitlements include a tentative subdivision map allowing for up to 763 single family homes (613 are age-restricted and 150 are traditional), plus neighborhood park parcels, and open space fronting creeks and avoiding sensitive features. The Project creates a new Specific Plan which would amend the General Plan. The Project is located on a vacant 207.9 acre site located on the southern end of the El Dorado Hills Business Park, south of Investment Boulevard and west of Latrobe Road. The Project parcels are APNs 117-010-032 and a portion of 117-720-012. A vicinity map is shown in **Figure ES-1**. The Project parcel is split by a creek, with most of the housing located on the south side of the creek. The north side of the creek would contain 104 of the single-family homes and open space, and the south side of the creek would include the remaining 659 single family homes.

The Project parcels have been de-annexed from the business park, and the applicant is requesting to change its General Plan land use designation and zoning from Research and Development (R&D) to Adopted Plan (AP) with Single Family Low Density (CV-SFL), Single Family Medium Density (CV-SFM) residential, Open Space (CV-OS), and Parks (CV-P) land use designations within the plan area.

Figure ES-1. Project location map

Project Description

Figure ES-2 provides a preliminary site plan for the Project. The Project would:

- Amend the General Plan, change the zoning designation, and adopt a specific plan to allow the development of 207.9 acres for residential and related uses on land that is undeveloped and currently designated as industrial and R&D.
- Create a Tentative Map for 613 age-restricted single-family homes and 150 traditional single-family homes. The Tentative Map would include additional lots associated with parks and open space and various landscape lots.

Access to the Project will be provided by three roadways and a multiuse trail:

- The primary access will be from Latrobe Road via an extension of Royal Oaks Drive. The intersection of Latrobe Rd/Royal Oaks Dr is proposed to remain as full access. This intersection is analyzed with its existing two-way-stop-control, with signal-controlled recommended as an abatement to maintain acceptable level-of-service.
- The first secondary access road is an extension of Avanti Dr. The intersection is currently a "T" intersection providing full access to Avanti Dr. At the request of community members, access to Avanti Dr at this location will be limited to right-in/right out (RIRO), with full access to the Project. Final configuration will be determined by DOT with confirmation with EDH Fire prior to approval of improvement plans. This intersection currently has and would retain two-way-stop-control (TWSC).
- The second secondary access is via a connection to Wetsel-Oviatt Road.
- A pedestrian and bicycle access route connecting to Robert J. Mathews Parkway will provide enhanced non-motorized access to the medical, education, fitness, service, food, and retail options within the El Dorado Hills Business Park. This will also available as Emergency Vehicle Access for fire apparatus, emergency medical, and law enforcement personnel in an emergency.

Traffic is distributed across the driveways based on the rough proximity of each land use to the access points.

Study Area

The TIS area (**Figure ES-3**), which includes portions of White Rock Road, Latrobe Road, El Dorado Hills Boulevard, Silva Valley Parkway and US 50 in El Dorado County, California, was selected with consideration of the requirements of CEQA and General Plan policies TC-Xd and TC-Xe. Specifically, the study was selected to include El Dorado County locations where Project traffic would constitute:

A. A two percent increase in traffic during the AM peak hour, PM peak hour, or daily; or,
B. The addition of 100 or more daily trips; or,
C. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

Figure ES-2. Preliminary Project site plan

Figure ES-3 Study area

Project Trip Generation and Distribution

Anticipated Traffic generation by the Project reflects both trips generated by the Project itself, and, avoided trips in 2033 and 2040 from the commercial land uses that the El Dorado County Travel Demand Model (TDM) assumes will take place on the Project parcels.

Project Trips

Anticipated trips are based on Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021). **Table ES-1** shows anticipated Project Trip Generation. To be conservative, trip generation estimates are generally based on the higher rates for the peak hour of the generator rather than the peak hour of adjacent street traffic. The higher of either the average trip generation rate or equation-based trip generation rate was also used.

Avoided Trips

Avoided trips are additional peak hour trips that the TDM assumes in the future from growth within the Project TAZ. These avoided trips were estimated by running the TDM with and without assumed 2020[1] through 2040 employment growth for the effected portion of the Project's transportation analysis zone (TAZ 612). Creekside Village replaces 62% of the available land in TAZ 612 (**Figure ES-4**), therefore 62% of the employment growth was eliminated from TAZ 612 when estimating the number of avoided trips using the TDM. TDM employment assumptions for TAZ 612 are shown in **Table ES-2** below, along with the resulting avoided trips.

Trip Distribution with Adjustment for Latrobe Elementary

Project trip distribution was based on the El Dorado County TDM, observed counts, prior studies in the vicinity of the Project, and consultation with El Dorado County staff. Additional adjustments were made to reflect school trips to Latrobe Elementary based on student generation statistics published by the school district. Trip distribution is shown in **Figure ES-5**.

Table ES-1. Trip generation

Land Use	Quantity	Metric	Daily	AM Peak Hour			PM Peak Hour		
				Total	Inbound	Outbound	Total	Inbound	Outbound
Single Family Detached Housing (ITE Use 210)	150 DU (1)	Notes	Equation Rate	Equation Rate for Peak Hour of Generator			Equation Rate for Peak Hour of Generator		
		Rate	9.77	0.76	26%	74%	1.01	64%	36%
		Trips	1465	114	30	84	151	97	54
Age Restricted Single Family Detached Housing (ITE Use 251)	613 DU (1)	Notes	Equation Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	4.51	0.34	43%	57%	0.39	56%	44%
		Trips	2767	208	90	118	239	134	105
Total residential trips			4232	322	120	202	390	231	159
Less 2% internalization based on Travel Demand Model			-85	-6	-2	-4	-8	-5	-3
Total New Project Trips			**4147**	**316**	**118**	**198**	**382**	**226**	**156**

(1) DU = Dwelling unit

Source: ITE (2021) Trip Generation Manual, 11th Ed., Institute of Transportation Engineers, Washington DC.

(Dated October 25, 2024)

[1] 2020 is used rather than 2023 because the process of purchasing the land and de-annexing it from the business park meant that no new employment on this portion of the model TAZ occurred as of that year.

Figure ES-4. Creekside Village is 62% of available land in TAZ 612

Table ES-2. TDM employment assumptions and avoided trips

	2020	2040 without Project	2040 with Project	Notes
Employment				
Retail	224	433	304	Creekside Village is 62% of remaining land in TAZ 612. Housing is assumed to replace 62% of employment growth. (With Project there are 2097 fewer employees.)
Non-Retail	2115	5355	3387	
Total	2339	5788	3691	
Avoided Trips AM (PM) [Daily]				
In			526 (311) [4735]	
Out			207 (518) [4680]	

Source: Section 5.1 of this report and of this report.

Figure ES-5. Creekside Village Project trip distribution

FINDINGS

Trip Generation Findings

The 763 dwelling unit Project is anticipated to generate 316 AM peak hour trips, 382 PM peak hour trips, and 4,147 daily trips. Those Project trips are offset under both the EPAP 2033 and Cumulative 2040 scenarios through forgone commercial development on the 207.9 ac project site which the travel demand model anticipated would have generated 733 AM and 829 PM peak hour trips, and 9,415 daily trips. Trip Generation is discussed in more detail in **Section 5.1**. Findings are reported in **Section 14.1**

CEQA Findings

VMT: The 763 dwelling unit Project is anticipated to have home based VMT per capita of 13.6 in 2023 and 13.1 in 2040, compared to a significance threshold of 17.3 (calculated using the same methodology and data as the Proposed Project impacts). Therefore, the Project has a **less-than significant** impact on VMT. The VMT analysis is discussed in **Section 3.4** and **Section 11**. CEQA Findings are reported in **Section 14.2**

Transit: The Project does not interfere with existing or proposed transit service and has a **less-than-significant** impact on transit. Transit impacts are briefly discussed in **Section 12**. CEQA Findings are reported in **Section 14.2**

Bicycles and Pedestrians: The Project enhances bicycle and pedestrian access to the El Dorado Hills Business Park and does not interfere with existing or planned bicycle and pedestrian facilities. The Project includes a variety of bike and pedestrian amenities providing connections both within the planned community and externally to the existing bike and pedestrian facilities along Latrobe Road and Royal Oaks Dr. Therefore, the Project has a **less-than-significant** impact on bicycle and pedestrian facilities. Bicycles and pedestrian impacts are briefly discussed in **Section 12**. CEQA Findings are reported in **Section 14.2**

General Plan Level-of-Service and Queue Length Findings

Deficiencies that are caused or worsened by the Project, and abatement measures to address said deficiencies, are identified for existing 2023 plus Project, Existing Plus Approved Projects (EPAP) 2033 plus Project, and cumulative 2040 plus Project conditions.

Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = “A”, 2033 = “B”, and 2040 = “C”). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C). Locations where the Project causes new or worsen existing deficiencies are listed in **Table ES-3**. The first occurrence of an abatement measure is listed in **bold red** font, subsequent applications of an abatement measure are listed in a regular typeface. Abatement measures for existing 2023 plus Project conditions are described in more detail in **Section 14.3**.

Other Findings/Conditions of Approval ("On-Site Transportation Review")

As noted in sections 13 and 14 of this report, "On-Site Transportation Review" looks at internal circulation (i.e., sight distance, driveway spacing, minimum required throat depth, parking). For this Project the on-site review should be addressed for each Final Map. Review at Final Map is appropriate because the Specific Plan allows for minor administrative changes that may shift lotting and internal roadways. On-Site Transportation Review findings are reported in **Section 14.3**

Table ES-3 Study area

ID	Location	2023 Plus Project (See Section 6.3)	2033 Plus Project (See Section 8.3)	2040 Plus Project	Related CIP Project
Locations have preexisting level-of-service and/or queueing deficiencies which are worsened by the Project:					
1	Latrobe Road/Serrano Pkwy	**1A: Adjust timing**	n/a	n/a	"Traffic Signals Intersection"
2	El Dorado Hills Blvd/Saratoga Way	**2A: SB right pocket, adjust timing**	n/a	n/a	36105076 and 36105035
3	El Dorado Hills Blvd/US 50 WB	**3A: Adjust timing**	Implement 3A	n/a	"Traffic Signals Intersection"
6	Latrobe Road/White Rock Road	**6A: Adjust timing**	Implement 6A	n/a	36105069
7	Latrobe Road/Golden Foothill Parkway (N)	n/a	**7B: Add SB right pocket**	n/a	36105069
9	Latrobe Road/ Golden Foothill Parkway (S)	**9A: Adjust timing**	**9B: Implement 9A plus: Add 2nd SB left-turn lane with receiving lane on Clubview Dr, adjust timing**	n/a	36105055 (AKA "72Latrobe")
10	Latrobe Road/Investment Boulevard	**10A: Stripe EB approach as left and a shared left-right in a pocket**	Implement 10A	Implement 10A	36105055 (AKA "72Latrobe")
13	Golden Foothill Parkway (S)/Robert J Mathews Pkwy	**13A: Construct roundabout**	n/a	n/a	36105083
18	White Rock Road/Carson Crossing Road	**18A: All Way Stop Control**	n/a	n/a	36105041
21	White Rock Road/Valley View Parkway	**21A: Add WB right pocket, extend WB left pocket to 350'**	**21B: Implement 21A plus additional lengthening of WB left pocket to 410'.**	n/a	36105042
Locations where the Project is anticipated to cause new deficiencies:					
12	Latrobe Road/Royal Oaks Drive	**12A: Signalize**	Implement 12A	Implement 12A	n/a

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1.0 INTRODUCTION AND BACKGROUND

This transportation impact study (TIS) analyzes the Reduced Impact Alternative analyzed in the Draft EIR for the Creekside Village Specific Plan (the Project) for consistency with the El Dorado County General Plan level-of-service policies and for vehicle miles of travel (VMT) impacts under the California Environmental Quality Act (CEQA). Where appropriate, abatement measures are provided to address any deficiencies relative to adopted General Plan policies and mitigation measures are provided to address any potentially significant impacts under CEQA. Creekside Village was originally analyzed as a 918 dwelling unit project with 5,400 sqft of neighborhood commercial in an April 2024 transportation impact study. Subsequent to that analysis a variety of constraints were identified which led to the development of the Reduced Impact Alterative that is analyzed at the project-specific level. This transportation impact study addresses that alternative relative to what was considered in the April 2024 analysis and is referred to as the "Project" for purposes of this analysis.

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The Project parcels have been de-annexed from the business park, and the applicant is requesting to change its General Plan land use designation and zoning from Research and Development (R&D) to Adopted Plan (AP) with Single Family Low Density (CV-SFL), Single Family Medium Density (CV-SFM) residential, Open Space (CV-OS), and Parks (CV-P) land use designations within the plan area.

Project Description

Figure 2 provides a preliminary site plan for the Project. The Project would:

- Amend the General Plan, change the zoning designation, and adopt a specific plan to allow the development of 207.9 acres for residential and related uses on land that is undeveloped and currently designated as industrial and R&D.
- Create a Tentative Map for 613 of age-restricted single-family homes and 150 traditional single-family homes. The Tentative Map would include additional lots associated with parks and open space and various landscape lots.

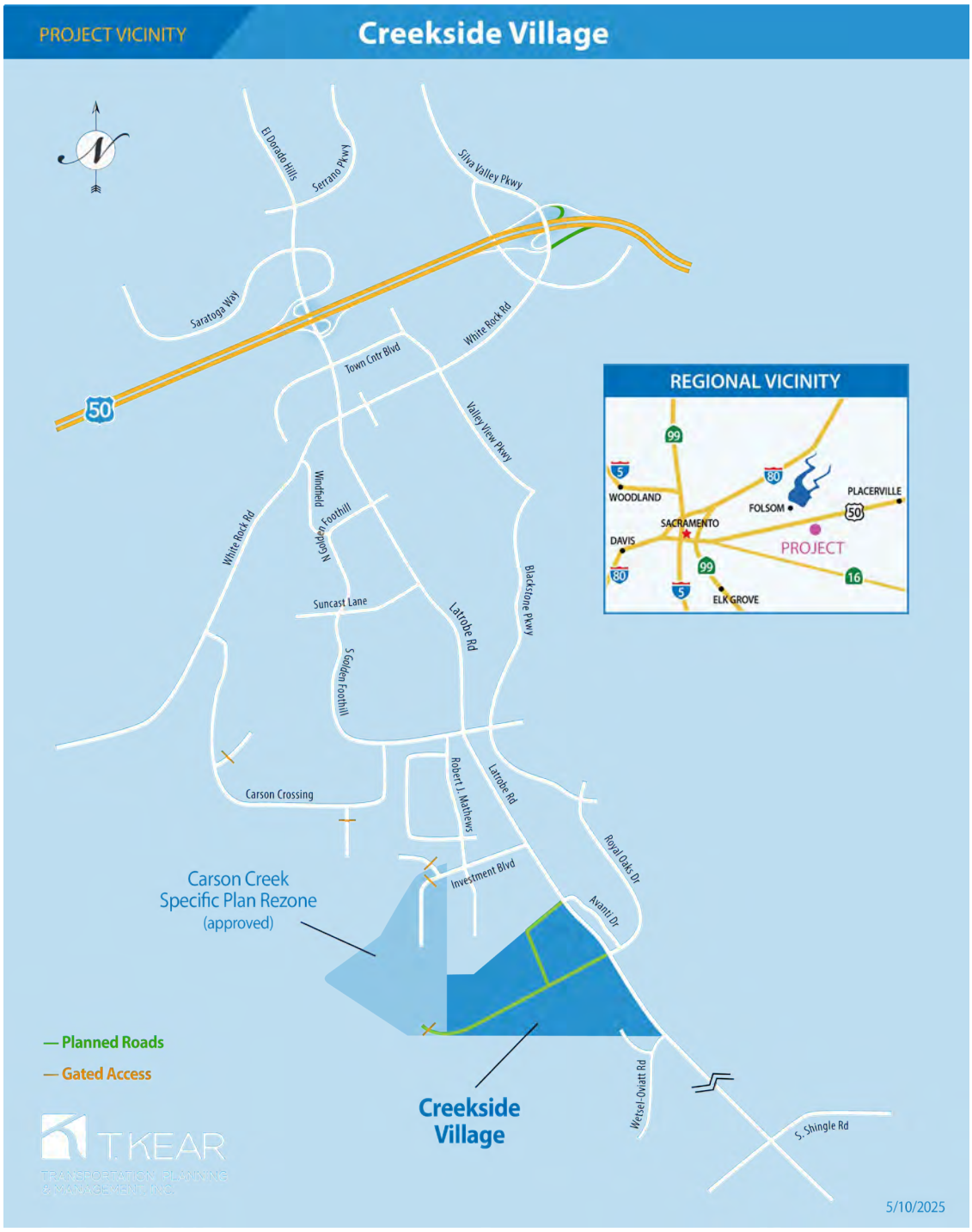

Figure 1. Project location map

Figure 2. Preliminary Project site plan

Access to the Project will be provided by three roadways, and a multiuse trail:

- The primary access will be from Latrobe Road via an extension of Royal Oaks Drive. The intersection of Latrobe Rd/Royal Oaks Dr is proposed to remain as full access. This intersection is analyzed with its existing two-way-stop-control, with signal-controlled recommended as an abatement to maintain acceptable level-of-service.
- The first secondary access road is an extension of Avanti Dr. The intersection is currently a "T" intersection providing full access to Avanti Dr. At the request of community members, access to Avanti Dr at this location will be limited to right-in/right out (RIRO), with full access to the Project. Final configuration will be determined by DOT with confirmation with EDH Fire prior to approval of improvement plans. This intersection currently has and would retain two-way-stop-control (TWSC).
- The second secondary access is via a connection to Wetsel-Oviatt Road.
- A pedestrian and bicycle access route connecting to Robert J. Mathews Parkway will provide enhanced non-motorized access to the medical, education, fitness, service, food, and retail options within the El Dorado Hills Business Park. This will also be available as Emergency Vehicle Access for fire apparatus, emergency medical, and law enforcement personnel in an emergency.

Traffic is distributed across the driveways based on the rough proximity of each land use to the access points.

General Plan Consistency Considerations for Cumulative Impact Analysis

Projects that are consistent with the General Plan, and cumulative travel demand model assumptions, may rely upon the General Plan EIR's cumulative analysis. The Project parcel is currently designated as industrial and R&D in the General Plan and zoned accordingly. The Project requires a general plan amendment and rezoning to accommodate the proposed residential uses and is therefore not consistent with the General Plan or its related CEQA documents. Project-level cumulative analysis is included in this TIS.

2.0 STUDY AREA

The TIS area (**Figure 3**), which includes portions of White Rock Road, Latrobe Road, El Dorado Hills Boulevard, Silva Valley Parkway and US 50 in El Dorado County, California, was selected with consideration of the requirements of CEQA and General Plan policies TC-Xd and TC-Xe. Specifically, the study was selected to include El Dorado County locations where Project traffic would constitute:

D. A two percent increase in traffic during the AM peak hour, PM peak hour, or daily; or,
E. The addition of 100 or more daily trips; or,
F. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

2.1 Project Area Roadways

The following are descriptions of the primary roadways in the project vicinity.

- **El Dorado Hills Boulevard** is a north-south arterial roadway that extends from Green Valley Road on the north to US 50 on the south where it continues as Latrobe Road. North of Green Valley Road it continues as Salmon Falls Road. Between US 50 and Saratoga Way El Dorado Hills Boulevard is a six-lane urban arterial, between Saratoga Way and Serrano Parkway it is a five-lane urban arterial, north of Serrano Parkway it continues as a four-lane urban arterial until Governor Drive, and then as a two-lane urban arterial northward to Green Valley Road. Just north of US 50, El Dorado Hills Boulevard carries approximately 28,000 vehicles per day.

- **Latrobe Road** is a north-south arterial roadway that provides a primary connection to US-50 for western El Dorado County. It extends from US 50, where it continues as El Dorado Hills Boulevard, to State Route 16. It is a six-lane urban arterial road between US 50 and White Rock Road. Latrobe Road is a four-lane urban arterial road between White Rock Road and Golden Foothill Parkway (south). It is a two-lane urban road from Golden Foothill Parkway (south) to Investment Boulevard and a two-lane rural road south of Investment Boulevard. North of White Rock Road, Latrobe Road carries approximately 32,500 vehicles per day with three through travel lanes in each direction. South of US 50, El Dorado Hills Boulevard becomes Latrobe Road.

Figure 3. Study area

- **Park Drive** is a two-lane local roadway serving the shopping center located north of US 50 at the El Dorado Hills Boulevard interchange. Park Drive intersects El Dorado Hills Boulevard at two locations, opposite the reconstructed US 50 westbound ramps and then approximately 1000 feet to the north where Saratoga Way intersects El Dorado Hills Boulevard. Park Drive serves about 12,000 vehicles per day east of El Dorado Hills Boulevard.

- **Silva Valley Parkway** is a north-south roadway that generally runs parallel to El Dorado Hills Boulevard north of US 50. The General Plan identifies Silva Valley Parkway as a four-lane divided road. A new US 50 interchange at Silva Valley/White Rock Road opened in 2016, which provides a realigned Silva Valley Parkway that connects to the existing four-lane Silva Valley Parkway to the north and the existing two-lane White Rock Road on the south. The new interchange is located east of the existing underpass, which will be preserved for bike and pedestrian access. Silva Valley Parkway serves about 17,000 vehicles per day north of US 50.

- **White Rock Road** is an east-west arterial that extends through several jurisdictions from Silva Valley Parkway in El Dorado County to International Drive in Rancho Cordova. Within El Dorado County, it is a two-lane urban arterial road from the Sacramento County – El Dorado County line to Manchester Drive, a four-lane urban arterial between Manchester Drive and Post Street, and a two-lane urban arterial road between Post Street and Silva Valley Parkway. White Rock Road carries approximately 8,000 vehicles per day at the Sacramento County – El Dorado County Line and 17,000 vehicles per day just west (south) of the Silva Valley Parkway Interchange.

- **Investment Boulevard:** Is a two-lane local road, running east-west within the El Dorado Hills Business Park. It connects the eastern edge of the CCSP to Robert J. Mathews Parkway and Latrobe Road. Curb and gutter are provided. There are no bike lanes or sidewalks. Twenty-five-foot Lane widths are provided within the business park.

- **Robert J Mathews Parkway:** Is a two-lane local road, running north-south within the El Dorado Hills Business Park. It connects Investment Boulevard to Golden Foothill Parkway on the north. Curb and gutter are provided. There are no bike lanes or sidewalks. Twenty-five-foot Lane widths are provided within the business park. The Project includes an access connecting to Robert J Mathews Parkway, to encourage residents to walk and bike to the plethora of schools, gyms, service and retail businesses and to minimize local traffic's use of Latrobe Road.

- **Royal Oaks Drive:** is a two-lane collector road within the Blackstone neighborhood of the Valley View Specific Plan. It provides the southernmost access for Blackstone to Latrobe Road. Royal Oaks Drive includes class 2 bike lanes, curb and gutter, and sidewalks fronting developed parcels.

2.2 Transit Service

El Dorado Transit is the primary public transit service provider in El Dorado County and provides local transit services within and between community areas of the county including Placerville and

Cameron Park. Within the study area, El Dorado Transit provides commuter service connecting a park-and-ride lot, located at the intersection of Latrobe Road and White Rock Road, with downtown Sacramento employment ("Sac Commuter"), and several locations in Folsom including the Iron Point Light Rail Station, Ingersoll Way & Parker Drive, Intel, Kaiser Permanente, and Folsom Lake College ("50X – 50 Express"). Dial-a-ride services are also provided within many portions of El Dorado County, including El Dorado Hills. A transit map provided as **Figure 4** shows the Sac Commuter and 50X-50 Express service.

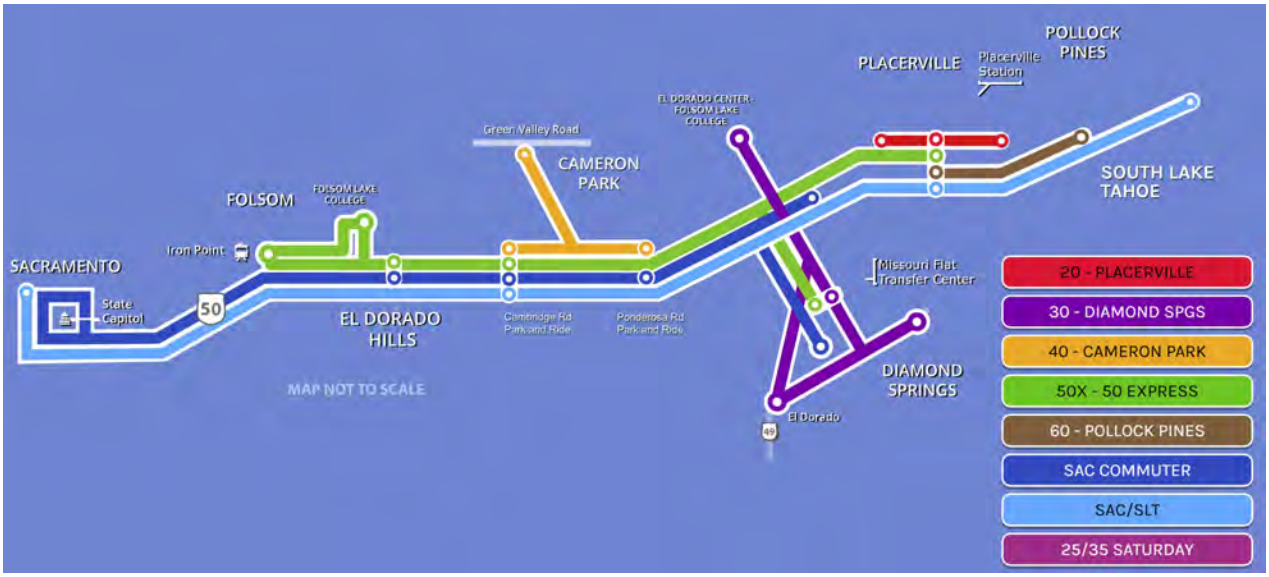

Figure 4. El Dorado County Transit Map

2.3 Bicycle Facilities

There are existing class II bike lanes along White Rock Road, Silva Valley Parkway, Latrobe Road, Valley View Parkway, and Blackstone Parkway. A class 1 bike trail fronts the east side of Latrobe Road within the Valley View Specific Plan area between Royal Oaks Drive and the El Dorado Irrigation water treatment plant (4625 Latrobe Road). A short section of Class I trail also connects the Carson Crossing specific plan area to the El Dorado Hills Business Park.

The 2020 Active Transportation Plan[2] calls for a pedestrian overcrossing of US 50 connecting Class 1 bike and pedestrian trails through the Town Center shopping district with the bike and pedestrian trails adjacent to the Raley's shopping center north of US 50. There are also plans for a class 1 shared use path along the Placerville & Sacramento Valley Railroad rail line running to the Southeast from the City of Folsom and skirting the southwestern edge of the Carson Creek Specific Plan area.

[2] El Dorado County Transportation Commission (2020) El Dorado County Active Transportation Plan, https://www.edctc.org/atp-plans.

2.4 Study Intersections and Segments

The following intersections are included in this evaluation and are marked in the preceding **Figure 3**:

1. El Dorado Hills Blvd/Serrano Pkwy
2. El Dorado Hills Blvd/Saratoga Way
3. El Dorado Hills Blvd/US 50 WB
4. El Dorado Hills Blvd/US 50 EB
5. Latrobe Road/Town Center Boulevard
6. Latrobe Road/White Rock Road
7. Latrobe Road/Golden Foothill Parkway (N)
8. Latrobe Road/Suncast Lane
9. Latrobe Road/ Golden Foothill Parkway (S)
10. Latrobe Road/Investment Boulevard
11. Latrobe Road/Avanti Drive
12. Latrobe Road/Royal Oaks Drive
13. Golden Foothill Pkwy/Robert J Mathews Pkwy
14. Investment Boulevard/Robert J Mathews Pkwy
15. Golden Foothill Parkway/Carson Crossing Road
16. Carson Crossing Road/Calypso Circle
17. Carson Crossing Road/Four Seasons Drive
18. White Rock Road/Carson Crossing Road
19. White Rock Road/Windfield Way
20. White Rock Road/Post Street
21. White Rock Road/Valley View Parkway
22. White Rock Road/Clarksville Crossing
23. Silva Valley Parkway/US 50 EB ramps
24. Silva Valley Parkway/US 50 WB ramps
25. (not used)[3]
26. Latrobe Road/Wetsel-Oviatt Road
27. Latrobe Road/South Shingle Road

Merge/diverge/weave analysis for traffic entering and exiting US 50 will be conducted on US 50 at the following locations:

<u>Westbound US 50</u>

1. Bass Lake Rd to Silva Valley Pkwy (basic)
2. Silva Valley Pkwy offramp (diverge)
3. Silva Valley Pkwy offramp to the (future) loop onramp (basic)
4. (Future) Silva Valley loop onramp (merge)
5. Silva Valley Pkwy slip onramp to El Dorado Hills Blvd offramp (weave)

[3] Intersection 25 represented a commercial driveway accessing Latrobe Road, just north of Royal Oaks Drive. The "Reduced Impact Alternative" described in this report eliminated the commercial land use and driveway, thus intersection 25 was removed.

6. El Dorado Hills Blvd offramp to onramp (basic)
7. El Dorado Hills Blvd onramp (merge)
8. El Dorado Hills Blvd to EDC line (basic)

Eastbound US 50

9. EDC line to Latrobe Rd (basic)
10. Latrobe Rd slip offramp (diverge)
11. Latrobe Rd loop offramp (diverge)
12. Latrobe Rd offramp to onramp (basic)
13. Latrobe Rd to Silva Valley Pkwy (weave)
14. Silva Valley Pkwy offramp to loop onramp (basic)
15. Silva Valley Pkwy onramp (merge)
16. (Future) Silva Valley slip onramp (merge)
17. Silva Valley Pkwy to Bass Lake Rd (basic)

Arterial segment analysis was conducted for the portion of Latrobe Road and White Rock Road:

i. Latrobe Rd between Royal Oaks Dr and Investment Blvd
ii. Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)
iii. Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln
iv. Latrobe Rd between White Rock Rd and Town Center Blvd
v. White Rock Rd between Valley View Pkwy to Silva Valley Pkwy

2.5 Study Scenarios

Six scenarios were identified for inclusion in this traffic impact study through consultation with the development team and El Dorado County staff. The study determines the weekday AM peak hour and PM peak hour level-of-service at the study intersections and segments under the following scenarios:

1. Existing 2023 (without Project);
2. Existing 2023 Plus Proposed Project;
3. Existing Plus Approved Projects (EPAP) 2033 (without project);
4. EPAP 2033 Plus Proposed Project;
5. Cumulative 2040 (without project); and
6. Cumulative 2040 Plus Proposed Project.

Existing 2023, and Existing 2023 Plus Proposed Project Scenarios

An analysis of the existing condition, which reflects the traffic volumes and roadway geometry at the time the study was initiated. This scenario is analyzed both with and without Project traffic to identify any Project related traffic deficiencies.

EPAP 2033, and EPAP 2033 Plus Proposed Project Scenarios

These scenarios, with and without the Project, will analyze conditions ten years from the current year calculated using a straight-line interpolation from existing traffic levels to the General Plan's 2040 traffic projections. These scenarios will expressly include an interpolated level of traffic from all projects with development agreements and approved tentative maps.

Cumulative 2040, and Cumulative 2040 Plus Proposed Scenarios

The Cumulative 2040 scenario reflects market rate buildout of the nearby specific plan areas and approved tentative maps in the El Dorado Hills area. This scenario was analyzed both with and without Project traffic to identify any Project related traffic deficiencies.

CEQA VMT analysis was performed for the existing and cumulative analysis scenarios.

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3.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

This section provides a process overview, discusses traffic forecasting, and describes the methods/criteria used to evaluate level-of-service. A discussion of the criteria for conformity with General Plan level-of-service policies is included. California Environmental Quality Act (CEQA) analysis of transportation is limited to vehicle miles of travel (VMT). A discussion of CEQA significance thresholds for VMT is also included.

3.1 Process Overview

The overall analysis process was structured to identify potential adverse Project traffic effects relative to either conformity to General Plan level-of-service policies, or CEQA VMT impacts.

- Traffic counts collected in 2023 were crosschecked against historic 2017 and 2018 counts. Counts reflect the 6-9 AM peak period and 4-7 PM peak period.
- Traffic volumes and turning movements for the Existing 2023 conditions were determined from traffic counts. Future-year volume forecasts were based on growth estimates from the El Dorado County travel demand mode (TDM)[4] applied to the observed count data. The NCHRP 255 procedure[5] was used to refine forecasted turning movements.
- Study intersections, arterial segments, and the US 50 segments were analyzed both with and without the proposed Project to identify potential Project impacts.
- General Plan level-of-service thresholds were based on El Dorado County General Plan, Transportation and Circulation Element policies TC-Xa (Measure Y and Measure E policies), TC-Xd and TC-Xe.
- CEQA thresholds of significance for VMT are based on guidance adopted by the Board of Supervisors on October 6, 2020.

3.2 Traffic Forecasting Methodology

The TDM catalog "EDC_CAT_082118" was used to generate existing and future traffic volume estimates for calculation of growth factors, and to estimate the distribution for trips generated by the Project. The TDM includes a 2018 baseline and 2040 cumulative scenario. Straight line interpolation was applied to estimate incremental growth from the base year through 2023, 2030, and 2040.

TDM Segment Level Calibration

The TDM was calibrated to local roadways by estimating and applying link level adjustment factors based on the difference between traffic counts and a 2023 TDM scenario. That calibration factor is applied to the 2023, 2033, and 2040 TDM results to improve the accuracy of the volume forecasts at each intersection. The NCHRP 255 process was used in combination with observed

[4] El Dorado Travel Demand Model version "EDC_CAT_082118".
[5] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.; as cited by Transportation Research Board (2014) National Cooperative Highway Research Program Report 765, Washington D.C.

turning movements, and the calibrated 2020, 2030, and 2040 model volumes, to refine turning movements for no-Project conditions.

Baseline 2016 TDM Network

The TDM network within the Folsom Ranch area for the 2018 baseline model runs assumed that traffic crossing the El Dorado County Line on White Rock Road would use Scott Road (AKA East Bidwell Street) for US 50 access. Placerville Road and Alder Creek Parkway to East Bidwell Street provides a more direct path. This shorter route exists today and Folsom's General Plan update (adopted 8/28/2018) preserves that Placerville Road-Alder Creek Parkway route through the Folsom Plan Area. Therefore, these network links were connected and turned on for the baseline 2018 model runs.

2040 Traffic Forecasts and Interpolation of 2030 Link Volumes

Growth in traffic for the EPAP scenario was based on linear interpolation of segment volumes between the Baseline 2018 scenario (with the Saratoga Way extension), and a cumulative (2040) TDM scenario. Land use was checked to ensure that it reflected a reasonable degree of buildout of the nearby specific plan areas and to ensure that interpolation of that land use would account for all approved tentative maps in the El Dorado Hills area.

- The model reflects buildout of the Carson Creek Specific Plan housing. There are 1,700 age-restricted dwelling units currently allowed within the CCSP. Age restricted dwelling units have lower trip generation than traditional homes[6] and the TDM reflects this by coding the land use as a smaller number of traditional homes. The 1,700 age-restricted homes would be reflected as 765 traditional single-family homes in the TDM. The model includes 1,042 homes in the CCSP area (reflecting approximately 2315 age-restricted homes). The County's buildout estimate is conservatively high and was not adjusted.
- Buildout of the El Dorado Hills Specific Plan is included in the 2040 model land use.
- Buildout of Promontory is included in the 2040 model land use.
- Buildout of Valley View Specific Plan (VVSP) (Blackstone) White Rock Village and West Valley Village is included in the 2040 model land use.
- Bass Lake Hills is a little under 85% built out (1,217 DUs out of 1,448) by 2040. Based on the rate of buildout of the Bass Lake Hills Specific Plan area the assumption of 85% buildout appears conservative and was not increased.

The 2040 model network was also updated to include the Mangini Parkway connection between Placerville Road and East Bidwell Street in the Folsom Plan area.

3.3 Intersection Turn Movement Forecast Methodology

Directional link level volume estimates from the 2018 and 2040 TDM model forecasts were used to scale traffic counts using the NCHRP 255 methodology. The methodology was applied through

[6] Age restricted housing generates about 45% of the daily trips of traditional housing, 33% of the AM peak hour trips, and 30% of the PM peak hour trips (Source: ITE Trip Generation Manual, 11th edition).

the TurnsW32 v2.0 software[7]. TDM result plots are provided in **Appendix C**. The Furness reports for the AM and PM peak hour turn movement forecasts under EPAP 2033 and Cumulative 2040 conditions are provided in **Appendix D**.

3.4 VMT Modeling Methodology and CEQA Significance Thresholds

VMT was analyzed based on extracting information from an unmodified version of the El Dorado County TDM. Before discussing the specific approach, background information on how the El Dorado County TDM works is appropriate. The TDM is a traditional trip based four-step travel demand model (trip generation, distribution, mode choice and assignment) with a 2018 base year and 2040 horizon year. Trip productions and attractions are estimated at the transportation analysis zone (TAZ) level. Within developed portions of the County, TAZs are roughly neighborhood size areas for which population socioeconomic data is tabulated. (TAZs are larger in less populated rural portions of the County). Trips are estimated by trip purpose based on eight purposes:

- Home based work,
- Home based shop,
- Home based school,
- Home based other,
- Work other,
- Other-other,
- Commercial two axle, and
- Commercial 3+ axle

As trips are estimated and processed by the model, they are converted from productions and attractions by purpose to origins and destinations by class (single occupancy, shared ride, commercial two-axle and commercial three-plus-axle). Trips are then assigned to the network by class using the origin-destination data. Through trips are also assigned based on an external origin-destination table. Both the production-attraction and origin-destination data are preserved in large matrices which can be leveraged to disaggregate the model's VMT estimates into VMT by trip purpose for evaluating the residential portion of the Project.

There are 674 TAZs in the model (25 of which represent external gateways) connected by 7,171 road segments. Each TAZ is represented by a centroid corresponding to the approximate center of travel activity with the TAZ. Each road segment includes relevant characteristics (location, uncongested speed, number of lanes, capacity, etc.) that allow the model to estimate travel times as trips are assigned to the network. **Figure 5** depicts the model road network with dots reflecting the centroid of each TAZ and red dots reflecting the model gateways. TAZ 612 where the Project is located is represented by a red star. **Figure 6** then shows the shape and extent of TAZ's near the Project site, with TAZ 612 (where the Project is located) and adjacent residential TAZ's which are predominantly residential (167 and 611) labeled.

[7] Dowling Associates (2002), http://sites.kittelson.com/kittelsondownloads/Downloads/Download/12544.

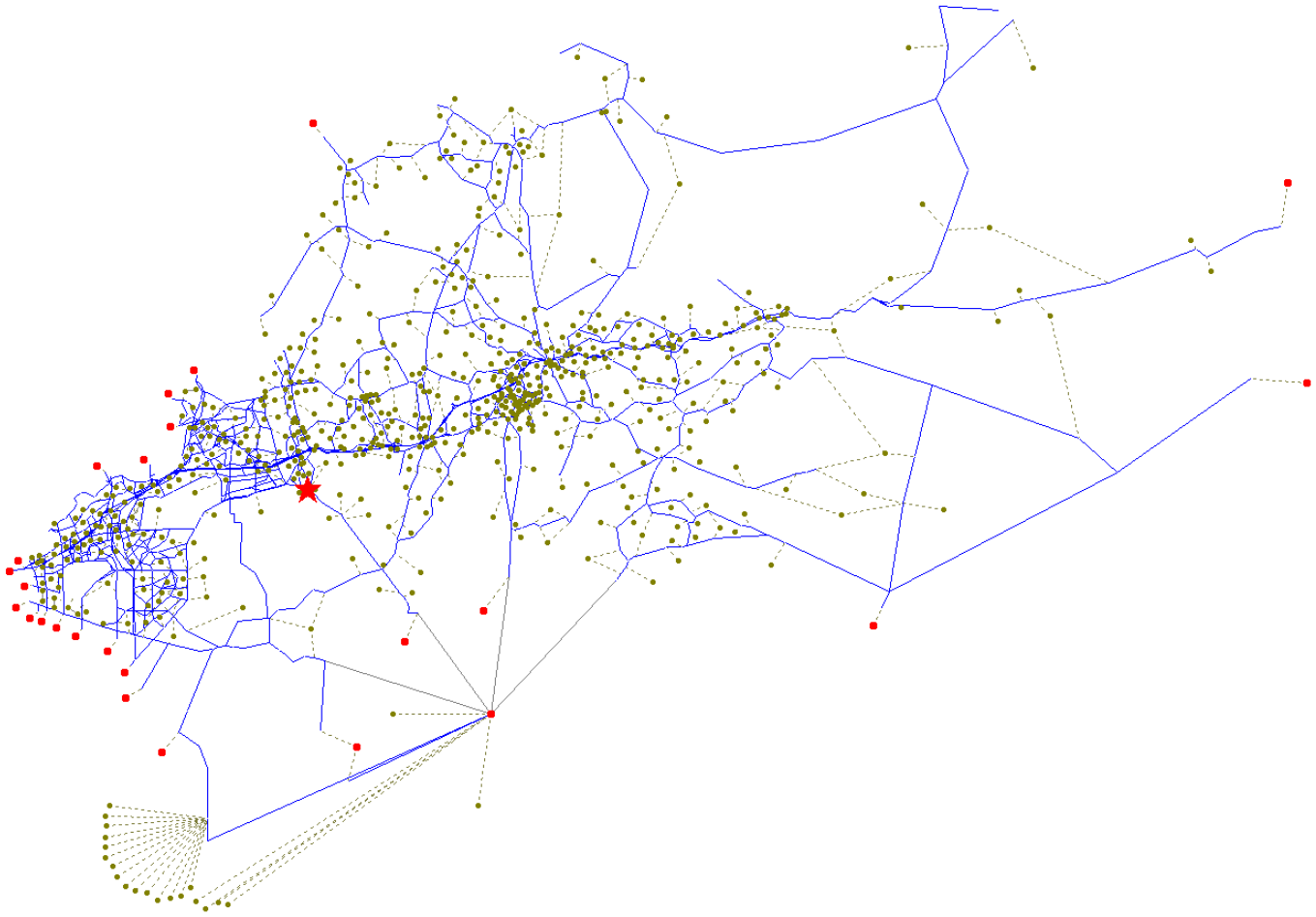

Figure 5. Travel demand model network and zone layout, Project TAZ (#612) shown as a star

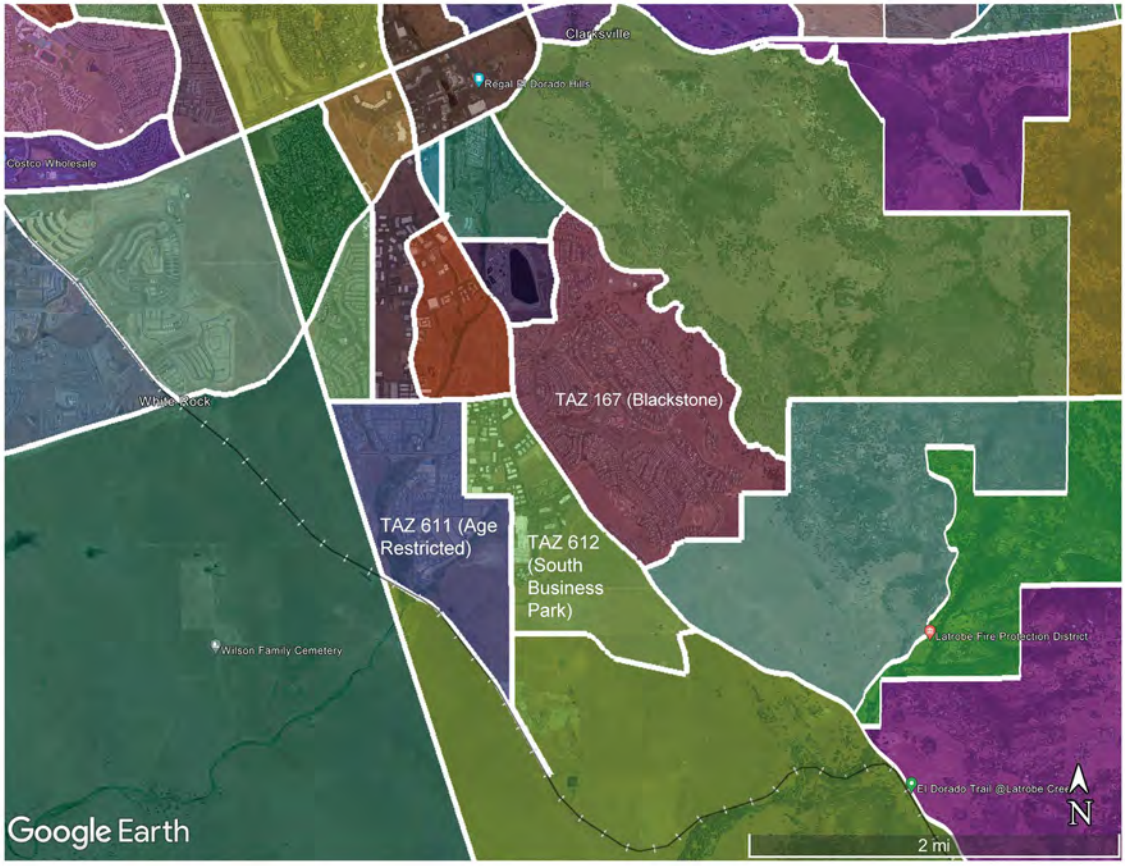

Figure 6. TAZ layout in the Project vicinity.

A three-step process for the baseline and cumulative analysis years was used to estimate per capita home based VMT.

Step 1. This step estimated TAZ[8]-to-TAZ distances from TDM skims, then combined those data with the number of TAZ-to-TAZ trips from the model's OD tables to estimate TAZ-to-TAZ VMT for drive along, shared ride, and commercial vehicles. Using the loaded networks accounts for any increases in trip distance that may result from congestion. In this step, model gateway trip lengths were adjusted based on **Table 1**. Those adjustments reflect the anticipated trip lengths for travel to/from El Dorado County from other parts of the region and state. This adjustment ensures that the TDM accounts for the full length of trips entering and exiting the County. The lengths for intrazonal trips (which have their origin and destination within the same TAZ) were estimated as half of the length of the

[8] TAZs are "transportation analysis zones", which are typically neighborhood size regions for which land use and demographic details, such as housing, employment, and population data are tabulated. The El Dorado County TDM has 674 TAZs.

TAZ's shortest centroid connector, which is the industry standard practice, and consistent with the County's VMT estimates.

Table 1. Average trip-length adjustments for TDM gateways

ID	Gateway Location	Average Additional Travel Distance (miles)	
		Internal to External (IX) Trips	External to Internal (XI) Trips
650	US 50 (to/from the west)	12.41	13.08
651	Dillard Rd	4.11	3.96
652	Sloughhouse Rd	0.00	0.00
653	Grant Line Rd/Sunrise Blvd	31.33	20.39
654	Excelsior Rd	11.07	10.38
655	Bradshaw Rd	11.32	8.80
656	Mayhew Rd	0.00	0.00
657	Jackson Rd (SR 16)	6.91	6.40
658	Local access between Bradshaw Rd and Excelsior Rd	0.00	0.00
659	Eagles Nest Rd	0.00	0.00
660	Folsom Blvd	7.73	7.19
661	Kiefer Blvd	8.88	8.54
662	Sunrise Blvd	5.47	6.14
663	Hazel Ave	8.16	5.41
664	Folsom Auburn Rd	10.17	12.66
665	Greenback Ln	5.43	5.17
666	Oak Ave	6.97	7.44
667	SR 49 (to/from the south)	0.00	0.00
668	Jackson Rd/Latrobe Rd/SR 49/Omo Ranch Rd	15.96	14.21
669	Jackson Rd	0.00	0.00
670	Latrobe Rd	0.00	0.00
671	SR 49 (to/from the north)	18.61	16.28
672	SR 88	0.00	0.00
673	N. South Rd	3.73	3.82
674	US 50 (to/from the east)	19.21	18.38

Note: Internal to External (IX) trips are trips that begin inside the El Dorado County model area and end outside. External to Internal (XI) trips are trips that begin outside the El Dorado County model area and end inside. Source: California Statewide Travel Demand Model.

Source: California Statewide Travel Demand Model as cited by Fehr and Peers in the Central El Dorado Hills Specific Plan VMT Analysis Memorandum dated January 5, 2021.

Step 2 This step estimated drive along, shared ride, and commercial vehicle trips by trip purpose from TDM trip production and attraction matrices. Then converted those data to the fraction of trip origins and destinations by trip purpose for each TAZ.

Step 3 The final step used the trip purpose data for each TAZ from task 2 to disaggregate the VMT data for each TAZ from task 1 into TAZ-to-TAZ VMT by trip purpose. Home based trips were assumed to consist of "home-based work", "home-based shop", "home-based school", "home-based other", and a portion of "other-other". Work-based trips were estimated as "work-other" and a portion of "other-other" trips. The other-other trips were allocated to the housing-based or work-based groups based on the ratio of home-other to work-other trips for each TAZ.

The resulting tables were summarized over unincorporated El Dorado County, and for TAZ 167 which was used as a surrogate for the Project[9]. TAZ 167 represents the Blackstone neighborhood across Latrobe Road from the Project. Blackstone was assumed to be the best available proxy for household size and income characteristics of the Project. It is likely a conservative comparison as the Project is envisioned to offer a wider variety of housing options with a diverse mix of housing styles and prices, where Blackstone was aimed at a higher income demographic. VMT per capita tends to increase as household income increases. The TDM is based in the CUBE software package by Bently Systems. Scripts used in each calculation step are provided **Appendix E**.

VMT Thresholds

The County's VMT thresholds set an identifiable metric by which the Project's effect on VMT will be determined to be significant or less-than-significant. Land use specific thresholds have been adopted as follows:

- Residential: 15% below baseline unincorporated countywide VMT per capita,
- Office: 15% below baseline unincorporated countywide VMT per capita,
- Retail: no net increase in VMT.

For Creekside Village, the residential use of the Project is evaluated based on the 15% reduction from baseline threshold listed above.

3.5 Level-of-Service Methodology

Level-of-service (LOS) is a qualitative indication of the level of delay and congestion experienced by motorists using an intersection. Levels-of-service are designated by the letters A through F, with "A" being the best conditions and "F" being the worst (high delay and congestion).

[9] Using a nearby TAZ as a surrogate avoids the need to artificially manipulate the socioeconomic distribution assumptions for the affected population. When a new TAZ is used, the distribution of socioeconomic characteristics for the households is copied and scaled from a similar nearby TAZ (i.e., TAZ 167). Using the existing TAZ as a surrogate maintains the County wide population and employment control totals that were adopted by the Board of Supervisors when the travel demand model and major TIF update are adopted. Artificially inflating the county wide population and employment can have nonsensical impacts on the resulting per capita VMT estimates.

Calculation methodologies, measures of performance, and thresholds for each letter grade differ for road segments, signalized intersections, and unsignalized intersections. LOS is analyzed only to demonstrate consistency with the General Plan. LOS is no longer the metric by which traffic impacts are analyzed for CEQA and the LOS discussion is not relevant to assessing impacts to the environment for purposes of CEQA.

Based on guidance from El Dorado County Community Development Agency staff, and the *County of El Dorado Department of Transportation – Traffic Impact Study Protocols and Procedures* (Dated November 2014), the following procedures described below for intersection traffic operations analysis were selected for this study.

Intersection Traffic Operations Analysis

Signalized Intersections

The methodology from Highway Capacity Manual (HCM) 7th Edition[10] are used to analyze signalized intersections. Level-of-service can be characterized for the entire intersection, each approach, or by lane group. Control delay alone (the weighted average delay for all vehicles entering the intersection) is used to characterize level-of-service for the entire intersection or an approach. Control delay and volume to capacity ratio are used to characterize level-of-service for lane groups. The average delay criteria used to determine the level-of-service at signalized intersections is presented in **Table 2**.

[10] TRB (2022) Highway Capacity Manual 7th Edition, Transportation Research Board, Washington D.C.

Table 2. Level-of-service criteria for signalized intersections

Level -of- Service	Description	Average Delay[1] (Sec. /Vehicle.)
A	Very Low Delay: This level-of-service occurs when progression is extremely favorable, and most vehicles arrive during a green phase. Most vehicles do not stop at all.	≤ 10.0
B	Minimal Delays: This level-of-service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.	10.1-20.0
C	Acceptable Delay: Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (*to service all waiting vehicles*) may begin to appear at this level of service. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.	20.1-35.0
D	Approaching Unstable/Tolerable Delays: The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.1-55.0
E	Unstable Operation/Significant Delays: This is considered by many agencies the upper limit of acceptable delays. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	55.1-80.0
F	Excessive Delays: This level, considered to be unacceptable to most drivers, often occurs with oversaturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delay levels.	> 80.0 or v/c >1.0

Note 1: Weighted average of delay on all approaches. This is the measure used by the Highway Capacity Manual to determine level-of-service. Any movement with a volume to capacity ratio (v/c) greater than 1.0 is considered to be level-of-service "F".

Source: Transportation Research Board (2022) Highway Capacity Manual, 6th Edition, Washington D.C., Chapter 19;

Unsignalized Intersections

The methodology from HCM 7th Edition is used for the analysis of unsignalized intersections. For unsignalized intersections, most of the main street traffic is un-delayed, and, by definition, have acceptable conditions. The main street left-turn movements and the minor street movements are all susceptible to delay of varying degrees. Generally, the higher the main street traffic volumes, the higher the delay for the minor movements. Separate methods are utilized for two-way stop-controlled (TWSC) intersections, and all-way stop-controlled (AWSC) intersections.

- **TWSC**: The methodology for analysis of two-way stop-controlled intersections calculates an average total delay per vehicle for each minor street movement and for the major

street left-turn movements, based on the availability of adequate gaps in the main street through traffic. A level-of-service designation is assigned to individual movements or to combinations of movements (in the case of shared lanes) based upon delay, it is not defined for the intersection as a whole. Unsignalized intersection level-of-service reported herein is for each movement (or group of movements) based upon the respective average delay per vehicle. **Table 3** presents the average delay criteria used to determine the level-of-service at TWSC and at AWSC intersections.

- **AWSC:** At all-way stop-controlled intersections, the level-of-service is determined by the weighted average delay for all vehicles entering the intersection. The methodologies for these types of intersections calculate a single weighted average delay and level-of-service for the intersection, as a whole. The average delay criteria used to determine the level-of-service at all-way stop intersections is the same as that presented in **Table 3**. Level-of-service for specific movements can also be determined based on the TWSC methodology.

It is not unusual for some of the minor street movements at unsignalized intersections to have level-of-service D, E, or F conditions while the major street movements have level-of-service A, B, or C conditions. In such a case, the minor street traffic experiences delay that can be substantial for individual minor street vehicles, but the majority of vehicles using the intersection have very little delay. Usually in such cases, the minor street traffic volumes are relatively low. If the minor street volume is large enough, improvements to reduce the minor street delay may be justified, such as channelization, widening, roundabout, or signalization.

Table 3. Level-of-service criteria for unsignalized intersections

Level of Service (LOS)	Description	TWSC[1] Average Delay by Movement (seconds / vehicle)	AWSC[2] Intersection Wide Average Delay (seconds / vehicle)
A	Little or no delay	< 10	< 10
B	Short traffic delay	> 10 and < 15	> 10 and < 15
C	Average traffic delays	> 15 and < 25	> 15 and < 25
D	Long traffic delays	> 25 and < 35	> 25 and < 35
E	Very long traffic delays	> 35 and < 50	> 35 and < 50
F	Extreme delays potentially affecting other traffic movements in the intersection	> 50 (or, v/c >1.0)	> 50

Note 1: Two-way stop-control (TWSC) level-of-service is calculated separately for each minor street movement (or shared movement) as well as major street left turns using these criteria. Any movement with a volume to capacity ratio (v/c) greater than 1.0 is considered to be level-of-service F.

Note 2: All-way stop-control (AWSC) assessment of level-of-service at the approach and intersection levels is based solely on control delay.

Source: Transportation Research Board (2022) Highway Capacity Manual, 7th Edition, Washington D.C., Chapter 20 (TWSC) and Chapter 21 (AWSC).

Signal Warrants

At each unsignalized intersection, the potential need for a traffic signal was evaluated. Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrants are met, signalization of the intersection may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would increase delays on the previously uncontrolled major street and may increase the occurrence of particular types of accidents.

As stated in revision 8 of the 2014 California Edition of the Manual on Uniform Traffic Control Devices (California MUTCD 2014)[11], "*The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:*

- *Warrant 1, Eight-Hour Vehicular Volume*
- *Warrant 2, Four-Hour Vehicular Volume*
- *Warrant 3, Peak Hour*
- *Warrant 4, Pedestrian Volume*
- *Warrant 5, School Crossing*
- *Warrant 6, Coordinated Signal System*
- *Warrant 7, Crash Experience*
- *Warrant 8, Roadway Network*
- *Warrant 9, Intersection Near a Grade Crossing*

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal."

Consistent with the industry standard of practice, this Traffic Impact Analysis did not evaluate the full panoply of warrants for traffic signals, but instead focused on the peak hour warrant. The MUTCD states that, "*This [peak hour] signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.*" So, the peak hour warrant is being used in this impact analysis study as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed the peak hour warrant are considered (for the purposes of this impact analysis) to be likely to meet one or more of the other signal warrants (such as the 4-hour or 8-hour warrants). This peak hour analysis is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction.

[11] Caltrans (2024) California Manual on Uniform Traffic Control Devices - FHWA's MUTCD 2009 Edition as amended for use in California - 2014 Edition - Revision 8, January 11, 2024. Section 4C.

Unsignalized intersections were evaluated using the Peak Hour Volume Warrant (Warrant No. 3) in the California MUTCD 2014. The Peak Hour Volume Warrant was applied where the minor street experiences long delays in entering or crossing the major street for at least one hour in a day.

Even if the Peak Hour Volume Warrant is met, a more detailed signal warrant study is recommended before a signal is installed. The more detailed study should consider volumes during the daily peak hours of roadway traffic, pedestrian traffic, and accident histories.

El Dorado County Roadway Segments

Several methods are available to evaluate roadway segments. The methodology selected for this analysis was chosen to be consistent with the 2014 El Dorado County Transportation Impact Study Guidelines.

Table 1 of that document contains the maximum flow rates for each level-of-service grade as a function of roadway classification. Those level-of-service criteria are shown in **Table 4**.

Table 4. Level-of-service criteria for county roadway segments

		HCM 2010 Planning Level Volumes[1]				
Code	**Functional Class Codes (Updated to HCM 2010)**	**A**	**B**	**C**	**D**	**E**
2A	Two-Lane Arterial	-	-	850	1,540	1,650
4AU	Four-Lane Arterial, Undivided	-	-	1,760	3,070	3,130
4AD	Four-Lane Arterial, Divided	-	-	1,850	3,220	3,290
6AD	Six-Lane Arterial, Divided	-	-	2,760	4,680	4,710
4M	Four-Lane Multi-Highway (Two Dir.)	-	2,240	3,230	4,250	4,970
2F	Two Freeway Lanes (One Dir.)	-	2,070	2,880	3,590	4,150
2FA	Two Freeway Lanes + Auxiliary Lane (One Dir.)	-	2,610	3,630	4,520	5,230
3F	Three Freeway Lanes (One Dir.)	-	3,100	4,320	5,380	6,230
3FA	Three Freeway Lanes + Auxiliary Lane (One Dir.)	-	3,640	5,070	6,320	7,310
4F	Four Freeway Lanes (One Dir.)	-	4,140	5,760	7,180	8,310

1 *Freeway LOS based on HCM 2010, Exhibit 10-8, Urban Area, Rolling Terrain, K-factor of 0.09, and D-factor of 0.60*

2-lane highway (and arterial 2-lane) LOS based on HCM 2010, Exhibit 15-30, Class II Rolling, .09 K-factor, and D-factor of 0.6

Arterial LOS based on HCM 2010, Exhibit 16-14, K-factor of 0.09, posted speed 45 mi/h

Volumes are for both directions unless noted

Caltrans Merge/Diverge/Weave Level-of-Service Analysis

Freeway merge/diverge segments, basic segments, and weaving segments were analyzed utilizing the methodologies outlined in Chapters 12-14 of the Highway Capacity Manual, 7th Edition (HCM 2016)[12]. Freeway operations and level-of-service is defined by density (passenger cars per mile per lane) which depends upon traffic volumes and the ramp characteristics. These characteristics include the length and type of acceleration/deceleration lanes; free-flow speeds; number of lanes;

[12] Transportation Research Board (2022) Highway Capacity Manual, 7th Edition, Washington, D.C.

grade; and types of facilities. **Table 5** through **Table 7** shows the relationship of level-of-service to freeway density. Note that the Leisch Method[13], which Caltrans prefers for weaving segments, was not applied because the State of California no longer considers level-of-service under CEQA, and the Leisch Method is not relevant to adopted General Plan policies.

Table 5. Level-of-Service Criteria – Basic freeway segment

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-11
B	>11-18
C	>18-26
D	>26-35
E	>35-45
F	>45, or demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 12, Washington, D.C.

Table 6. Level-of-Service Criteria - Freeway ramp merge/diverge areas

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-10
B	>10-20
C	>20-28
D	>28-35
E	> 35
F	Demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 14, Washington, D.C.

Table 7. Level-of-service criteria - freeway weaving areas

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	0-10
B	>10-20
C	>20-28
D	>28-35
E	> 35-43
F	>43, or demand exceeds capacity

Source: Transportation Research Board (2022) Highway Capacity Manual, Chapters 13, Washington, D.C.

[13] Caltrans (2012) Highway Design Manual, Index 504.7

3.6 General Plan Level-of-Service Standards

Conformity to General Plan level-of-service policies for the Project were determined based on the methods described above and identified as "deficient" in accordance with El Dorado County protocols and procedures[14] . Level-of-service is only applicable to General Plan conformity. Delay and level-of-service is not a significant impact under CEQA.

General Plan Circulation Policy TC-Xd provides that level-of-service for county-maintained roads and state highways within the unincorporated areas of the county shall not be worse than level-of-service E in the community regions or level-of-service D in the rural centers and rural regions, unless specifically exempted as shown in **Table 8**.

Table 8. General plan exceptions to level-of-service standards

El Dorado County Roads Allowed to Operate at Level-of-Service F[a] (Through December 31, 2029)		
Road Segments		**Max. v/c[b]**
Cambridge Road	Country Club Drive to Oxford Road	1.07
Cameron Park Drive	Robin Lane to Coach Lane	1.11
Missouri Flat Road	US 50 to Mother Lode Drive	1.12
	Mother Lode Drive to China Garden Road	1.20
Pleasant Valley Road	El Dorado Road to State Route 49	1.28
US 50	Canal Street to junction of State Route 49 (Spring Street)	1.25
	Junction of State Route 49 (Spring Street) to Coloma Street	1.59
	Coloma Street to Bedford Avenue	1.61
	Bedford Avenue to beginning of freeway	1.73
	Beginning of freeway to Washington overhead	1.16
	Ice House Road to Echo Lake	1.16
State Route 49	Pacific/Sacramento Street to new four-lane section	1.31
	US 50 to State Route 193	1.32
	State Route 193 to county line	1.51

Note a: Roads improved to their maximum width given right-of-way and physical limitations
Note b: Volume-to-capacity ratio.
Source: 2004 General Plan (amended January 2009) Table TC-2

All but two study intersections are within the El Dorado Hills community region and shall operate at level-of-service E or better. Intersection #22 (White Rock Rd/Clarksville Crossing) and #23 (White Rock Road/US 50 EB) are outside of the community region and shall operate at level-of-service D or better. If a project causes the peak hour level-of-service or volume/capacity ratio on a county road or state highway that would otherwise meet the county standards (without the project) to exceed the values listed in the above tables and text, then the impact shall be considered significant. Because this Traffic Impact Analysis is not a CEQA document, facilities and intersections will be noted as having deficient level-of-service rather than an impact.

If any county road or state highway fails to meet the above listed county standards for peak hour level-of-service or volume/capacity ratios under without Project conditions, and the Project will

[14] Traffic Impact Study Protocols and Procedures, County of El Dorado, Department of Transportation, 2008.

"significantly worsen" conditions on the road or highway, then the impact shall be considered significant. The term, "significantly worsen" is defined for the purpose of this paragraph according to General Plan Policy TC-Xe as follows:

A. A two percent increase in traffic during the AM peak hour, PM peak hour, or daily; or,

B. The addition of 100 or more daily trips; or,

C. The addition of 10 or more trips during the AM peak hour or the PM peak hour.

Though not explicitly stated in the General Plan policies, 95% left turn queues that exceed available storage lengths are considered to operate deficiently. The highway capacity manual calculations assume that left turn queues do not typically spill out of turn pockets to block through traffic. In keeping with the state of the practice, where the Project adds less than one car length (25 feet) to 95% left turn queues that exceed available storage, that addition is considered to de minimis.

3.7 Analysis Tools

El Dorado County Travel Demand Model (TDM)

As noted in prior sections, The El Dorado County Travel Demand Model (version EDC_CAT_082118) was utilized to estimate VMT and forecast growth in traffic volumes on study area roadways.

NCHRP 255 Adjustment

The NCHRP 255[15] adjustment procedure was used to improve turning movement forecasts for EPAP 2030 and Cumulative 2040 conditions.

Macroscopic Intersection Analysis

Control delay and level-of-service for study intersections were calculated using PTV Vistro[16] traffic analysis software (Version 2024, SP 0-2). Vistro is a complete traffic analysis software package used for evaluating development impacts, optimizing traffic signal timings, and evaluating intersection levels of service. It implements the methodologies of the HCM 2000, 2010, and 6th Ed. for signalized and unsignalized intersections, and requires data on road characteristics (geometric), traffic counts, and the signal timing data for each analysis intersection.

When calculating intersection control delay and level-of-service for all study intersections, default parameters were used, except for locations where specific field data were available (e.g., peak-hour factors). Heavy vehicle percentages during the peak-hour of 2% were assumed.

[15] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.
[16] PTV Vistro (2017), Portland OR.

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4.0 EXISTING (2023) CONDITIONS

4.1 Data Sources

The analysis tools require a variety of data to generate the evaluation criteria. The following sections describe data collection procedures for Existing Conditions. There were three primary data elements (roadway characteristics, intersection turning movement counts, and traffic control data); and two supplementary elements (other recent studies, and field data) that comprised the data collection program for this traffic analysis.

Roadway Geometry and Usage Characteristics

The geometry and usage data for the analysis were collected using aerial photographs, field visits, and prior studies. Current intersection geometry was field validated. **Table 9** shows the key items included in the geometric data and the source for each item.

Table 9. Key items and sources for geometry and usage data

Key Item	Source
Lane configurations & width	Aerial photographs and field visits
Lane utilization	Prior studies, aerial photographs, and field visits
Intersection spacing	Aerial photographs and field visits
Length of storage bays	Aerial photographs and field visits
Transit stops and routes	Transit schedules, aerial photographs, and field visits
Turn prohibitions or allowance	Aerial photographs and field visits
Right Turn on Red (RTOR)	Turn movement counts
Signal timing	Timing sheets provided by El Dorado County

Lane configurations and width – These data specify the number of lanes and the width of the roadway in each direction, and the directional turns that are allowed from each lane.

Lane utilization – These data specify how lanes are used by drivers, such as traffic distribution between lanes on a multi-lane roadway.

Intersection spacing – These data refer to the distance between intersections, which is recorded in feet.

Length of storage bays – These data refer to the length (feet) of available storage for left- or right-turning vehicles where exclusive turn lanes are available. These data are collected for right-turn lanes when the parking lane is used as a right- turn lane.

Transit stops and routes – A transit stop is an area where passengers await, board, alight, and transfer between transit vehicles. A transit route is the roadway that transit vehicles operate on.

Turn prohibitions or allowance – This data specifies if right turns on red (RTOR) are allowed on the roadway.

Right Turn on Red – Volumes making a right turn on red were based on observed traffic counts.

Intersection Turning Movement Counts

Existing morning and evening peak-period vehicle and pedestrian turning movement counts collected in April 2023 were used for this study. Historic 2017 and 2018 counts were also used as a "floor" to ensure that there were no COVID related reductions in the 2023 counts. Traffic count data sheets are provided in **Appendix A** of this report. Traffic volumes between intersections were balanced where differences could not reasonably be attributed to a vehicle platoon being held at one of the lights, driveway access between intersections, or shifts in the time of the peak hour from one intersection to another. All balancing was done by adding vehicle trips to the 2023 turning movements. Observed intersection peak hour factors (PHF) were applied. **Figure 7** provides a summary of the intersection lane geometry and peak period turning movements under Existing 2023 conditions.

Segment Counts

Turning movement counts can significantly overstate segment volumes. The practice of balancing traffic flows between adjacent intersections when counts may have been collected on different days and/or the corresponding intersections experience slightly different peak-hours can make those counts too conservative to apply to the segments.

Segment counts collected by El Dorado County on multiple days in 2023 and the development team were used to analyze road segments. Segment counts are summarized in **Table 12** below. Raw count data can be found in **Appendix A.**

4.2 Existing Condition Intersection and Segment Level-of-Service

Table 10 through **Table 12** present a summary of level-of-service results for the study intersections and segments under Existing 2023 conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **bold black** typeface denote deficient traffic operations, and unsignalized intersections that meet the peak hour signal warrant are denoted with an asterisk and shading.

The results indicate thirteen study intersections operate deficiently with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way: AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard: PM;
- (6) Latrobe Road/White Rock Road AM and PM;
- (7) Latrobe Road/Golden Foothill Parkway (N): PM;
- (8) Latrobe Rd/Suncast Ln PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S): AM and PM;
- (10) Latrobe Road/Investment Boulevard: PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathews Pkwy PM;
- (19) White Rock Road/Windfield Way AM and PM;

- (20) White Rock Road/Post Street: AM and PM; and
- (21) White Rock Road/Valley View Parkway: AM and PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. The remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

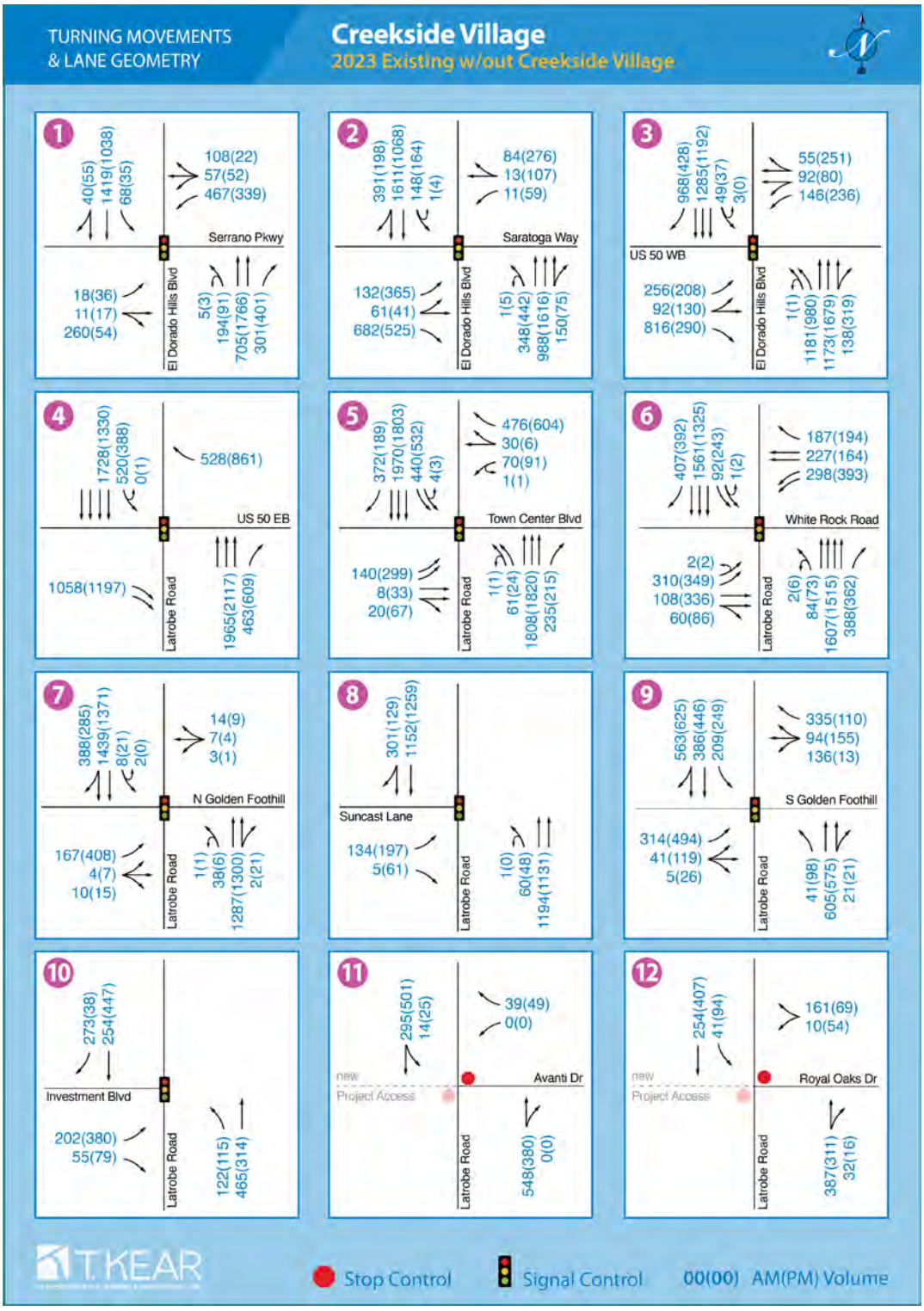

Figure 7. Existing 2023 conditions lane geometry and turning movements

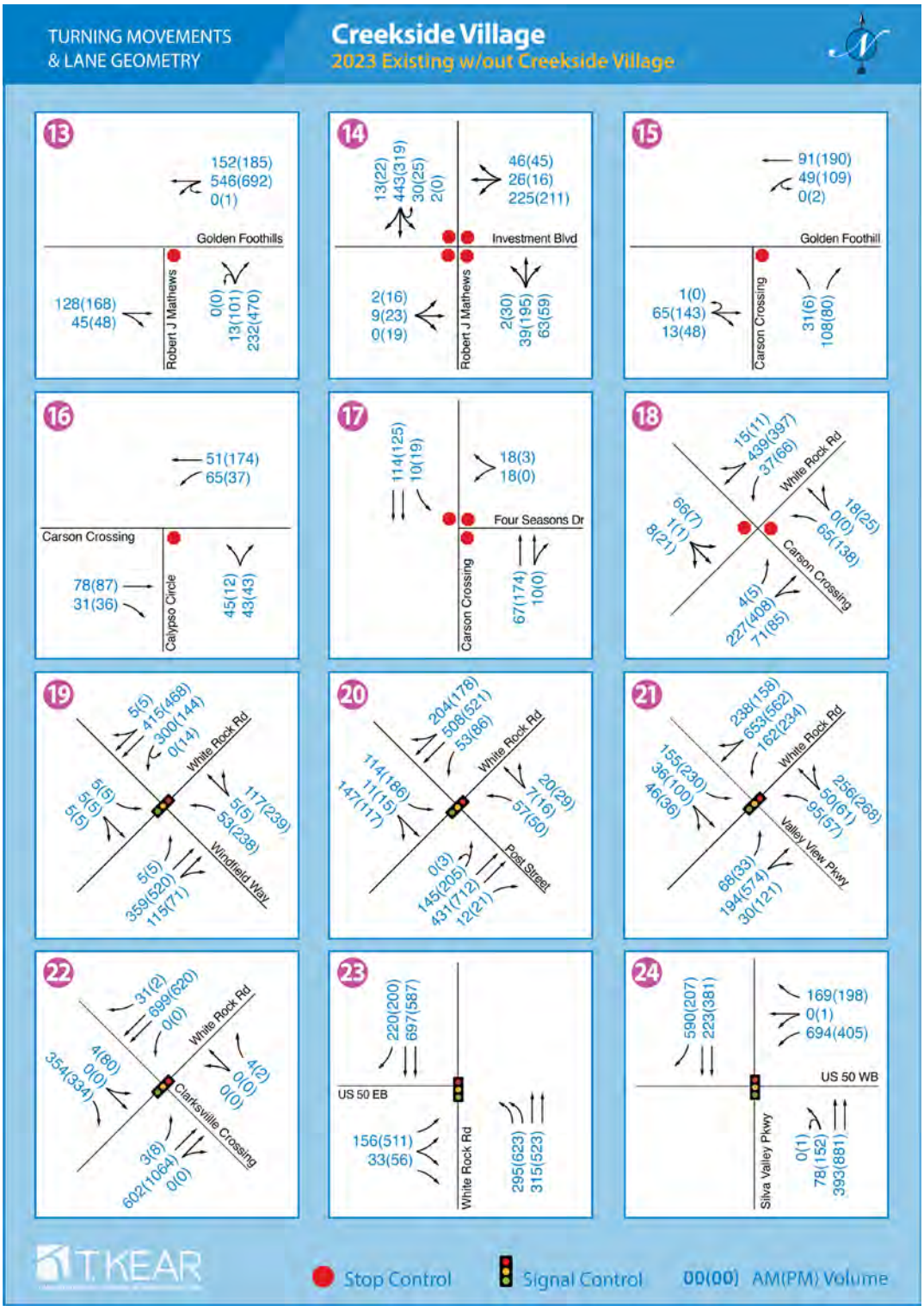

Figure 7. Existing 2023 conditions lane geometry and turning movements (continued)

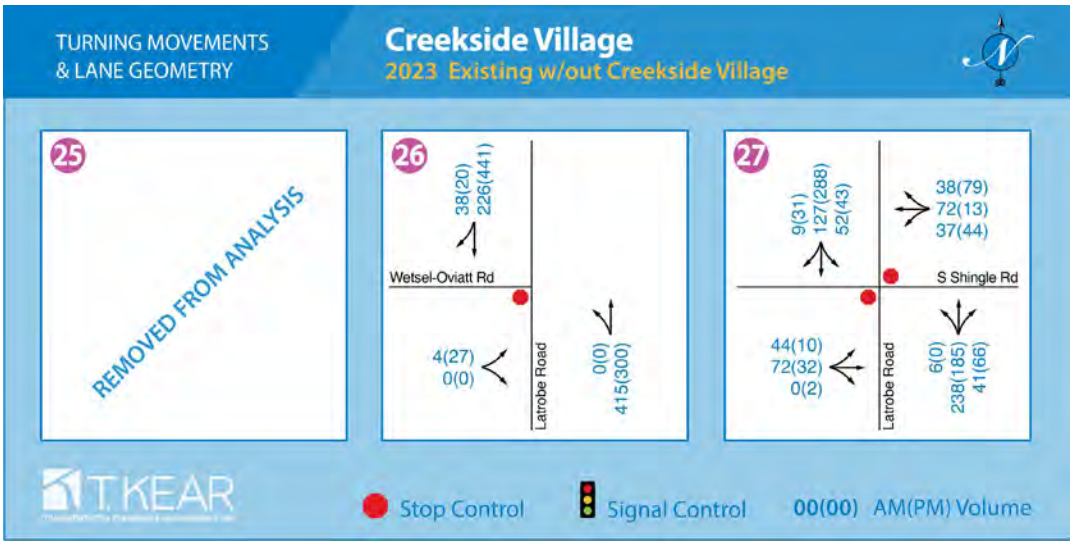

Figure 7. Existing 2023 conditions lane geometry and turning movements (continued)

Table 10. Existing 2023 intersection delay and level-of-service without the Project

ID	Intersection	Control	Left Turn Storage		2023 AM Peak No Project				2023 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB	260	**112.9**	**F**	NB	**296**	46.8	D	NB	91
			SB	110			SB	110			SB	38
			EB	100			EB	25			EB	34
			WB	430			WB	423			WB	197
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB	230	**147.8**	**F**	NB	**712**	**107.8**	**F**	NB	**1334**
			SB	100			SB	**202**			SB	**252**
			EB	150			EB	116			EB	**290**
			WB	N/A			WB	N/A			WB	N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB	N/A	**94.1**	**F**	NB	N/A	47.9	D	NB	N/A
			SB	220			SB	95			SB	68
			EB	N/A			EB	262			EB	297
			WB	150			WB	**175**			WB	**277**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB	N/A	23.0	C	NB	N/A	22.8	C	NB	N/A
			SB	570			SB	363			SB	298
			EB	N/A			EB	271			EB	445
			WB	N/A			WB	0			WB	0
5	Latrobe Road/Town Center Boulevard	Signal	NB	220	21.1	C	NB	29	38.1	D	NB	13
			SB	330			SB	198			SB	**472**
			EB	300			EB	65			EB	156
			WB	100			WB	59			WB	86
6	Latrobe Road/White Rock Road	Signal	NB	270	33.0	C	NB	172	51.0	D	NB	157
			SB	260			SB	86			SB	227
			EB	360			EB	275			EB	306
			WB	160			WB	**266**			WB	**507**
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB	200	20.9	C	NB	35	20.9	C	NB	7
			SB	200			SB	11			SB	24
			EB	100			EB	79			EB	**180**
			WB	N/A			WB	N/A			WB	N/A
8	Latrobe Road/Suncast Lane	Signal	NB	280	9.3	A	NB	39	10.8	B	NB	32
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	91			EB	**127**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB	220	26.0	C	NB	32	37.5	D	NB	86
			SB	530			SB	157			SB	253
			EB	100			EB	**130**			EB	**309**
			WB	N/A			WB	N/A			WB	N/A
10	Latrobe Road/Investment Boulevard	Signal	NB	180	10.8	B	NB	35	18.0	B	NB	66
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	68			EB	**232**
11	Latrobe Road/Avanti Drive	TWSC	NB	N/A	(WB) 12.7	B	NB	N/A	(WB) 11.1	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB	320	(WB) 14.0	B	NB	0	(WB) 21.8	C	NB	0
			SB	320			SB	4			SB	7
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB	N/A	(NB) 18.3	C	NB	N/A	**(NB) 2479.7 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

Table 10. Existing 2023 intersection delay and level-of-service without the Project (continued)

ID	Intersection	Control	Left Turn Storage		2023 AM Peak No Project				2023 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB	N/A	25.0	C	NB	N/A	19.6	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB	N/A	(NBL) 10.5	B	NB	N/A	(NBL) 14.8	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	220			WB	3			WB	8
16	Carson Crossing Road/Calypso Circle	TWSC	NB	N/A	(NB) 10.2	B	NB	N/A	(NB) 9.5	A	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	190			WB	4			WB	2
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB	N/A	7.9	A	NB	N/A	8.1	A	NB	N/A
			SB	100			SB	1			SB	2
			WB	N/A			WB	N/A			WB	N/A
18	White Rock Road/Carson Crossing Road	TWSC	NB		(NBL) 22.0	C	NB	N/A	**(NBL) 69.3**	**F**	NB	N/A
			SB				SB	N/A			SB	N/A
			EB				EB	0			EB	0
			WB				WB	2			WB	5
19	White Rock Road/Windfield Way	Signal	NB	150	25.8	C	NB	80	29.1	C	NB	**331**
			SB	100			SB	10			SB	10
			EB	200			EB	10			EB	10
			WB	200			WB	**363**			WB	**222**
20	White Rock Road/Post Street	Signal	NB	N/A	39.2	D	NB	N/A	70.4	E	NB	N/A
			SB	100			SB	**319**			SB	**683**
			EB	100			EB	**245**			EB	**327**
			WB	120			WB	99			WB	**158**
21	White Rock Road/Valley View Parkway	Signal	NB	100	75.0	E	NB	**106**	54.2	D	NB	70
			SB	100			SB	206			SB	**304**
			EB	100			EB	92			EB	50
			WB	100			WB	**206**			WB	**321**
22	White Rock Road/Clarksville Crossing	Signal	NB	N/A	25.8	C	NB	N/A	29.1	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	460			EB	6			EB	10
			WB	290			WB	0			WB	0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB	500	16.9	B	NB	172	31.7	C	NB	316
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB	550	34.2	C	NB	98	19.3	B	NB	192
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
25	not used				not used							
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB	150	(EB) 13.5	B	NB	N/A	(EB) 15.2	C	NB	N/A
			SB	100			SB	N/A			SB	N/A
			EB	200			EB	N/A			EB	N/A
			WB	200								
27	Latrobe Road/S. Shingle Road	TWSC	NB	N/A	(EB) 18.1	C	NB	N/A	(EB) 16.4	C	NB	N/A
			SB	100			SB	N/A			SB	N/A
			EB	100			EB	N/A			EB	N/A
			WB	120			WB	N/A			WB	N/A

* Denotes intersections where the peak-hour signal warrant is met.

Table 11. Existing 2023 freeway facility density and level-of-service without the Project

No	Segment	Segment Type	Method	2023 No Project AM	2023 No Project PM
Westbound US 50					
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	22.1/C	16.8/B
2	Silva Valley offramp	diverge	HCM 7th Ed.	18.7/B	13.2/B
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	15.2/B	12.6/B
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	n/a	n/a
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	15.1/B	11.1/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	11.8/B	10.8/A
7	El Dorado Hills Blvd onramp	merge	HCM 7th Ed.	28.4/D	22.9/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	29.5/D	21.9/B
Eastbound US 50					
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	10.9/A	18.4/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	20.8/C	29.6/D
11	Latrobe loop offramp	diverge		20.0/C	28.8/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	3.7/A	8.8/A
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	7.2/A	11.8/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	7.3/A	10.7/A
15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	13.8/B	19./B
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	n/a	n/a
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	9.7/A	14.5/B

Density in units of passenger cars per mile per lane.

*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Table 12. Existing 2023 arterial level-of-service check without the Project

Arterial Segment	**Description (and level-of-service E threshold)**	**2023 AM No Project** (vehicle trips)	**2023 PM No Project** (vehicle trips)
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650 vehicle trips)	593 (Better than LOS E)	655 (Better than LOS E)
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650 vehicle trips)	1015 (Better than LOS E)	932 (Better than LOS E)
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln)	4-lane divided arterial (threshold 3290 vehicle trips)	1998 (Better than LOS E)	2030 (Better than LOS E)
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280 vehicle trips, extrapolated from 6-lane divided arterial)	2931 (Better than LOS E)	3018 (Better than LOS E)
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	2-lane arterial (threshold 1650 vehicle trips)	1194 (Better than LOS E)	1440 (Better than LOS E)

5.0 ASSESSMENT OF PROPOSED CREEKSIDE VILLAGE PROJECT

5.1 Proposed Project Trip Generation

Anticipated Traffic generation by the Project reflects both trips generated by the Project itself, and, avoided trips in 2033 and 2040 from the commercial land uses that the El Dorado County TDM assumes will take place on the Project parcels.

Project Trips

Anticipated trips are based on Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021). **Table 13** shows anticipated Project Trip Generation. To be conservative, trip generation estimates are generally based on the higher rates for the peak hour of the generator rather than the peak hour of adjacent street traffic. The higher of either the average trip generation rate or equation-based trip generation rate was also used. Use of these higher rates has historically been preferred by El Dorado County.

Table 13. Trip generation

Land Use	Quantity	Metric	Daily	AM Peak Hour			PM Peak Hour		
				Total	Inbound	Outbound	Total	Inbound	Outbound
Single Family Detached Housing (ITE Use 210)	150 DU (1)	Notes	Equation Rate	Equation Rate for Peak Hour of Generator			Equation Rate for Peak Hour of Generator		
		Rate	9.77	0.76	26%	74%	1.01	64%	36%
		Trips	1465	114	30	84	151	97	54
Age Restricted Single Family Detached Housing (ITE Use 251)	613 DU (1)	Notes	Equation Rate	Average Rate for Peak Hour of Generator			Average Rate for Peak Hour of Generator		
		Rate	4.51	0.34	43%	57%	0.39	56%	44%
		Trips	2767	208	90	118	239	134	105
Total residential trips			4232	322	120	202	390	231	159
Less 2% internalization based on Travel Demand Model			-85	-6	-2	-4	-8	-5	-3
Total New Project Trips			**4147**	**316**	**118**	**198**	**382**	**226**	**156**

(1) DU = Dwelling unit

Source: ITE (2021) Trip Generation Manual, 11th Ed., Institute of Transportation Engineers, Washington DC.

(Dated October 25, 2024)

Trip Distribution with Adjustment for Latrobe Elementary

Project trip distribution was based on the El Dorado County TDM, observed counts, prior studies in the vicinity of the Project, and consultation with El Dorado County staff. Additional adjustments were made to reflect school trips to Latrobe Elementary based on student generation statistics published by the school district. Trip distribution is shown in **Figure 8**. Assignment of the Project trips to study intersections is shown in **Figure 9**.

Figure 8. Creekside Village Project trip distribution

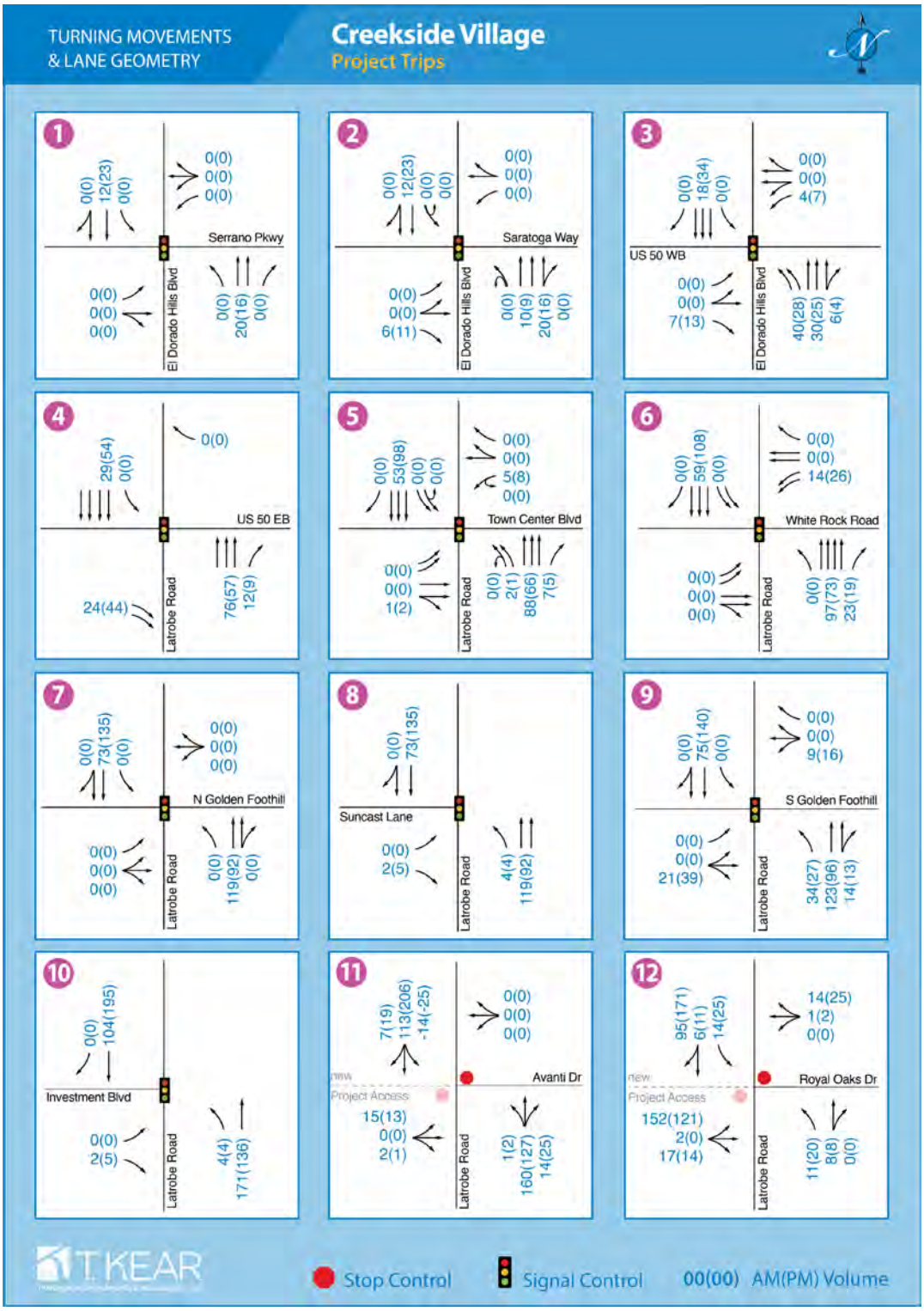

Figure 9. Project trip assignment for 763 dwelling units

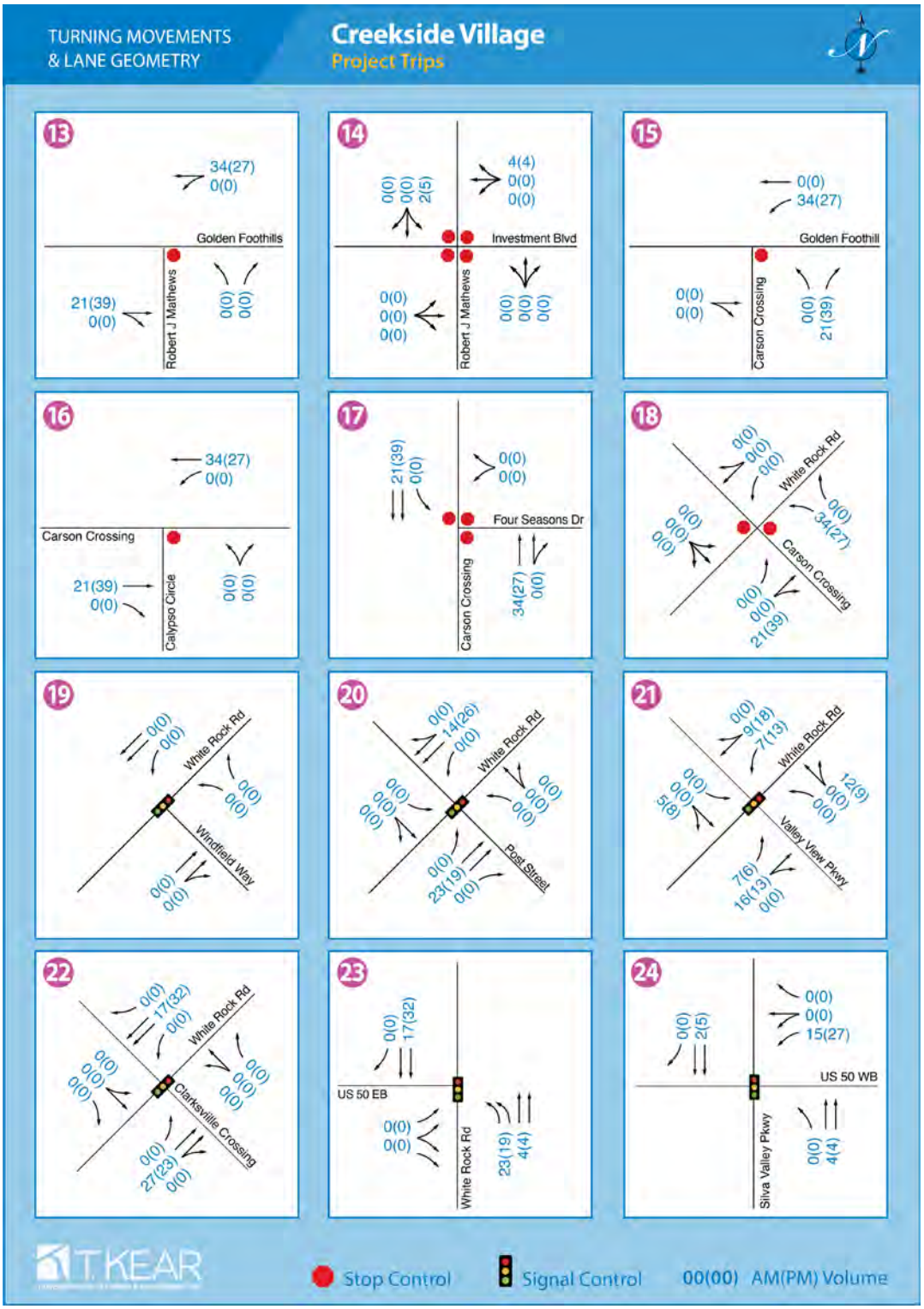

Figure 9. Project trip assignment for 763 dwelling units (continued)

Figure 9. Project trip assignment for 763 dwelling units (continued)

Avoided Trips

Avoided trips are additional peak hour trips that the TDM assumes in the future from growth within the Project TAZ. These avoided trips were estimated by running the TDM with and without assumed 2020[17] through 2040 employment growth for the effected portion of the Project's transportation analysis zone (TAZ 612). Creekside Village replaces 62% of the available land in TAZ 612 (**Figure 10**), therefore 62% of the employment growth was eliminated from TAZ 612 when estimating the number of avoided trips using the TDM. TDM employment assumptions for TAZ 612 are shown in **Table 14** below, along with the resulting avoided trips. Avoided trips for 2040 are shown in **Figure 11**. Using straight line interpolation, 2033 avoided trips reflect the 13 years of unrealized growth from 2020. These avoided trips in this report for the Reduced Impact Alternative match those in the April 25, 2024 report for the Preferred Project.

[17] 2020 is used rather than 2023 because the process of purchasing the land and de-annexing it from the business park meant that no new employment on this portion of the model TAZ occurred as of that year.

Figure 10. Creekside Village is 62% of available land in TAZ 612

Table 14. TDM employment assumptions and avoided trips

	2020	2040 without Project	2040 with Project	Notes
Employment				
Retail	224	433	304	Creekside Village is 62% of remaining land in TAZ 612. Housing is assumed to replace 62% of employment growth. (With Project there are 2097 fewer employees.)
Non-Retail	2115	5355	3387	
Total	2339	5788	3691	
Avoided Trips AM (PM) [Daily]				
In	526 (311) [4735]			
Out	207 (518) [4680]			

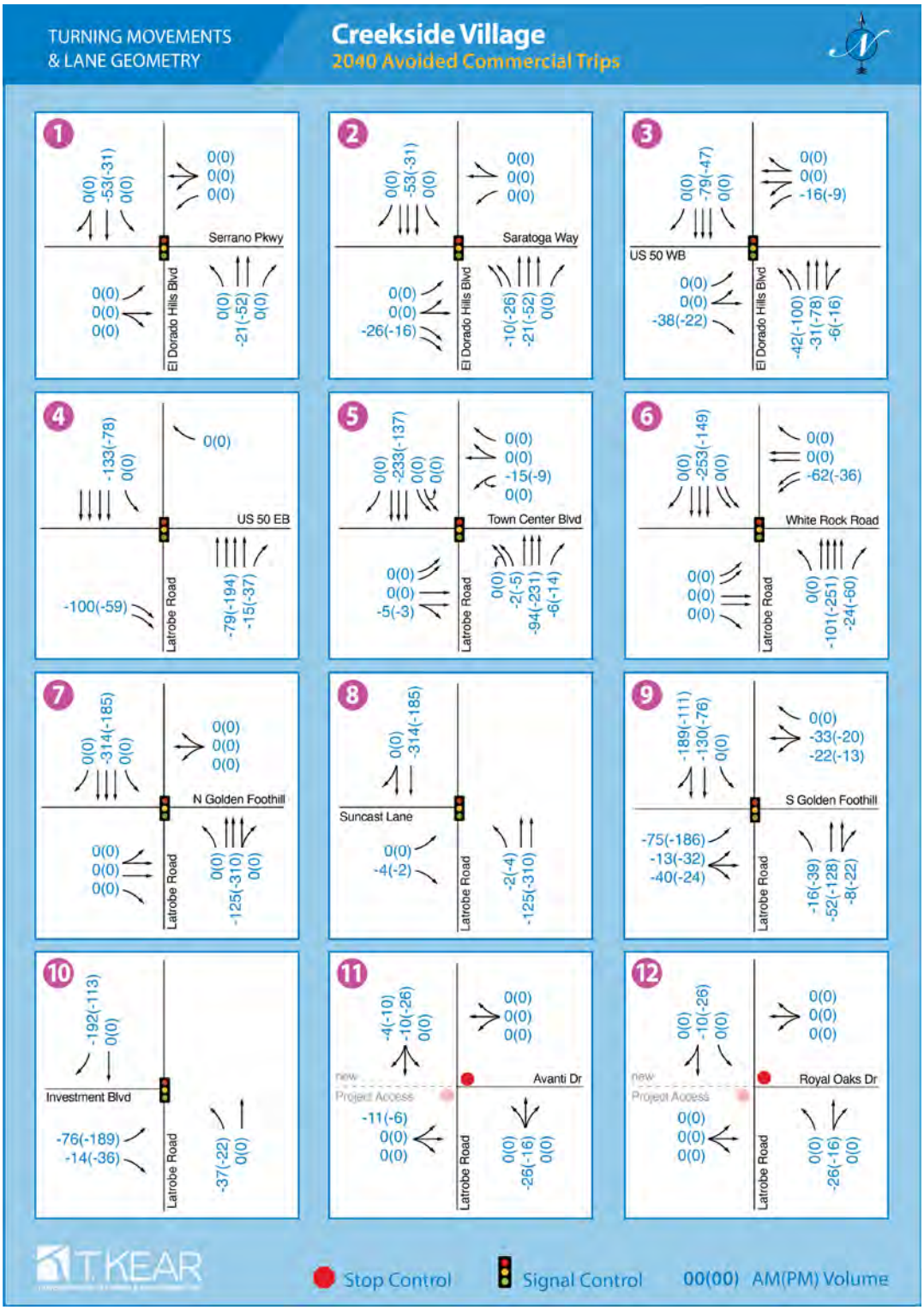

Figure 11. Creekside Village avoided industrial and R&D trips in 2040

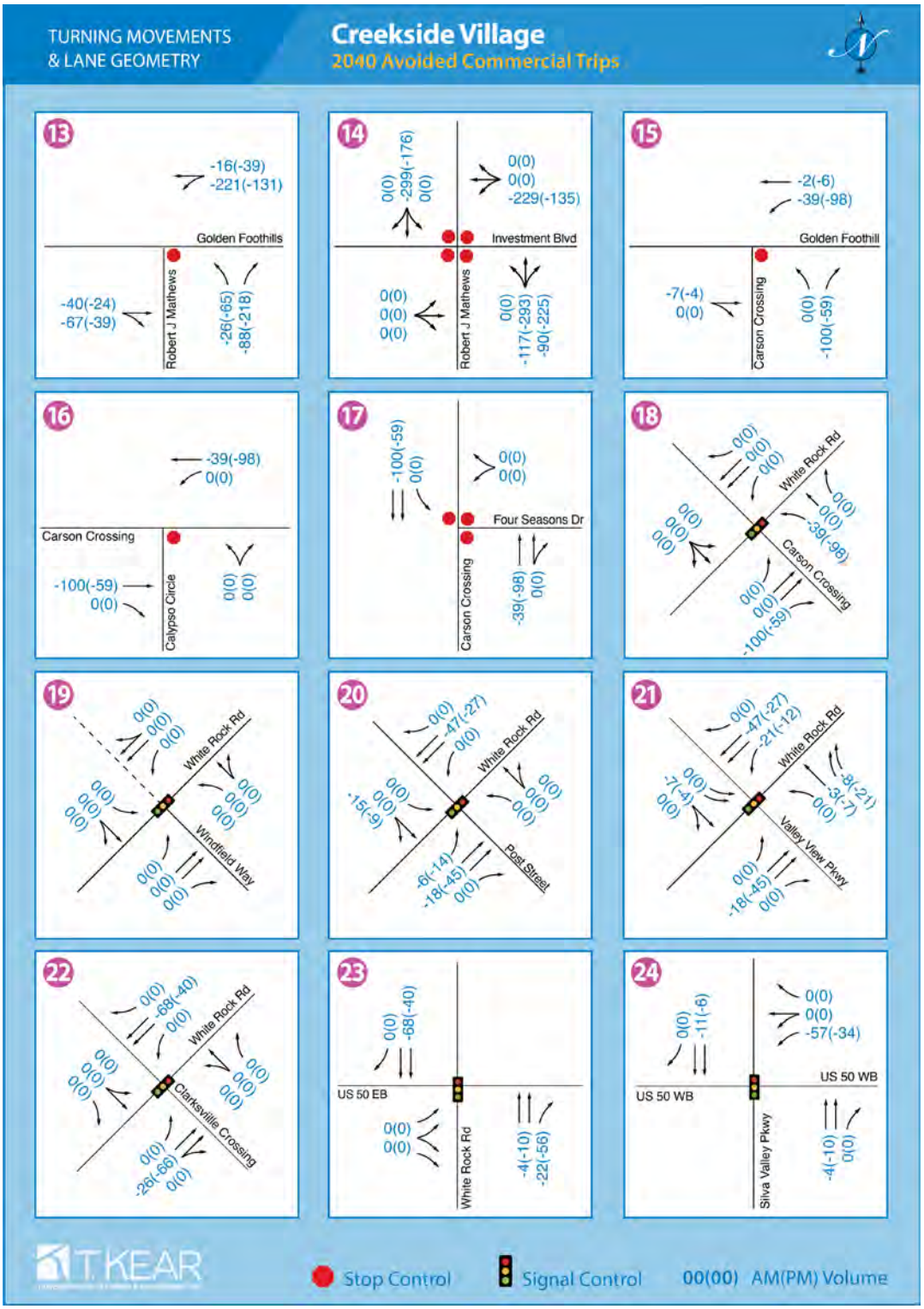

Figure 11. Creekside Village avoided industrial and R&D trips in 2040 (continued)

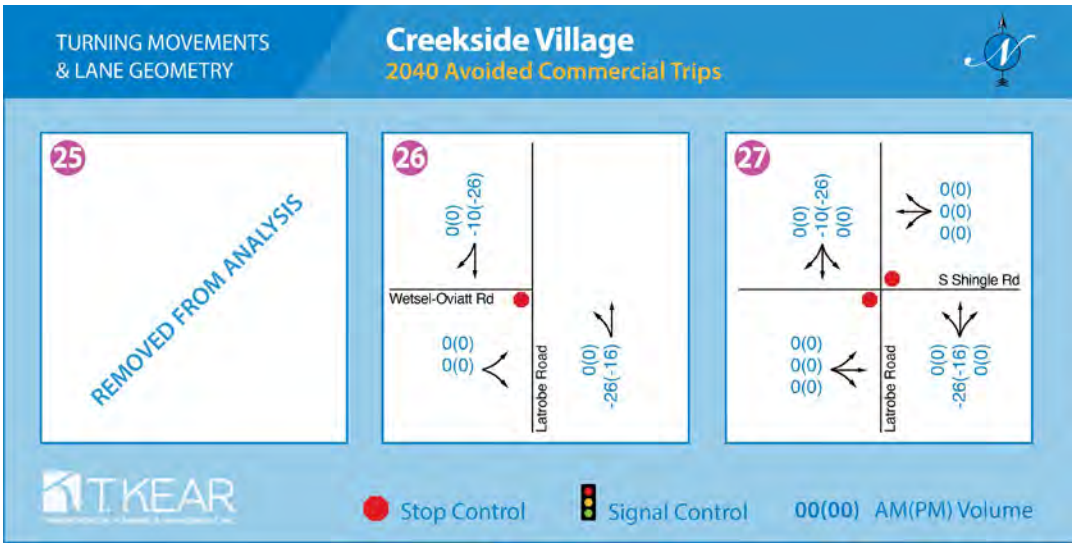

Figure 11. Creekside Village avoided industrial and R&D trips in 2040 (continued)

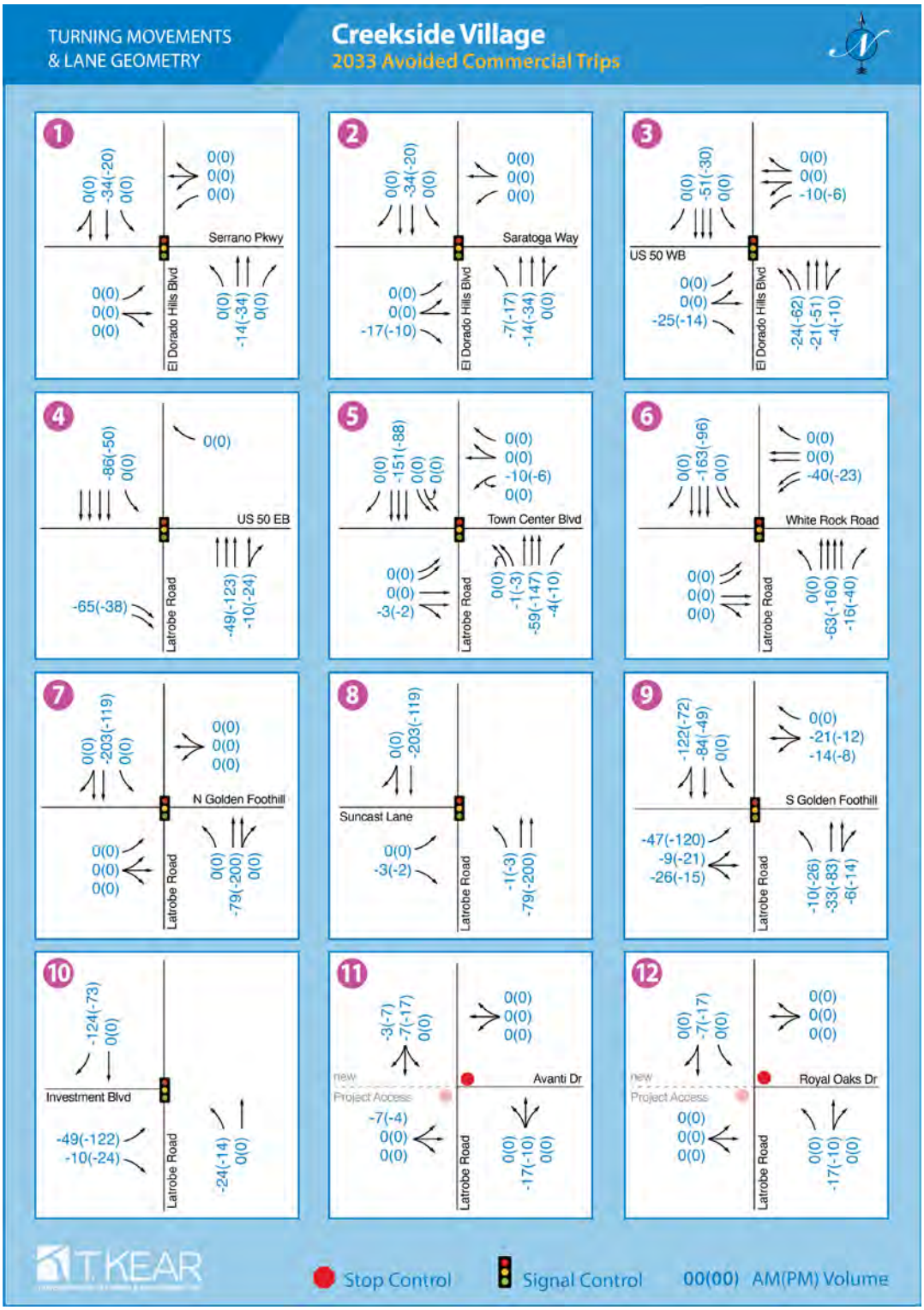

Figure 12. Creekside Village avoided industrial and R&D trips in 2033

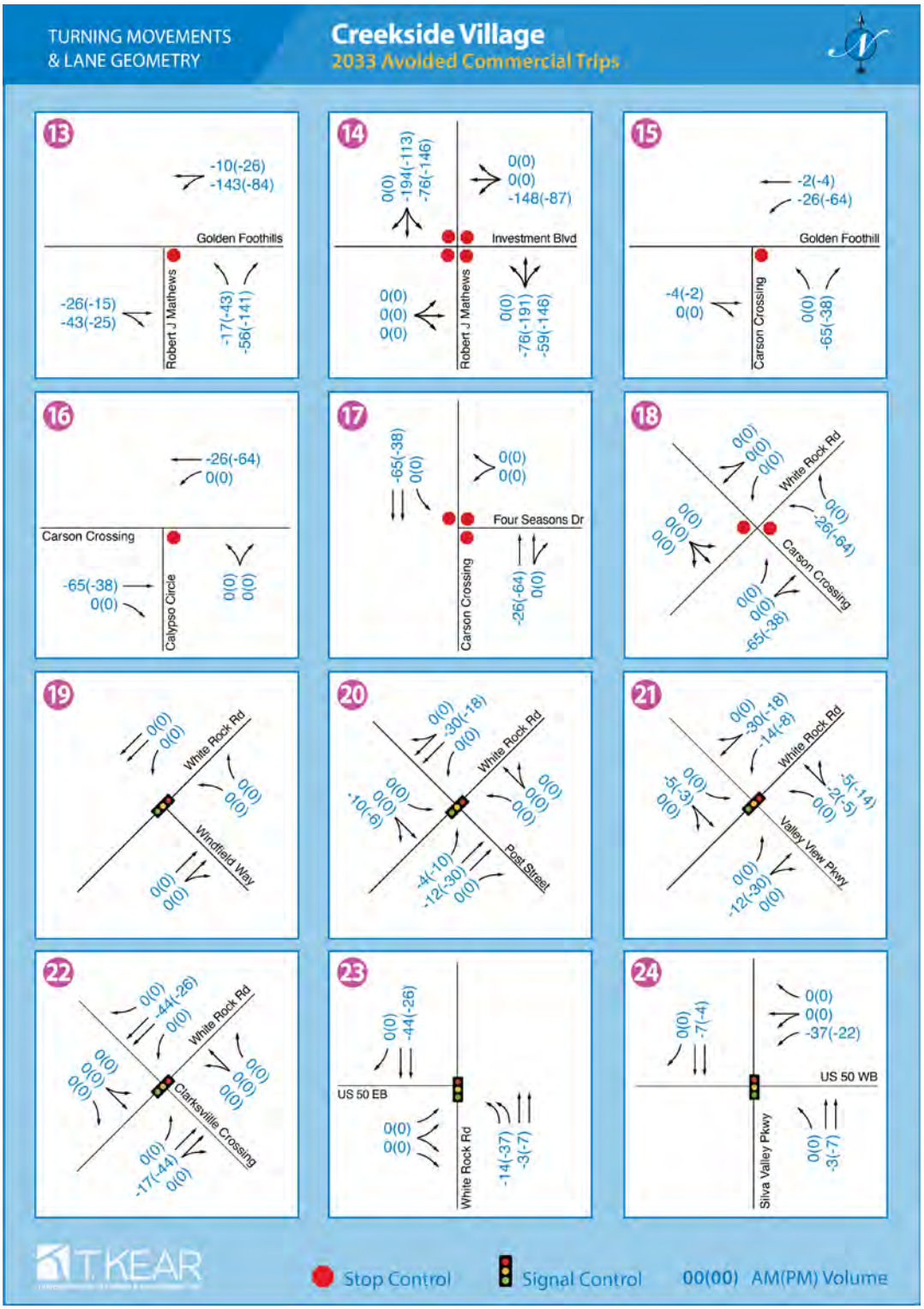

Figure 12. Creekside Village avoided industrial and R&D trips in 2033 (continued)

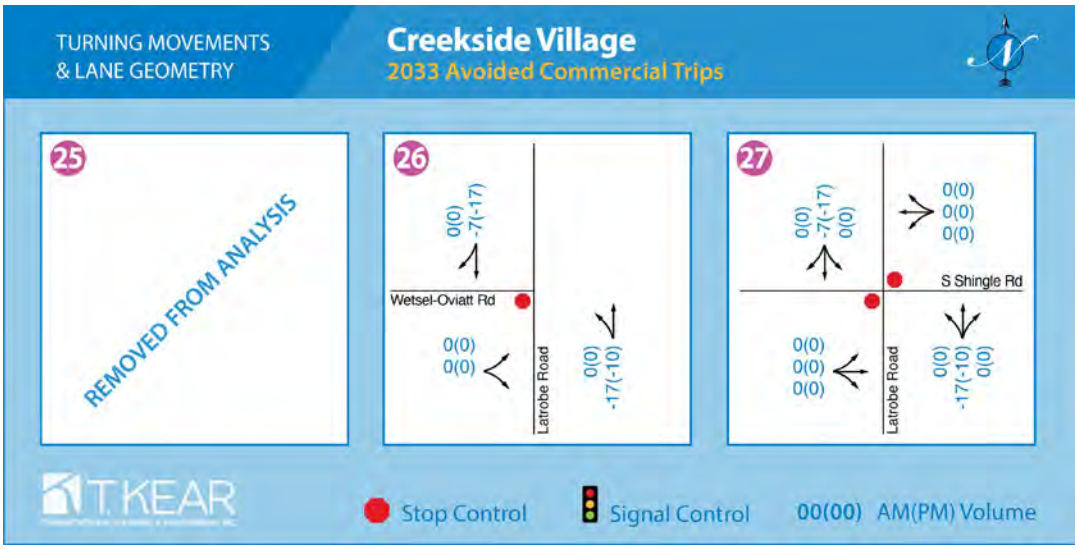

Figure 12. Creekside Village avoided industrial and R&D trips in 2033 (continued)

6.0 EXISTING 2023 PLUS PROPOSED PROJECT CONDITIONS

6.1 Traffic Volumes

Peak hour traffic associated with the proposed Project was added to the Existing 2023 condition scenario's traffic volumes, delay and level-of-service were determined at the study intersections and segments. **Figure 13** summarizes the turning movements and lane configurations for the Existing 2023 Plus Proposed Project scenario.

6.2 Level-of-Service

Table 15 through **Table 17** present a summary of level-of-service results for the study intersections and segments under Existing 2023 conditions with and without Project traffic. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **Bold black** text in **Table 15** through **Table 17** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. **Bold red** text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies. Unsignalized intersections that meet the peak hour signal warrant are shaded and denoted with an asterisk.

Fifteen intersections are anticipated to have level-of-service and/or queue spillback deficiencies.

<u>4 Locations that are deficient with or without the Project that are not worsened:</u>

- (5) Latrobe Road/Town Center Boulevard: PM;
- (7) Latrobe Road/Golden Foothill Parkway (N): PM;
- (19) White Rock Road/Windfield Way AM and PM; and
- (20) White Rock Road/Post Street: AM and PM.

<u>10 Locations that are deficient with or without the Project that are worsened:</u>

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way: AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM;
- (6) Latrobe Road/White Rock Road PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S): AM and PM;
- (10) Latrobe Road/Investment Boulevard: PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathews Pkwy PM;
- (18) White Rock Road/Carson Crossing Road PM; and
- (21) White Rock Road/Valley View Parkway: AM and PM.

<u>1 Location where the Project is anticipated to cause new deficiencies:</u>

- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. the remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

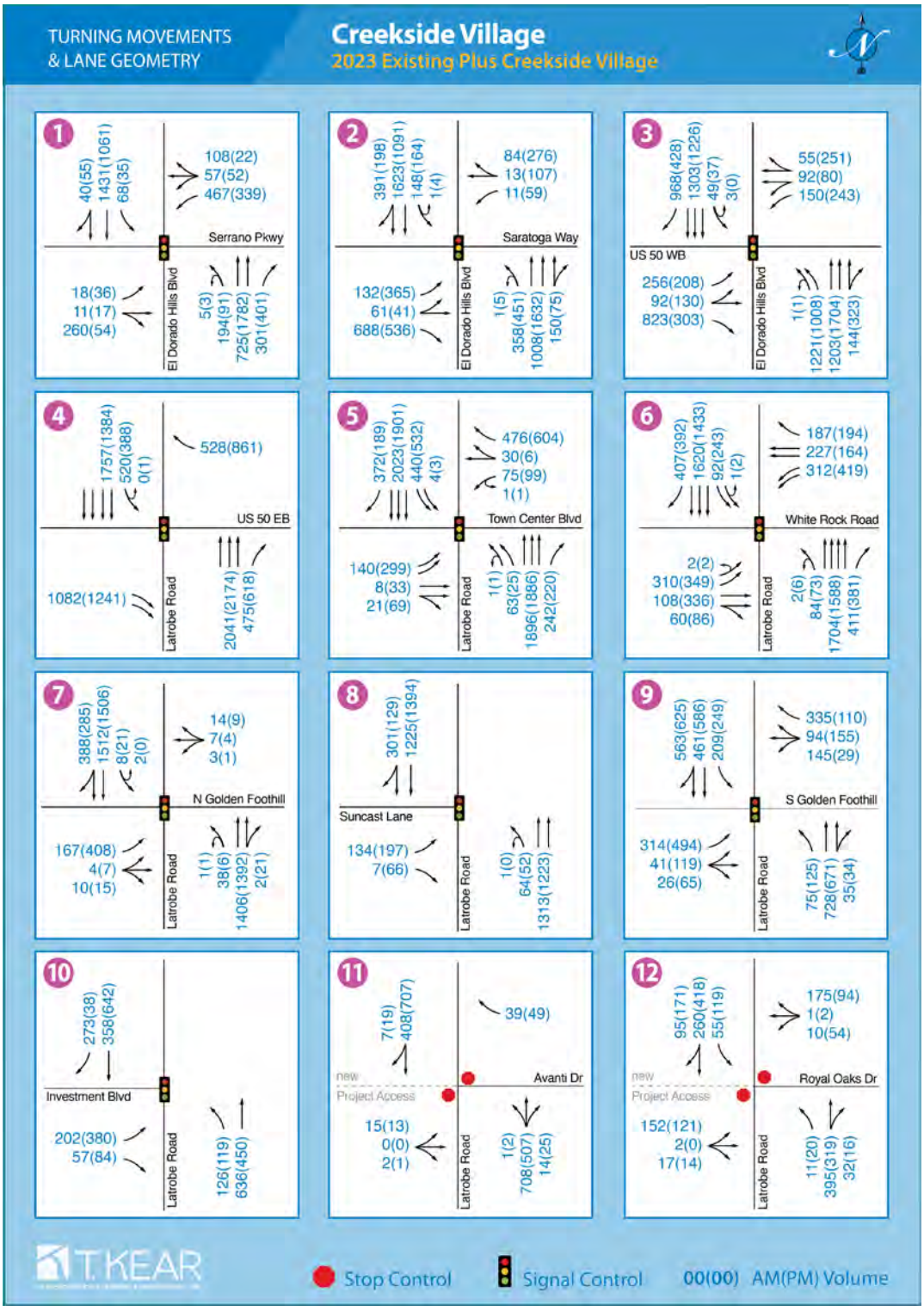

Figure 13. Existing 2023 plus project lane geometry and turning movements

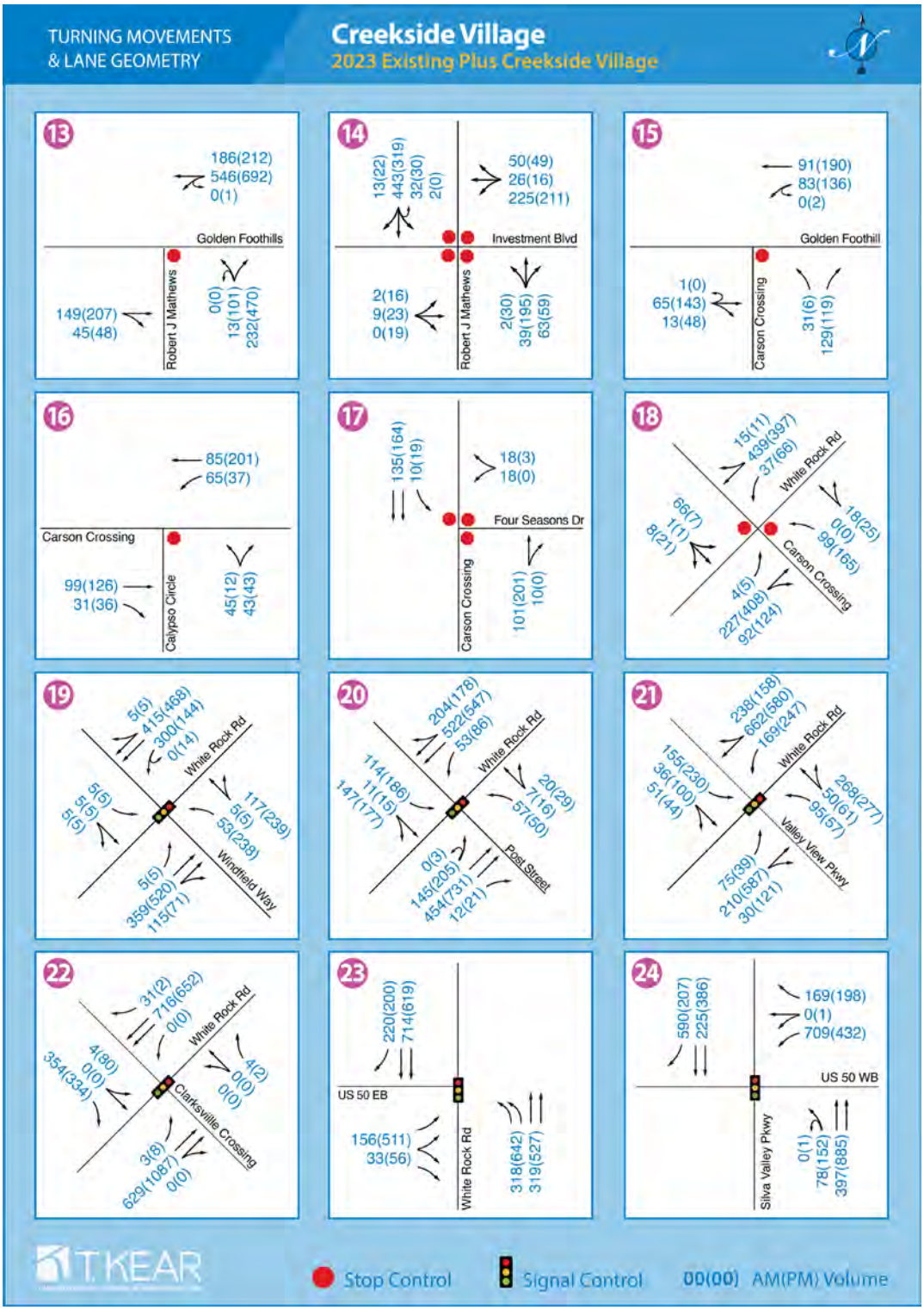

Figure 13. Existing 2023 plus project lane geometry and turning movements (continued)

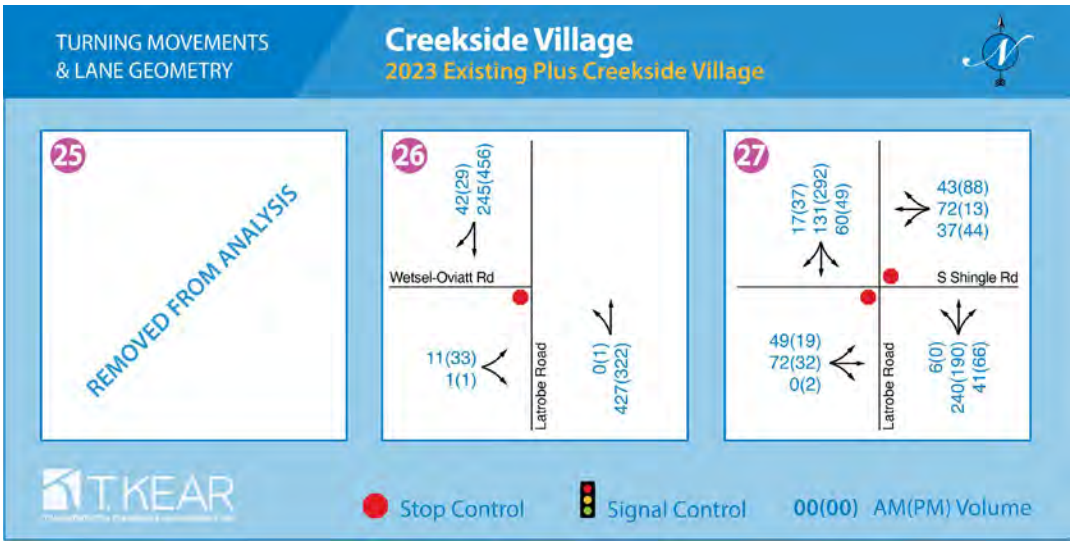

Figure 13. Existing 2023 plus project lane geometry and turning movements (continued)

Table 15. Existing 2023 intersection delay and level-of-service with and without the Project

ID	Intersection	Control	Left Turn Storage	2023 AM Peak No Project				2023 PM Peak No Project				2023 AM Peak with Project				2023 PM Peak with Project			
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB 260 SB 110 EB 100 WB 430	**112.9**	**F**	NB **296** SB 110 EB 25 WB 423		46.8	D	NB 91 SB 38 EB 34 WB 197		**114.8**	**F**	NB **296** SB 110 EB 25 WB 423		49.0	D	NB 91 SB 38 EB 34 WB 197	
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB 230 SB 100 EB 150 WB N/A	**147.8**	**F**	NB **712** SB **202** EB 116 WB N/A		**107.8**	**F**	NB **1334** SB **252** EB **290** WB N/A		**151.2**	**F**	NB **760** SB **202** EB 116 WB N/A		**112.4**	**F**	NB **1392** SB **254** EB **292** WB N/A	
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**94.1**	**F**	NB N/A SB 95 EB 262 WB **175**		47.9	D	NB N/A SB 68 EB 297 WB **277**		**101.4**	**F**	NB N/A SB 95 EB 267 WB **177**		51.2	E	NB N/A SB 68 EB 305 WB **285**	
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB N/A SB 570 EB N/A WB N/A	23.0	C	NB N/A SB 363 EB 271 WB 0		22.8	C	NB N/A SB 298 EB 445 WB 0		26.7	C	NB N/A SB 363 EB 284 WB 0		26.3	C	NB N/A SB 298 EB 528 WB 0	
5	Latrobe Road/Town Center Boulevard	Signal	NB 220 SB 330 EB 300 WB 100	21.1	C	NB 29 SB 198 EB 65 WB 59		38.1	D	NB 13 SB **472** EB 156 WB 86		21.9	C	NB 32 SB 210 EB 71 WB 69		39.2	D	NB 14 SB **492** EB 159 WB 96	
6	Latrobe Road/White Rock Road	Signal	NB 270 SB 260 EB 360 WB 160	33.0	C	NB 172 SB 86 EB 275 WB **266**		51.0	D	NB 157 SB 227 EB 306 WB **507**		33.0	C	NB 172 SB 86 EB 275 WB **276**		54.1	D	NB 157 SB 227 EB 306 WB **578**	
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB 200 SB 200 EB 100 WB N/A	20.9	C	NB 35 SB 11 EB 79 WB N/A		20.9	C	NB 7 SB 24 EB **180** WB N/A		24.9	C	NB 35 SB 11 EB 80 WB N/A		25.80	C	NB 7 SB 23 EB **188** WB N/A	
8	Latrobe Road/Suncast Lane	Signal	NB 280 SB N/A EB 100	9.3	A	NB 39 SB N/A EB 91		10.8	B	NB 32 SB N/A EB **127**		9.9	A	NB 45 SB N/A EB **97**		12.1	B	NB 38 SB N/A EB **142**	
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	26.0	C	NB 32 SB 157 EB **130** WB N/A		37.5	D	NB 86 SB 253 EB **309** WB N/A		30.9	C	NB 68 SB 195 EB **158** WB N/A		54.1	D	NB 115 SB 305 EB **425** WB N/A	
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	10.8	B	NB 35 SB N/A EB 68		18.0	B	NB 66 SB N/A EB **232**		11.2	B	NB 40 SB N/A EB 74		24.6	C	NB 110 SB N/A EB **351**	
11	Latrobe Road/Avanti Drive	TWSC	NB N/A SB N/A EB N/A WB N/A	(WB) 12.7	B	NB N/A SB N/A EB N/A WB N/A		(WB) 11.1	B	NB N/A SB N/A EB N/A WB N/A		(EB) 32.4	D	NB N/A SB N/A EB N/A WB N/A		(EB) 40.0	E	NB N/A SB N/A EB N/A WB N/A	
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 14.0	B	NB 0 SB 4 EB N/A WB N/A		(WB) 21.8	C	NB 0 SB 7 EB N/A WB N/A		**(EB) 188.5 ***	**F**	NB 1 SB 4 EB N/A WB N/A		**(EB) 213.1.1 ***	**F**	NB 2 SB 9 EB N/A WB N/A	
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB N/A SB N/A EB N/A WB N/A	(NB) 18.3	C	NB N/A SB N/A EB N/A WB N/A		**(NB) 2479.7 ***	**F**	NB N/A SB N/A EB N/A WB N/A		(NB) 20.4	D	NB N/A SB N/A EB N/A WB N/A		**(NB) 3030.5 ***	**F**	NB N/A SB N/A EB N/A WB N/A	

Table 15. Existing 2023 intersection delay and level-of-service with and without the Project (continued)

ID	Intersection	Control	Left Turn Storage	2023 AM Peak No Project				2023 PM Peak No Project				2023 AM Peak with Project				2023 PM Peak with Project			
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB N/A SB N/A EB N/A WB N/A	25.0	C	NB N/A SB N/A EB N/A WB N/A		19.6	C	NB N/A SB N/A EB N/A WB N/A		25.7	D	NB N/A SB N/A EB N/A WB N/A		20.2	C	NB N/A SB N/A EB N/A WB N/A	
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB N/A SB N/A EB N/A WB 220	(NBL) 10.5	B	NB N/A SB N/A EB N/A WB 3		(NBL) 14.8	B	NB N/A SB N/A EB N/A WB 8		(NBL) 12.9	B	NB N/A SB N/A EB N/A WB 5		(NBL) 16.1	C	NB N/A SB N/A EB N/A WB 11	
16	Carson Crossing Road/Calypso Circle	TWSC	NB N/A SB N/A EB N/A WB 190	(NB) 10.2	B	NB N/A SB N/A EB N/A WB 4		(NB) 9.5	A	NB N/A SB N/A EB N/A WB 2		(NB) 10.5	B	NB N/A SB N/A EB N/A WB 4		(NB) 9.8	A	NB N/A SB N/A EB N/A WB 2	
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB N/A SB 100 WB N/A	7.9	A	NB N/A SB 1 WB N/A		8.1	A	NB N/A SB 2 WB N/A		8.0	A	NB N/A SB 1 WB N/A		8.2	A	NB N/A SB 2 WB N/A	
18	White Rock Road/Carson Crossing Road	TWSC	NB SB EB WB	(NBL) 22.0	C	NB N/A SB N/A EB 0 WB 2		**(NBL) 69.3**	**F**	NB N/A SB N/A EB 0 WB 5		(NBL) 35.7	E	NB N/A SB N/A EB 0 WB 2		**(NBL) 107.4**	**F**	NB N/A SB N/A EB 0 WB 6	
19	White Rock Road/Windfield Way	Signal	NB 150 SB 100 EB 200 WB 200	25.8	C	NB 80 SB 10 EB 10 WB **363**		29.1	C	NB **331** SB 10 EB 10 WB **222**		25.8	C	NB 80 SB 10 EB 10 WB **363**		29.1	C	NB **331** SB 10 EB 10 WB **222**	
20	White Rock Road/Post Street	Signal	NB N/A SB 100 EB 100 WB 120	39.2	D	NB N/A SB **319** EB **245** WB 99		70.4	E	NB N/A SB **683** EB **327** WB **158**		38.6	D	NB N/A SB **318** EB **245** WB 99		69.3	E	NB N/A SB **683** EB **327** WB **158**	
21	White Rock Road/Valley View Parkway	Signal	NB 100 SB 100 EB 100 WB 100	75.0	E	NB **106** SB 206 EB 92 WB **206**		54.2	D	NB 70 SB **304** EB 50 WB **321**		**81.2**	**F**	NB **107** SB **210** EB **102** WB **216**		59.8	E	NB 71 SB **309** EB 61 WB **349**	
22	White Rock Road/Clarksville Crossing	Signal	NB N/A SB N/A EB 460 WB 290	25.8	C	NB N/A SB N/A EB 6 WB 0		29.1	C	NB N/A SB N/A EB 10 WB 0		23.7	C	NB N/A SB N/A EB 6 WB 0		23.7	C	NB N/A SB N/A EB 10 WB 0	
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB 500 SB N/A EB N/A WB N/A	16.9	B	NB 172 SB N/A EB N/A WB N/A		31.7	C	NB 316 SB N/A EB N/A WB N/A		17.3	B	NB 185 SB N/A EB N/A WB N/A		31.8	C	NB 324 SB N/A EB N/A WB N/A	
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB 550 SB N/A EB N/A WB N/A	34.2	C	NB 98 SB N/A EB N/A WB N/A		19.3	B	NB 192 SB N/A EB N/A WB N/A		35.1	D	NB 98 SB N/A EB N/A WB N/A		19.7	B	NB 192 SB N/A EB N/A WB N/A	
25	not used			not used								not used							
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB 150 SB 100 EB 200 WB 200	(EB) 13.5	B	NB N/A SB N/A EB N/A		(EB) 15.2	C	NB N/A SB N/A EB N/A		(EB) 14.0	B	NB N/A SB N/A EB N/A		(EB) 16.0	C	NB N/A SB N/A EB N/A	
27	Latrobe Road/S. Shingle Road	TWSC	NB N/A SB 100 EB 100 WB 120	(EB) 18.1	C	NB N/A SB N/A EB N/A WB N/A		(EB) 16.4	C	NB N/A SB N/A EB N/A WB N/A		(EB) 19.5	C	NB N/A SB N/A EB N/A WB N/A		(EB) 18.0	C	NB N/A SB N/A EB N/A WB N/A	

* Denotes intersections where the peak-hour signal warrant is met.

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Table 16. Existing 2023 freeway facility density and level-of-service with and without the Project

No	Segment	Segment Type	Method	2023 No Project AM	2023 No Project PM	2023 Plus Project AM	2023 Plus Project PM
Westbound US 50							
1	Bass Lake Rd to Silva Valley Pkwy	Basic	HCM 7th Ed.	22.1/C	16.8/B	22.5/C	17.7/B
2	Silva Valley offramp	Diverge	HCM 7th Ed.	18.7/B	13.2/B	19.2/B	14.1/B
3	Silva Valley offramp to future loop onramp	Basic	HCM 7th Ed.	15.2/B	12.6/B	15.3/B	12.8/B
4	Future Silva Valley loop onramp	Merge	HCM 7th Ed.	n/a	n/a	n/a	n/a
5	Silva Valley Pkwy to Latrobe Rd	Weave	HCM 7th Ed.	15.1/B	11.1/B	15.2/B	11.3/B
6	El Dorado Hills Blvd offramp to onramp	Basic	HCM 7th Ed.	11.8/B	10.8/A	11.8/B	10.8/A
7	El Dorado Hills Blvd onramp	Merge	HCM 7th Ed.	28.4/D	22.9/C	28.4/D	23.4/C
8	El Dorado Hills Blvd to EDC Line *	Basic	HCM 7th Ed.	29.5/D	21.9/B	29.5/D	22.5/C
Eastbound US 50							
9	EDC Line to Latrobe Rd	Basic	HCM 7th Ed.	10.9/A	18.4/C	11.2/B	19.1/C
10	Latrobe slip offramp	Diverge	HCM 7th Ed.	20.8/C	29.6/D	21.3/C	30.6/D
11	Latrobe loop offramp	Diverge		20.0/C	28.8/D	20.3/C	29.3/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	Basic	HCM 7th Ed.	3.7/A	8.8/A	3.7/A	8.8/A
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	Weave	HCM 7th Ed.	7.2/A	11.8/B	7.3/A	11.9/B
14	Silva Valley Pkwy offramp to onramp	Basic	HCM 7th Ed.	7.3/A	10.7/A	7.5/A	10.8/A
15	Silva Valley Pkwy onramp	Merge	HCM 7th Ed.	13.8/B	19./B	14.5/B	20.0/C
16	Future Silva Valley Pkwy slip onramp	Merge	HCM 7th Ed.	n/a	n/a	n/a	n/a
17	Silva Valley Pkwy to Bass Lake Rd	Basic	HCM 7th Ed.	9.7/A	14.5/B	10.1/A	14.7/B

Density in units of passenger cars per mile per lane.

*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Table 17. Existing 2023 arterial level-of-service check with and without the Project

Arterial Segment	**Description (and level-of-service E threshold)**	**2023 AM No Project** (vehicle trips)	**2023 PM No Project** (vehicle trips)	**2023 AM Plus Project** (vehicle trips)	**2023 PM Plus Project** (vehicle trips)
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650 vehicle trips)	593 (Better than LOS E)	655 (Better than LOS E)	874 (Better than LOS E)	995 (Better than LOS E)
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650 vehicle trips)	1015 (Better than LOS E)	932 (Better than LOS E)	1290 (Better than LOS E)	1263 (Better than LOS E)
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln)	4-lane divided arterial (threshold 3290 vehicle trips)	1998 (Better than LOS E)	2030 (Better than LOS E)	2195 (Better than LOS E)	2266 (Better than LOS E)
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280 vehicle trips, extrapolated from 6-lane divided arterial)	2931 (Better than LOS E)	3018 (Better than LOS E)	3087 (Better than LOS E)	3198 (Better than LOS E)
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	2-lane arterial (threshold 1650 vehicle trips)	1194 (Better than LOS E)	1440 (Better than LOS E)	1237 (Better than LOS E)	1494 (Better than LOS E)

6.3 Existing 2023 Plus Project General Plan Deficiency Findings

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "Project deficiency." There are ten intersections where the Project is anticipated to create new or worsen existing deficiencies under existing 2023 conditions. All study segments are anticipated to operate acceptably with or without the Project.

Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = "A", 2033 = "B", and 2040 = "C"). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing. For certain abatements (Abatement 10A), a building permit trigger has been analyzed and included to determine the necessary timing for the improvement. For all other abatements, it is assumed the timing would be prior to issuance of the first building permit. If desired, a building permit trigger could also be determined for those abatements.

2023 Intersection Deficiencies and Abatement Measures

1A. El Dorado Hills Blvd/Serrano Pkwy in 2023

Deficiency: Level-of-service is F prior to addition of Project traffic, with northbound left-turn queues spilling out of the turn pocket. Project traffic is anticipated to worsen level-of-service.

Abatement: Adjust signal timing by changing the "vehicle extension" setting for the westbound approach from 4 seconds to 2 seconds.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project Responsibility: Project is responsible for its fair-share of signal timing adjustment. The CIP includes funding for intersection and safety improvements at "to be determined" locations. The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

2A. El Dorado Hills Blvd/Saratoga Way in 2023

Deficiency: Level-of-service is F prior to addition of Project traffic, with northbound left-turn queues spilling out of the turn pocket. Project traffic is anticipated to worsen level-of-service and northbound left-turn queues.

Abatement: Construct a 300-foot southbound right turn pocket and adjust signal timing.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project Responsibility: This abatement partially implements Project #36105076 in the 10-year Capital Improvement Program (CIP). The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

3A. El Dorado Hills Blvd/US 50 WB in 2023

Deficiency: Existing AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

Abatement: Adjust signal timing by optimizing splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: Project is responsible for its fair-share of signal timing adjustment. The CIP includes funding for intersection and safety improvements at "to be determined" locations. The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 3B.

6A. Latrobe Road/White Rock Road in 2023

Deficiency: The westbound left-turn queue spills back out of its turn pocket under existing conditions without the Project. Project traffic is anticipated to worsen that queue spillback.

Abatement: Adjust signal timing by optimizing splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: This abatement partially implements Project #36105069 in the 20-year Capital Improvement Program (CIP). The Project is responsible for its fair share of modification of signal timing, which may be addressed through payment of fees if the CIP project is moved to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 6B.

9A. Latrobe Road/ Golden Foothill Parkway (south) in 2023

Deficiency: Project traffic is anticipated to worsen existing queue spillback from the eastbound left turn during both the AM and PM peak-hours.

Abatement: Adjust signal timing by optimizing splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after CIP project 36105055 (AKA "72Latrobe") is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 9B, which builds on abatement 9a.

10A. Latrobe Road/Investment Boulevard in 2023

Deficiency: Project traffic is anticipated to worsen the existing east bound (Investment Blvd) left turn queue spillback during the PM peak-hour.

Abatement: Stripe eastbound approach as left, shared left-right in 190-foot pocket. Adjust cycle length and splits. Construction of a 300-foot receiving lane is required on northbound Latrobe Road to accommodate the left turn from the shared eastbound left-right turn lane. These improvements are consistent with intersection improvements that would be constructed under CIP project 36105055 (AKA "72Latrobe"). Therefore, addition of CIP project 36105055to the 10-year CIP would address the Project's fair share cost of these improvements as well.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after CIP project 36105055 (AKA "72Latrobe") is added to the 10-year CIP.

Timing: A phasing analysis determined that 90 traditional dwelling units, or 260 age restricted dwelling units, could be constructed prior to the project deficiency being triggered. Therefore, this abatement is required by the 90th traditional dwelling unit or the 260th age restricted dwelling unit.

Cross reference: See abatement 10B and 10C.

12A. Latrobe Road/Royal Oaks Drive in 2023

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

Abatement: Signalize the intersection using the "with Project" geometry (north and southbound approaches having a shared through right lane and protected left turns in 320' pockets; east and west bound approaches as shared left-through-right lanes.)

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for construction of these intersection improvements.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 12B and 12C.

13A. Golden Foothill Pkwy/Robert J. Mathews Pkwy in 2023

Deficiency: Project traffic is anticipated to worsen existing level-of-service F conditions.

Abatement: Reconstruct as a single lane roundabout.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after the roundabout is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

18A. White Rock Road/Carson Crossing Road in 2023

Deficiency: Project traffic is anticipated to worsen existing level-of-service F.

Abatement: Install all-way-stop-control with existing intersection geometry.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: This off-site improvement partially implements 20-year CIP project 36105041 (White Rock Road Widening 2 to 4 Lanes - Windfield Way to Sacramento County Line) and it should be advanced to the 10-year CIP. The Project is responsible for its fair share of cost, which would be met through payment of the TIF program fee.

Timing: Prior to issuance of 1st building permit.

21A. White Rock Road/Valley View Parkway in 2023

Deficiency: Project traffic is anticipated to worsen level-of-service to F during the AM peak hour and worsen existing westbound left-turn queue spillback on White Rock Rd.

Abatement: Add a 100-foot westbound right-turn pocket and extend the westbound left turn pocket to 350 feet. Note that due to the location of utilities on the northside of White Rock Rd, any required widening will likely be on the south side of White Rock Road, and eastbound lane alignment shall be adjusted to the satisfaction of the County Engineer.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36105042 (White Rock Road Widening 2 to 4 lanes - Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Payment of TIF at issuance of each building permit.

Cross reference: See abatement 21B, which builds on abatement 21a.

Table 18. Existing 2023 intersection delay and level-of-service with and without the abated Project

ID	Intersection	Control	Left Turn Storage	2023 AM Peak No Project				2023 PM Peak No Project				2023 AM Peak with Project				2023 PM Peak with Project				Abatement Strategy	Left Turn Storage	Abated AM Peak (+ Proj)				Abated PM Peak (+ Proj)				Existing or Anticipated CIP Project
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)			Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB 260 SB 110 EB 100 WB 430	**112.9**	**F**	NB **296** SB 110 EB 25 WB 423		46.8	D	NB 91 SB 38 EB 34 WB 197		**114.8**	**F**	NB **296** SB 110 EB 25 WB 423		49.0	D	NB 91 SB 38 EB 34 WB 197		Adjust WB vehicle extention from 4 seconds to 2 seconds	NB 260 SB 110 EB 100 WB 430	**108.8**	**F**	NB **288** SB 108 EB 24 WB 417		42.6	D	NB 89 SB 37 EB 34 WB 189		"Traffic Signals Intersection"
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB 230 SB 100 EB 150 WB N/A	**147.8**	**F**	NB **712** SB **202** EB 116 WB N/A		**107.8**	**F**	NB **1334** SB **252** EB **290** WB N/A		**151.2**	**F**	NB **760** SB **202** EB 116 WB N/A		**112.4**	**F**	NB **1392** SB **254** EB **292** WB N/A		Construct 300' SBR Pocket. Adjust SBT/NBL splits	NB 230 SB 100 EB 150 WB N/A	**130.6**	**F**	NB 222 SB 79 EB 26 WB N/A		**94.1**	**F**	NB **1085** SB **257** EB **297** WB N/A		36105076 and 36105035
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**94.1**	**F**	NB N/A SB 95 EB 262 WB **175**		47.9	D	NB N/A SB 68 EB 297 WB **277**		**101.4**	**F**	NB N/A SB 95 EB 267 WB **177**		51.2	E	NB N/A SB 68 EB 305 WB **285**		Adjust splits for AM only	NB N/A SB 220 EB N/A WB 150	79.9	F	NB N/A SB 94 EB 297 WB **176**		No Changes						"Traffic Signals Intersection"
6	Latrobe Road/White Rock Road	Signal	NB 270 SB 260 EB 360 WB 160	33.0	C	NB 172 SB 86 EB 275 WB **266**		51.0	D	NB 157 SB 227 EB 306 WB **507**		33.0	C	NB 172 SB 86 EB 275 WB **276**		54.1	D	NB 157 SB 227 EB 306 WB **578**		Adjust splits for PM only	NB 270 SB 260 EB 360 WB 140	no changes				41.9	D	NB 160 SB 229 EB 310 WB **358**		36105069
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	26.0	C	NB 32 SB 157 EB **130** WB N/A		37.5	D	NB 86 SB 253 EB **309** WB N/A		30.9	C	NB 68 SB 195 EB **158** WB N/A		54.1	D	NB 115 SB 305 EB **425** WB N/A		Adjust cycle length and splits.	NB 220 SB 530 EB 100 WB N/A	29.9	C	NB 67 SB 162 EB N/A WB N/A		47.6	D	NB 121 SB 212 EB **277** WB 176		"Latrobe 72"
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	10.8	B	NB 35 SB N/A EB 68		18.0	B	NB 66 SB N/A EB **232**		11.2	B	NB 40 SB N/A EB 74		24.6	C	NB 110 SB N/A EB **351**		EB: Stripe EB approach as left, shared left-right in 190' pocket. Construct 300+ foot receiving lane on NB Latrobe. Adjust cycle length and splits.	NB 180 SB N/A EB 190	10.3	B	NB 36 SB N/A EB 44		17.0	B	NB 71 SB N/A EB 155		"Latrobe 72"
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 14.0	B	NB 0 SB 4 EB N/A WB N/A		(WB) 21.8	C	NB 0 SB 7 EB N/A WB N/A		**(EB) 188.5 ***	**F**	NB 1 SB 4 EB N/A WB N/A		**(EB) 213.1.1 ***	**F**	NB 2 SB 9 EB N/A WB N/A		Signalize	NB 320 SB 320 EB N/A WB N/A	19.1	B	NB 7 SB 29 EB N/A WB N/A		20.4	C	NB 12 SB 50 EB N/A WB N/A		n/a
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	TWSC	NB N/A SB N/A EB N/A WB N/A	(NB) 18.3	C	NB N/A SB N/A EB N/A WB N/A		**(NB) 2479.7 ***	**F**	NB N/A SB N/A EB N/A WB N/A		(NB) 20.4	D	NB N/A SB N/A EB N/A WB N/A		**(NB) 3030.5 ***	**F**	NB N/A SB N/A EB N/A WB N/A		Construct single lane roundabout	NB N/A EB N/A WB N/A	(EB) 9.8	A	NB N/A EB N/A WB N/A		(WB) 21.9	C	NB N/A EB N/A WB N/A		36105083
18	White Rock Road/Carson Crossing Road	TWSC	NB SB EB WB	(NBL) 22.0	C	NB N/A SB N/A EB 0 WB 2		**(NBL) 69.3**	**F**	NB N/A SB N/A EB 0 WB 5		(NBL) 35.7	E	NB N/A SB N/A EB 0 WB 2		**(NBL) 107.4**	**F**	NB N/A SB N/A EB 0 WB 6		AWSC	NB N/A SB N/A EB 200 WB 300	17.2	C	NB **N/A** SB **N/A** EB **1** WB **6**		29.0	D	NB N/A SB N/A EB 1 WB 12		36105041
21	White Rock Road/Valley View Parkway	Signal	NB 100 SB 100 EB 100 WB 100	75.0	E	NB **106** SB 206 EB 92 WB **206**		54.2	D	NB 70 SB **304** EB 50 WB **321**		**81.2**	**F**	NB **107** SB **210** EB **102** WB **216**		59.8	E	NB 71 SB **309** EB 61 WB **349**		Add 100' WB right turn ocket and restript the existing shared thru-right as an exclusive Thru lane, extend WB left pocket to 350'	NB 100 SB 100 EB 100 WB 350	39.2	D	NB **102** SB **202** EB 98 WB 208		57.0	E	NB 71 SB **309** EB 61 WB 349		36105042

* Denotes intersections where the peak-hour signal warrant is met.

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7.0 EPAP 2033 CONDITIONS

The EPAP 2033 conditions analysis started with lane configurations from Existing 2023 conditions, turning movements derived from existing traffic counts, growth factors from the Travel Demand Model, and the NCHRP 255 adjustment procedure[18].

Several volume and network adjustments were then made.

Two Capital Improvement Program (CIP) projects that effect study intersection geometry were accounted for:

- CIP Project 36105076: "El Dorado Hills Saratoga Way Turn Pockets" will construct a southbound right turn pocket and extend the northbound and southbound left turn pockets on El Dorado Hills Blvd. The southbound right pocket was modeled as a 300-foot right turn pocket. The northbound and southbound left turn pockets were modeled as 500-foot left turn pockets.
- CIP Project 36105083 "Robert J Mathews Pkwy/Golden foothill Pkwy Roundabout" will construct a roundabout at Robert J Mathews Pkwy/Golden foothill Pkwy.

Traffic volumes from 2023 without the Project were used as a floor before traffic from the avoided trips (see **Figure 12**, page 48) was shifted from where the TDM loads it directly onto Carson Crossing Drive to Investment Blvd.

Traffic for the approved Carson Creek/Heritage Project was added. Note that because the Creekside Village project also has avoided R&D and industrial vehicle trips, some turning movements are lower in 2033 than they were in 2023.

Figure *14* summarizes the turning movements and lane configurations for the EPAP 2033 conditions scenario.

Delay and level-of-service is presented in **Table 19** through **Table 21**. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **bold black** typeface denote deficient traffic operations, and unsignalized intersections that meet the peak hour signal warrant are denoted with an asterisk and shading.

The results indicate that one study segment (White Rock Rd between Valley View Pkwy to Silva Valley Pkwy) and fifteen study intersections operate deficiency with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

[18] Transportation Research Board (1982) National Cooperative Highway Research Program Report 255, Washington D.C.

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way: AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard: AM and PM;
- (6) Latrobe Road/White Rock Road AM and PM;
- (7) Latrobe Road/Golden Foothill Parkway (N): AM and PM;
- (8) Latrobe Road/Suncast Lane AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S): AM and PM;
- (10) Latrobe Road/Investment Boulevard: PM;
- (14) Investment Boulevard/Robert J. Mathews Pkwy AM and PM
- (18) White Rock Road/Carson Crossing Road PM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street: AM and PM;
- (21) White Rock Road/Valley View Parkway: AM and PM; and
- (23) Silva Valley Parkway/US 50 EB ramps PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. The remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

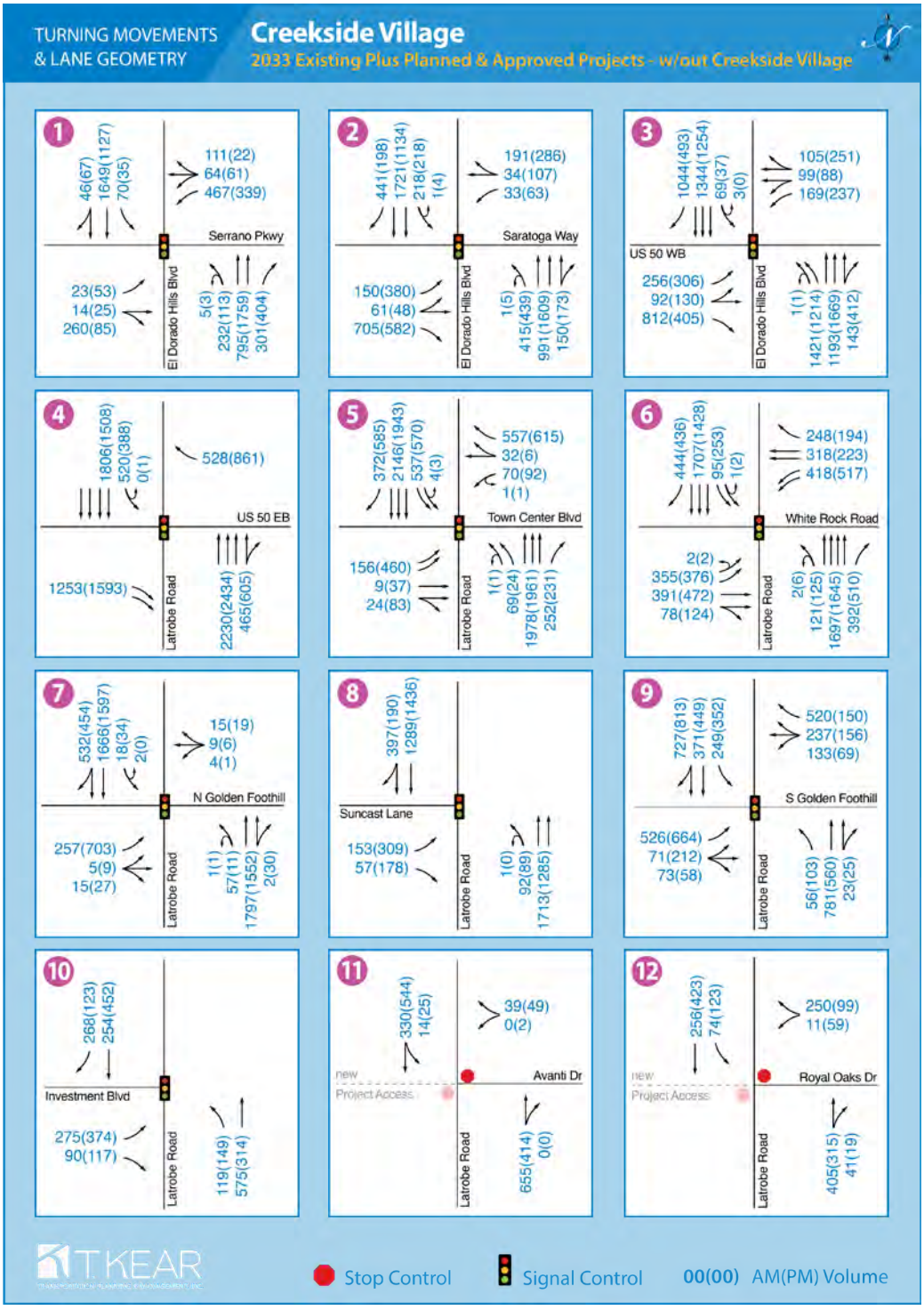

Figure 14. EPAP 2033 conditions lane geometry and turning movements

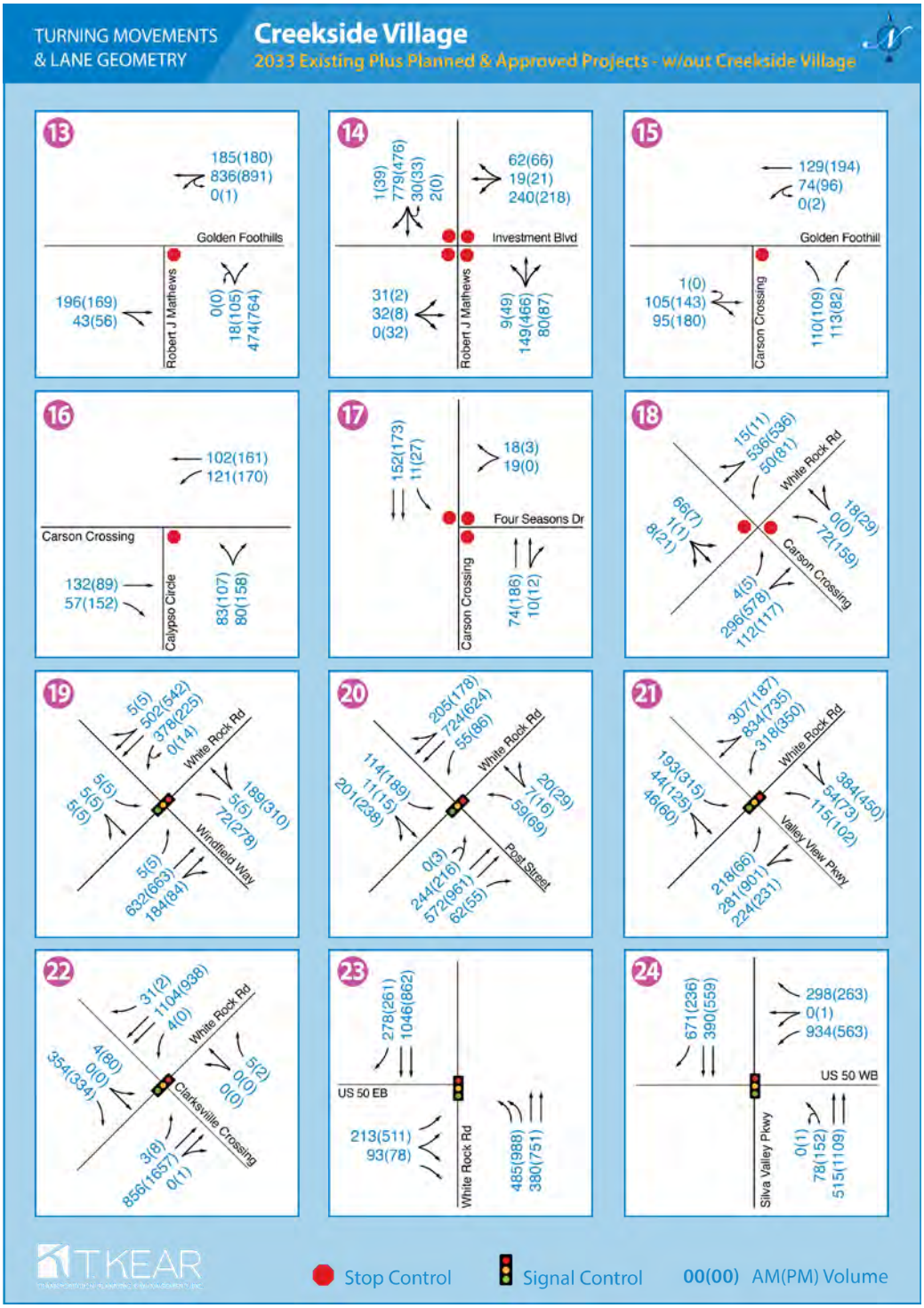

Figure 14. EPAP 2033 conditions lane geometry and turning movements (continued)

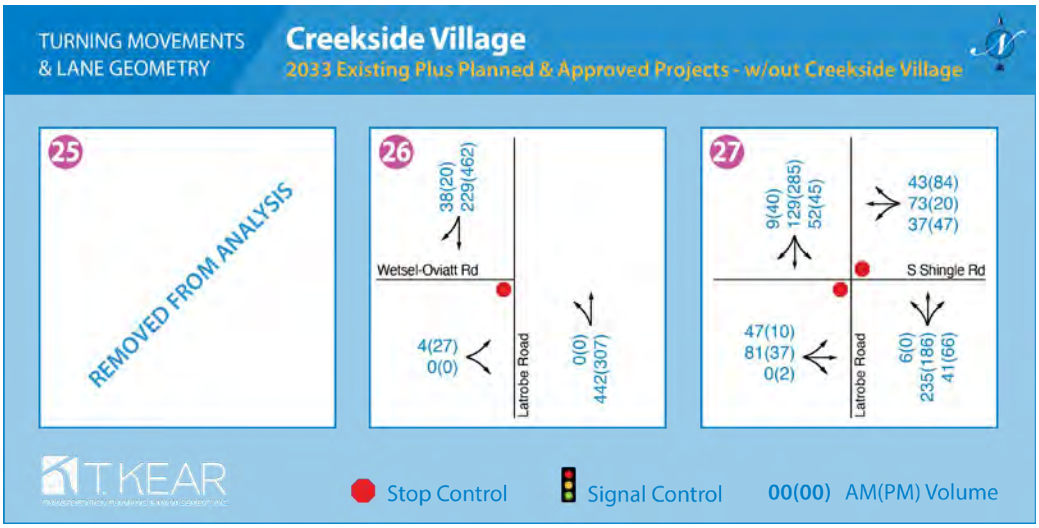

Figure 14. EPAP 2033 conditions lane geometry and turning movements (continued)

Table 19. EPAP 2033 intersection delay and level-of-service without the Project

ID	Intersection	Control	Left Turn Storage		2033 AM Peak No Project				2033 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB	260	**177.9**	**F**	NB	**382**	55.7	E	NB	115
			SB	110			SB	**119**			SB	40
			EB	100			EB	33			EB	52
			WB	430			WB	**457**			WB	207
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB	500	**162.8**	**F**	NB	**1151**	**112.0**	**F**	NB	**1312**
			SB	500			SB	332			SB	341
			EB	150			EB	140			EB	**311**
			WB	N/A			WB	N/A			WB	N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB	N/A	**92.6**	**F**	NB	N/A	50.7	D	NB	N/A
			SB	220			SB	113			SB	57
			EB	N/A			EB	227			EB	319
			WB	150			WB	**182**			WB	**238**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB	N/A	32.3	C	NB	N/A	58.1	E	NB	N/A
			SB	570			SB	363			SB	298
			EB	N/A			EB	549			EB	1251
			WB	N/A			WB	0			WB	0
5	Latrobe Road/Town Center Boulevard	Signal	NB	220	39.4	D	NB	41	52.3	D	NB	15
			SB	330			SB	**479**			SB	**679**
			EB	300			EB	93			EB	249
			WB	100			WB	74			WB	99
6	Latrobe Road/White Rock Road	Signal	NB	270	44.3	D	NB	253	79.6	E	NB	246
			SB	260			SB	89			SB	234
			EB	360			EB	306			EB	325
			WB	160			WB	**378**			WB	**840**
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB	200	**84.0**	**F**	NB	56	80.0	E	NB	13
			SB	200			SB	22			SB	38
			EB	100			EB	**126**			EB	**416**
			WB	N/A			WB	N/A			WB	N/A
8	Latrobe Road/Suncast Lane	Signal	NB	280	13.7	B	NB	77	22.6	C	NB	85
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	**127**			EB	**289**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB	220	**90.2**	**F**	NB	66	**132.3**	**F**	NB	98
			SB	530			SB	475			SB	**786**
			EB	100			EB	**638**			EB	**1066**
			WB	N/A			WB	N/A			WB	N/A
10	Latrobe Road/Investment Boulevard	Signal	NB	180	12.2	B	NB	40	19.1	B	NB	93
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	98			EB	**251**
11	Latrobe Road/Avanti Drive	TWSC	NB	N/A	(WB) 14.5	B	NB	N/A	(WB) 11.9	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB	320	(WB) 17.4	B	NB	0	(WB) 26.5	D	NB	0
			SB	320			SB	6			SB	9
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	Rondabout	NB	N/A	(EB) 16.5	C	NB	N/A	(NB) 26.9	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

Table 19. EPAP 2033 intersection delay and level-of-service without the Project (continued)

ID	Intersection	Control	Left Turn Storage		2033 AM Peak No Project				2033 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB	N/A	**203.9 ***	**F**	NB	N/A	**135.9 ***	**f**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB	N/A	(NBL) 13.7	B	NB	N/A	(NBL) 21.4	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	220			WB	5			WB	8
16	Carson Crossing Road/Calypso Circle	TWSC	NB	N/A	(NB) 13.2	B	NB	N/A	(NB) 16.8	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	190			WB	8			WB	12
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB	N/A	8.0	A	NB	N/A	8.2	A	NB	N/A
			SB	100			SB	1			SB	3
			WB	N/A			WB	N/A			WB	N/A
18	White Rock Road/Carson Crossing Road	TWSC	NB	N/A	(NBL) 34.5	D	NB	N/A	**(NBL) 411.5***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	200			EB	0			EB	0
			WB	300			WB	4			WB	8
19	White Rock Road/Windfield Way	Signal	NB	150	29.2	C	NB	105	32.9	C	NB	**393**
			SB	100			SB	**10**			SB	10
			EB	200			EB	10			EB	10
			WB	200			WB	**452**			WB	**309**
20	White Rock Road/Post Street	Signal	NB	N/A	40.1	D	NB	N/A	67.2	E	NB	N/A
			SB	100			SB	**318**			SB	**702**
			EB	100			EB	**373**			EB	**341**
			WB	120			WB	102			WB	**158**
21	White Rock Road/Valley View Parkway	Signal	NB	100	**252.3**	**F**	NB	**170**	**259.5**	**F**	NB	**152**
			SB	100			SB	**324**			SB	**505**
			EB	100			EB	**387**			EB	**125**
			WB	100			WB	**708**			WB	**827**
22	White Rock Road/Clarksville Crossing	Signal	NB	N/A	35.7	D	NB	N/A	37.9	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	460			EB	7			EB	13
			WB	290			WB	8			WB	0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB	500	21.7	C	NB	257	49.9	D	NB	**698**
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB	550	69.7	E	NB	98	23.0	D	NB	192
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
25	not used				not used							
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB	N/A	(EB) 13.8	B	NB	N/A	(EB) 15.7	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
27	Latrobe Road/S. Shingle Road	TWSC	NB	N/A	(EB) 18.7	B	NB	N/A	(EB) 16.9	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

* Denotes intersections where the peak-hour signal warrant is met.

Table 20. EPAP 2033 freeway facility level-of-service without the Project

No	Segment	Segment Type	Method	2033 No Project AM	2333 No Project PM
Westbound US 50					
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	28.5/D	22.5/C
2	Silva Valley offramp	diverge	HCM 7th Ed.	24.1/C	19.1/B
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	16.2/B	15.8/B
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	n/a	n/a
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	16.5/B	13.7/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	13.3/B	12.6/B
7	El Dorado Hills Blvd onramp	merge	HCM 7th Ed.	30.1/D	27.5/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	32.5/D	28.0/D
Eastbound US 50					
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	14.0/B	22.8/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	25.2/C	34.9/D
11	Latrobe loop offramp	diverge		23.7/C	32.2/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	5.9/A	10.4/A
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	9.1/A	13.3/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	9.0/A	12.3/B
B15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	17.3/B	24.5/C
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	n/a	n/a
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	12.4/B	18.3/C

Notes:
Density in units of passenger cars per mile per lane.
*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Table 21. EPAP 2033 arterial level-of-service check without the Project

Arterial Segment	**Description (and level-of-service E threshold)**	**2033 AM No Project** (vehicle trips)	**2033 PM No Project** (vehicle trips)
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650 vehicle trips)	736 (Better than LOS E)	734 (Better than LOS E)
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650 vehicle trips)	1213 (Better than LOS E)	1035 (Better than LOS E)
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln	4-lane divided arterial (threshold 3290 vehicle trips)	2756 (Better than LOS E)	2549 (Better than LOS E)
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280 vehicle trips, extrapolated from 6-lane divided arterial)	3327 (Better than LOS E)	3354 (Better than LOS E)
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	2-lane arterial (threshold 1650 vehicle trips)	**1856 (LOS F)**	**2360 (LOS F)**

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8.0 EPAP 2033 PLUS PROPOSED PROJECT CONDITIONS

8.1 Traffic Volumes

Peak hour Project trips (**Figure 9** page 41) and avoided R&D and industrial trips (**Figure 12** page 48) were added to the EPAP 2033 conditions traffic volumes. Delay and level-of-service were determined at the study intersections and segments. **Figure 15** summarizes the turning movements and lane configurations for the EPAP 2033 Plus Proposed Project scenario.

8.2 Level-of-Service

Table 22 through **Table 24** present a summary of the level-of-service results for the study intersections and segments under EPAP 2033 Plus Proposed Project conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **Bold black** text in **Table 22** through **Table 24** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. **Bold red** text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies. Unsignalized intersections that meet the peak hour signal warrant are shaded and denoted with an asterisk.

One arterial segment has a preexisting deficiency, which is not worsened by Project. sixteen intersections are anticipated to have level-of-service and/or queue spillback deficiencies.

1 Arterial segment has a preexisting deficiency, which is not worsened by Project:

- White Rock Rd between Valley View Pkwy to Silva Valley Pkwy PM;

9 Locations that are deficient with or without the Project that are not worsened:

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way AM and PM;
- (5) Latrobe Road/Town Center Boulevard AM and PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (14) Investment Boulevard/Robert J. Mathews Pkwy AM;
- (18) White Rock Road/Carson Crossing Road PM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street AM and PM; and
- (23) Silva Valley Parkway/US 50 EB ramps PM.

6 Locations that are deficient with or without the Project that are worsened:

- (3) El Dorado Hills Blvd/US 50 WB AM;
- (6) Latrobe Road/White Rock Road PM;
- (7) Latrobe Road/Golden Foothill Parkway (N) PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) PM;
- (10) Latrobe Road/Investment Boulevard PM; and

- (21) White Rock Road/Valley View Parkway: PM.

1 Location where the Project is anticipated to cause new deficiencies:

- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. the remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

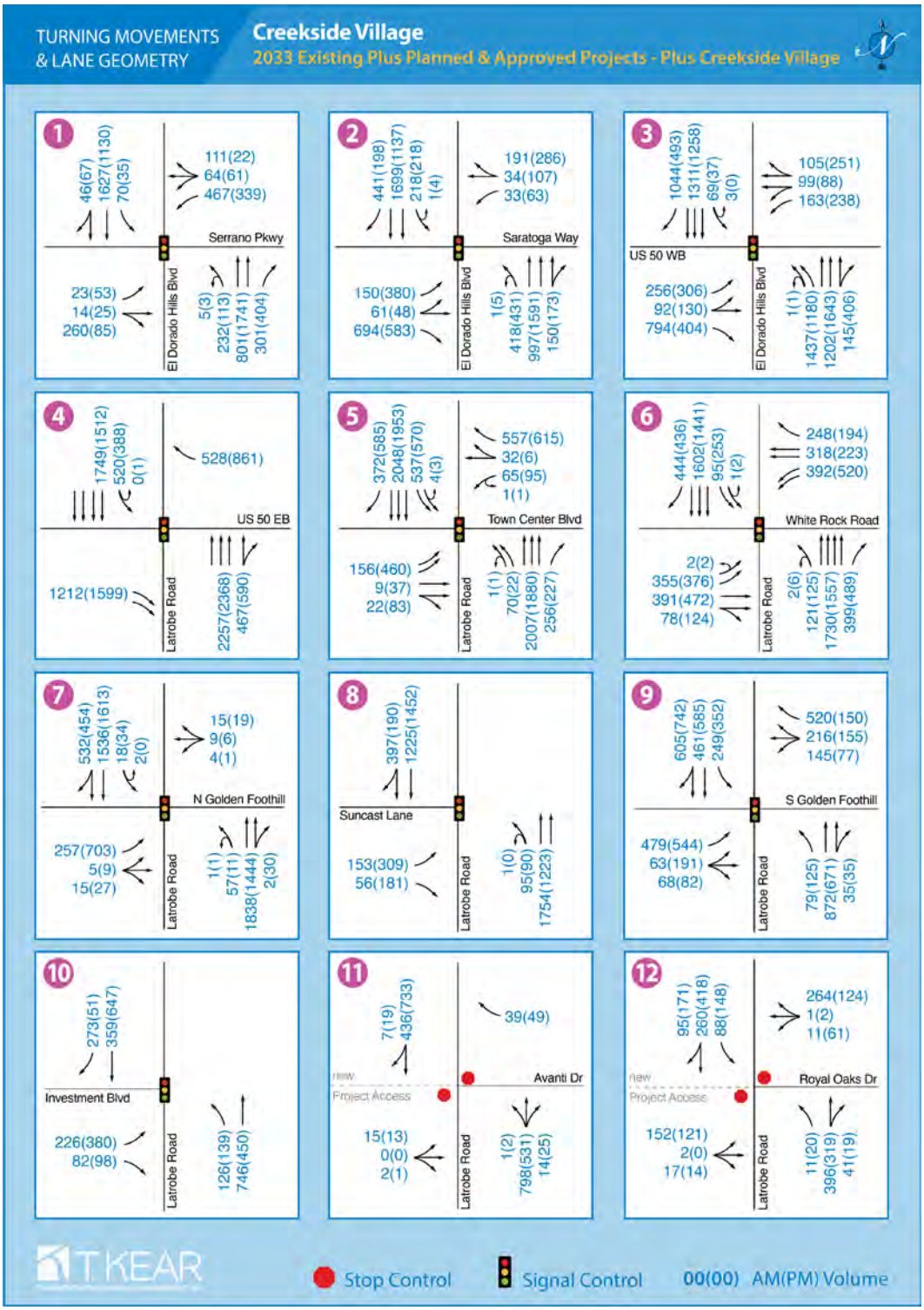

Figure 15. EPAP 2033 plus Project lane geometry and turning movements

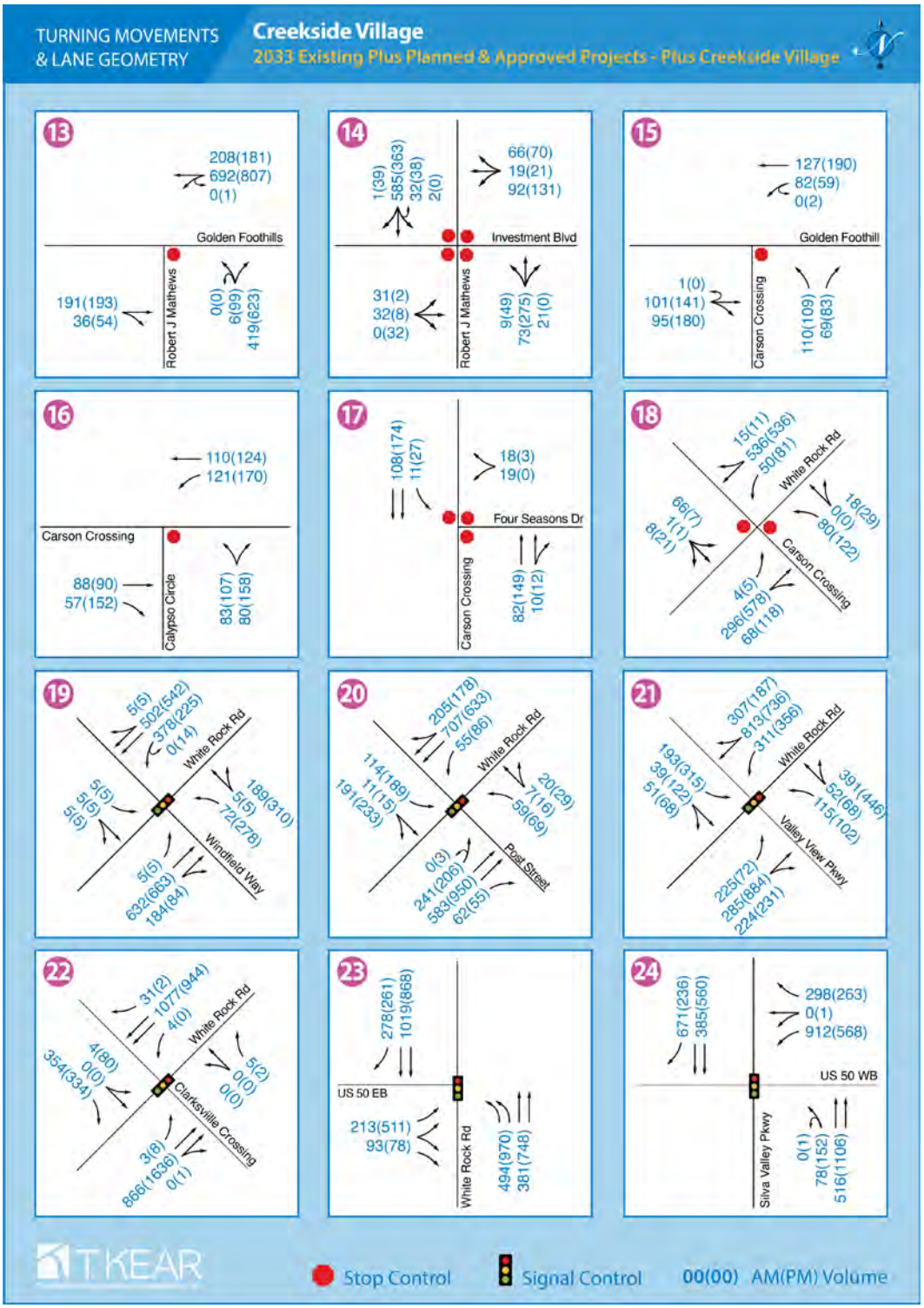

Figure 15. EPAP 2033 plus Project lane geometry and turning movements (continued)

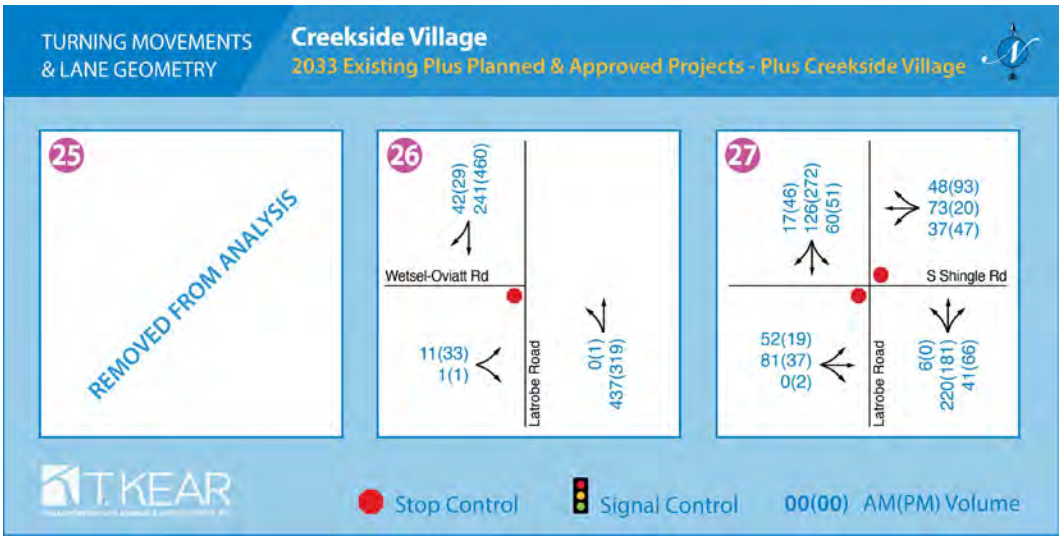

Figure 15. EPAP 2033 plus Project lane geometry and turning movements (continued)

Table 22. EPAP 2033 intersection delay and level-of-service with and without the Project

ID	Intersection	Control	Left Turn Storage		2033 AM Peak No Project				2033 PM Peak No Project				2033 AM Peak with Project				2033 PM Peak with Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB SB EB WB	260 110 100 430	**177.9**	**F**	NB SB EB WB	**382** **119** 33 **457**	55.7	E	NB SB EB WB	115 40 52 207	**172.7**	**F**	NB SB EB WB	**382** 119 33 457	53.2	D	NB SB EB WB	115 40 52 207
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB SB EB WB	500 500 150 N/A	**162.8**	**F**	NB SB EB WB	**1151** 332 140 N/A	**112.0**	**F**	NB SB EB WB	**1312** 341 **311** N/A	**158.6**	**F**	NB SB EB WB	**1165** 332 140 N/A	**110.8**	**F**	NB SB EB WB	**1271** 341 **311** N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB SB EB WB	N/A 220 N/A 150	**92.6**	**F**	NB SB EB WB	N/A 113 227 **182**	50.7	D	NB SB EB WB	N/A 57 319 **238**	**94.7**	**F**	NB SB EB WB	N/A 113 227 **178**	48.4	D	NB SB EB WB	N/A 57 319 **239**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB SB EB WB	N/A 570 N/A N/A	32.3	C	NB SB EB WB	N/A 363 549 0	58.1	E	NB SB EB WB	N/A 298 1251 0	30.5	D	NB SB EB WB	N/A 363 472 0	58.9	E	NB SB EB WB	N/A 298 1263 0
5	Latrobe Road/Town Center Boulevard	Signal	NB SB EB WB	220 330 300 100	39.4	D	NB SB EB WB	41 **479** 93 74	52.3	D	NB SB EB WB	15 **679** 249 99	39.9	D	NB SB EB WB	42 **483** 93 69	52.5	E	NB SB EB WB	14 **686** 250 **103**
6	Latrobe Road/White Rock Road	Signal	NB SB EB WB	270 260 360 160	44.3	D	NB SB EB WB	253 89 306 **378**	79.6	E	NB SB EB WB	246 234 325 **840**	43.0	D	NB SB EB WB	253 89 306 **338**	**80.8**	**F**	NB SB EB WB	246 234 325 **848**
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB SB EB WB	200 200 100 N/A	**84.0**	**F**	NB SB EB WB	56 22 **126** N/A	80.0	E	NB SB EB WB	13 38 **416** N/A	54.8	D	NB SB EB WB	56 22 **126** N/A	**80.9**	**F**	NB SB EB WB	**13** 37 **405** N/A
8	Latrobe Road/Suncast Lane	Signal	NB SB EB	280 N/A 100	13.7	B	NB SB EB	77 N/A **127**	22.6	C	NB SB EB	85 N/A **289**	12.9	B	NB SB EB	76 N/A **124**	23.5	C	NB SB EB	86 N/A **290**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB SB EB WB	220 530 100 N/A	**90.2**	**F**	NB SB EB WB	66 475 **638** N/A	**132.3**	**F**	NB SB EB WB	98 **786** **1066** N/A	**84.0**	**F**	NB SB EB WB	93 497 **529** N/A	**112.8**	**F**	NB SB EB WB	120 **822** **788** N/A
10	Latrobe Road/Investment Boulevard	Signal	NB SB EB	180 N/A 100	12.2	B	NB SB EB	40 N/A 98	19.1	B	NB SB EB	93 N/A **251**	12.3	B	NB SB EB	44 N/A 86	26.6	C	NB SB EB	138 N/A **375**
11	Latrobe Road/Avanti Drive	TWSC	NB SB EB WB	N/A N/A N/A N/A	(WB) 14.5	B	NB SB EB WB	N/A N/A N/A N/A	(WB) 11.9	B	NB SB EB WB	N/A N/A N/A N/A	(EB) 40.4	E	NB SB EB WB	N/A N/A N/A N/A	(EB) 43.8	E	NB SB EB WB	N/A N/A N/A N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB SB EB WB	320 320 N/A N/A	(WB) 17.4	B	NB SB EB WB	0 6 N/A N/A	(WB) 26.5	D	NB SB EB WB	0 9 N/A N/A	**(EB) 526.1 ***	**F**	NB SB EB WB	1 7 N/A N/A	**(EB) 237.6 ***	**F**	NB SB EB WB	2 11 N/A N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	Rondabout	NB SB EB WB	N/A N/A N/A N/A	(EB) 16.5	C	NB SB EB WB	N/A N/A N/A N/A	(NB) 26.9	D	NB SB EB WB	N/A N/A N/A N/A	(EB) 12.0	B	NB SB EB WB	N/A N/A N/A N/A	(EB) 17.4	C	NB SB EB WB	N/A N/A N/A N/A

Table 22. EPAP 2033 intersection delay and level-of-service with and without the Project (continued)

ID	Intersection	Control	Left Turn Storage		2033 AM Peak No Project				2033 PM Peak No Project				2033 AM Peak with Project				2033 PM Peak with Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB	N/A	**203.9 ***	**F**	NB	N/A	**135.9 ***	**f**	NB	N/A	**51.0**	**F**	NB	N/A	24.2	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB	N/A	(NBL) 13.7	B	NB	N/A	(NBL) 21.4	C	NB	N/A	(NBL) 13.8	B	NB	N/A	(NBL) 17.8	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	220			WB	5			WB	8			WB	5			WB	5
16	Carson Crossing Road/Calypso Circle	TWSC	NB	N/A	(NB) 13.2	B	NB	N/A	(NB) 16.8	C	NB	N/A	(NB) 12.6	B	NB	N/A	(NB) 16.1	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	190			WB	8			WB	12			WB	8			WB	12
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB	N/A	8.0	A	NB	N/A	8.2	A	NB	N/A	7.9	A	NB	N/A	8.1	A	NB	N/A
			SB	100			SB	1			SB	3			SB	1			SB	3
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
18	White Rock Road/Carson Crossing Road	TWSC	NB	N/A	(NBL) 34.5	D	NB	N/A	**(NBL) 411.5***	**F**	NB	N/A	(NBL) 34.6	D	NB	N/A	**(NBL) 260.1 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	200			EB	0			EB	0			EB	0			EB	0
			WB	300			WB	4			WB	8			WB	4			WB	8
19	White Rock Road/Windfield Way	Signal	NB	150	29.2	C	NB	105	32.9	C	NB	**393**	29.2	C	NB	105	32.9	C	NB	**393**
			SB	100			SB	**10**			SB	10			SB	**10**			SB	10
			EB	200			EB	10			EB	10			EB	10			EB	10
			WB	200			WB	**452**			WB	**309**			WB	**452**			WB	**309**
20	White Rock Road/Post Street	Signal	NB	N/A	40.1	D	NB	N/A	67.2	E	NB	N/A	39.5	D	NB	N/A	66.9	E	NB	N/A
			SB	100			SB	**318**			SB	**702**			SB	**318**			SB	**702**
			EB	100			EB	**373**			EB	**341**			EB	**370**			EB	**328**
			WB	120			WB	102			WB	**158**			WB	102			WB	**158**
21	White Rock Road/Valley View Parkway	Signal	NB	100	**252.3**	**F**	NB	**170**	**259.5**	**F**	NB	**152**	**247.0**	**F**	NB	**172**	**254.8**	**F**	NB	**152**
			SB	100			SB	**324**			SB	**505**			SB	**328**			SB	**505**
			EB	100			EB	**387**			EB	**125**			EB	**406**			EB	**136**
			WB	100			WB	**708**			WB	**827**			WB	**686**			WB	**855**
22	White Rock Road/Clarksville Crossing	Signal	NB	N/A	35.7	D	NB	N/A	37.9	D	NB	N/A	34.5	D	NB	N/A	37.1	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	460			EB	7			EB	13			EB	7			EB	13
			WB	290			WB	8			WB	0			WB	8			WB	0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB	500	21.7	C	NB	257	49.9	D	NB	**698**	21.7	C	NB	261	46.8	D	NB	**654**
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB	550	69.7	E	NB	98	23.0	D	NB	192	65.9	E	NB	98	23.1	C	NB	192
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
25	not used				not used								not used							
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB	N/A	(EB) 13.8	B	NB	N/A	(EB) 15.7	C	NB	N/A	(EB) 13.7	B	NB	N/A	(EB) 16.0	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
27	Latrobe Road/S. Shingle Road	TWSC	NB	N/A	(EB) 18.7	B	NB	N/A	(EB) 16.9	C	NB	N/A	(EB)19.4	C	NB	N/A	(EB) 18.0	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A

* Denotes intersections where the peak-hour signal warrant is met.

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Table 23. EPAP 2033 freeway facility level-of-service with and without the proposed Project with park

No	Segment	Segment Type	Method	2033 No Project AM	2033 No Project PM	2033 Plus Project AM	2033 Plus Project PM
Westbound US 50							
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	28.5/D	22.5/C	29.4/D	23.2/C
2	Silva Valley offramp	diverge	HCM 7th Ed.	24.1/C	19.1/B	24.8/C	19.8/B
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	16.2/B	15.8/B	16.8/B	15.9/B
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	n/a	n/a	n/a	n/a
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	16.5/B	13.7/B	17.0/B	13.8/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	13.3/B	12.6/B	13.9/B	12.6/B
7	El Dorado Hills Blvd onramp	merge	HCM 7th Ed.	30.1/D	27.5/C	30.9/D	27.4/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	32.5/D	28.0/D	33.9/D	27.9/D
Eastbound US 50							
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	14.0/B	22.8/C	13.9/B	23.3/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	25.2/C	34.9/D	24.9/C	35.6/E
11	Latrobe loop offramp	diverge		23.7/C	32.2/D	23.5/C	32.6/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	5.9/A	10.4/A	5.9/A	10.4/A
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	9.1/A	13.3/B	9.2/A	13.3/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	9.0/A	12.3/B	9.1/A	12.2/B
15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	17.3/B	24.5/C	17.9/B	24.4/C
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	n/a	n/a	n/a	n/a
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	12.4/B	18.3/C	12.8/B	18.2/C

Notes:
Density in units of passenger cars per mile per lane.
*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Project plus forgone business park trips will reduce WB US 50 volume between Latrobe Rd and the El Dorado County line during the PM-peak.

Project plus forgone business park trips will reduce EB US 50 volume between EDC line and Latrobe Rd during the AM-peak, and between Silva Valley Pkwy and Bass Lake Rd during the PM peak.

Table 24. EPAP 2033 arterial level-of-service check with and without the Project

Arterial Segment	**Description (and level-of-service E threshold)**	**2033 AM No Project** (vehicle trips)	**2033 PM No Project** (vehicle trips)	**2033 AM Plus Project** (vehicle trips)	**2033 PM Plus Project** (vehicle trips)
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650 vehicle trips)	736 (Better than LOS E)	734 (Better than LOS E)	1013 (Better than LOS E)	1043 (Better than LOS E)
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650 vehicle trips)	1213 (Better than LOS E)	1035 (Better than LOS E)	1300 (Better than LOS E)	1391 (Better than LOS E)
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln	4-lane divided arterial (threshold 3290 vehicle trips)	2756 (Better than LOS E)	2549 (Better than LOS E)	2214 (Better than LOS E)	2553 (Better than LOS E)
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280 vehicle trips, extrapolated from 6-lane divided arterial)	3327 (Better than LOS E)	3354 (Better than LOS E)	3102 (Better than LOS E)	3280 (Better than LOS E)
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	2-lane arterial (threshold 1650 vehicle trips)	**1856** (LOS F)	**2360** (LOS F)	1239 (Better than LOS E)	**2346** (LOS F)

8.3 Existing 2033 Plus Project General Plan Deficiency Findings

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "project deficiency". There are twelve intersections and two arterial segments where the Project is anticipated to create new or worsen existing deficiencies under EPAP 2033 Plus Project conditions.

Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = "A", 2033 = "B", and 2040 = "C"). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing. Unless otherwise noted, it is assumed the timing would be prior to issuance of the first building permit

2033 Intersection Deficiencies and Abatement Measures

3B. El Dorado Hills Blvd/US 50 WB in 2033

Deficiency: AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 3A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 3A.

Timing: Not applicable, addressed through abatement 3A.

Cross reference: See abatement 3A.

6B. Latrobe Road/White Rock Road in 2033

Deficiency: PM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2033 Improvements Assumed: None.

2023-2033 Improvements Assumed: None.

Abatement: implement as abatement 6A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 6A.

Timing: Not applicable, addressed through abatement 6A.

Cross reference: See abatement 6A.

7B. Latrobe Road/Golden Foothill Parkway (N) in 2033

Deficiency: PM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2033 Improvements Assumed: None.

Abatement: Construct 170-foot southbound right turn pocket.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: CIP 36105069 will widen this portion of Latrobe Rd to six lanes by 2040 and should be advanced to the 10-year CIP. The Project's fair share cost of this improvement is payment of the TIF program fee.

Timing: Prior to issuance of 1st building permit.

9B. Latrobe Road/ Golden Foothill Parkway (S) in 2033

Deficiency: Project traffic is anticipated to worsen existing queue spillback from the southbound left turn during both the AM and PM peak-hours.

2023-2033 Improvements Assumed: None.

Abatement: Construct a second southbound left turn lane on Latrobe Rd and a second eastbound lane on Clubview Dr between Latrobe Road and Blackstone Pkwy. The second eastbound lane on Clubview Dr is a receiving lane for the second southbound left turn lane from Latrobe Rd.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after CIP project 36105055 (AKA "72Latrobe") is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 9A.

10B. Latrobe Road/Investment Boulevard in 2033

Deficiency: Project traffic is anticipated to cause the eastbound (Investment Blvd) left-turn queue to spill out of its left-turn pocket.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 10A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 10A.

Timing: Not applicable, addressed through abatement 10A.

Cross reference: See abatement 10A.

12B. Latrobe Road/Royal Oaks Drive in 2033

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 12A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this

location. **Table 25** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 12A.

Timing: Not applicable, addressed through abatement 12A.

Cross reference: See abatement 12A.

21B. White Rock Road/Valley View Parkway in 2033

Deficiency: Project traffic is anticipated to worsen left-turn queue spillback on westbound White Rock Rd.

2023-2033 Improvements Assumed: None.

Abatement:

- Implement abatement 21A.
- Further extend the westbound left turn pocket to 410 feet. (Note: abatement 21A will extend this pocket to 350 feet. Abatement 21B reflects an additional 60 feet of westbound right turn storage.)

Widening should be done to the south of Latrobe Rd to avoid high voltage lines. Eastbound-westbound Lane alignment may require additional space.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36105042 (White Rock Road Widening 2 to 4 lanes – Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 21A.

Table 25. EPAP 2033 intersection delay and level-of-service with and without the abated Project

ID	Intersection	Control	Left Turn Storage	2033 AM Peak No Project				2033 PM Peak No Project				2033 AM Peak with Project				2033 PM Peak with Project				Abatement Strategy	Left Turn Storage	Abated AM Peak (+ Proj)				Abated PM Peak (+ Proj)				Existing or Anticipated CIP Project
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)			Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB N/A SB 220 EB N/A WB 150	**92.6**	**F**	NB N/A SB 113 EB 227 WB **182**		50.7	D	NB N/A SB 57 EB 319 WB **238**		**94.7**	**F**	NB N/A SB 113 EB 227 WB **178**		48.4	D	NB N/A SB 57 EB 319 WB **239**		Implement Abatement 3A	NB N/A SB 220 EB N/A WB 150	78.1	E	NB N/A SB 112 EB 242 WB **177**		no change				"Traffic Signals Intersection"
6	Latrobe Road/White Rock Road	Signal	NB 270 SB 260 EB 360 WB 160	44.3	D	NB 253 SB 89 EB 306 WB **378**		79.6	E	NB 246 SB 234 EB 325 WB **840**		43.0	D	NB 253 SB 89 EB 306 WB **338**		**80.8**	**F**	NB 246 SB 234 EB 325 WB **848**		Implement Abatement 6A.	NB 270 SB 260 EB 360 WB 160	no changes				51.2	D	NB 256 SB 237 EB 329 WB **426**		36105069
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB 200 SB 200 EB 100 WB N/A	**84.0**	**F**	NB 56 SB 22 EB **126** WB N/A		80.0	E	NB 13 SB 38 EB **416** WB N/A		54.8	D	NB 56 SB 22 EB **126** WB N/A		**80.9**	**F**	NB **13** SB 37 EB **405** WB N/A		Add 170' SB right turn pocket	NB 200 SB 200 EB 100 WB N/A	25.9	C	NB 30 SB 16 EB 56 WB N/A		39.9	D	NB 13 SB 37 EB **405** WB N/A		36105069
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB 220 SB 530 EB 100 WB N/A	**90.2**	**F**	NB 66 SB 475 EB **638** WB N/A		**132.3**	**F**	NB 98 SB **786** EB **1066** WB N/A		**84.0**	**F**	NB 93 SB 497 EB **529** WB N/A		**112.8**	**F**	NB 120 SB **822** EB **788** WB N/A		Construct 2nd SB left (both left turn lanes only require 160') on Latrobe and receiving lane on Clubview	NB 220 SB 160 EB 100 WB N/A	68.3	E	NB 90 SB 126 EB 488 WB N/A		**90.0**	**F**	NB 120 SB 152 EB **788** WB N/A		"Latrobe 72"
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	12.2	B	NB 40 SB N/A EB 98		19.1	B	NB 93 SB N/A EB **251**		12.3	B	NB 44 SB N/A EB 86		26.6	C	NB 138 SB N/A EB **375**		Implement Abatement 10A	NB 180 SB N/A EB 190	11.3	B	NB 39 SB N/A EB 55		18.9	B	NB 93 SB N/A EB **189**		"Latrobe 72"
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 17.4	B	NB 0 SB 6 EB N/A WB N/A		(WB) 26.5	D	NB 0 SB 9 EB N/A WB N/A		**(EB) 526.1 ***	**F**	NB 1 SB 7 EB N/A WB N/A		**(EB) 237.6 ***	**F**	NB 2 SB 11 EB N/A WB N/A		Implement Abatement 12A	NB 320 SB 320 EB N/A WB N/A	27.0	C	NB 10 SB 67 EB N/A WB N/A		23.4	C	NB 13 SB 69 EB N/A WB N/A		n/a
21	White Rock Road/Valley View Parkway	Signal	NB 100 SB 100 EB 100 WB 100	**252.3**	**F**	NB **170** SB **324** EB **387** WB **708**		**259.5**	**F**	NB **152** SB **505** EB **125** WB **827**		**247.0**	**F**	NB **172** SB **328** EB **406** WB **686**		**254.8**	**F**	NB **152** SB **505** EB **136** WB **855**		Implement Abatement 21A. Additional lengthening of WB left turn pocket to from 350' to 410'.	NB 100 SB 100 EB 100 WB 410	**145.1**	**F**	NB **172** SB **328** EB 406 WB 686		232.3	**F**	NB **145** SB **156** EB 42 WB 410		36105042

* Denotes intersections where the peak-hour signal warrant is met.

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9.0 CUMULATIVE 2040 CONDITIONS

The Cumulative 2040 conditions analysis started with lane configurations from Existing 2023 conditions and turning movements derived from existing traffic counts, growth factors from the Travel Demand Model, and the NCHRP 255 adjustment procedure. Several volume and network adjustments were then made.

Seven Capital Improvement Program (CIP) projects that affect study intersection geometry were accounted for:

- CIP Project 36105042: Widening of White Rock Road to four-lanes between Post Street and the US 50 Silva Valley interchange.
- CIP Project 36105007: Country Club Drive Extension to El Dorado Hills Blvd.
- CIP Project 36105035: Saratoga Way Extension Phase 2 (widening to four-lanes and associated intersection improvements).
- CIP Project 36104021: US 50 auxiliary lane westbound - El Dorado Hills Blvd to El Dorado County line.
- CIP Project 36104001: US 50/El Dorado Hills Blvd interchange improvements phase 2B (adds another NB through lane at study intersection #4.)
- CIP Project 36104004: US 50/Silva Valley Parkway interchange Phase 2 – on ramps and auxiliary lanes. (adds eastbound slip onramp and westbound loop onramp).
- CIP Project 36105041: White Rock Road widening to four-lanes between Manchester Drive and the El Dorado County line.

Traffic volumes from 2033 without the Project were used as a floor before traffic from the avoided trips (see **Figure 11**, page 45) was shifted from where the TDM loads it directly onto Carson Crossing Drive to Investment Blvd. Traffic for the approved Carson Creek/Heritage project was added. Note that because the Creekside Village project also has avoided R&D and industrial vehicle trips, some turning movements are lower in 2040 than they were in 2033. For 2040, a peak hour factor of 0.92 was also used as a floor.

Figure *16* summarizes the turning movements and lane configurations for the Cumulative 2040 conditions scenario.

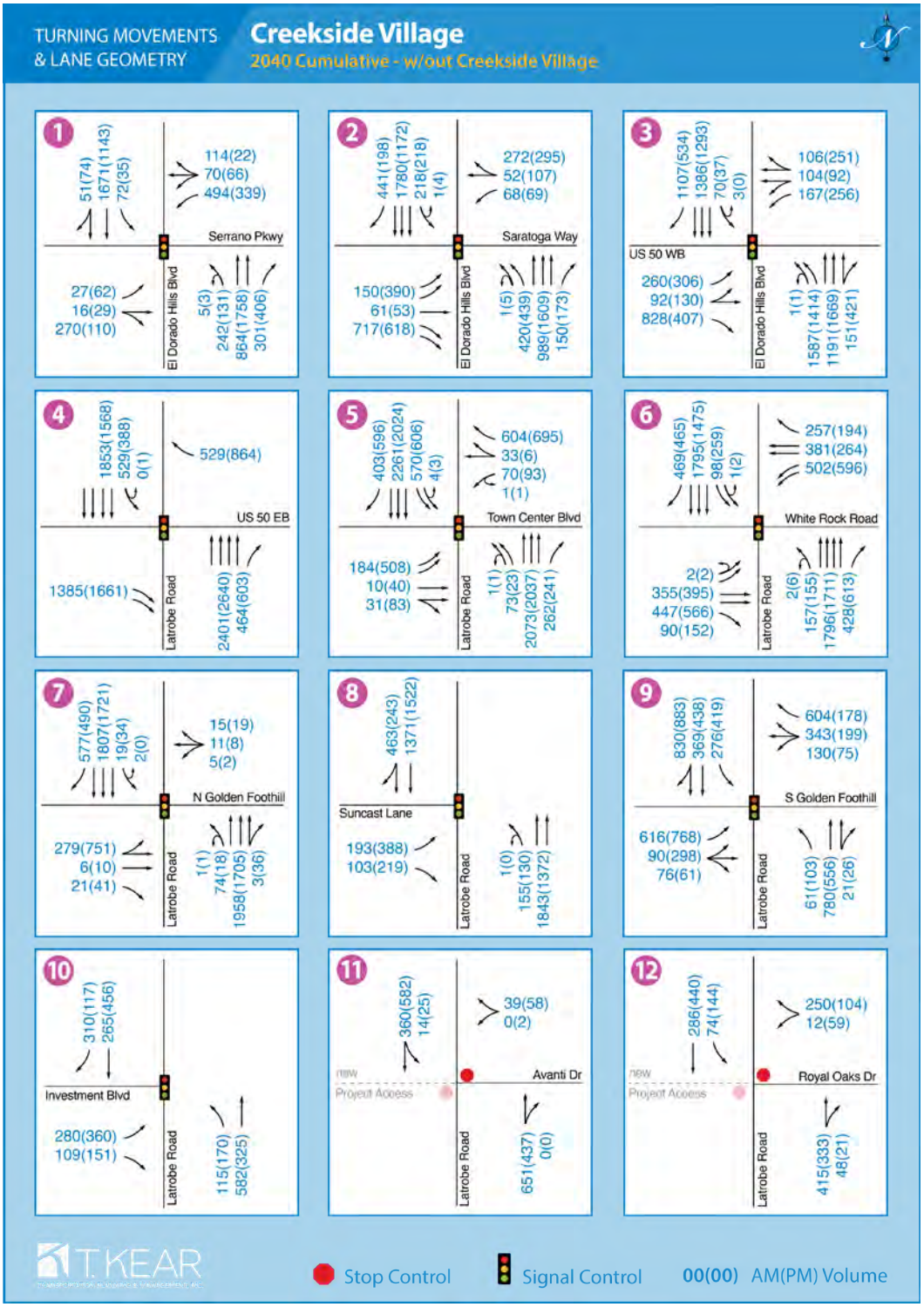

Figure 16. Cumulative 2040 lane geometry and turning movements

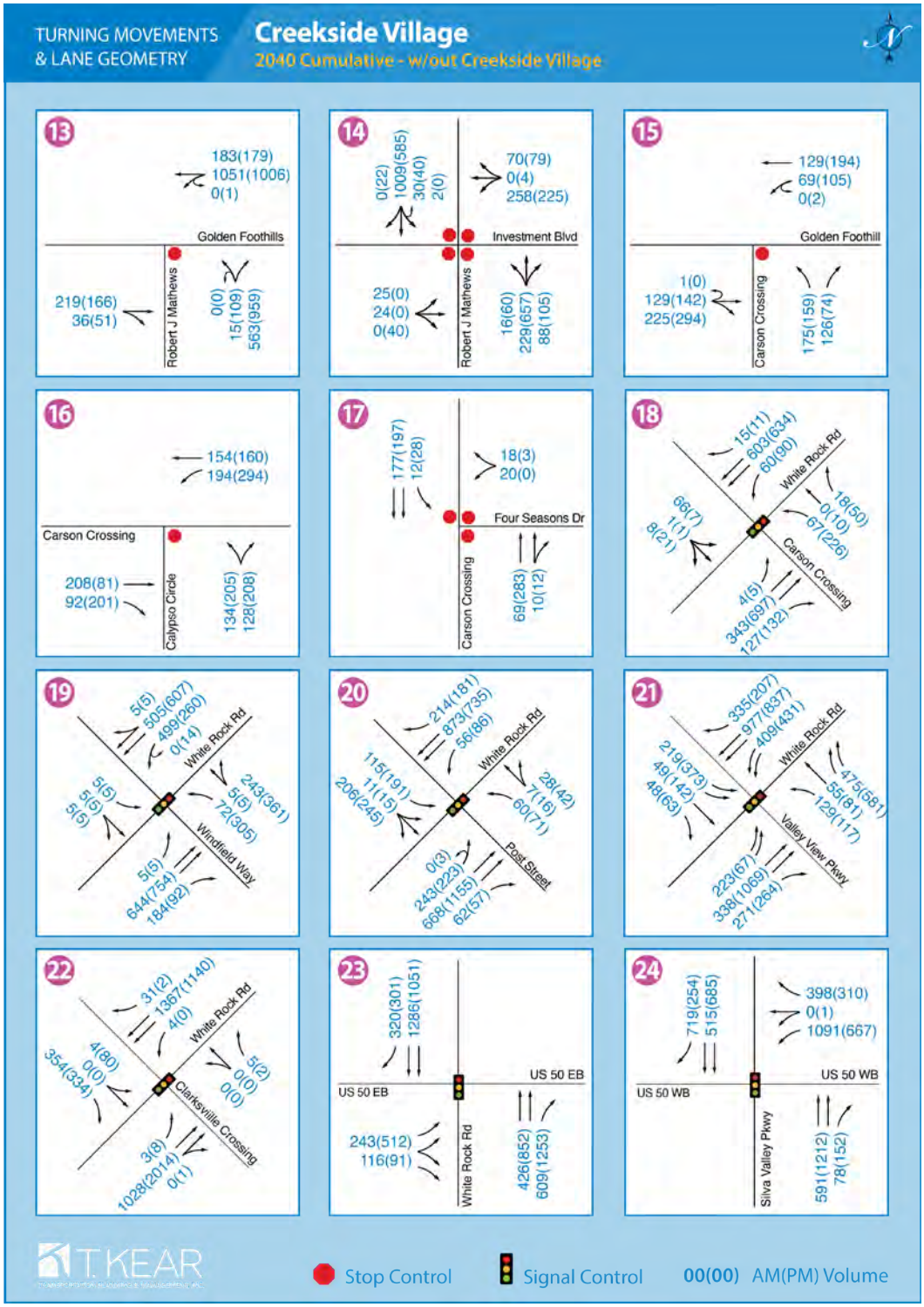

Figure 16. Cumulative 2040 lane geometry and turning movements (continued)

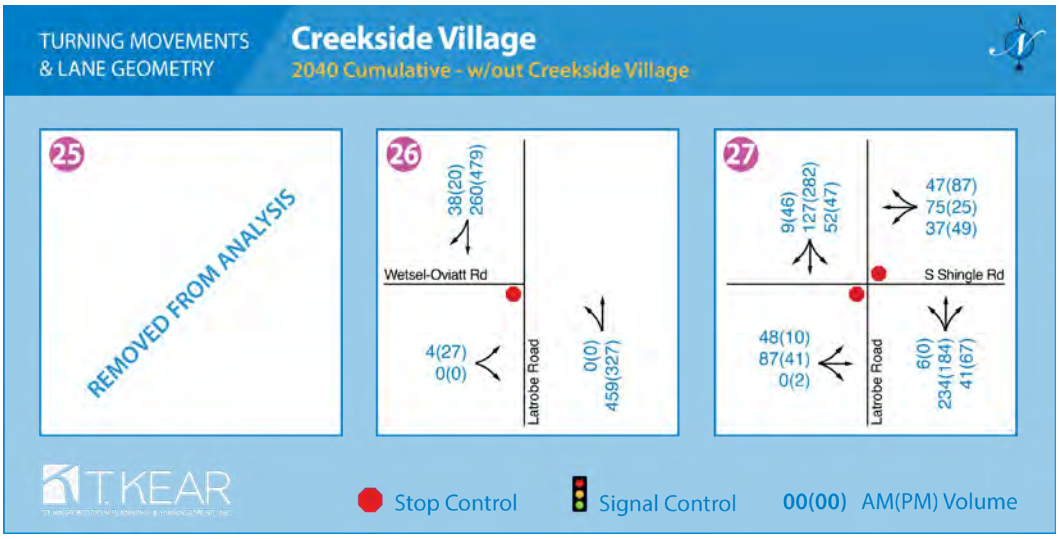

Figure *16*. Cumulative 2040 lane geometry and turning movements (continued)

Delay and level-of-service is presented in **Table 26** through **Table 28**. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **bold black** typeface denote deficient traffic operations, and unsignalized intersections that meet the peak hour signal warrant are denoted with an asterisk and shading.

The results indicate that thirteen study intersections operate deficiency with level-of-service F conditions and/or 95% left turn queues that exceed available storage lengths.

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard AM and PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) AM and PM;
- (10) Latrobe Road/Investment Boulevard PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathews Pkwy PM;
- (14) Investment Boulevard/Robert J. Mathews Pkwy AM and PM
- (16) Carson Crossing Road/Calypso Circle PM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street AM and PM; and
- (21) White Rock Road/Valley View Parkway PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. the remainder of the study intersections, all of the US 50 study segments, and arterial study segments were found to operate acceptably.

Table 26. Cumulative 2040 intersection delay and level-of-service without the Project

ID	Intersection	Control	Left Turn Storage		2040 AM Peak No Project				2040 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB	260	**196.7**	**F**	NB	**418**	63.1	E	NB	136
			SB	110			SB	**129**			SB	41
			EB	100			EB	40			EB	61
			WB	430			WB	506			WB	214
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB	500	55.5	E	NB	284	69.6	E	NB	612
			SB	500			SB	341			SB	332
			EB	150			EB	145			EB	**332**
			WB	N/A			WB	N/A			WB	N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB	N/A	**120.8**	**F**	NB	N/A	71.5	E	NB	N/A
			SB	220			SB	115			SB	57
			EB	N/A			EB	227			EB	318
			WB	150			WB	**184**			WB	**259**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB	N/A	37.3	D	NB	N/A	61.7	E	NB	N/A
			SB	570			SB	372			SB	298
			EB	N/A			EB	810			EB	1400
			WB	N/A			WB	0			WB	0
5	Latrobe Road/Town Center Boulevard	Signal	NB	220	36.2	D	NB	44	70.5	E	NB	16
			SB	330			SB	**460**			SB	**864**
			EB	300			EB	109			EB	295
			WB	100			WB	74			WB	**113**
6	Latrobe Road/White Rock Road	Signal	NB	270	41.5	D	NB	159	48.9	D	NB	162
			SB	260			SB	95			SB	241
			EB	360			EB	313			EB	343
			WB	400			WB	364			WB	360
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB	200	15.4	B	NB	19	23.9	C	NB	19
			SB	200			SB	21			SB	37
			EB	320			EB	118			EB	305
			WB	N/A			WB	N/A			WB	N/A
8	Latrobe Road/Suncast Lane	Signal	NB	280	28.5	C	NB	151	45.6	D	NB	134
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	**186**			EB	**486**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB	220	**143.8**	**F**	NB	72	**217.0**	**F**	NB	102
			SB	530			SB	**601**			SB	**1186**
			EB	100			EB	**917**			EB	**1643**
			WB	N/A			WB	N/A			WB	N/A
10	Latrobe Road/Investment Boulevard	Signal	NB	180	12.1	B	NB	35	19.6	B	NB	108
			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	92			EB	**251**
11	Latrobe Road/Avanti Drive	TWSC	NB	N/A	(WB) 14.1	B	NB	N/A	(WB) 12.3	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB	320	(WB) 18.2	C	NB	0	(WB) 32.3	D	NB	0
			SB	320			SB	6			SB	11
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	Rondabout	NB	N/A	(EB) 30.4	D	NB	N/A	**(NB) 74.4**	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

Table 26. Cumulative 2040 intersection delay and level-of-service without the Project (continued)

ID	Intersection	Control	Left Turn Storage		2040 AM Peak No Project				2040 PM Peak No Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB	N/A	**372.9 ***	**F**	NB	N/A	**273.2 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB	N/A	(NBL) 17.4	C	NB	N/A	(NBL) 35.4	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	220			WB	5			WB	11
16	Carson Crossing Road/Calypso Circle	TWSC	NB	N/A	(NB) 29.8	D	NB	N/A	**(NB) 163.7 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	190			WB	15			WB	25
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB	N/A	8.1	A	NB	N/A	8.7	A	NB	N/A
			SB	100			SB	1			SB	3
			WB	N/A			WB	N/A			WB	N/A
18	White Rock Road/Carson Crossing Road	**Signal**	NB	200	16.6	B	NB	29	17.4	B	NB	127
			SB	N/A			SB	N/A			SB	N/A
			EB	200			EB	3			EB	4
			WB	300			WB	27			WB	49
19	White Rock Road/Windfield Way	Signal	NB	150	35.0	C	NB	105	34.8	C	NB	**434**
			SB	100			SB	10			SB	10
			EB	200			EB	10			EB	10
			WB	200			WB	**610**			WB	**345**
20	White Rock Road/Post Street	Signal	NB	N/A	44.8	D	NB	N/A	44.9	D	NB	N/A
			SB	100			SB	**216**			SB	**344**
			EB	300			EB	**305**			EB	272
			WB	200			WB	117			WB	183
21	White Rock Road/Valley View Parkway	Signal	NB	300	26.9	C	NB	148	33.5	C	NB	159
			SB	200			SB	119			SB	**229**
			EB	300			EB	121			EB	44
			WB	500			WB	209			WB	255
22	White Rock Road/Clarksville Crossing	Signal	NB	N/A	43.1	D	NB	N/A	57.2	B	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	460			EB	7			EB	14
			WB	290			WB	8			WB	0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB	N/A	11.1	B	NB	N/A	38.0	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB	N/A	52.2	D	NB	N/A	27.5	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A
25	not used				not used							
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB	N/A	(EB) 14.4	B	NB	N/A	(EB) 16.3	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
27	Latrobe Road/S. Shingle Road	TWSC	NB	N/A	(EB) 19.0	C	NB	N/A	(EB) 17.2	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A

* Denotes intersections where the peak-hour signal warrant is met.

Table 27. Cumulative 2040 freeway facility level-of-service without the Project

No	Segment	Segment Type	Method	2040 No Project AM	2340 No Project PM
Westbound US 50					
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	33.6/D	27.3/D
2	Silva Valley offramp	diverge	HCM 7th Ed.	27.5/C	23.2/C
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	17.1/B	18.1/C
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	22.7/C	24.3/C
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	17.4/B	15.2/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	14.2/B	14.8/B
7	El Dorado Hills Blvd onramp	Merge	HCM 7th Ed.	29.7/D	24.6/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	23.7/C	19.8/C
Eastbound US 50					
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	16.1/B	25.0/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	28.0/D	36.9/E
11	Latrobe loop offramp	diverge		25.9/C	33.7/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	7.2/A	11.6/B
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	10.4/B	14.4/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	10.1/A	13.4/B
B15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	15.2/B	18.5/B
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	15.5/B	23.7C
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	14.3/B	21.4/C

Table 28. Cumulative 2040 arterial level-of-service check without the Project

Arterial Segment	**Description (and level-of-service E threshold)**	**2040 AM No Project** (vehicle trips)	**2040 PM No Project** (vehicle trips)
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650 vehicle trips)	775 (Better than LOS E)	809 (Better than LOS E)
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650 vehicle trips)	1303 (Better than LOS E)	1073 (Better than LOS E)
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln	4-lane divided arterial (threshold 3290 vehicle trips)	3134 (Better than LOS E)	2776 (Better than LOS E)
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280 vehicle trips, extrapolated from 6-lane divided arterial)	3598 (Better than LOS E)	3580 (Better than LOS E)
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	4-lane divided arterial (threshold 3290 vehicle trips)	2303 (Better than LOS E)	2934 (Better than LOS E)

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10.0 CUMULATIVE 2040 PLUS PROPOSED PROJECT CONDITIONS

10.1 Traffic Volumes

Peak hour Project trips (**Figure 9** page 41) and avoided R&D and industrial trips (**Figure 11** page 45) were added to the EPAP 2040 conditions traffic volumes. Delay and level-of-service were determined at the study intersections and segments. **Figure 17** summarizes the turning movements and lane configurations for the Cumulative 2040 Plus Proposed Project scenario.

10.2 Level-of-Service

Table 29 through **Table 31** present a summary of the level-of-service results for the study intersections and segments under Cumulative 2040 Plus Proposed Project conditions. Intersection control is listed as signal, two-way stop-controlled (TWSC), or all-way stop-control (AWSC). Both the estimated delay and level-of-service (LOS) are provided. At TWSC intersections, the movement with the worst delay is shown in parentheses. Ninety-fifth percentile left turn queues are also listed. Entries shown in **Bold black** text in **Table 29** through **Table 31** denote locations with preexisting deficiencies that the Project is not anticipated to worsen. **Bold red** text denotes locations where the Project is anticipated to create new or worsen preexisting deficiencies. Unsignalized intersections that meet the peak hour signal warrant are shaded and denoted with an asterisk.

Thirteen intersections are anticipated to have level-of-service and/or queue spillback deficiencies.

<u>11 Locations that are deficient with or without the Project that are not worsened:</u>

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way PM;
- (3) El Dorado Hills Blvd/US 50 WB AM and PM;
- (5) Latrobe Road/Town Center Boulevard AM and PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) AM and PM;
- (14) Investment Boulevard/Robert J. Mathews Pkwy AM;
- (16) Carson Crossing Road/Calypso Circle PM;
- (19) White Rock Road/Windfield Way AM and PM;
- (20) White Rock Road/Post Street AM and PM; and
- (21) White Rock Road/Valley View Parkway PM.

<u>1 Locations that are deficient with or without the Project that are worsened:</u>

- (10) Latrobe Road/Investment Boulevard PM;

<u>1 Locations where the Project is anticipated to cause new deficiencies:</u>

- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Calculation sheets for delay and level-of-service are provided in **Appendix B**. The remainder of the study intersections, all of the US 50 study segments, and arterial study segments, were found to operate acceptably.

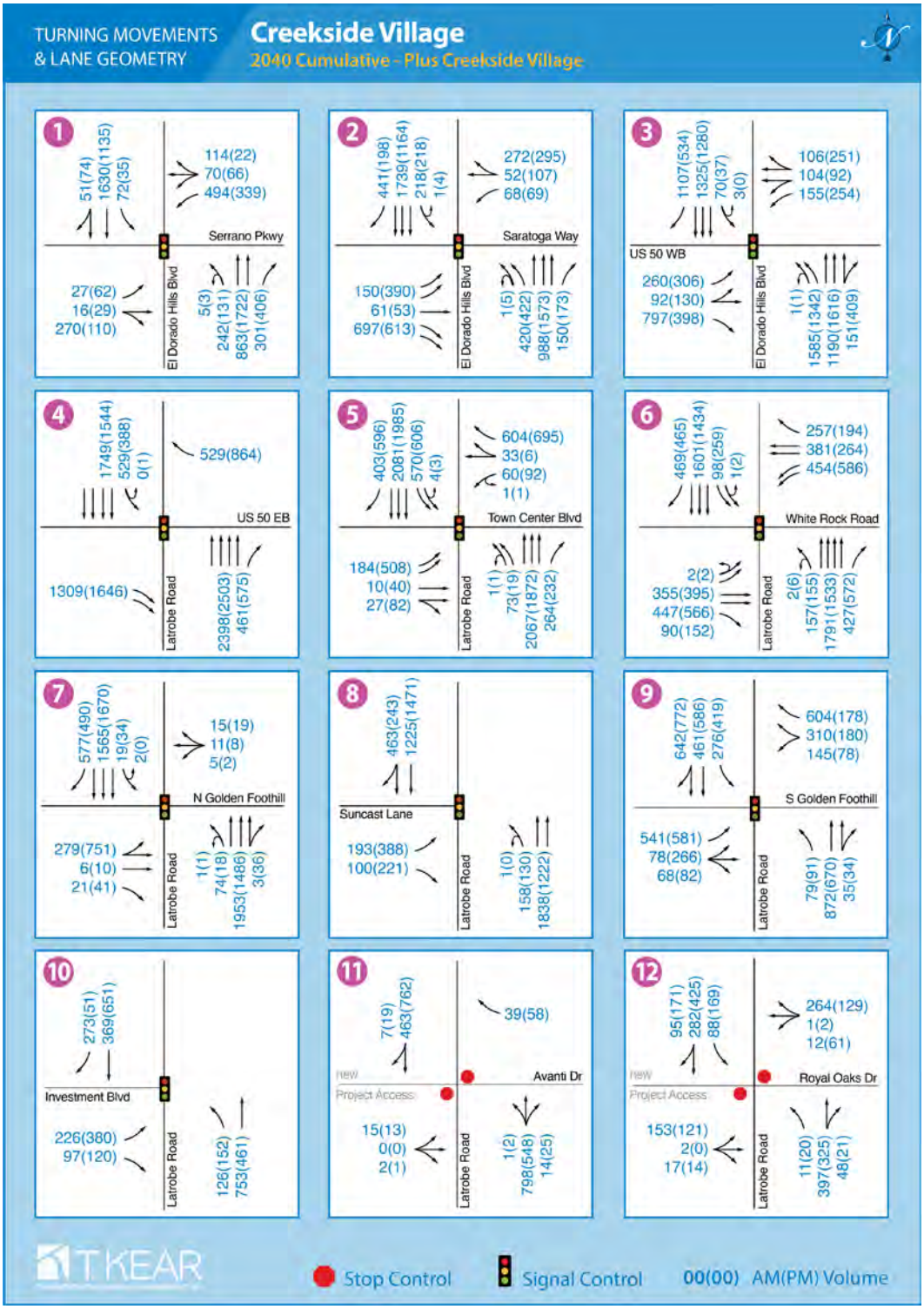

Figure 17. Cumulative 2040 plus Project lane geometry and turning movements

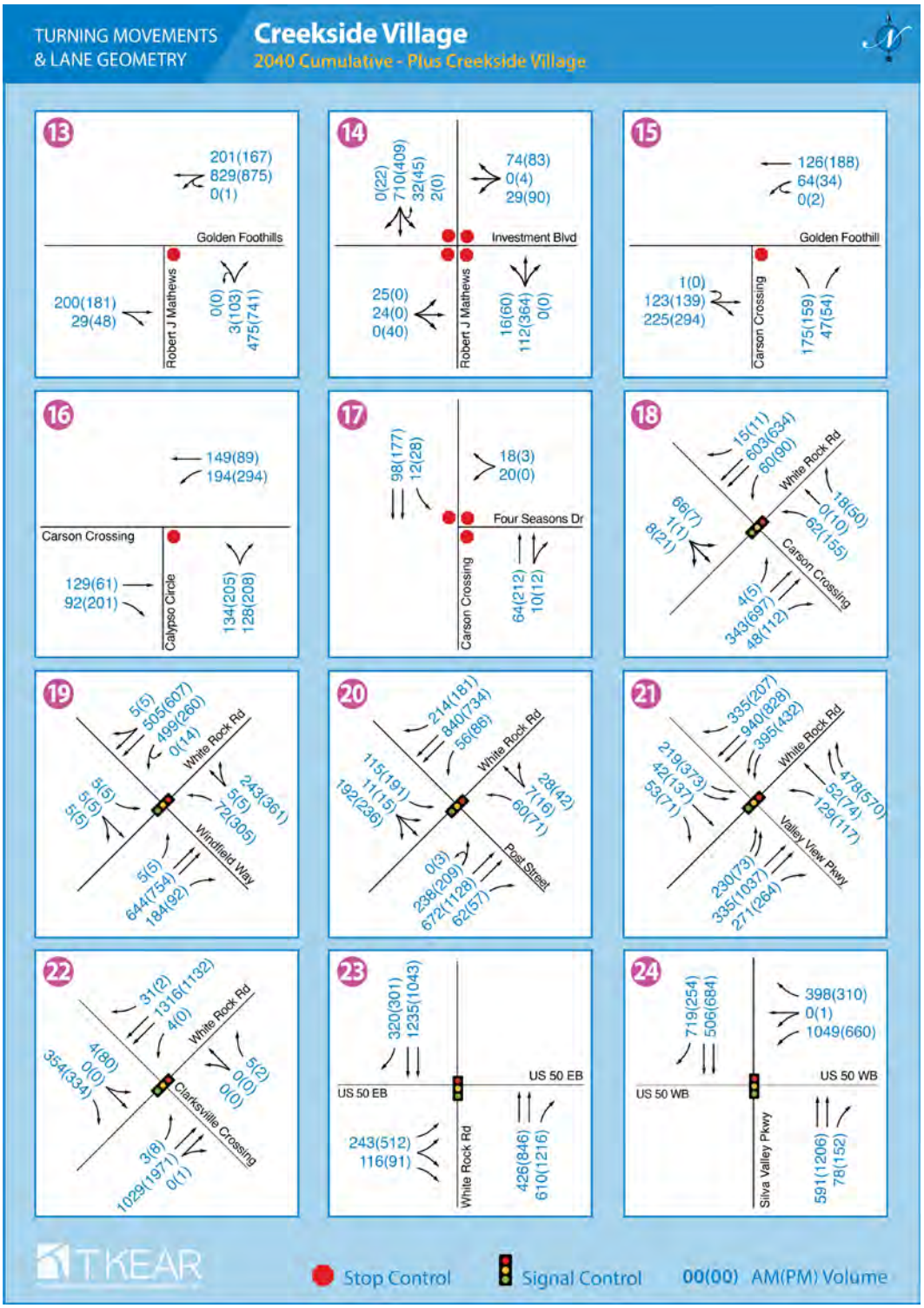

Figure 17. Cumulative 2040 plus Project lane geometry and turning movements (continued)

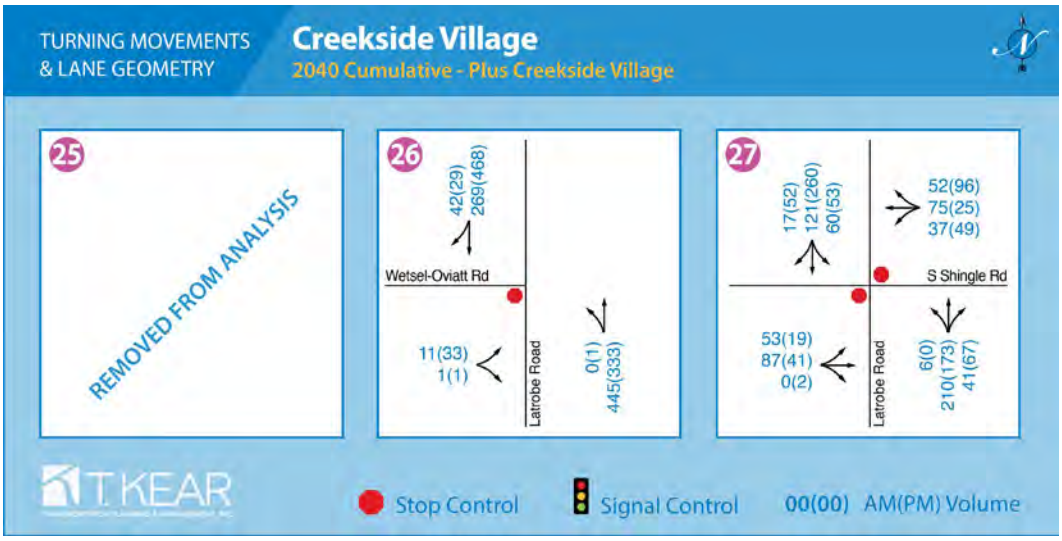

Figure 17. Cumulative 2040 plus Project lane geometry and turning movements (continued)

Table 29. Cumulative 2040 intersection delay and level-of-service with and without the proposed Project

ID	Intersection	Control	Left Turn Storage		2040 AM Peak No Project				2040 PM Peak No Project				2040 AM Peak with Project				2040 PM Peak with Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
1	El Dorado Hills Blvd/Serrano Pkwy	Signal	NB	260	**196.7**	**F**	NB	**418**	63.1	E	NB	136	**187.0**	**F**	NB	**418**	58.2	E	NB	137
			SB	110			SB	**129**			SB	41			SB	**129**			SB	41
			EB	100			EB	40			EB	61			EB	40			EB	61
			WB	430			WB	506			WB	214			WB	506			WB	214
2	El Dorado Hills Blvd/Saratoga Way	Signal	NB	500	55.5	E	NB	284	69.6	E	NB	612	53.2	D	NB	284	65.4	E	NB	**554**
			SB	500			SB	341			SB	332			SB	340			SB	329
			EB	150			EB	145			EB	**332**			EB	145			EB	**328**
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
3	El Dorado Hills Blvd/US 50 WB (Note EBL queueing reported even though there is not a left-turn pocket, it is 250' to end of right-turn pocket.)	Signal	NB	N/A	**120.8**	**F**	NB	N/A	71.5	E	NB	N/A	**120.1**	**F**	NB	N/A	63.9	E	NB	N/A
			SB	220			SB	115			SB	57			SB	115			SB	57
			EB	N/A			EB	227			EB	318			EB	226			EB	318
			WB	150			WB	**184**			WB	**259**			WB	**179**			WB	**257**
4	El Dorado Hills Blvd/US 50 EB (Note: EB and WB right queue reported as EB and WB. EB slip offramp is 1725 feet long)	Signal	NB	N/A	37.3	D	NB	N/A	61.7	E	NB	N/A	31.9	C	NB	N/A	61.0	E	NB	N/A
			SB	570			SB	372			SB	298			SB	372			SB	298
			EB	N/A			EB	810			EB	1400			EB	656			EB	1364
			WB	N/A			WB	0			WB	0			WB	0			WB	0
5	Latrobe Road/Town Center Boulevard	Signal	NB	220	36.2	D	NB	44	70.5	E	NB	16	36.3	D	NB	44	67.0	E	NB	13
			SB	330			SB	**460**			SB	**864**			SB	**458**			SB	**829**
			EB	300			EB	109			EB	295			EB	109			EB	285
			WB	100			WB	74			WB	**113**			WB	63			WB	**107**
6	Latrobe Road/White Rock Road	Signal	NB	270	41.5	D	NB	159	48.9	D	NB	162	54.9	D	NB	156	50.0	D	NB	162
			SB	260			SB	95			SB	241			SB	95			SB	241
			EB	360			EB	313			EB	343			EB	313			EB	343
			WB	400			WB	364			WB	360			WB	165			WB	347
7	Latrobe Road/Golden Foothill Parkway (N)	Signal	NB	200	15.4	B	NB	19	23.9	C	NB	19	15.2	B	NB	64	22.6	C	NB	19
			SB	200			SB	21			SB	37			SB	22			SB	37
			EB	320			EB	118			EB	305			EB	117			EB	304
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
8	Latrobe Road/Suncast Lane	Signal	NB	280	28.5	C	NB	151	45.6	D	NB	134	20.7	C	NB	156	41.6	D	NB	134
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	**186**			EB	**486**			EB	**186**			EB	**486**
9	Latrobe Road/ Golden Foothill Parkway (S)	Signal	NB	220	**143.8**	**F**	NB	72	**217.0**	**F**	NB	102	**121.7**	**F**	NB	93	**147.4**	**F**	NB	88
			SB	530			SB	**601**			SB	**1186**			SB	**626**			SB	**1153**
			EB	100			EB	**917**			EB	**1643**			EB	**713**			EB	**1054**
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
10	Latrobe Road/Investment Boulevard	Signal	NB	180	12.1	B	NB	35	19.6	B	NB	108	12.2	B	NB	45	27.8	C	NB	156
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	100			EB	92			EB	**251**			EB	88			EB	**388**
11	Latrobe Road/Avanti Drive	TWSC	NB	N/A	(WB) 14.1	B	NB	N/A	(WB) 12.3	B	NB	N/A	(EB) 42.0	E	NB	N/A	(EB) 49.1	E	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
12	Latrobe Road/Royal Oaks Drive	TWSC	NB	320	(WB) 18.2	C	NB	0	(WB) 32.3	D	NB	0	**(EB) 584.4. ***	**F**	NB	1	**(EB) 441.3 ***	**F**	NB	2
			SB	320			SB	6			SB	11			SB	7			SB	14
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
13	Golden Foothill Pkwy/Robert J. Mathews Pkwy	Rondabout	NB	N/A	(EB) 30.4	D	NB	N/A	**(NB) 74.4**	**F**	NB	N/A	(EB) 15.6	C	NB	N/A	(NB) 25.7	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A

Table 29. Cumulative 2040 intersection delay and level-of-service with and without the proposed Project (continued)

ID	Intersection	Control	Left Turn Storage		2040 AM Peak No Project				2040 PM Peak No Project				2040 AM Peak with Project				2040 PM Peak with Project			
					Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)
14	Investment Boulevard/Robert J. Mathews Pkwy	AWSC	NB	N/A	**372.9 ***	**F**	NB	N/A	**273.2 ***	**F**	NB	N/A	**85.4**	**F**	NB	N/A	34.1	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
15	Golden Foothill Parkway/Carson Crossing Road	TWSC	NB	N/A	(NBL) 17.4	C	NB	N/A	(NBL) 35.4	D	NB	N/A	(NBL) 16.7	C	NB	N/A	(NBL) 20.5	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	220			WB	5			WB	11			WB	5			WB	3
16	Carson Crossing Road/Calypso Circle	TWSC	NB	N/A	(NB) 29.8	D	NB	N/A	**(NB) 163.7 ***	**F**	NB	N/A	(NB) 23.0	C	NB	N/A	**(NB) 95.5 ***	**F**	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	190			WB	15			WB	25			WB	15			WB	25
17	Carson Crossing Road/4 Seasons Drive	AWSC	NB	N/A	8.1	A	NB	N/A	8.7	A	NB	N/A	7.8	A	NB	N/A	8.4	A	NB	N/A
			SB	100			SB	1			SB	3			SB	1			SB	3
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
18	White Rock Road/Carson Crossing Road	**Signal**	NB	200	16.6	B	NB	29	17.4	B	NB	127	16.4	B	NB	26	16.6	B	NB	79
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	200			EB	3			EB	4			EB	3			EB	4
			WB	300			WB	27			WB	49			WB	27			WB	48
19	White Rock Road/Windfield Way	Signal	NB	150	35.0	C	NB	105	34.8	C	NB	**434**	35.0	C	NB	105	34.8	C	NB	**434**
			SB	100			SB	10			SB	10			SB	10			SB	10
			EB	200			EB	10			EB	10			EB	10			EB	10
			WB	200			WB	**610**			WB	**345**			WB	**610**			WB	**345**
20	White Rock Road/Post Street	Signal	NB	N/A	44.8	D	NB	N/A	44.9	D	NB	N/A	44.2	D	NB	N/A	44.0	D	NB	N/A
			SB	100			SB	**216**			SB	**344**			SB	**218**			SB	**339**
			EB	300			EB	**305**			EB	272			EB	286			EB	256
			WB	200			WB	117			WB	183			WB	117			WB	183
21	White Rock Road/Valley View Parkway	Signal	NB	300	26.9	C	NB	148	33.5	C	NB	159	26.1	C	NB	141	32.4	C	NB	153
			SB	200			SB	119			SB	**229**			SB	114			SB	**221**
			EB	300			EB	121			EB	44			EB	119			EB	46
			WB	500			WB	209			WB	255			WB	197			WB	246
22	White Rock Road/Clarksville Crossing	Signal	NB	N/A	43.1	D	NB	N/A	57.2	B	NB	N/A	41.9	D	NB	N/A	53.8	D	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	460			EB	7			EB	14			EB	7			EB	13
			WB	290			WB	8			WB	0			WB	8			WB	0
23	Silva Valley Parkway/US 50 EB ramps	Signal	NB	N/A	11.1	B	NB	N/A	38.0	D	NB	N/A	11.1	B	NB	N/A	34.1	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
24	Silva Valley Parkway/US 50 WB ramps	Signal	NB	N/A	52.2	D	NB	N/A	27.5	C	NB	N/A	47.6	D	NB	N/A	27.1	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A
25	not used				not used								not used							
26	Latrobe Road/Wetsel-Oviatt Road	TWSC	NB	N/A	(EB) 14.4	B	NB	N/A	(EB) 16.3	C	NB	N/A	(EB) 14.2	B	NB	N/A	(EB) 16.4	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
27	Latrobe Road/S. Shingle Road	TWSC	NB	N/A	(EB) 19.0	C	NB	N/A	(EB) 17.2	C	NB	N/A	(EB) 19.3	C	NB	N/A	(EB) 18.0	C	NB	N/A
			SB	N/A			SB	N/A			SB	N/A			SB	N/A			SB	N/A
			EB	N/A			EB	N/A			EB	N/A			EB	N/A			EB	N/A
			WB	N/A			WB	N/A			WB	N/A			WB	N/A			WB	N/A

* Denotes intersections where the peak-hour signal warrant is met.

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Table 30. Cumulative 2040 freeway facility level-of-service with and without the proposed Project

No	Segment	Segment Type	Method	2040 No Project AM	2040 No Project PM	2040 Plus Project AM	2040 Plus Project PM
Westbound US 50							
1	Bass Lake Rd to Silva Valley Pkwy	basic	HCM 7th Ed.	33.6/D	27.3/D	32.6/D	27.8/D
2	Silva Valley offramp	diverge	HCM 7th Ed.	27.5/C	23.2/C	26.9/C	23.6/C
3	Silva Valley offramp to future loop onramp	basic	HCM 7th Ed.	17.1/B	18.1/C	16.9/B	18.2/C
4	Future Silva Valley loop onramp	merge	HCM 7th Ed.	22.7/C	24.3/C	22.5/C	24.4/C
5	Silva Valley Pkwy to Latrobe Rd	weave	HCM 7th Ed.	17.4/B	15.2/B	17.2/B	15.3/B
6	El Dorado Hills Blvd offramp to onramp	basic	HCM 7th Ed.	14.2/B	14.8/B	14.2/B	14.8/B
7	El Dorado Hills Blvd onramp	Merge	HCM 7th Ed.	29.7/D	24.6/C	30.2/D	24.1/C
8	El Dorado Hills Blvd to EDC Line *	basic	HCM 7th Ed.	23.7/C	19.8/C	24.1/C	19.5/C
Eastbound US 50							
9	EDC Line to Latrobe Rd	basic	HCM 7th Ed.	16.1/B	25.0/C	15.8/B	25.4/C
10	Latrobe slip offramp	diverge	HCM 7th Ed.	28.0/D	36.9/E	27.4/C	37.4/E
11	Latrobe loop offramp	diverge		25.9/C	33.7/D	25.6/C	33.9/D
12	El Dorado Hills Blvd offramp to Latrobe Rd onramp	basic	HCM 7th Ed.	7.2/A	11.6/B	7.2/A	11.6/B
13	Latrobe Rd onramp to Silva Valley Pkwy offramp	weave	HCM 7th Ed.	10.4/B	14.4/B	10.5/B	14.3/B
14	Silva Valley Pkwy offramp to onramp	basic	HCM 7th Ed.	10.1/A	13.4/B	10.2/A	13.3/B
15	Silva Valley Pkwy onramp	merge	HCM 7th Ed.	15.2/B	18.5/B	15.3/B	18.4/B
16	Future Silva Valley Pkwy slip onramp	merge	HCM 7th Ed.	15.5/B	23.7C	15.9/B	23.5C
17	Silva Valley Pkwy to Bass Lake Rd	basic	HCM 7th Ed.	14.3/B	21.4/C	14.6/B	21.1/C

Density in units of passenger cars per mile per lane.

*Prior to the opening of the Saratoga Way extension, Caltrans has reported occasional LOS F conditions during the morning peak for this segment based on planning methods rather than counts.

Project plus forgone business park trips will reduce WB US 50 volume between Bass Lake Rd and Latrobe Rd in the morning, and between Latrobe Rd and the El Dorado County Line during the afternoon.

Project plus forgone business park trips will reduce EB US 50 volume between EDC line and Latrobe Rd during the AM-peak, and between Silva Valley Pkwy and Bass Lake Rd during the PM peak.

Table 31. Cumulative 2040 arterial level-of-service check with and without the Project

Arterial Segment	**Description (and level-of-service E threshold)**	**2040 AM No Project** (vehicle trips)	**2040 PM No Project** (vehicle trips)	**2040 AM Plus Project** (vehicle trips)	**2040 PM Plus Project** (vehicle trip)s
Latrobe Rd between Royal Oaks Dr and Investment Blvd	2-lane arterial (threshold 1650 vehicle trips)	775 (Better than LOS E)	809 (Better than LOS E)	1053 (Better than LOS E)	1101 (Better than LOS E)
Latrobe Rd between Investment Blvd and Golden Foothill Pkwy (south)	2-lane arterial (threshold 1650 vehicle trips)	1303 (Better than LOS E)	1073 (Better than LOS E)	1454 (Better than LOS E)	1369 (Better than LOS E)
Latrobe Rd between Golden Foothill Pkwy (south) and Suncast Ln	4-lane divided arterial (threshold 3290 vehicle trips)	3134 (Better than LOS E)	2776 (Better than LOS E)	3036 (Better than LOS E)	2663 (Better than LOS E)
Latrobe Rd between White Rock Rd and Town Center Blvd	8-lane divided arterial (threshold 6280 vehicle trips, extrapolated from 6-lane divided arterial)	3598 (Better than LOS E)	3580 (Better than LOS E)	3400 (Better than LOS E)	3361 (Better than LOS E)
White Rock Rd between Valley View Pkwy to Silva Valley Pkwy	4-lane divided arterial (threshold 3290 vehicle trips)	2303 (Better than LOS E)	2934 (Better than LOS E)	2253 (Better than LOS E)	2883 (Better than LOS E)

10.3 Findings of Project General Plan Level-of-Service and Queueing Deficiencies

Level-of-service and queueing impacts are not considered significant under CEQA. Intersections and/or segments where Project traffic creates new or worsens existing exceedances of General Plan policy thresholds are referred to as having a "Project deficiency". There are two intersections where the Project is anticipated to create new or worsen existing deficiencies under Cumulative 2040 Plus Project conditions.

Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = "A", 2033 = "B", and 2040 = "C"). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C).

All deficiencies and abatements described below include the deficiency number/abatement number and location as a title, followed by a description of the deficiency, the abatement, findings, responsibility, and timing.

2040 Intersection Deficiencies and Abatement Measures

10C. Latrobe Road/Investment Boulevard in 2040

Deficiency: Project traffic is anticipated to cause the eastbound (Investment Blvd) left-turn queue to spill out of its left-turn pocket.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 10A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 32** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 10A.

Timing: Not applicable, addressed through abatement 10A.

Cross reference: See abatement 9A and 9B.

12C. Latrobe Road/Royal Oaks Drive in 2040

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 12A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 32** at the end of this section presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 12A.

Timing: Not applicable, addressed through abatement 12A.

Cross reference: See abatement 12A and 12B.

Table 32. EPAP 2040 intersection delay and level-of-service with and without the abated Project

ID	Intersection	Control	Left Turn Storage	2040 AM Peak No Project				2040 PM Peak No Project				2040 AM Peak with Project				2040 PM Peak with Project				Abatement Strategy	Left Turn Storage	2040 Abated AM Peak (+ Proj)				2040 Abated PM Peak (+ Proj)				Existing or Anticipated CIP Project
				Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)			Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	Delay (Sec.)	LOS	Left Turn 95% Queue Spillback	95% Queue Length (Ft.)	
10	Latrobe Road/Investment Boulevard	Signal	NB 180 SB N/A EB 100	12.1	B	NB SB EB	35 N/A 92	19.6	B	NB SB EB	108 N/A **251**	12.2	B	NB SB EB	45 N/A 88	27.8	C	NB SB EB	156 N/A **388**	Implement Abatement 10A	NB 180 SB N/A EB 190	11.1	B	NB SB EB	39 N/A 52	19.2	B	NB SB EB	103 N/A 188	"Latrobe 72"
12	Latrobe Road/Royal Oaks Drive	TWSC	NB 320 SB 320 EB N/A WB N/A	(WB) 18.2	C	NB SB EB WB	0 6 N/A N/A	(WB) 32.3	D	NB SB EB WB	0 11 N/A N/A	(EB) 584.4. *	F	NB SB EB WB	1 7 N/A N/A	(EB) 441.3 *	F	NB SB EB WB	2 14 N/A N/A	Implement Abatement 12A	NB 320 SB 320 EB N/A WB N/A	28.1	C	NB SB EB WB	10 69 N/A N/A	24.6	C	NB SB EB WB	13 82 N/A N/A	n/a

* Denotes intersections where the peak-hour signal warrant is met.

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11.0 CEQA VMT ANALYSIS

The Residential components of the Project are addressed below based on the methods and thresholds specified in Section 3.4.

11.1 Residential Use

The unincorporated countywide VMT per capita for determining the significance threshold for residential projects, and the Project analysis itself were estimated using the same tools and methodology. For this analysis 2018 baseline travel demand model results and 2040 cumulative travel demand model results were used to estimate the baseline VMT, 2040 VMT, the 15% VMT reduction threshold, and Project VMT (per El dorado County Resolution 141-2020). Those data are summarized in **Table 33**. Travel demand model scripts used are shown in **Appendix E**. The significance threshold determined by this calculation is 17.3 VMT per capita. The residential use of the Project is anticipated to generate 13.6 VMT per capita based on 2018 land use and drop to 13.1 VMT per capita by 2040. CEQA Finding: The residential Project is anticipated to have a **less-than-significant** impact on VMT.

Table 33. Creekside Village residential VMT analysis

	El Dorado County		Project (Based on TAZ 167)	
	2018	**2040**	**2018**	**2040**
Home based VMT	2,813,221	3,158,464	39,441	45,417
Population	137,989	162,164	2,904	3,478
Trips	616,395	746,555	10,217	12,453
VMT per capita	20.4	19.5	13.6	13.1
VMT threshold with 15% reduction	17.3	n/a	n/a	n/a
Avg. trip length (miles)	4.6	4.2	3.9	3.6

11.2 Traditional vs Age Restricted Housing

The travel demand model does not include an age-restricted land use. There is limited information published on how the travel characteristics of age-restricted housing and traditional housing differ. The best available data comes from the published ITE trip generation rates for traditional and age-restricted housing and the 2017 National Household Travel Survey.

ITE Trip Generation Rates

Age-restricted households generate fewer trips than traditional households. Published Institute of Traffic Engineers (ITE) trip generation rates[19] anticipate that traditional housing has a daily trip generation rate of 9.43 trips per household, while age-restricted housing generates less than half

[19] ITE (2021) Trip Generation Manual 11th Edition, Institute of Transportation Engineers, Washington DC

of that at 4.31 trips per household. This supports the suspected result of lower VMT per capita from age-restricted housing but is not proof as changes in household size are not addressed.

National Household Travel Survey Person Miles of Travel (PMT)

The 2017 National Household Travel Survey[20] estimated PMT and person trips for both the population (as a whole) and for several subgroups, including those 65[21] and older. Those data show that the older drivers had 19% less PMT and took 5% fewer trips than the population as a whole. PMT being reduced at a greater rate than person trips indicates that the older population is taking fewer and shorter trips, leading to the 19% reduction in PMT.

11.3 Discussion and findings

This analysis found that 763 traditional housing units were anticipated to have a less-than-significant impact on VMT per capita under CEQA. The implementation of the age-restricted housing is anticipated to produce fewer trips per household, fewer trips per capita, and less VMT per capita than traditional households. Therefore, the mixed traditional housing and age-restricted housing project is also anticipated to have a less-than-significant impact on VMT under CEQA.

[20] FHWA (2018) Summary of Travel Trends: 2017 National Household Travel Survey (Tables 11 and 31), Federal Highway Administration, report FHWA-PL-18_019, https://nhts.ornl.gov/assets/2017_nhts_summary_travel_trends.pdf.
[21] Note that active adult/age-restricted housing is defined as 55 and older rather than 65 and older.

12.0 BICYCLE, PEDESTRIAN AND TRANSIT IMPACTS

The Project does not interfere with existing or proposed transit service and has a **less-than-significant** impact on transit.

The Project enhances bicycle and pedestrian access to the El Dorado Hills Business Park (**Figure 18**) and does not interfere with existing or planned bicycle and pedestrian facilities. The Project includes a variety of bike and pedestrian amenities providing connections both within the planned community and externally to the existing bike and pedestrian facilities along Latrobe Road and Royal Oaks Dr:

- The Creekside Village entry road will feature class II bike lanes from its intersection with Latrobe Road.
- The Project features a complete system of paved and unpaved trails located in the open space buffer areas and landscape corridors. The trails will be destination-oriented and link the various residential neighborhoods, parks, and the business park.
- The majority of Creekside Village streets will include attached or separated sidewalks on both sides of the street. Sidewalks will comply with ADA standards and be a minimum of 4-feet in width.

The Project has a **less-than-significant** impact on bicycle and pedestrian facilities.

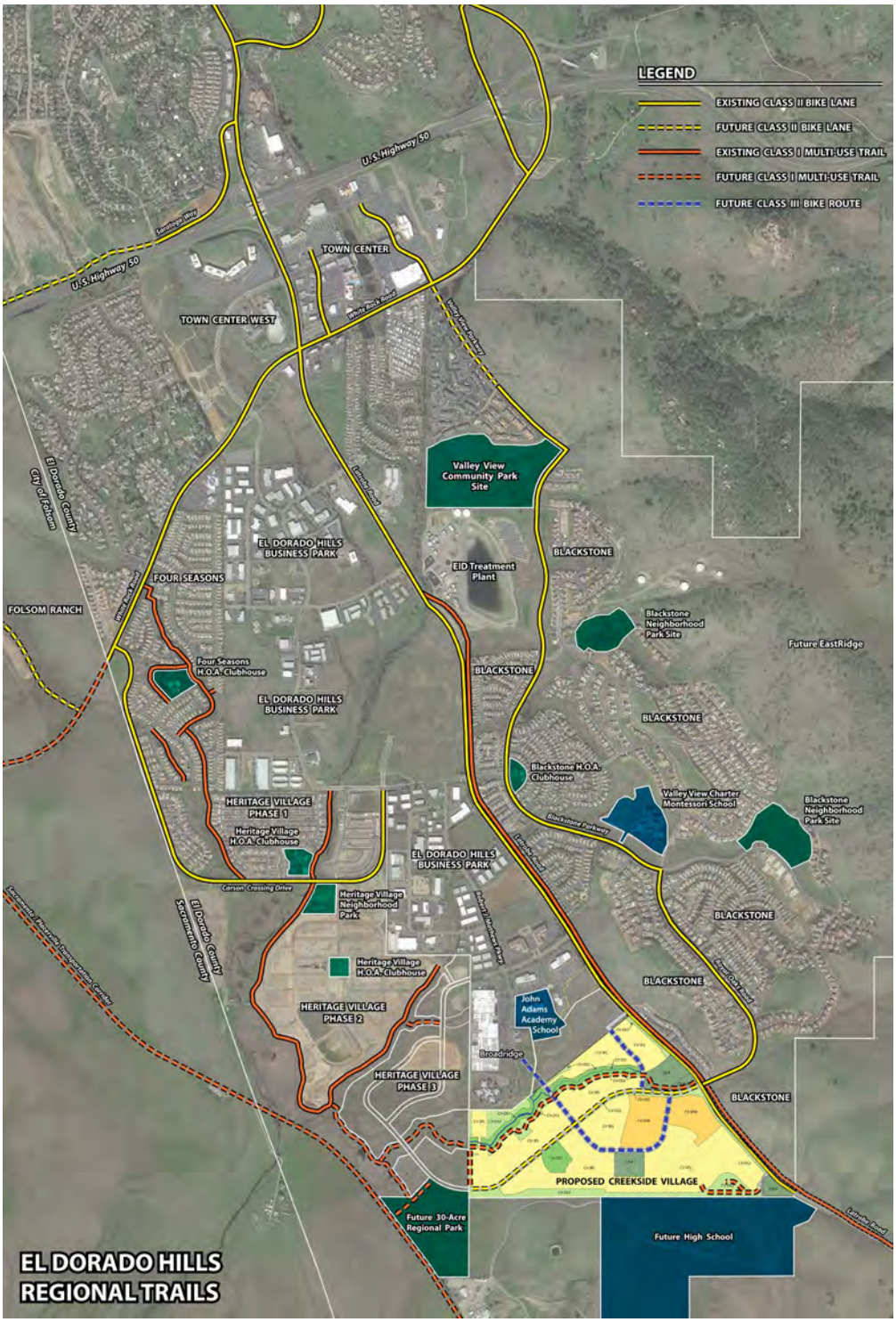

Figure 18. Bike and pedestrian facilities map (Project would construct on-site facilities)

13.0 ON-SITE TRANSPORTATION REVIEW

Per the County's guidelines, on-site transportation review including site review, internal circulation, sight distance review, driveway spacing, minimum required throat depth review, parking supply review, etc. should be addressed for every project.

On Site Transportation review shall be performed with each Final Map. This approach is appropriate as the specific plan allows for "minor administrative modifications" to the specific plan as follows:

> *"Minor administrative modifications (MAM) to the CVSP that are consistent with and do not substantially change its overall intent, such as minor adjustments to the land use locations and parcel boundaries shown in Figure 3.2 – Specific Plan Land Use Designations and Figure 3.4 – Plan Area Parcels and the land use acreages shown in Table 3.1 – Land Use Summary may be approved administratively by the El Dorado County Planning Services Department, provided the following criteria are met:*
>
> - *The proposed modification is within the Plan Area.*
> - *The general land use pattern remains consistent with the intent and spirit of the CVSP*
> - *The proposed changes do not substantially alter the backbone infrastructure network.*
> - *The proposed modification offers equal or superior improvements to development capacity or standards.*
> - *The increase or decrease of lots by 15% within villages so long as the overall unit count stays at or below 763.*
> - *The proposed modification does not increase environmental impacts beyond those identified in the EIR.*
> - *Reduction and relocation of park acreage so long as parkland dedication requirements are satisfied at Final Map approval including dedication of land, payment of in-lieu fees, or some combination thereof as required by the conditions of approval.*
> - *Relocated park parcels continue to meet the standards for the type of park proposed.*
> - *Relocated park parcels remain within walking distance of the residents they serve.*
>
> *Minor administrative modifications to the CVSP may be reviewed and approved at the discretion of the El Dorado County Planning and Building Department and no County Planning Commission or Board of Supervisors review is required unless the modification approval is appealed. However, if a minor administrative modification is appealed, it shall be reviewed by the Planning Commission who shall have authority to approve or deny the minor administrative modification.*

The Planning Commission decision may be appealed to the El Dorado County Board of Supervisors."

Because each of the villages may see the number of dwelling units increase or decrease by as much as 15% (so long as the overall total number of dwelling units is not increased), and because roadways apart from the "backbone infrastructure" can be modified, on-site transportation review does not make sense at the Specific Plan level. For this Project the on-site review should be addressed for each Final Map.

14.0 FINDINGS

14.1 Trip Generation Findings

The 763 dwelling unit Project is anticipated to generate 316 AM peak hour trips, 382 PM peak hour trips, and 4147 daily trips. Those Project trips are offset under both the EPAP 2033 and Cumulative 2040 scenarios through forgone commercial development on the 207.9 ac project site which the travel demand model anticipated would have generated 733 AM peak hour trips, 829 PM peak hour trips, and 9,415 daily trips. Trip Generation is discussed in more detail in **Section 5.1**.

14.2 CEQA Findings

VMT: The 763 dwelling unit Project is anticipated to have home based VMT per capita of 13.6 in 2023 and 13.1 in 2040, compared to a significance threshold (calculated using the same methodology and data as the Project impacts) of 17.3. Therefore, the Project has a **less-than significant** impact on VMT. The VMT analysis is discussed in **Section 3.4** and **Section 11**.

Transit: The Project does not interfere with existing or proposed transit service and has a **less-than-significant** impact on transit. Transit impacts are briefly discussed in **Section 12**.

Bicycles and Pedestrians: The Project enhances bicycle and pedestrian access to the El Dorado Hills Business Park and does not interfere with existing or planned bicycle and pedestrian facilities. The Project includes a variety of bike and pedestrian amenities providing connections both within the planned community and externally to the existing bike and pedestrian facilities along Latrobe Road and Royal Oaks Dr. Therefore, the Project has a **less-than-significant** impact on bicycle and pedestrian facilities. Bicycles and pedestrian impacts are briefly discussed in **Section 12**.

14.3 General Plan Level-of-Service and Queue Length Findings

This section consolidates abatement measures identified in Sections 6.3, 8.3, and 10.3 which are necessary to ensure that the Project does not in level-of-service deficiencies relative to General Plan policies. Deficiencies that are caused or worsened by the Project, and abatement measures to address those deficiencies, are identified below for existing 2023 plus Project, EPAP 2033 plus Project, and cumulative 2040 plus Project conditions.

Throughout this document, segment deficiencies are numbered using the segment number (i through v) and a year code (2023 = “A”, 2033 = “B”, and 2040 = “C”). Intersection abatement measures are numbered using the intersection number (1-27) and the year code (A, B, or C).

Existing 2023 Plus Project Conditions

Existing 2023 plus Project conditions are discussed in **Section 6.** The Project is anticipated to cause new or worsen existing level-of-service/queuing deficiencies at eleven intersections (deficiencies may be caused by anticipated level-of-service and/or queue spillback):

10 Locations that are deficient with or without the Project that are worsened:

- (1) El Dorado Hills Blvd/Serrano Pkwy AM;
- (2) El Dorado Hills Blvd/Saratoga Way: AM and PM;
- (3) El Dorado Hills Blvd/US 50 WB AM;
- (6) Latrobe Road/White Rock Road PM;
- (8) Latrobe Rd/Suncast Ln AM and PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S): AM and PM;
- (10) Latrobe Road/Investment Boulevard: PM;
- (13) Golden Foothill Parkway (S)/Robert J. Mathews Pkwy PM;
- (18) White Rock Road/Carson Crossing Road PM; and
- (21) White Rock Road/Valley View Parkway: AM and PM.

1 Location where the Project is anticipated to cause new deficiencies:

- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Deficiency/Abatement 1A. El Dorado Hills Blvd/Serrano Pkwy in 2023

Deficiency: Level-of-service is F prior to addition of Project traffic, with northbound left-turn queues spilling out of the turn pocket. Project traffic is anticipated to worsen level-of-service.

Abatement: Adjust signal timing by changing the "vehicle extension" setting for the westbound approach from 4 seconds to 2 seconds.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project Responsibility: Project is responsible for its fair-share of signal timing adjustment. The CIP includes funding for intersection and safety improvements at "to be determined" locations. The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 2A. El Dorado Hills Blvd/Saratoga Way in 2023

Deficiency: Level-of-service is F prior to addition of Project traffic, with northbound left-turn queues spilling out of the turn pocket. Project traffic is anticipated to worsen level-of-service and northbound left-turn queues.

Abatement: Construct a 300-foot southbound right turn pocket and adjust signal timing.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project Responsibility: This abatement partially implements Project #36105076 in the 10-year Capital Improvement Program (CIP). The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 3A. El Dorado Hills Blvd/US 50 WB in 2023

Deficiency: Existing AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

Abatement: Adjust signal timing by optimizing splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project responsibility: Project is responsible for its fair-share of signal timing adjustment. The CIP includes funding for intersection and safety improvements at “to be determined” locations. The Project may satisfy this requirement through payment of applicable fees under the El Dorado County traffic impact Fee (TIF) program.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 3B.

Deficiency/Abatement 6A. Latrobe Road/White Rock Road in 2023

Deficiency: The westbound left-turn queue spills back out of its turn pocket under existing conditions without the Project. Project traffic is anticipated to worsen that queue spillback.

Abatement: Adjust signal timing by optimizing splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project responsibility: This abatement partially implements Project #36105069 in the 20-year Capital Improvement Program (CIP). The Project is responsible for its fair share of modification of signal timing, which may be addressed through payment of fees if the CIP project is moved to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 6B.

Deficiency/Abatement 9A. Latrobe Road/ Golden Foothill Parkway (south) in 2023

Deficiency: Project traffic is anticipated to worsen existing queue spillback from the eastbound left turn during both the AM and PM peak-hours.

Abatement: Adjust signal timing by optimizing splits.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after CIP project 36105055 (AKA “72Latrobe”) is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 9B, which builds on abatement 9a.

Deficiency/Abatement 10A. Latrobe Road/Investment Boulevard in 2023

Deficiency: Project traffic is anticipated to worsen the existing east bound (Investment Blvd) left turn queue spillback during the PM peak-hour.

Abatement: Stripe eastbound approach as left, shared left-right in 190-foot pocket. Adjust cycle length and splits. Construction of a 300-foot receiving lane is required on northbound Latrobe Road to accommodate the left turn from the shared eastbound left-right turn lane. These improvements are consistent with intersection improvements that would be constructed under CIP project 36105055 (AKA "72Latrobe"). Therefore, addition of CIP project 36105055 to the 10-year CIP would address the Project's fair share cost of these improvements as well.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after CIP project 36105055 (AKA "72Latrobe") is added to the 10-year CIP.

Timing: A phasing analysis determined that 90 traditional dwelling units, or 260 age restricted dwelling units, could be constructed prior to the project deficiency being triggered. Therefor this abatement is required by the 90th traditional dwelling unit or the 260th age restricted dwelling unit.

Cross reference: See abatement 10B and 10C.

Deficiency/Abatement 12A. Latrobe Road/Royal Oaks Drive in 2023

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

Abatement: Signalize the intersection using the "with Project" geometry (north and southbound approaches having a shared through right lane and protected left turns in 320' pockets; east and west bound approaches as shared left-through-right lanes.)

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for construction of these intersection improvements.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 12B and 12C.

Deficiency/Abatement 13A. Golden Foothill Pkwy/Robert J. Mathews Pkwy in 2023

Deficiency: Project traffic is anticipated to worsen existing level-of-service F conditions.

Abatement: Reconstruct as a single lane roundabout.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after the roundabout is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 18A. White Rock Road/Carson Crossing Road in 2023

Deficiency: Project traffic is anticipated to worsen existing level-of-service F.

Abatement: Install all-way-stop-control with existing intersection geometry.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project responsibility: This off-site improvement partially implements 20-year CIP project 36105041 (White Rock Road Widening 2 to 4 Lanes - Windfield Way to Sacramento County Line) and it should be advanced to the 10-year CIP. The Project is responsible for its fair share of cost, which would be met through payment of the TIF program fee.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 21A. White Rock Road/Valley View Parkway in 2023

Deficiency: Project traffic is anticipated to worsen level-of-service to F during the AM peak hour and worsen existing westbound left-turn queue spillback on White Rock Rd.

Abatement: Add a 100-foot westbound right-turn pocket and extend the westbound left turn pocket to 350 feet. Note that due to the location of utilities on the northside of White

Rock Rd, any required widening will likely be on the south side of White Rock Road, and eastbound lane alignment shall be adjusted to the satisfaction of the County Engineer.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 18** in **Section 6.3** presents intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36105042 (White Rock Road Widening 2 to 4 lanes - Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Payment of TIF at issuance of each building permit.

Cross reference: See abatement 21B, which builds on abatement 21a.

EPAP 2033 Plus Project Conditions

EPAP 2033 plus Project conditions are discussed in **Section 8.** The Project is anticipated to cause new or worsen existing level-of-service/queuing deficiencies at seven intersections (deficiencies may be caused by anticipated level-of-service and/or queue spillback):

6 Locations that are deficient with or without the Project that are worsened:

- (3) El Dorado Hills Blvd/US 50 WB AM;
- (6) Latrobe Road/White Rock Road PM;
- (7) Latrobe Road/Golden Foothill Parkway (N) PM;
- (9) Latrobe Road/ Golden Foothill Parkway (S) PM;
- (10) Latrobe Road/Investment Boulevard PM; and
- (21) White Rock Road/Valley View Parkway: PM.

1 Locations where the Project is anticipated to cause new deficiencies:

- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Deficiency/Abatement 3B. El Dorado Hills Blvd/US 50 WB in 2033

Deficiency: AM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 3A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** in **Section 8.3** presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 3A.

Timing: Not applicable, addressed through abatement 3A.

Cross reference: See abatement 3A.

Deficiency/Abatement 6B. Latrobe Road/White Rock Road in 2033

Deficiency: PM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2033 Improvements Assumed: None.

2023-2033 Improvements Assumed: None.

Abatement: implement as abatement 6A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** in **Section 8.3** presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 6A.

Timing: Not applicable, addressed through abatement 6A.

Cross reference: See abatement 6A.

Deficiency/Abatement 7B. Latrobe Road/Golden Foothill Parkway (N) in 2033

Deficiency: PM peak-hour level-of-service is F prior to addition of Project traffic. Project traffic is anticipated to worsen level-of-service.

2023-2033 Improvements Assumed: None.

Abatement: Construct 170-foot southbound right turn pocket.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** in **Section 8.3** presents intersection level-of-service results with this abatement.

Project responsibility: CIP 36105069 will widen this portion of Latrobe Rd to six lanes by 2040 and should be advanced to the 10-year CIP. The Project's fair share cost of this improvement is payment of the TIF program fee.

Timing: Prior to issuance of 1st building permit.

Deficiency/Abatement 9B. Latrobe Road/ Golden Foothill Parkway (S) in 2033

Deficiency: Project traffic is anticipated to worsen existing queue spillback from the southbound left turn during both the AM and PM peak-hours.

2023-2033 Improvements Assumed: None.

Abatement: Construct a second southbound left turn lane on Latrobe Rd and a second eastbound lane on Clubview Dr between Latrobe Road and Blackstone Pkwy. The second eastbound lane on Clubview Dr is a receiving lane for the second southbound left turn lane from Latrobe Rd.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** in **Section 8.3** presents intersection level-of-service results with this abatement.

Project responsibility: The Project is responsible for its fair share of the cost of these off-site improvements which would be addressed by payment of fees after CIP project 36105055 (AKA "72Latrobe") is added to the 10-year CIP.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 9A.

Deficiency/Abatement 10B. Latrobe Road/Investment Boulevard in 2033

Deficiency: Project traffic is anticipated to cause the eastbound (Investment Blvd) left-turn queue to spill out of its left-turn pocket.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 10A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** in **Section 8.3** presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 10A.

Timing: Not applicable, addressed through abatement 10A.

Cross reference: See abatement 10A.

Deficiency/Abatement 12B. Latrobe Road/Royal Oaks Drive in 2033

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

2023-2033 Improvements Assumed: None.

Abatement: Implement as abatement 12A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** in **Section 8.3** presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 12A.

Timing: Not applicable, addressed through abatement 12A.

Cross reference: See abatement 12A.

Deficiency/Abatement 21B. White Rock Road/Valley View Parkway in 2033

Deficiency: Project traffic is anticipated to worsen left-turn queue spillback on westbound White Rock Rd.

2023-2033 Improvements Assumed: None.

Abatement:

- Implement abatement 21 A.
- Further extend the westbound left turn pocket to 410 feet. (Note: abatement 21A will extend this pocket to 350 feet. Abatement 21B reflects an additional 60 feet of westbound right turn storage.)

Widening should be done to the south of Latrobe Rd to avoid high voltage lines. Eastbound-westbound Lane alignment may require additional space.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 25** in **Section 8.3** presents intersection level-of-service results with this abatement.

Project responsibility: CIP Project 36105042 (White Rock Road Widening 2 to 4 lanes – Post Street to South of Silva Valley Parkway) includes funding for improvements to this intersection in both the 10-year and 20-year CIPs and all components should be advanced to 10-year CIP. The Project's fair share responsibility for this improvement can be met through payment of TIF program fees.

Timing: Prior to issuance of 1st building permit.

Cross reference: See abatement 21A.

Cumulative 2040 Plus Project Conditions

Existing 2040 plus Project conditions are discussed in **Section 10.** The Project is anticipated to cause new or worsen existing level-of-service/queuing deficiencies at two intersections (deficiencies may be caused by anticipated level-of-service and/or queue spillback):

1 Locations that are deficient with or without the Project that are worsened:

- (10) Latrobe Road/Investment Boulevard PM;

1 Locations where the Project is anticipated to cause new deficiencies:

- (12) Latrobe Road/Royal Oaks Drive AM and PM.

Deficiency/Abatement 10C. Latrobe Road/Investment Boulevard in 2040

Deficiency: Project traffic is anticipated to cause the eastbound (Investment Blvd) left-turn queue to spill out of its left-turn pocket.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 10A

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 32** in **Section 10.3** presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 10A.

Timing: Not applicable, addressed through abatement 10A.

Cross reference: See abatement 9A and 9B.

Deficiency/Abatement 12C. Latrobe Road/Royal Oaks Drive in 2040

Deficiency: Project traffic is anticipated to worsen the intersection to level-of-service F.

2023-2040 Improvements Assumed: None.

Abatement: Implement as abatement 12A.

Finding: With implementation of the abatement measure, the Project is not anticipated to cause new, or worsen existing, General Plan level-of-service policy deficiencies at this location. **Table 32** in **Section 10.3** presents intersection level-of-service results with this abatement.

Project responsibility: None, addressed through abatement 12A.

Timing: Not applicable, addressed through abatement 12A.

Cross reference: See abatement 12A and 12B.

Timing: Not applicable, addressed through abatement 12A.

On-Site Transportation Review

As discussed in Section 13 above. On-site transportation review is better done with each Final Map as minor changes to the specific lotting and internal roadways may be approved by El dorado County staff via a minor administrative modification.

A condition of approval should be added to the specific plan specifying that on-site transportation review be performed with each Final Map.

Condition: On-Site Transportation Review shall be conducted with each Final Map to the satisfaction of the County Engineer.

Appendix A: Traffic Counts and Signal Timing Sheets

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EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1400018	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	**8.88**
Road Name:	**Latrobe Road**	Location:	**100 Ft. S. of Investment Blvd.**
Lanes:	2	Direction:	SOUTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day Time	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
100	30		14	11	18	7	23		13
200	13		3	6	8	10	9		7
300	5		1	3	6	8	4		5
400	7		8	8	8	11	5		9
500	9		24	17	24	17	15		21
600	29		80	61	72	54	66		67
700	58		99	145	138	129	120		128
800	102		189	229	189	203	174		203
900	133		198	217	218	216	217		212
1000	199		183	185	173	201	197		186
1100	249		175	193	191	213	248		193
1200	289		219	192	234	221	278		217
1300	290		250	252	265	257	274		256
1400	270		251	293	295	247	346		272
1500	284		308	326	340	274	357		312
1600	279		369	400	346	280	415		349
1700	300		412	361	409	306	416		372
1800	276		354	367	371	296	394		347
1900	216		224	257	255	208	273		236
2000	180		171	179	165	204	205		180
2100	142		121	138	171	125	156		139
2200	104		51	89	86	103	115		82
2300	80		43	43	50	58	96		49
2400	55		18	19	26	36	68		25
Totals	3599		3765	3991	4058	3684	4471		3875
AM Peak Hr	12:00		12:00	8:00	12:00	12:00	12:00		12:00
AM Count	289		219	229	234	221	278		217
PM Peak Hr	5:00		5:00	4:00	5:00	5:00	5:00		5:00
PM Count	300		412	400	409	306	416		372

TOTAL ADT: 7,605

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1400018	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	**8.88**
Road Name:	**Latrobe Road**	Location:	**100 Ft. S. of Investment Blvd.**
Lanes:	2	Direction:	NORTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	12		8	5	5	6	9		6
200	6		5	3	3	5	3		4
300	13		6	3	5	9	6		6
400	8		15	10	13	10	6		12
500	6		35	41	44	38	33		40
600	33		121	131	108	107	92		117
700	51		207	195	214	201	177		204
800	115		344	427	402	375	343		387
900	192		315	364	346	353	314		345
1000	247		279	296	305	245	287		281
1100	251		255	274	269	270	283		267
1200	283		247	253	236	246	258		246
1300	286		220	230	255	226	271		233
1400	213		242	233	216	215	269		227
1500	262		303	309	294	267	340		293
1600	279		262	238	253	250	296		251
1700	265		255	284	245	260	331		261
1800	251		196	229	230	234	277		222
1900	167		126	153	128	177	165		146
2000	124		89	72	95	87	118		86
2100	115		46	44	48	36	93		44
2200	82		23	25	30	28	54		27
2300	53		18	15	15	20	66		17
2400	30		8	13	8	14	23		11
Totals	3344		3625	3847	3767	3679	4114		3730
AM Peak Hr	12:00		8:00	8:00	8:00	8:00	8:00		8:00
AM Count	283		344	427	402	375	343		387
PM Peak Hr	1:00		3:00	3:00	3:00	3:00	3:00		3:00
PM Count	286		303	309	294	267	340		293

TOTAL ADT: 7,605

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1450018	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	**8.92**
Road Name:	**Latrobe Road**	Location:	**100 Ft. N. of Investment Blvd.**
Lanes:	2	Direction:	NORTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day Time	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
100	12	12	9	8	10	7	11	10	9
200	9	13	11	7	7	11	6	9	10
300	15	6	9	6	6	12	8	9	8
400	8	7	17	10	15	11	12	11	12
500	8	20	63	44	53	47	34	38	45
600	74	45	140	160	145	141	129	119	126
700	83	76	212	228	240	230	208	182	197
800	118	81	369	609	606	392	349	361	411
900	199	155	374	560	533	400	361	369	404
1000	245	231	317	336	315	300	338	297	300
1100	260	239	311	317	322	345	341	305	307
1200	295	276	324	404	297	337	340	325	328
1300	293	222	335	315	550	305	359	340	345
1400	234	244	311	281	526	300	343	320	332
1500	273	202	387	518	402	366	421	367	375
1600	288	268	410	602	438	434	410	407	430
1700	281	280	386	514	420	384	412	382	397
1800	279	229	297	415	340	341	350	322	324
1900	184	156	170	197	177	224	204	187	185
2000	125	118	104	91	110	100	128	111	105
2100	118	68	52	57	56	42	101	71	55
2200	82	38	29	31	39	45	63	47	36
2300	58	40	24	22	24	30	72	39	28
2400	31	12	8	15	15	15	26	17	13
Totals	3572	3038	4669	5747	5646	4819	5026	4645	4784
AM Peak Hr	12:00	12:00	9:00	8:00	8:00	9:00	9:00	9:00	8:00
AM Count	295	276	374	609	606	400	361	369	411
PM Peak Hr	1:00	5:00	4:00	4:00	1:00	4:00	3:00	4:00	4:00
PM Count	293	280	410	602	550	434	421	407	430

TOTAL ADT: 9,671

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1450018	Counter ID:	TLS #4
City/Town:	El Dorado Hills	Mile Post:	**8.92**
Road Name:	**Latrobe Road**	Location:	**100 Ft. N. of Investment Blvd.**
Lanes:	2	Direction:	SOUTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	30	38	15	17	18	10	23	22	20
200	17	14	8	9	13	16	16	13	12
300	6	10	3	5	9	10	5	7	7
400	10	7	10	11	12	17	10	11	11
500	13	12	31	20	32	24	21	22	24
600	105	89	192	174	191	168	175	156	163
700	73	34	246	295	290	283	254	211	230
800	117	59	362	577	521	415	328	340	387
900	146	84	327	429	452	334	355	304	325
1000	214	190	268	268	273	290	265	253	258
1100	271	201	233	260	251	289	311	259	247
1200	292	266	292	278	303	307	353	299	289
1300	296	281	335	335	460	378	351	348	358
1400	285	232	327	347	403	312	389	328	324
1500	298	238	351	468	405	324	386	353	357
1600	291	224	425	548	373	303	429	370	375
1700	315	223	438	432	428	327	427	370	370
1800	353	307	424	460	448	375	466	405	403
1900	226	193	241	263	269	227	279	243	239
2000	182	171	176	193	170	209	210	187	184
2100	144	129	123	142	180	130	160	144	141
2200	107	66	54	97	91	110	131	94	84
2300	83	54	45	47	54	64	101	64	53
2400	59	40	19	21	28	38	73	40	29
Totals	3933	3162	4945	5696	5674	4960	5518	4841	4887
AM Peak Hr	12:00	12:00	8:00	8:00	8:00	8:00	9:00	8:00	8:00
AM Count	292	266	362	577	521	415	355	340	387
PM Peak Hr	6:00	6:00	5:00	4:00	1:00	1:00	6:00	6:00	6:00
PM Count	353	307	438	548	460	378	466	405	403

TOTAL ADT: 9,671

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 30, 2024

Count Station:	Special	Counter ID:	75
City/Town:	El Dorado Hills	Mile Post:	
Road Name:	**Latrobe Road**	Location:	**S of Suncast Ln**
Lanes:	2	Direction:	NORTHBOUND

Date	4	5	30	31	1	2	3	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100			17	13	16				15
200			18	6	10				11
300			14	20	17				17
400			22	29	23				25
500			128	64	47				80
600			196	178	202				192
700			352	383	363				366
800			966	954	861				927
900			1048	1065	1010				1041
1000			600	633	500				578
1100			668	678	548				631
1200			830	762	764				785
1300			670	688	668				675
1400			654	722	544				640
1500			870	774	822				822
1600			1241	1121	1120				1161
1700			1033	928	884				948
1800			826	750	866				814
1900			435	449	547				477
2000			292	260	288				280
2100			176	159	143				159
2200			168	124	114				135
2300			38	52	34				41
2400			38	30	6				25
Totals			11300	10842	10397				10846
AM Peak Hr			9:00	9:00	9:00				9:00
AM Count			1048	1065	1010				1041
PM Peak Hr			4:00	4:00	4:00				4:00
PM Count			1241	1121	1120				1161

TOTAL ADT: 21,709

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: January 30, 2024

Count Station:	Special	Counter ID:	75
City/Town:	El Dorado Hills	Mile Post:	
Road Name:	**Latrobe Road**	Location:	**S of Suncast Ln**
Lanes:	2	Direction:	SOUTHBOUND

Date	4	5	30	31	1	2	3	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100			16	28	18				21
200			20	10	14				15
300			6	6	3				5
400			14	8	14				12
500			72	58	65				65
600			284	280	260				275
700			407	413	351				390
800			1108	1098	1008				1071
900			986	1000	866				951
1000			600	599	536				578
1100			526	500	499				508
1200			652	620	570				614
1300			688	734	681				701
1400			711	734	672				706
1500			1032	926	952				970
1600			862	824	922				869
1700			858	758	816				811
1800			886	786	814				829
1900			640	549	543				577
2000			356	316	418				363
2100			250	235	266				250
2200			154	144	178				159
2300			89	72	94				85
2400			41	30	44				38
Totals			11258	10728	10604				10863
AM Peak Hr			8:00	8:00	8:00				8:00
AM Count			1108	1098	1008				1071
PM Peak Hr			3:00	3:00	3:00				3:00
PM Count			1032	926	952				970

TOTAL ADT: 21,709

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1600018	Counter ID:	80
City/Town:	El Dorado Hills	Mile Post:	**11.06**
Road Name:	**Latrobe Road**	Location:	**300 Ft. N. of White Rock Rd.**
Lanes:	2	Direction:	NORTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100			33	40					37
200			20	26					23
300			25	23					24
400			27	30					29
500			103	82					93
600			276	246					261
700			482	540					511
800			1078	1085					1082
900			1346	1358					1352
1000			898	952					925
1100			982	986					984
1200			1146	1184					1165
1300			1052	1134					1093
1400			992	1141					1067
1500			1295	1224					1260
1600			1510	1674					1592
1700			1628	1550					1589
1800			1306	1318					1312
1900			924	978					951
2000			518	520					519
2100			318	370					344
2200			180	294					237
2300			104	104					104
2400			52	54					53
Totals			16295	16913					16604
AM Peak Hr			9:00	9:00					9:00
AM Count			1346	1358					1352
PM Peak Hr			5:00	4:00					4:00
PM Count			1628	1674					1592

TOTAL ADT: 34,058

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: October 4, 2023

Count Station:	1600018	Counter ID:	81
City/Town:	El Dorado Hills	Mile Post:	**11.06**
Road Name:	**Latrobe Road**	Location:	**300 Ft. N. of White Rock Rd.**
Lanes:	2	Direction:	SOUTHBOUND

Date	8	9	10	4	5	6	7	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100			34	46					40
200			18	37					28
300			20	18					19
400			28	24					26
500			98	98					98
600			360	408					384
700			648	658					653
800			1672	1640					1656
900			1544	1614					1579
1000			996	1028					1012
1100			929	964					947
1200			1038	1082					1060
1300			1131	1158					1145
1400			1139	1257					1198
1500			1396	1404					1400
1600			1506	1346					1426
1700			1190	1267					1229
1800			1194	1258					1226
1900			828	970					899
2000			604	599					602
2100			376	404					390
2200			234	249					242
2300			116	132					124
2400			66	82					74
Totals			17165	17743					17454
AM Peak Hr			8:00	8:00					8:00
AM Count			1672	1640					1656
PM Peak Hr			4:00	3:00					4:00
PM Count			1506	1404					1426

TOTAL ADT: 34,058

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: December 5, 2023

Count Station:	1400034	Counter ID:	75
City/Town:	El Dorado Hills	Mile Post:	**2.08**
Road Name:	**White Rock Road**	Location:	**100 Ft. S. of Silva Valley Pkwy.**
Lanes:	2	Direction:	EASTBOUND

Date	10	11	5	6	7	8	9	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	45	25	21	35	30	30	47	33	28
200	15	10	15	9	9	12	22	13	11
300	13	5	4	6	6	6	11	7	5
400	6	10	5	13	9	4	2	7	8
500	10	21	15	13	19	13	10	14	16
600	10	42	53	42	49	56	19	39	48
700	38	127	147	140	128	124	37	106	133
800	73	464	461	483	482	458	122	363	470
900	156	475	507	465	494	475	260	405	483
1000	303	322	323	366	362	314	411	343	337
1100	376	409	386	414	375	441	417	403	405
1200	483	497	463	464	471	480	486	478	475
1300	500	488	482	604	503	558	505	520	527
1400	541	570	572	567	564	688	523	575	592
1500	476	593	590	579	583	710	536	581	611
1600	465	755	737	708	763	715	575	674	736
1700	448	881	866	830	825	708	538	728	822
1800	391	716	777	735	723	686	472	643	727
1900	288	460	498	491	477	565	360	448	498
2000	234	295	329	304	338	418	325	320	337
2100	164	203	282	253	280	358	254	256	275
2200	152	153	242	181	189	280	238	205	209
2300	64	91	53	82	88	145	181	101	92
2400	38	24	40	33	33	83	77	47	43
Totals	5289	7636	7868	7817	7800	8327	6428	7309	7890
AM Peak Hr	12:00	12:00	9:00	8:00	9:00	12:00	12:00	12:00	9:00
AM Count	483	497	507	483	494	480	486	478	483
PM Peak Hr	2:00	5:00	5:00	5:00	5:00	4:00	4:00	5:00	5:00
PM Count	541	881	866	830	825	715	575	728	822

TOTAL ADT: 15,755

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION

Count Summary Beginning: December 5, 2023

Count Station:	1400034	Counter ID:	75
City/Town:	El Dorado Hills	Mile Post:	**2.08**
Road Name:	**White Rock Road**	Location:	**100 Ft. S. of Silva Valley Pkwy.**
Lanes:	2	Direction:	WESTBOUND

Date	10	11	5	6	7	8	9	Weekly	Wk Day
Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Average	Avg.
Time									
100	34	18	14	16	11	22	35	21	16
200	17	3	8	9	9	11	18	11	8
300	14	8	7	6	12	9	10	9	8
400	11	13	17	12	16	17	13	14	15
500	12	51	46	35	37	34	19	33	41
600	25	104	121	132	115	105	64	95	115
700	75	182	217	228	202	201	138	178	206
800	149	596	583	588	596	532	279	475	579
900	352	702	686	709	722	686	397	608	701
1000	440	534	515	537	514	534	484	508	527
1100	513	510	533	506	488	552	521	518	518
1200	572	566	521	525	533	624	538	554	554
1300	523	553	540	583	527	591	579	557	559
1400	467	523	557	553	516	565	531	530	543
1500	401	644	602	646	599	636	515	578	625
1600	381	649	615	599	621	631	523	574	623
1700	444	572	608	586	604	586	509	558	591
1800	383	552	594	577	582	607	543	548	582
1900	286	397	465	366	400	493	422	404	424
2000	197	242	270	231	255	270	272	248	254
2100	125	151	166	209	200	222	182	179	190
2200	97	79	97	98	99	131	154	108	101
2300	55	44	54	47	43	85	101	61	55
2400	34	24	27	28	24	52	57	35	31
Totals	5607	7717	7863	7826	7725	8196	6904	7405	7865
AM Peak Hr	12:00	9:00	9:00	9:00	9:00	9:00	12:00	9:00	9:00
AM Count	572	702	686	709	722	686	538	608	701
PM Peak Hr	1:00	4:00	4:00	3:00	4:00	3:00	1:00	3:00	3:00
PM Count	523	649	615	646	621	636	579	578	625

TOTAL ADT: 15,755

Prepared by National Data & Surveying Services

Occupancy Counts

Location: US 50/El Dorado Fwy E/O Bass Lake Rd/Marble Valley Rd
City: El Dorado Hills

Date: 5/25/2022
Day: Wednesday

Time	HOV Lane				Totals
	EB		WB		
	Cars	HT	Cars	HT	
6:30 AM	31	0	62	0	**93**
6:45 AM	37	1	59	0	**97**
7:00 AM	30	1	51	1	**83**
7:15 AM	55	0	76	0	**131**
7:30 AM	73	0	110	0	**183**
7:45 AM	96	0	94	0	**190**
8:00 AM	77	1	75	0	**153**
8:15 AM	67	0	85	0	**152**
8:30 AM	62	0	70	0	**132**
8:45 AM	57	0	56	0	**113**
4:30 PM	120	0	67	1	**188**
4:45 PM	102	0	98	0	**200**
5:00 PM	90	0	81	0	**171**
5:15 PM	96	0	105	0	**201**
5:30 PM	91	0	91	2	**184**
5:45 PM	87	0	86	0	**173**
6:00 PM	70	0	85	0	**155**
6:15 PM	54	0	63	0	**117**
Totals	**1295**	**3**	**1414**	**4**	**2716**

Time	Mixed Lane				Totals
	EB		WB		
	Cars	HT	Cars	HT	
6:30 AM	244	24	485	31	**784**
6:45 AM	253	32	488	25	**798**
7:00 AM	290	28	496	22	**836**
7:15 AM	372	43	583	22	**1020**
7:30 AM	431	32	610	16	**1089**
7:45 AM	514	27	642	20	**1203**
8:00 AM	447	35	513	29	**1024**
8:15 AM	408	35	528	33	**1004**
8:30 AM	399	34	612	29	**1074**
8:45 AM	368	32	482	26	**908**
4:30 PM	659	11	456	18	**1144**
4:45 PM	658	7	488	16	**1169**
5:00 PM	612	11	582	11	**1216**
5:15 PM	629	7	572	14	**1222**
5:30 PM	564	11	463	19	**1057**
5:45 PM	504	10	479	15	**1008**
6:00 PM	477	13	423	11	**924**
6:15 PM	479	6	344	10	**839**
Totals	**8308**	**398**	**9246**	**367**	**18319**

Analysis ID: 1472965
Analysis: Creekside #1 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	EDH Blvd north (Southbound)			Serrano Pkwy (Westbound)			EDH Blvd south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:15am	4	251	5	56	12	22	28	167	32
8:30am	5	260	11	57	18	23	53	165	40
8:45am	7	346	10	79	11	13	42	155	34
9:00am	2	368	13	86	3	3	24	159	34
Hourly Tot	18	1225	39	278	44	61	147	646	140
Hourly Tot	0.014	0.9555	0.0304	0.7258	0.1149	0.1593	0.1576	0.6924	0.1501
PHF	0.64	0.83	0.75	0.81	0.61	0.66	0.69	0.97	0.88

All Days, Peak PM

	EDH Blvd north (Southbound)			Serrano Pkwy (Westbound)			EDH Blvd south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	5	277	12	66	14	6	16	329	90
4:00pm	4	269	14	58	12	1	20	346	87
4:15pm	6	205	11	58	16	3	18	303	86
4:30pm	10	227	8	64	12	2	17	381	78
Hourly Tot	25	978	45	246	54	12	71	1359	341
Hourly Tot	0.0239	0.9332	0.0429	0.7885	0.1731	0.0385	0.0401	0.7674	0.1925
PHF	0.62	0.88	0.8	0.93	0.84	0.5	0.89	0.89	0.95

Tues-Thurs, Peak AM

	EDH Blvd north (Southbound)			Serrano Pkwy (Westbound)			EDH Blvd south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:15am	3	291	2	59	14	29	35	186	43
8:30am	6	298	10	62	25	29	68	167	53
8:45am	8	384	12	91	14	11	55	169	40
9:00am	2	436	16	92	4	1	36	183	33
Hourly Tot	19	1409	40	304	57	70	194	705	169
Hourly Tot	0.0129	0.9598	0.0272	0.7053	0.1323	0.1624	0.1816	0.6601	0.1582
PHF	0.59	0.81	0.62	0.83	0.57	0.6	0.71	0.95	0.8

Tues-Thurs, Peak PM

	EDH Blvd north (Southbound)			Serrano Pkwy (Westbound)			EDH Blvd south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	5	320	12	75	7	5	15	327	93
4:00pm	6	292	18	63	11	1	16	363	78
4:15pm	10	207	16	68	18	1	15	407	81
4:30pm	14	219	9	76	16	0	17	421	87
Hourly Tot	35	1038	55	282	52	7	63	1518	339
Hourly Tot	0.031	0.9202	0.0488	0.827	0.1525	0.0205	0.0328	0.7906	0.1766
PHF	0.62	0.81	0.76	0.93	0.72	0.35	0.93	0.9	0.91

Lassen Ln (Eastbound)

Left	Thru	Right	Total	Total %
5	0	17	599	0.2203
0	0	26	658	0.242
0	0	38	735	0.2703
0	0	35	727	0.2674
5	0	116	2719	1
0.0413	0	0.9587		
0.25	0	0.76		

Lassen Ln (Eastbound)

Left	Thru	Right	Total	Total %
6	2	9	832	0.2577
5	6	12	834	0.2584
9	7	13	735	0.2277
7	4	17	827	0.2562
27	19	51	3228	1
0.2784	0.1959	0.5258		
0.75	0.68	0.75		

Lassen Ln (Eastbound)

Left	Thru	Right	Total	Total %
4	0	25	691	0.2205
0	0	36	754	0.2406
0	0	52	836	0.2668
0	1	49	853	0.2722
4	1	162	3134	1
0.024	0.006	0.9701		
0.25	0.25	0.78		

Lassen Ln (Eastbound)

Left	Thru	Right	Total	Total %
7	0	7	873	0.2504
8	1	10	867	0.2487
9	4	13	849	0.2435
12	6	20	897	0.2573
36	11	50	3486	1
0.3711	0.1134	0.5155		
0.75	0.46	0.62		

Prepared by National Data & Surveying Services

#1

El Dorado Hills Blvd & Serrano Pkwy

Peak Hour Turning Movement Count

ID: 18-07183-001
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 06:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 07:00 PM

El Dorado Hills Blvd — SOUTHBOUND

AM	24	1419	68	0	719	AM
NOON	0	0	0	0	0	NOON
PM	22	733	30	0	1333	PM

Serrano Pkwy — EASTBOUND

AM	NOON	PM		
93	0	130		
0	0	0	0	
18	0	19	1	
11	0	17	0.5	
57	0	54	0.5	
AM	NOON	PM		

WESTBOUND — Serrano Pkwy

PM	NOON	AM	
22	0	108	0
17	0	17	0.5
127	0	193	1.5
0	0	0	0
284	0	180	
PM	NOON	AM	

CONTROL: Signalized

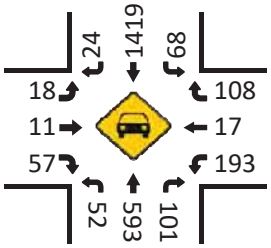
TEV	2666	0	2664
	AM	NOON	PM
PHF	0.87		0.98

El Dorado Hills Blvd — NORTHBOUND

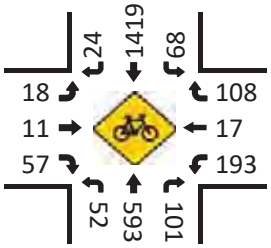
PM	917	3	91	1292	237	PM
NOON	0	0	0	0	0	NOON
AM	1674	5	52	593	101	AM

Turning factors: 0 | 2 | 1 | 0 (southbound); 0 | 1 | 2 | 1 (northbound)

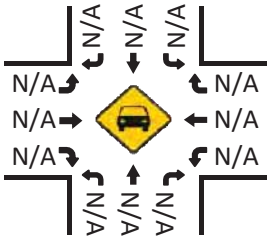
Total Vehicles (AM)



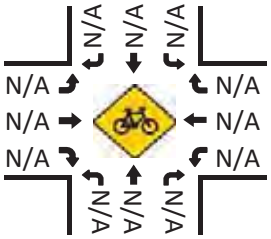
(AM)



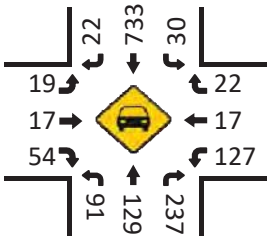
Total Vehicles (Noon)



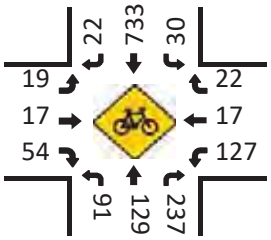
(NOON)



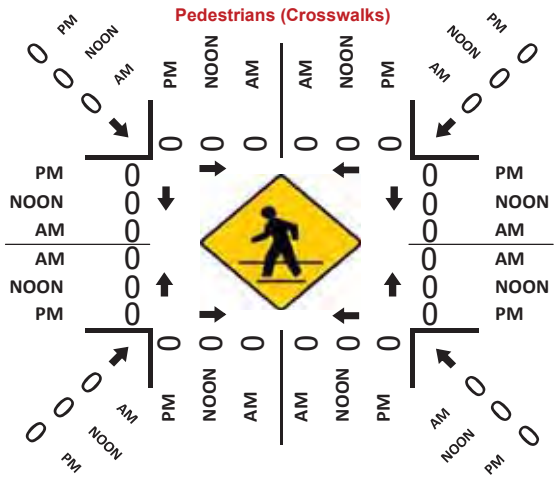
Total Vehicles (PM)



(PM)



Pedestrians (Crosswalks)



Analysis ID: 1472961
Analysis: Creekside #2 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	EDH north (Southbound)			Park (Westbound)			EDH south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:30am	20	352	58	2	1	8	87	262	25
8:45am	38	377	111	2	3	20	68	210	12
9:00am	45	354	120	2	3	23	63	186	2
9:15am	42	311	79	2	6	19	67	166	5
Hourly Tot	145	1394	368	8	13	70	285	824	44
Hourly Tot	0.076	0.731	0.193	0.0879	0.1429	0.7692	0.2472	0.7147	0.0382
PHF	0.81	0.92	0.77	1	0.54	0.76	0.82	0.79	0.44

All Days, Peak PM

	EDH north (Southbound)			Park (Westbound)			EDH south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	39	257	62	14	3	52	102	381	13
3:30pm	42	233	70	17	2	49	90	261	14
3:45pm	46	266	73	11	3	45	89	352	15
4:00pm	39	238	60	9	5	61	77	362	17
Hourly Tot	166	994	265	51	13	207	358	1356	59
Hourly Tot	0.1165	0.6975	0.186	0.1882	0.048	0.7638	0.2019	0.7648	0.0333
PHF	0.9	0.93	0.91	0.75	0.65	0.85	0.88	0.89	0.87

Tues-Thurs, Peak AM

	EDH north (Southbound)			Park (Westbound)			EDH south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:15am	11	352	62	0	1	16	98	264	33
8:30am	23	397	70	1	1	11	102	279	37
8:45am	47	389	130	1	5	25	78	231	15
9:00am	57	470	129	3	6	30	70	211	0
Hourly Tot	138	1608	391	5	13	82	348	985	85
Hourly Tot	0.0646	0.7525	0.183	0.05	0.13	0.82	0.2454	0.6946	0.0599
PHF	0.61	0.86	0.75	0.42	0.54	0.68	0.85	0.88	0.57

Tues-Thurs, Peak PM

	EDH north (Southbound)			Park (Westbound)			EDH south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:15pm	30	228	41	4	16	61	92	422	10
4:30pm	33	260	49	8	28	37	121	445	10
4:45pm	39	332	55	10	29	27	128	359	19
5:00pm	24	248	53	19	34	46	101	390	28
Hourly Tot	126	1068	198	41	107	171	442	1616	67
Hourly Tot	0.0905	0.7672	0.1422	0.1285	0.3354	0.5361	0.208	0.7605	0.0315
PHF	0.81	0.8	0.9	0.54	0.79	0.7	0.86	0.91	0.6

Saratoga (Eastbound)

Left	Thru	Right	Total	Total %
34	15	156	1020	0.2622
37	14	175	1067	0.2743
36	11	128	973	0.2501
27	7	99	830	0.2134
134	47	558	3890	1
0.1813	0.0636	0.7551		
0.91	0.78	0.8		

Saratoga (Eastbound)

Left	Thru	Right	Total	Total %
66	11	203	1203	0.2695
67	20	159	1024	0.2294
88	20	137	1145	0.2566
83	12	128	1091	0.2445
304	63	627	4463	1
0.3058	0.0634	0.6308		
0.86	0.79	0.77		

Saratoga (Eastbound)

Left	Thru	Right	Total	Total %
14	11	144	1006	0.2221
36	20	189	1166	0.2574
45	17	205	1188	0.2623
37	13	144	1170	0.2583
132	61	682	4530	1
0.1509	0.0697	0.7794		
0.73	0.76	0.83		

Saratoga (Eastbound)

Left	Thru	Right	Total	Total %
90	11	125	1130	0.237
91	16	129	1227	0.2574
91	8	140	1237	0.2595
93	6	131	1173	0.2461
365	41	525	4767	1
0.3921	0.044	0.5639		
0.98	0.64	0.94		

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

File Name : 17-7192-001 El Dorado Hills Blvd & Saratoga Way North
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	El Dorado Hills Blvd Southbound					Saratoga Way North Westbound					El Dorado Hills Blvd Northbound					Saratoga Way North Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	12	125	1	0	138	0	0	4	0	4	1	43	0	0	44	2	0	9	0	11	197	0
6:15	6	153	0	0	159	2	1	2	0	5	3	45	1	1	50	1	0	8	0	9	223	1
6:30	18	237	0	0	255	0	1	4	0	5	1	65	3	0	69	3	0	9	0	12	341	0
6:45	18	238	1	0	257	2	2	6	0	10	7	86	1	0	94	2	0	16	0	18	379	0
Total	54	753	2	0	809	4	4	16	0	24	12	239	5	1	257	8	0	42	0	50	1140	1
7:00	27	280	2	1	310	1	1	13	0	15	9	144	2	1	156	10	4	23	0	37	518	2
7:15	28	336	4	0	368	2	2	22	0	26	8	122	2	0	132	5	1	16	0	22	548	0
7:30	27	362	4	0	393	1	2	12	0	15	12	134	4	0	150	8	4	28	0	40	598	0
7:45	53	376	10	0	439	4	1	22	0	27	25	164	3	0	192	1	0	23	0	24	682	0
Total	135	1354	20	1	1510	8	6	69	0	83	54	564	11	1	630	24	9	90	0	123	2346	2
8:00	37	397	1	0	435	1	5	23	0	29	18	128	8	1	155	3	2	38	0	43	662	1
8:15	29	286	6	1	322	5	2	13	0	20	16	175	14	0	205	6	1	33	0	40	587	1
8:30	22	284	6	0	312	4	0	16	0	20	26	168	9	1	204	7	4	27	0	38	574	1
8:45	33	328	6	2	369	3	3	13	0	19	44	163	14	0	221	9	8	47	0	64	673	2
Total	121	1295	19	3	1438	13	10	65	0	88	104	634	45	2	785	25	15	145	0	185	2496	5
16:00	30	184	11	0	225	9	3	58	0	70	17	283	13	1	314	14	8	23	0	45	654	1
16:15	38	178	9	1	226	15	4	45	0	64	24	242	19	3	288	9	8	26	0	43	621	4
16:30	28	165	6	1	200	17	7	53	0	77	30	273	14	1	318	8	1	27	0	36	631	2
16:45	34	180	5	2	221	10	7	70	0	87	24	290	18	0	332	15	4	15	0	34	674	2
Total	130	707	31	4	872	51	21	226	0	298	95	1088	64	5	1252	46	21	91	0	158	2580	9
17:00	32	180	8	1	221	16	1	59	0	76	30	284	15	1	330	15	7	34	0	56	683	2
17:15	41	199	5	0	245	13	2	74	0	89	31	377	16	2	426	8	6	21	0	35	795	2
17:30	51	190	8	2	251	14	9	75	0	98	35	310	22	1	368	8	8	25	0	41	758	3
17:45	40	192	8	1	241	14	6	65	0	85	26	308	22	1	357	6	4	18	0	28	711	2
Total	164	761	29	4	958	57	18	273	0	348	122	1279	75	5	1481	37	25	98	0	160	2947	9
18:00	41	148	10	0	199	10	8	79	0	97	24	307	14	0	345	14	2	14	0	30	671	0
18:15	28	156	3	1	188	10	2	59	0	71	19	316	13	0	348	14	4	19	0	37	644	1
18:30	36	151	1	0	188	8	2	62	0	72	18	287	19	0	324	10	3	13	0	26	610	0
18:45	25	158	14	2	199	12	2	43	0	57	20	230	7	0	257	10	3	9	0	22	535	2
Total	130	613	28	3	774	40	14	243	0	297	81	1140	53	0	1274	48	12	55	0	115	2460	3
Grand Total	734	5483	129	15	6361	173	73	892	0	1138	468	4944	253	14	5679	188	82	521	0	791	13969	29
Apprch %	11.5%	86.2%	2.0%	0.2%		15.2%	6.4%	78.4%	0.0%		8.2%	87.1%	4.5%	0.2%		23.8%	10.4%	65.9%	0.0%			
Total %	5.3%	39.3%	0.9%	0.1%	45.5%	1.2%	0.5%	6.4%	0.0%	8.1%	3.4%	35.4%	1.8%	0.1%	40.7%	1.3%	0.6%	3.7%	0.0%	5.7%	100.0%	

AM PEAK HOUR	El Dorado Hills Blvd Southbound					Saratoga Way North Westbound					El Dorado Hills Blvd Northbound					Saratoga Way North Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	27	362	4	0	393	1	2	12	0	15	12	134	4	0	150	8	4	28	0	40	598
7:45	53	376	10	0	439	4	1	22	0	27	25	164	3	0	192	1	0	23	0	24	682
8:00	37	397	1	0	435	1	5	23	0	29	18	128	8	1	155	3	2	38	0	43	662
8:15	29	286	6	1	322	5	2	13	0	20	16	175	14	0	205	6	1	33	0	40	587
Total Volume	146	1421	21	1	1589	11	10	70	0	91	71	601	29	1	702	18	7	122	0	147	2529
% App Total	9.2%	89.4%	1.3%	0.1%		12.1%	11.0%	76.9%	0.0%		10.1%	85.6%	4.1%	0.1%		12.2%	4.8%	83.0%	0.0%		
PHF	.689	.895	.525	.250	.905	.550	.500	.761	.000	.784	.710	.859	.518	.250	.856	.563	.438	.803	.000	.855	.927

PM PEAK HOUR	El Dorado Hills Blvd Southbound					Saratoga Way North Westbound					El Dorado Hills Blvd Northbound					Saratoga Way North Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	32	180	8	1	221	16	1	59	0	76	30	284	15	1	330	15	7	34	0	56	683
17:15	41	199	5	0	245	13	2	74	0	89	31	377	16	2	426	8	6	21	0	35	795
17:30	51	190	8	2	251	14	9	75	0	98	35	310	22	1	368	8	8	25	0	41	758
17:45	40	192	8	1	241	14	6	65	0	85	26	308	22	1	357	6	4	18	0	28	711
Total Volume	164	761	29	4	958	57	18	273	0	348	122	1279	75	5	1481	37	25	98	0	160	2947
% App Total	17.1%	79.4%	3.0%	0.4%		16.4%	5.2%	78.4%	0.0%		8.2%	86.4%	5.1%	0.3%		23.1%	15.6%	61.3%	0.0%		
PHF	.804	.956	.906	.500	.954	.891	.500	.910	.000	.888	.871	.848	.852	.625	.869	.617	.781	.721	.000	.714	.927

Analysis ID: 1472996
Analysis: Creekside #3 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
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04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	EDH north (Southbound)			Park (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	13	320	141	30	4	11	239	204	24
8:00am	8	283	141	33	11	12	228	234	26
8:15am	11	235	158	35	11	12	251	226	21
8:30am	15	289	172	30	18	9	279	294	34
Hourly Tot	47	1127	612	128	44	44	997	958	105
Hourly Tot	0.0263	0.631	0.3427	0.5926	0.2037	0.2037	0.484	0.465	0.051
PHF	0.78	0.88	0.89	0.91	0.61	0.92	0.89	0.81	0.77

All Days, Peak PM

	EDH north (Southbound)			Park (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	11	357	102	25	22	18	266	410	56
3:30pm	12	281	89	49	21	11	239	303	53
3:45pm	15	339	93	57	23	19	221	365	56
4:00pm	17	220	105	52	25	22	191	380	58
Hourly Tot	55	1197	389	183	91	70	917	1458	223
Hourly Tot	0.0335	0.7294	0.2371	0.532	0.2645	0.2035	0.353	0.5612	0.0858
PHF	0.81	0.84	0.93	0.8	0.91	0.8	0.86	0.89	0.96

Tues-Thurs, Peak AM

	EDH north (Southbound)			Park (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	19	325	167	41	4	14	301	239	25
8:00am	8	324	158	37	15	13	286	260	25
8:15am	7	303	165	36	16	13	316	297	19
8:30am	15	333	182	32	19	11	278	377	36
Hourly Tot	49	1285	672	146	54	51	1181	1173	105
Hourly Tot	0.0244	0.6406	0.335	0.5817	0.2151	0.2032	0.4803	0.477	0.0427
PHF	0.64	0.96	0.92	0.89	0.71	0.91	0.93	0.78	0.73

Tues-Thurs, Peak PM

	EDH north (Southbound)			Park (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:00pm	17	260	115	62	29	27	209	425	61
4:15pm	10	230	107	62	19	26	233	387	63
4:30pm	6	275	110	61	18	25	216	493	64
4:45pm	4	427	96	51	14	25	199	374	73
Hourly Tot	37	1192	428	236	80	103	857	1679	261
Hourly Tot	0.0223	0.7194	0.2583	0.5632	0.1909	0.2458	0.3064	0.6003	0.0933
PHF	0.54	0.7	0.93	0.95	0.69	0.95	0.92	0.85	0.89

WB 50 ramp (Eastbound)

Left	Thru	Right	Total	Total %
50	21	238	1295	0.2589
56	19	185	1236	0.2472
59	19	127	1165	0.233
61	16	88	1305	0.2609
226	75	638	5001	1
0.2407	0.0799	0.6794		
0.93	0.89	0.67		

WB 50 ramp (Eastbound)

Left	Thru	Right	Total	Total %
40	11	69	1387	0.2765
42	6	42	1148	0.2288
47	12	48	1295	0.2581
42	23	52	1187	0.2366
171	52	211	5017	1
0.394	0.1198	0.4862		
0.91	0.57	0.76		

WB 50 ramp (Eastbound)

Left	Thru	Right	Total	Total %
65	20	301	1521	0.2587
65	24	235	1450	0.2466
60	26	166	1424	0.2422
66	22	114	1485	0.2526
256	92	816	5880	1
0.2199	0.079	0.701		
0.97	0.88	0.68		

WB 50 ramp (Eastbound)

Left	Thru	Right	Total	Total %
40	32	59	1336	0.2429
49	38	74	1298	0.236
60	31	76	1435	0.2609
59	29	81	1432	0.2603
208	130	290	5501	1
0.3312	0.207	0.4618		
0.87	0.86	0.9		

Prepared by National Data & Surveying Services

#3

El Dorado Hills Blvd & U.S. 50 WB

Peak Hour Turning Movement Count

ID: 18-07183-003
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	06:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	04:00 PM - 07:00 PM

El Dorado Hills Blvd — SOUTHBOUND

AM	657	880	49	3	777	AM
NOON	0	0	0	0	0	NOON
PM	329	544	31	0	1532	PM

U.S. 50 WB — EASTBOUND

AM	NOON	PM		
1287	0	1385	⇦	
0	0	0	↶	0
169	0	125	↱	1.5
69	0	67	→	0.5
532	0	132	↴	1
AM	NOON	PM		

CONTROL

Signalized

TEV	3850 AM	0 NOON	4169 PM
PHF	0.84		0.99

U.S. 50 WB — WESTBOUND

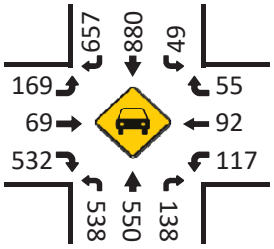
PM	NOON	AM		
78	0	55	↰	0.5
76	0	92	←	1
158	0	117	↰	1.5
0	0	0	↶	0
417	0	256	⇨	
PM	NOON	AM		

El Dorado Hills Blvd — NORTHBOUND

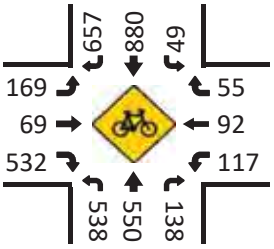
PM	835	1	980	1329	319	PM
NOON	0	0	0	0	0	NOON
AM	1530	1	538	550	138	AM

1 3 1 0 — 0 2 2.5 0.5

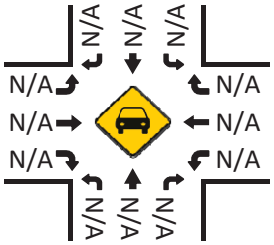
Total Vehicles (AM)



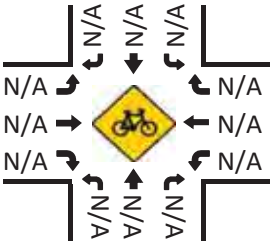
(AM)



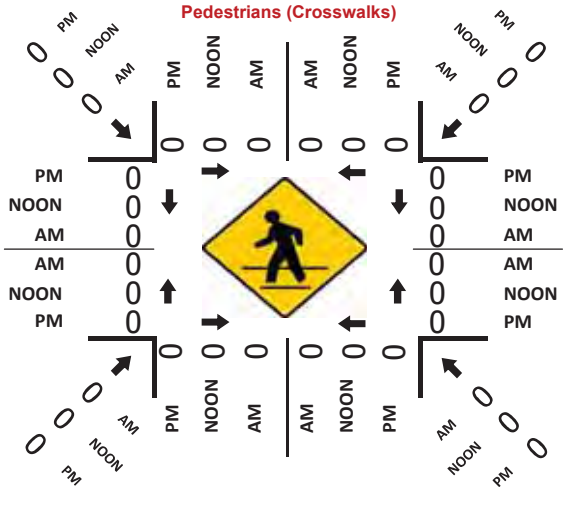
Total Vehicles (Noon)



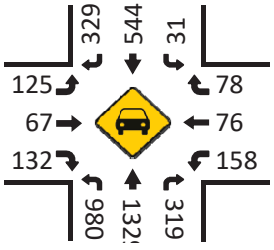
(NOON)



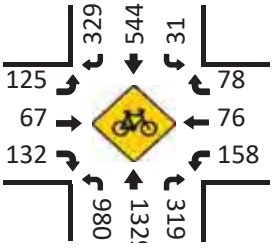
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1472979
Analysis: Creekside #4 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	EDH (Southbound)			us 50 on & loop off (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	79	460	0	0	0	78	0	392	92
8:00am	72	407	0	0	0	68	0	374	101
8:15am	80	328	0	0	0	64	0	432	111
8:30am	99	263	0	2	0	77	0	450	92
Hourly Tot	330	1458	0	2	0	287	0	1648	396
Hourly Tot	0.1846	0.8154	0	0.0069	0	0.9931	0	0.8063	0.1937
PHF	0.83	0.79	0	0.25	0	0.92	0	0.92	0.89

All Days, Peak PM

	EDH (Southbound)			us 50 on & loop off (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	83	306	0	0	0	214	0	483	141
3:30pm	81	303	0	0	0	165	0	446	133
3:45pm	80	332	0	0	0	158	0	476	130
4:00pm	80	269	0	0	0	154	0	437	150
Hourly Tot	324	1210	0	0	0	691	0	1842	554
Hourly Tot	0.2112	0.7888	0	0	0	1	0	0.7688	0.2312
PHF	0.98	0.91	0	0	0	0.81	0	0.95	0.92

Tues-Thurs, Peak AM

	EDH (Southbound)			us 50 on & loop off (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	83	530	0	1	0	81	0	462	104
8:00am	75	508	0	0	0	59	0	455	116
8:15am	89	398	0	1	0	71	0	513	129
8:30am	114	291	0	3	0	85	0	534	111
Hourly Tot	361	1727	0	5	0	296	0	1964	460
Hourly Tot	0.1729	0.8271	0	0.0166	0	0.9834	0	0.8102	0.1898
PHF	0.79	0.81	0	0.42	0	0.87	0	0.92	0.89

Tues-Thurs, Peak PM

	EDH (Southbound)			us 50 on & loop off (Westbound)			Latrobe (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	80	312	0	0	0	182	0	563	146
3:30pm	82	362	0	0	0	179	0	458	143
3:45pm	78	363	0	0	0	176	0	474	143
4:00pm	77	293	0	0	0	167	0	503	177
Hourly Tot	317	1330	0	0	0	704	0	1998	609
Hourly Tot	0.1925	0.8075	0	0	0	1	0	0.7664	0.2336
PHF	0.97	0.92	0	0	0	0.97	0	0.89	0.86

EB 50 off (Eastbound)

Left	Thru	Right	Total	Total %
0	0	182	1283	0.2654
0	0	175	1197	0.2476
0	0	185	1200	0.2482
0	0	172	1155	0.2389
0	0	714	4835	1
0	0	1		
0	0	0.96		

EB 50 off (Eastbound)

Left	Thru	Right	Total	Total %
0	0	249	1476	0.2563
0	0	268	1396	0.2424
0	0	322	1498	0.2602
0	0	298	1388	0.2411
0	0	1137	5758	1
0	0	1		
0	0	0.88		

EB 50 off (Eastbound)

Left	Thru	Right	Total	Total %
0	0	196	1457	0.2588
0	0	215	1428	0.2537
0	0	197	1398	0.2484
0	0	208	1346	0.2391
0	0	816	5629	1
0	0	1		
0	0	0.95		

EB 50 off (Eastbound)

Left	Thru	Right	Total	Total %
0	0	251	1534	0.2492
0	0	293	1517	0.2465
0	0	351	1585	0.2575
0	0	302	1519	0.2468
0	0	1197	6155	1
0	0	1		
0	0	0.85		

Prepared by National Data & Surveying Services

#4

Latrobe Rd & U.S. 50 EB

Peak Hour Turning Movement Count

ID: 18-07183-004
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 06:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 07:00 PM

Latrobe Rd — SOUTHBOUND

AM	0	1349	164	0	1269	AM
NOON	0	0	0	0	0	NOON
PM	0	673	173	1	2636	PM

U.S. 50 EB — EASTBOUND

AM	NOON	PM		
0	0	0		
0	0	0	0	
0	0	0	0	
0	0	0	0	
1055	0	813	2	
AM	NOON	PM		

0 4 1 0

CONTROL

Signalized

TEV	4033 AM	0 NOON	4746 PM
PHF	0.84		0.95

U.S. 50 EB — WESTBOUND

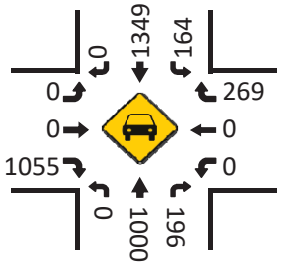
PM	NOON	AM	
726	0	269	1
0	0	0	0
0	0	0	0
0	0	0	0
624	0	360	
PM	NOON	AM	

0 0 3 1

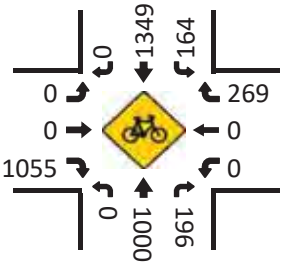
Latrobe Rd — NORTHBOUND

PM	1486	0	0	1909	451	PM
NOON	0	0	0	0	0	NOON
AM	2404	0	0	1000	196	AM

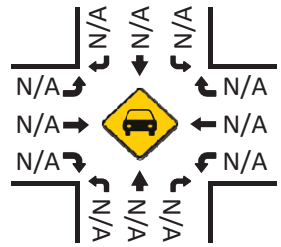
Total Vehicles (AM)



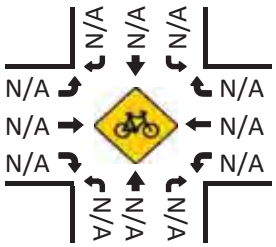
(AM)



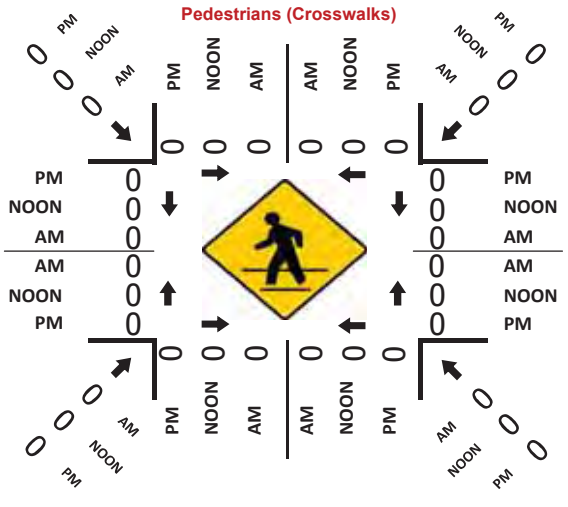
Total Vehicles (Noon)



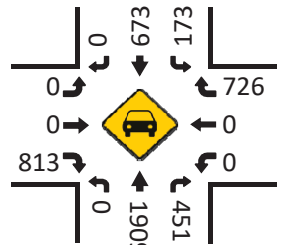
(NOON)



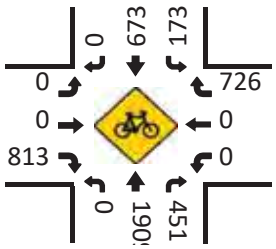
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1472998
Analysis: Creekside #5 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			Town Cntr easy (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	104	465	3	14	0	110	0	347	44
8:00am	109	434	8	21	0	114	0	375	61
8:15am	83	401	9	13	0	97	0	378	58
8:30am	97	288	11	17	0	102	0	410	29
Hourly Tot	393	1588	31	65	0	423	0	1510	192
Hourly Tot	0.1953	0.7893	0.0154	0.1332	0	0.8668	0	0.8872	0.1128
PHF	0.9	0.85	0.7	0.77	0	0.93	0	0.92	0.79

All Days, Peak PM

	Latrobe north (Southbound)			Town Cntr easy (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	114	394	2	22	0	143	5	438	49
3:30pm	142	390	1	17	1	145	3	406	47
3:45pm	189	422	4	24	2	146	3	371	34
4:00pm	147	359	8	24	1	162	3	394	36
Hourly Tot	592	1565	15	87	4	596	14	1609	166
Hourly Tot	0.2726	0.7205	0.0069	0.1266	0.0058	0.8675	0.0078	0.8994	0.0928
PHF	0.78	0.93	0.47	0.91	0.5	0.92	0.7	0.92	0.85

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			Town Cntr easy (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	115	572	3	14	0	125	0	401	52
8:00am	113	533	9	16	0	126	0	473	74
8:15am	86	513	14	11	0	115	0	434	72
8:30am	106	322	15	16	0	110	0	500	37
Hourly Tot	420	1940	41	57	0	476	0	1808	235
Hourly Tot	0.1749	0.808	0.0171	0.1069	0	0.8931	0	0.885	0.115
PHF	0.91	0.85	0.68	0.89	0	0.94	0	0.9	0.79

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			Town Cntr easy (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:00pm	95	447	6	30	0	129	1	473	57
3:15pm	117	454	3	22	0	139	5	545	62
3:30pm	151	421	2	16	2	138	3	414	54
3:45pm	169	481	3	23	4	144	4	388	42
Hourly Tot	532	1803	14	91	6	550	13	1820	215
Hourly Tot	0.2265	0.7676	0.006	0.1406	0.0093	0.8501	0.0063	0.8887	0.105
PHF	0.79	0.94	0.58	0.76	0.38	0.95	0.65	0.83	0.87

Town Cntr west (Eastbound)

Left	Thru	Right	Total	Total %
0	0	2	1089	0.2582
0	0	4	1126	0.267
0	0	6	1045	0.2477
1	0	3	958	0.2271
1	0	15	4218	1
0.0625	0	0.9375		
0.25	0	0.62		

Town Cntr west (Eastbound)

Left	Thru	Right	Total	Total %
6	3	3	1179	0.252
4	0	2	1158	0.2475
4	1	1	1201	0.2567
4	1	2	1141	0.2439
18	5	8	4679	1
0.5806	0.1613	0.2581		
0.75	0.42	0.67		

Town Cntr west (Eastbound)

Left	Thru	Right	Total	Total %
0	0	1	1283	0.2567
0	0	6	1350	0.2701
0	0	8	1253	0.2507
2	0	5	1113	0.2226
2	0	20	4999	1
0.0909	0	0.9091		
0.25	0	0.62		

Town Cntr west (Eastbound)

Left	Thru	Right	Total	Total %
13	0	2	1253	0.2466
4	1	4	1356	0.2668
5	0	4	1210	0.2381
4	0	1	1263	0.2485
26	1	11	5082	1
0.6842	0.0263	0.2895		
0.5	0.25	0.69		

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

File Name : 17-7192-004 Latrobe Rd & Town Center Blvd
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Town Center Blvd Westbound					Latrobe Rd Northbound					Town Center Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	44	89	21	0	154	6	1	16	0	23	1	101	4	0	106	0	0	0	0	0	283	0
6:15	42	129	20	1	192	4	1	37	0	42	3	86	4	0	93	2	0	0	0	2	329	1
6:30	64	198	24	0	286	8	2	40	0	50	0	115	12	0	127	2	0	0	0	2	465	0
6:45	66	306	41	0	413	10	2	48	0	60	3	92	12	0	107	3	0	0	0	3	583	0
Total	216	722	106	1	1045	28	6	141	0	175	7	394	32	0	433	7	0	0	0	7	1660	1
7:00	65	284	40	0	389	9	2	41	0	52	4	147	10	0	161	1	1	1	0	3	605	0
7:15	86	252	42	0	380	15	4	45	0	64	13	156	12	0	181	0	2	0	0	2	627	0
7:30	80	302	58	2	442	17	1	49	0	67	8	144	15	0	167	4	0	0	0	4	680	2
7:45	112	388	71	1	572	10	9	45	0	64	12	193	11	0	216	3	1	2	0	6	858	1
Total	343	1226	211	3	1783	51	16	180	0	247	37	640	48	0	725	8	4	3	0	15	2770	3
8:00	113	408	57	0	578	15	8	50	0	73	15	188	20	0	223	2	0	1	0	3	877	0
8:15	96	332	76	2	506	22	5	73	1	101	13	203	26	0	242	4	4	2	0	10	859	3
8:30	106	265	78	1	450	15	5	68	0	88	16	243	21	0	280	1	2	1	0	4	822	1
8:45	125	308	86	1	520	18	12	80	0	110	17	198	25	1	241	4	2	2	0	8	879	2
Total	440	1313	297	4	2054	70	30	271	1	372	61	832	92	1	986	11	8	6	0	25	3437	6
16:00	121	239	6	1	367	14	2	143	0	159	0	354	39	1	394	44	6	19	0	69	989	2
16:15	115	236	5	0	356	16	0	145	1	162	1	322	33	0	356	48	5	11	0	64	938	1
16:30	120	212	4	2	338	8	1	160	0	169	0	384	33	1	418	77	8	20	0	105	1030	3
16:45	163	237	6	0	406	14	1	136	0	151	1	302	28	0	331	80	11	10	0	101	989	0
Total	519	924	21	3	1467	52	4	584	1	641	2	1362	133	2	1499	249	30	60	0	339	3946	6
17:00	129	213	4	0	346	21	3	159	1	184	0	399	44	0	443	79	9	15	0	103	1076	1
17:15	137	247	1	1	386	15	1	149	0	165	1	347	44	0	392	63	5	22	0	90	1033	1
17:30	111	231	1	3	346	21	0	149	1	171	0	306	27	0	333	60	5	12	0	77	927	4
17:45	123	252	0	5	380	16	0	137	0	153	0	310	39	0	349	27	3	5	0	35	917	5
Total	500	943	6	9	1458	73	4	594	2	673	1	1362	154	0	1517	229	22	54	0	305	3953	11
18:00	118	156	3	0	277	10	0	159	0	169	0	348	32	0	380	29	8	4	0	41	867	0
18:15	115	172	1	2	290	19	0	154	1	174	0	200	25	0	225	18	1	8	0	27	716	3
18:30	87	178	1	6	272	20	1	129	0	150	0	187	15	0	202	15	3	0	0	18	642	6
18:45	83	160	0	4	247	9	0	108	0	117	0	153	23	1	177	10	0	3	0	13	554	5
Total	403	666	5	12	1086	58	1	550	1	610	0	888	95	1	984	72	12	15	0	99	2779	14
Grand Total	2421	5794	646	32	8893	332	61	2320	5	2718	108	5478	554	4	6144	576	76	138	0	790	18545	41
Apprch %	27.2%	65.2%	7.3%	0.4%		12.2%	2.2%	85.4%	0.2%		1.8%	89.2%	9.0%	0.1%		72.9%	9.6%	17.5%	0.0%			
Total %	13.1%	31.2%	3.5%	0.2%	48.0%	1.8%	0.3%	12.5%	0.0%	14.7%	0.6%	29.5%	3.0%	0.0%	33.1%	3.1%	0.4%	0.7%	0.0%	4.3%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Town Center Blvd Westbound					Latrobe Rd Northbound					Town Center Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	113	408	57	0	578	15	8	50	0	73	15	188	20	0	223	2	0	1	0	3	877
8:15	96	332	76	2	506	22	5	73	1	101	13	203	26	0	242	4	4	2	0	10	859
8:30	106	265	78	1	450	15	5	68	0	88	16	243	21	0	280	1	2	1	0	4	822
8:45	125	308	86	1	520	18	12	80	0	110	17	198	25	1	241	4	2	2	0	8	879
Total Volume	440	1313	297	4	2054	70	30	271	1	372	61	832	92	1	986	11	8	6	0	25	3437
% App Total	21.4%	63.9%	14.5%	0.2%		18.8%	8.1%	72.8%	0.3%		6.2%	84.4%	9.3%	0.1%		44.0%	32.0%	24.0%	0.0%		
PHF	.880	.805	.863	.500	.888	.795	.625	.847	.250	.845	.897	.856	.885	.250	.880	.688	.500	.750	.000	.625	.978

PM PEAK HOUR	Latrobe Rd Southbound					Town Center Blvd Westbound					Latrobe Rd Northbound					Town Center Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	120	212	4	2	338	8	1	160	0	169	0	384	33	1	418	77	8	20	0	105	1030
16:45	163	237	6	0	406	14	1	136	0	151	1	302	28	0	331	80	11	10	0	101	989
17:00	129	213	4	0	346	21	3	159	1	184	0	399	44	0	443	79	9	15	0	103	1076
17:15	137	247	1	1	386	15	1	149	0	165	1	347	44	0	392	63	5	22	0	90	1033
Total Volume	549	909	15	3	1476	58	6	604	1	669	2	1432	149	1	1584	299	33	67	0	399	4128
% App Total	37.2%	61.6%	1.0%	0.2%		8.7%	0.9%	90.3%	0.1%		0.1%	90.4%	9.4%	0.1%		74.9%	8.3%	16.8%	0.0%		
PHF	.842	.920	.625	.375	.909	.690	.500	.944	.250	.909	.500	.897	.847	.250	.894	.934	.750	.761	.000	.950	.959

Analysis ID: 1472999
Analysis: Creekside #6 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			WRR east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	10	401	71	57	28	21	10	280	32
8:00am	15	350	82	57	37	20	12	372	45
8:15am	23	266	92	52	30	20	12	312	40
8:30am	33	168	98	61	38	25	10	279	35
Hourly Tot	81	1185	343	227	133	86	44	1243	152
Hourly Tot	0.0503	0.7365	0.2132	0.509	0.2982	0.1928	0.0306	0.8638	0.1056
PHF	0.61	0.74	0.88	0.93	0.88	0.86	0.92	0.84	0.84

All Days, Peak PM

	Latrobe north (Southbound)			WRR east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:45pm	36	359	75	87	47	52	19	218	51
3:00pm	32	289	63	82	40	48	11	315	71
3:15pm	53	260	100	74	27	43	3	409	82
3:30pm	61	217	97	63	32	43	5	289	75
Hourly Tot	182	1125	335	306	146	186	38	1231	279
Hourly Tot	0.1108	0.6851	0.204	0.4796	0.2288	0.2915	0.0245	0.7952	0.1802
PHF	0.75	0.78	0.84	0.88	0.78	0.89	0.5	0.75	0.85

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			WRR east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	11	490	83	74	34	25	15	344	35
8:00am	7	432	100	74	38	26	18	489	59
8:15am	17	361	114	64	26	30	18	348	38
8:30am	30	278	110	78	39	30	13	336	41
Hourly Tot	65	1561	407	290	137	111	64	1517	173
Hourly Tot	0.032	0.7678	0.2002	0.539	0.2546	0.2063	0.0365	0.8649	0.0986
PHF	0.54	0.8	0.89	0.93	0.88	0.93	0.89	0.78	0.73

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			WRR east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:45pm	22	433	75	110	60	54	23	281	62
3:00pm	37	349	74	106	43	52	9	400	87
3:15pm	62	293	120	96	29	43	2	510	113
3:30pm	75	244	123	81	32	37	4	324	100
Hourly Tot	196	1319	392	393	164	186	38	1515	362
Hourly Tot	0.1028	0.6917	0.2056	0.5289	0.2207	0.2503	0.0198	0.7911	0.189
PHF	0.65	0.76	0.8	0.89	0.68	0.86	0.41	0.74	0.8

ERR west (Eastbound)

Left	Thru	Right	Total	Total %
39	15	7	971	0.2492
60	26	4	1080	0.2772
83	33	4	967	0.2482
90	37	4	878	0.2254
272	111	19	3896	1
0.6766	0.2761	0.0473		
0.76	0.75	0.68		

ERR west (Eastbound)

Left	Thru	Right	Total	Total %
70	49	9	1072	0.2505
59	36	8	1054	0.2463
57	36	9	1153	0.2695
68	41	9	1000	0.2337
254	162	35	4279	1
0.5632	0.3592	0.0776		
0.91	0.83	0.97		

ERR west (Eastbound)

Left	Thru	Right	Total	Total %
42	14	7	1174	0.2462
69	21	4	1337	0.2804
99	33	7	1155	0.2422
100	40	7	1102	0.2311
310	108	25	4768	1
0.6998	0.2438	0.0564		
0.78	0.68	0.89		

ERR west (Eastbound)

Left	Thru	Right	Total	Total %
82	53	12	1267	0.2501
69	35	10	1271	0.2509
59	36	9	1372	0.2709
75	48	12	1155	0.228
285	172	43	5065	1
0.57	0.344	0.086		
0.87	0.81	0.9		

#6

National Data and Surveying Services

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7192-005 Latrobe Rd & White Rock Rd
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					White Rock Rd Westbound					Latrobe Rd Northbound					White Rock Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	9	76	18	0	103	13	11	12	0	36	5	83	11	0	99	11	5	0	0	16	254	0
6:15	4	109	22	0	135	34	12	16	0	62	9	72	9	0	90	10	4	5	0	19	306	0
6:30	13	158	33	0	204	27	26	19	0	72	12	88	6	0	106	14	10	13	0	37	419	0
6:45	16	271	32	2	321	67	32	18	0	117	11	73	14	0	98	18	10	21	0	49	585	2
Total	42	614	105	2	763	141	81	65	0	287	37	316	40	0	393	53	29	39	0	121	1564	2
7:00	16	209	53	0	278	49	40	22	0	111	26	104	18	1	149	38	12	7	0	57	595	1
7:15	15	199	63	1	278	58	39	34	0	131	16	108	19	0	143	30	20	17	0	67	619	1
7:30	14	235	71	0	320	57	53	23	0	133	25	109	11	1	146	39	28	13	0	80	679	1
7:45	23	291	87	0	401	102	59	22	0	183	19	141	25	0	185	53	32	23	0	108	877	0
Total	68	934	274	1	1277	266	191	101	0	558	86	462	73	2	623	160	92	60	0	312	2770	3
8:00	31	298	83	0	412	82	58	29	0	169	25	135	29	1	190	58	21	13	0	92	863	1
8:15	19	266	83	1	369	58	50	28	0	136	14	160	42	1	217	53	25	10	1	89	811	3
8:30	19	176	73	0	268	56	60	41	0	157	26	165	35	0	226	71	22	14	1	108	759	1
8:45	28	224	73	0	325	62	49	33	0	144	6	140	17	0	163	62	19	16	0	97	729	0
Total	97	964	312	1	1374	258	217	131	0	606	71	600	123	2	796	244	87	53	2	386	3162	5
16:00	66	138	64	3	271	49	29	39	0	117	21	293	87	1	402	67	56	25	1	149	939	5
16:15	54	142	59	0	255	45	51	49	0	145	17	228	58	2	305	69	71	34	0	174	879	2
16:30	68	121	61	0	250	36	27	45	0	108	18	303	84	2	407	85	90	18	0	193	958	2
16:45	51	147	43	1	242	53	40	46	1	140	20	213	82	0	315	79	79	30	0	188	885	2
Total	239	548	227	4	1018	183	147	179	1	510	76	1037	311	5	1429	300	296	107	1	704	3661	11
17:00	65	133	58	1	257	47	41	54	0	142	17	307	104	4	432	92	94	16	1	203	1034	6
17:15	59	173	61	0	293	58	56	49	0	163	18	226	76	0	320	93	73	22	1	189	965	1
17:30	58	142	45	2	247	42	45	41	0	128	21	238	86	1	346	83	77	20	1	181	902	4
17:45	50	171	65	1	287	48	26	49	0	123	24	186	57	0	267	78	52	21	0	151	828	1
Total	232	619	229	4	1084	195	168	193	0	556	80	957	323	5	1365	346	296	79	3	724	3729	12
18:00	59	88	34	0	181	43	25	44	0	112	20	264	53	2	339	76	49	14	1	140	772	3
18:15	49	111	41	0	201	31	40	35	0	106	16	142	34	0	192	37	44	11	0	92	591	0
18:30	50	121	31	0	202	24	25	49	0	98	7	115	39	1	162	41	39	11	1	92	554	2
18:45	32	101	38	0	171	38	11	35	0	84	2	101	31	1	135	32	19	16	0	67	457	1
Total	190	421	144	0	755	136	101	163	0	400	45	622	157	4	828	186	151	52	2	391	2374	6
Grand Total	868	4100	1291	12	6271	1179	905	832	1	2917	395	3994	1027	18	5434	1289	951	390	8	2638	17260	39
Apprch %	13.8%	65.4%	20.6%	0.2%		40.4%	31.0%	28.5%	0.0%		7.3%	73.5%	18.9%	0.3%		48.9%	36.1%	14.8%	0.3%			
Total %	5.0%	23.8%	7.5%	0.1%	36.3%	6.8%	5.2%	4.8%	0.0%	16.9%	2.3%	23.1%	6.0%	0.1%	31.5%	7.5%	5.5%	2.3%	0.0%	15.3%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					White Rock Rd Westbound					Latrobe Rd Northbound					White Rock Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	23	291	87	0	401	102	59	22	0	183	19	141	25	0	185	53	32	23	0	108	877
8:00	31	298	83	0	412	82	58	29	0	169	25	135	29	1	190	58	21	13	0	92	863
8:15	19	266	83	1	369	58	50	28	0	136	14	160	42	1	217	53	25	10	1	89	811
8:30	19	176	73	0	268	56	60	41	0	157	26	165	35	0	226	71	22	14	1	108	759
Total Volume	92	1031	326	1	1450	298	227	120	0	645	84	601	131	2	818	235	100	60	2	397	3310
% App Total	6.3%	71.1%	22.5%	0.1%		46.2%	35.2%	18.6%	0.0%		10.3%	73.5%	16.0%	0.2%		59.2%	25.2%	15.1%	0.5%		
PHF	.742	.865	.937	.250	.880	.730	.946	.732	.000	.881	.808	.911	.780	.500	.905	.827	.781	.652	.500	.919	.944

PM PEAK HOUR	Latrobe Rd Southbound					White Rock Rd Westbound					Latrobe Rd Northbound					White Rock Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	68	121	61	0	250	36	27	45	0	108	18	303	84	2	407	85	90	18	0	193	958
16:45	51	147	43	1	242	53	40	46	1	140	20	213	82	0	315	79	79	30	0	188	885
17:00	65	133	58	1	257	47	41	54	0	142	17	307	104	4	432	92	94	16	1	203	1034
17:15	59	173	61	0	293	58	56	49	0	163	18	226	76	0	320	93	73	22	1	189	965
Total Volume	243	574	223	2	1042	194	164	194	1	553	73	1049	346	6	1474	349	336	86	2	773	3842
% App Total	23.3%	55.1%	21.4%	0.2%		35.1%	29.7%	35.1%	0.2%		5.0%	71.2%	23.5%	0.4%		45.1%	43.5%	11.1%	0.3%		
PHF	.893	.829	.914	.500	.889	.836	.732	.898	.250	.848	.913	.854	.832	.375	.853	.938	.894	.717	.500	.952	.929

Analysis ID: 1473000
Analysis: Creekside #7 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			Monte Verde (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	1	166	38	1	0	0	7	321	0
7:45am	2	348	54	0	1	1	6	264	0
8:00am	1	387	53	0	1	2	6	271	0
8:15am	0	231	50	0	4	1	6	221	0
Hourly Tot	4	1132	195	1	6	4	25	1077	0
Hourly Tot	0.003	0.8505	0.1465	0.0909	0.5455	0.3636	0.0227	0.9773	0
PHF	0.5	0.73	0.9	0.25	0.38	0.5	0.89	0.84	0

All Days, Peak PM

	Latrobe north (Southbound)			Monte Verde (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	7	277	32	0	3	1	3	200	0
2:45pm	7	401	52	0	1	1	0	207	0
3:00pm	4	253	61	1	2	2	0	295	5
3:15pm	4	271	56	1	2	1	0	332	7
Hourly Tot	22	1202	201	2	8	5	3	1034	12
Hourly Tot	0.0154	0.8435	0.1411	0.1333	0.5333	0.3333	0.0029	0.9857	0.0114
PHF	0.79	0.75	0.82	0.5	0.67	0.62	0.25	0.78	0.43

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			Monte Verde (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	2	256	48	0	0	0	9	381	0
7:45am	4	427	71	0	0	2	7	316	0
8:00am	2	439	79	0	0	5	11	339	0
8:15am	0	317	74	0	2	2	11	251	0
Hourly Tot	8	1439	272	0	2	9	38	1287	0
Hourly Tot	0.0047	0.8371	0.1582	0	0.1818	0.8182	0.0287	0.9713	0
PHF	0.5	0.82	0.86	0	0.25	0.45	0.86	0.84	0

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			Monte Verde (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:45pm	12	473	72	0	0	2	0	266	0
3:00pm	7	317	92	0	2	5	0	376	7
3:15pm	2	294	70	0	2	2	0	412	9
3:30pm	0	287	51	0	0	0	0	246	5
Hourly Tot	21	1371	285	0	4	9	0	1300	21
Hourly Tot	0.0125	0.8175	0.1699	0	0.3077	0.6923	0	0.9841	0.0159
PHF	0.44	0.72	0.77	0	0.5	0.45	0	0.79	0.58

GF (north) (Eastbound)

Left	Thru	Right	Total	Total %
8	0	0	542	0.2107
26	0	0	702	0.2729
46	0	0	767	0.2982
46	0	2	561	0.2181
126	0	2	2572	1
0.9844	0	0.0156		
0.68	0	0.25		

GF (north) (Eastbound)

Left	Thru	Right	Total	Total %
56	0	19	598	0.216
58	0	9	736	0.2659
62	0	1	686	0.2478
73	1	0	748	0.2702
249	1	29	2768	1
0.8925	0.0036	0.1039		
0.85	0.25	0.38		

GF (north) (Eastbound)

Left	Thru	Right	Total	Total %
9	0	0	705	0.2187
32	0	0	859	0.2664
61	0	0	936	0.2903
65	0	2	724	0.2246
167	0	2	3224	1
0.9882	0	0.0118		
0.64	0	0.25		

GF (north) (Eastbound)

Left	Thru	Right	Total	Total %
77	0	11	913	0.2702
87	0	1	894	0.2646
97	2	0	890	0.2634
87	5	1	682	0.2018
348	7	13	3379	1
0.9457	0.019	0.0353		
0.9	0.35	0.3		

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-005
Date : 11/16/2017

#7

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Golden Foothill Pkwy Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	103	15	1	119	0	0	1	0	1	1	85	0	0	86	8	0	0	0	8	214	1
6:15	0	112	19	0	131	0	0	2	0	2	1	90	0	0	91	3	0	0	0	3	227	0
6:30	1	135	29	0	165	0	0	1	0	1	0	115	0	0	115	1	0	0	0	1	282	0
6:45	1	208	57	0	266	0	0	2	0	2	3	110	0	0	113	5	0	0	0	5	386	0
Total	2	558	120	1	681	0	0	6	0	6	5	400	0	0	405	17	0	0	0	17	1109	1
7:00	0	183	77	1	261	0	1	3	0	4	0	113	0	0	113	12	0	1	0	13	391	1
7:15	0	209	50	0	259	1	1	3	0	5	3	132	1	0	136	13	0	0	0	13	413	0
7:30	0	306	61	1	368	0	0	4	0	4	1	153	0	0	154	9	0	0	0	9	535	1
7:45	0	301	117	0	418	0	3	4	0	7	6	178	1	1	186	19	2	1	0	22	633	1
Total	0	999	305	2	1306	1	5	14	0	20	10	576	2	1	589	53	2	2	0	57	1972	3
8:00	1	268	140	1	410	1	2	3	0	6	6	215	0	0	221	41	2	6	0	49	686	1
8:15	0	234	70	0	304	2	2	3	0	7	3	166	1	0	170	35	0	3	0	38	519	0
8:30	0	195	70	0	265	1	2	1	0	4	3	127	1	0	131	18	0	4	0	22	422	0
8:45	1	216	68	0	285	2	1	2	0	5	2	141	1	0	144	13	0	1	0	14	448	0
Total	2	913	348	1	1264	6	7	9	0	22	14	649	3	0	666	107	2	14	0	123	2075	1
16:00	1	162	30	0	193	0	0	1	0	1	3	210	1	0	214	67	0	4	0	71	479	0
16:15	3	178	33	0	214	0	1	1	0	2	0	327	2	0	329	122	1	3	0	126	671	0
16:30	3	205	29	0	237	0	0	0	0	0	0	230	2	0	232	93	1	3	0	97	566	0
16:45	4	161	34	0	199	0	1	2	0	3	3	295	3	0	301	117	1	5	0	123	626	0
Total	11	706	126	0	843	0	2	4	0	6	6	1062	8	0	1076	399	3	15	0	417	2342	0
17:00	5	158	42	0	205	1	2	4	0	7	3	223	1	1	228	76	1	4	0	81	521	1
17:15	8	191	29	1	229	1	1	6	0	8	1	199	0	0	200	69	1	4	0	74	511	1
17:30	3	188	23	0	214	1	0	2	0	3	1	215	1	0	217	46	1	2	0	49	483	0
17:45	2	150	19	1	172	1	3	0	0	4	3	229	0	0	232	43	1	3	0	47	455	1
Total	18	687	113	2	820	4	6	12	0	22	8	866	2	1	877	234	4	13	0	251	1970	3
18:00	1	161	17	1	180	3	0	1	0	4	1	128	1	0	130	42	1	2	0	45	359	1
18:15	3	124	14	1	142	1	0	5	0	6	0	107	1	0	108	58	1	0	0	59	315	1
18:30	6	127	16	0	149	0	0	0	0	0	0	93	0	0	93	34	0	3	0	37	279	0
18:45	6	127	16	0	149	0	0	0	0	0	0	93	0	0	93	34	0	3	0	37	279	0
Total	16	539	63	2	620	4	0	6	0	10	1	421	2	0	424	168	2	8	0	178	1232	2
Grand Total	49	4402	1075	8	5534	15	20	51	0	86	44	3974	17	2	4037	978	13	52	0	1043	10700	10
Apprch %	0.9%	79.5%	19.4%	0.1%		17.4%	23.3%	59.3%	0.0%		1.1%	98.4%	0.4%	0.0%		93.8%	1.2%	5.0%	0.0%			
Total %	0.5%	41.1%	10.0%	0.1%	51.7%	0.1%	0.2%	0.5%	0.0%	0.8%	0.4%	37.1%	0.2%	0.0%	37.7%	9.1%	0.1%	0.5%	0.0%	9.7%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Golden Foothill Pkwy Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	306	61	1	368	0	0	4	0	4	1	153	0	0	154	9	0	0	0	9	535
7:45	0	301	117	0	418	0	3	4	0	7	6	178	1	1	186	19	2	1	0	22	633
8:00	1	268	140	1	410	1	2	3	0	6	6	215	0	0	221	41	2	6	0	49	686
8:15	0	234	70	0	304	2	2	3	0	7	3	166	1	0	170	35	0	3	0	38	519
Total Volume	1	1109	388	2	1500	3	7	14	0	24	16	712	2	1	731	104	4	10	0	118	2373
% App Total	0.1%	73.9%	25.9%	0.1%		12.5%	29.2%	58.3%	0.0%		2.2%	97.4%	0.3%	0.1%		88.1%	3.4%	8.5%	0.0%		
PHF	.250	.906	.693	.500	.897	.375	.583	.875	.000	.857	.667	.828	.500	.250	.827	.634	.500	.417	.000	.602	.865

PM PEAK HOUR	Latrobe Rd Southbound					Golden Foothill Pkwy Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	3	178	33	0	214	0	1	1	0	2	0	327	2	0	329	122	1	3	0	126	671
16:30	3	205	29	0	237	0	0	0	0	0	0	230	2	0	232	93	1	3	0	97	566
16:45	4	161	34	0	199	0	1	2	0	3	3	295	3	0	301	117	1	5	0	123	626
17:00	5	158	42	0	205	1	2	4	0	7	3	223	1	1	228	76	1	4	0	81	521
Total Volume	15	702	138	0	855	1	4	7	0	12	6	1075	8	1	1090	408	4	15	0	427	2384
% App Total	1.8%	82.1%	16.1%	0.0%		8.3%	33.3%	58.3%	0.0%		0.6%	98.6%	0.7%	0.1%		95.6%	0.9%	3.5%	0.0%		
PHF	.750	.856	.821	.000	.902	.250	.500	.438	.000	.429	.500	.822	.667	.250	.828	.836	1.000	.750	.000	.847	.888

25-1836 D.3 Page 3430 of 4853

Analysis ID: 1473003
Analysis: Creekside #8 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Suncaste (Eastbound)		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
7:30am	164	9	4	0	2	310	489	0.2428
7:45am	260	23	7	0	8	227	525	0.2607
8:00am	242	42	11	0	11	256	562	0.279
8:15am	166	36	7	0	22	207	438	0.2175
Hourly Tot	832	110	29	0	43	1000	2014	1
Hourly Tot	0.8832	0.1168	1	0	0.0412	0.9588		
PHF	0.8	0.65	0.66	0	0.49	0.81		

All Days, Peak PM

	Latrobe north (Southb		Suncaste (Eastbound)		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
2:30pm	292	18	25	14	7	172	528	0.2359
2:45pm	338	24	15	13	11	207	608	0.2717
3:00pm	160	25	25	9	11	277	507	0.2265
3:15pm	241	24	35	10	8	277	595	0.2659
Hourly Tot	1031	91	100	46	37	933	2238	1
Hourly Tot	0.9189	0.0811	0.6849	0.3151	0.0381	0.9619		
PHF	0.76	0.91	0.71	0.82	0.84	0.84		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Suncaste (Eastbound)		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
7:30am	184	13	2	0	4	365	568	0.2397
7:45am	299	34	9	0	9	275	626	0.2641
8:00am	254	55	10	0	16	306	641	0.2705
8:15am	209	46	9	0	31	240	535	0.2257
Hourly Tot	946	148	30	0	60	1186	2370	1
Hourly Tot	0.8647	0.1353	1	0	0.0482	0.9518		
PHF	0.79	0.67	0.75	0	0.48	0.81		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Suncaste (Eastbound)		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
2:30pm	347	21	28	20	12	188	616	0.2259
2:45pm	406	29	19	18	15	257	744	0.2728
3:00pm	245	28	30	11	12	346	672	0.2464
3:15pm	261	31	42	12	9	340	695	0.2549
Hourly Tot	1259	109	119	61	48	1131	2727	1
Hourly Tot	0.9203	0.0797	0.6611	0.3389	0.0407	0.9593		
PHF	0.78	0.88	0.71	0.76	0.8	0.82		

#8

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-004
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Suncast Ln Westbound					Latrobe Rd Northbound					Suncast Ln Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	102	5	0	107	0	0	0	0	0	1	89	0	0	90	2	0	0	0	2	199	0
6:15	0	108	5	0	113	0	0	0	0	0	0	90	0	0	90	2	0	1	0	3	206	0
6:30	0	132	9	0	141	0	0	0	0	0	1	122	0	0	123	1	0	0	0	1	265	0
6:45	0	195	17	0	212	0	0	0	0	0	1	109	0	0	110	2	0	0	0	2	324	0
Total	0	537	36	0	573	0	0	0	0	0	3	410	0	0	413	7	0	1	0	8	994	0
7:00	0	176	16	0	192	0	0	0	0	0	1	119	0	0	120	5	0	1	0	6	318	0
7:15	0	211	20	0	231	0	0	0	0	0	3	136	0	0	139	2	0	1	0	3	373	0
7:30	0	255	24	0	279	0	0	0	0	0	6	147	0	0	153	2	0	0	0	2	434	0
7:45	0	294	31	0	325	0	0	0	0	0	8	191	0	0	199	7	0	0	0	7	531	0
Total	0	936	91	0	1027	0	0	0	0	0	18	593	0	0	611	16	0	2	0	18	1656	0
8:00	0	207	41	0	248	0	0	0	0	0	14	205	0	1	220	16	0	1	0	17	485	1
8:15	0	223	22	0	245	0	0	0	0	0	5	133	0	0	138	10	0	4	0	14	397	0
8:30	0	180	25	0	205	0	0	0	0	0	3	144	0	0	147	5	0	1	0	6	358	0
8:45	0	174	41	0	215	0	0	0	0	0	3	129	0	0	132	10	0	0	0	10	357	0
Total	0	784	129	0	913	0	0	0	0	0	25	611	0	1	637	41	0	6	0	47	1597	1
16:00	0	140	23	0	163	0	0	0	0	0	5	270	0	0	275	43	0	10	0	53	491	0
16:15	0	151	17	0	168	0	0	0	0	0	0	180	0	0	180	29	0	4	0	33	381	0
16:30	0	167	21	0	188	0	0	0	0	0	0	292	0	0	292	45	0	3	0	48	528	0
16:45	0	185	16	0	201	0	0	0	0	0	2	213	0	0	215	30	0	6	0	36	452	0
Total	0	643	77	0	720	0	0	0	0	0	7	955	0	0	962	147	0	23	0	170	1852	0
17:00	0	169	12	0	181	0	0	0	0	0	3	234	0	0	237	71	0	6	0	77	495	0
17:15	0	156	14	0	170	0	0	0	0	0	3	182	0	0	185	35	0	6	0	41	396	0
17:30	0	186	9	0	195	0	0	0	0	0	0	193	0	1	194	26	0	4	0	30	419	1
17:45	0	175	11	0	186	0	0	0	0	0	0	179	0	0	179	29	0	4	0	33	398	0
Total	0	686	46	0	732	0	0	0	0	0	6	788	0	1	795	161	0	20	0	181	1708	1
18:00	0	152	19	0	171	0	0	0	0	0	1	205	0	0	206	23	0	3	0	26	403	0
18:15	0	139	13	0	152	0	0	0	0	0	1	106	0	0	107	10	0	2	0	12	271	0
18:30	0	116	9	0	125	0	0	0	0	0	2	101	0	0	103	10	0	1	0	11	239	0
18:45	0	119	12	0	131	0	0	0	0	0	0	75	0	0	75	12	0	1	0	13	219	0
Total	0	526	53	0	579	0	0	0	0	0	4	487	0	0	491	55	0	7	0	62	1132	0
Grand Total	0	4112	432	0	4544	0	0	0	0	0	63	3844	0	2	3909	427	0	59	0	486	8939	2
Apprch %	0.0%	90.5%	9.5%	0.0%		0.0%	0.0%	0.0%	0.0%		1.6%	98.3%	0.0%	0.1%		87.9%	0.0%	12.1%	0.0%			
Total %	0.0%	46.0%	4.8%	0.0%	50.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	43.0%	0.0%	0.0%	43.7%	4.8%	0.0%	0.7%	0.0%	5.4%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Suncast Ln Westbound					Latrobe Rd Northbound					Suncast Ln Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	255	24	0	279	0	0	0	0	0	6	147	0	0	153	2	0	0	0	2	434
7:45	0	294	31	0	325	0	0	0	0	0	8	191	0	0	199	7	0	0	0	7	531
8:00	0	207	41	0	248	0	0	0	0	0	14	205	0	1	220	16	0	1	0	17	485
8:15	0	223	22	0	245	0	0	0	0	0	5	133	0	0	138	10	0	4	0	14	397
Total Volume	0	979	118	0	1097	0	0	0	0	0	33	676	0	1	710	35	0	5	0	40	1847
% App Total	0.0%	89.2%	10.8%	0.0%		0.0%	0.0%	0.0%	0.0%		4.6%	95.2%	0.0%	0.1%		87.5%	0.0%	12.5%	0.0%		
PHF	.000	.832	.720	.000	.844	.000	.000	.000	.000	.000	.589	.824	.000	.250	.807	.547	.000	.313	.000	.588	.870

PM PEAK HOUR	Latrobe Rd Southbound					Suncast Ln Westbound					Latrobe Rd Northbound					Suncast Ln Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	167	21	0	188	0	0	0	0	0	0	292	0	0	292	45	0	3	0	48	528
16:45	0	185	16	0	201	0	0	0	0	0	2	213	0	0	215	30	0	6	0	36	452
17:00	0	169	12	0	181	0	0	0	0	0	3	234	0	0	237	71	0	6	0	77	495
17:15	0	156	14	0	170	0	0	0	0	0	3	182	0	0	185	35	0	6	0	41	396
Total Volume	0	677	63	0	740	0	0	0	0	0	8	921	0	0	929	181	0	21	0	202	1871
% App Total	0.0%	91.5%	8.5%	0.0%		0.0%	0.0%	0.0%	0.0%		0.9%	99.1%	0.0%	0.0%		89.6%	0.0%	10.4%	0.0%		
PHF	.000	.915	.750	.000	.920	.000	.000	.000	.000	.000	.667	.789	.000	.000	.795	.637	.000	.875	.000	.656	.886

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Analysis ID: 1475494
Analysis: Creekside #9 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			Clubview (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	42	25	95	0	5	179	3	116	0
7:45am	48	39	158	0	13	90	9	144	2
8:00am	46	54	130	1	24	51	8	124	3
8:15am	35	61	101	0	24	41	3	107	0
Hourly Tot	171	179	484	1	66	361	23	491	5
Hourly Tot	0.205	0.2146	0.5803	0.0023	0.1542	0.8435	0.0443	0.9461	0.0096
PHF	0.89	0.73	0.77	0.25	0.69	0.5	0.64	0.85	0.42

All Days, Peak PM

	Latrobe north (Southbound)			Clubview (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	52	109	139	0	17	32	2	109	0
2:45pm	54	100	199	2	19	28	4	111	3
3:00pm	55	78	106	3	14	26	4	124	5
3:15pm	58	75	72	4	6	28	10	123	4
Hourly Tot	219	362	516	9	56	114	20	467	12
Hourly Tot	0.1996	0.33	0.4704	0.0503	0.3128	0.6369	0.0401	0.9359	0.024
PHF	0.94	0.83	0.65	0.56	0.74	0.89	0.5	0.94	0.6

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			Clubview (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	40	23	122	1	8	143	6	139	0
7:45am	47	36	163	0	19	98	16	183	2
8:00am	55	54	159	0	35	48	14	159	4
8:15am	36	60	119	0	32	46	5	124	1
Hourly Tot	178	173	563	1	94	335	41	605	7
Hourly Tot	0.1947	0.1893	0.616	0.0023	0.2186	0.7791	0.0628	0.9265	0.0107
PHF	0.81	0.72	0.86	0.25	0.67	0.59	0.64	0.83	0.44

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			Clubview (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	56	120	182	1	22	33	3	113	0
2:45pm	62	114	192	2	26	24	6	129	2
3:00pm	63	78	131	4	20	22	8	153	5
3:15pm	67	73	98	6	9	24	12	150	4
Hourly Tot	248	385	603	13	77	103	29	545	11
Hourly Tot	0.2006	0.3115	0.4879	0.0674	0.399	0.5337	0.0496	0.9316	0.0188
PHF	0.93	0.8	0.79	0.54	0.74	0.78	0.6	0.89	0.55

GF (south) (Eastbound)

Left	Thru	Right	Total	Total %
25	7	0	497	0.2399
50	8	0	561	0.2708
90	9	1	541	0.2611
92	7	2	473	0.2283
257	31	3	2072	1
0.8832	0.1065	0.0103		
0.7	0.86	0.38		

GF (south) (Eastbound)

Left	Thru	Right	Total	Total %
53	14	2	529	0.2319
104	20	6	650	0.285
128	26	6	575	0.2521
121	19	7	527	0.231
406	79	21	2281	1
0.8024	0.1561	0.0415		
0.79	0.76	0.75		

GF (south) (Eastbound)

Left	Thru	Right	Total	Total %
26	9	0	517	0.2193
62	13	0	639	0.2711
110	11	2	651	0.2762
116	8	3	550	0.2333
314	41	5	2357	1
0.8722	0.1139	0.0139		
0.68	0.79	0.42		

GF (south) (Eastbound)

Left	Thru	Right	Total	Total %
62	14	2	608	0.2309
128	24	8	717	0.2723
154	35	8	681	0.2586
150	26	8	627	0.2381
494	99	26	2633	1
0.7981	0.1599	0.042		
0.8	0.71	0.81		

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-003
Date : 11/16/2017

#9

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Golden Foothill Pkwy /Clubview Dr Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy /Clubview Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	6	46	64	0	116	3	0	23	0	26	3	50	1	0	54	19	4	0	0	23	219	0
6:15	9	46	33	0	88	1	1	30	0	32	2	53	2	0	57	7	0	0	0	7	184	0
6:30	14	64	59	0	137	2	3	36	0	41	2	62	1	0	65	11	0	0	0	11	254	0
6:45	27	82	64	0	173	1	6	50	0	57	4	60	2	0	66	5	3	0	0	8	304	0
Total	56	238	220	0	514	7	10	139	0	156	11	225	6	0	242	42	7	0	0	49	961	0
7:00	30	65	81	0	176	1	2	32	0	35	6	63	1	0	70	13	1	1	0	15	296	0
7:15	34	75	71	0	180	2	4	52	0	58	2	78	1	0	81	11	0	3	0	14	333	0
7:30	56	105	107	0	268	5	11	47	0	63	5	81	2	0	88	16	1	1	0	18	437	0
7:45	82	104	81	0	267	5	14	104	0	123	7	83	0	0	90	10	5	1	0	16	496	0
Total	202	349	340	0	891	13	31	235	0	279	20	305	4	0	329	50	7	6	0	63	1562	0
8:00	41	98	119	0	258	4	18	105	0	127	9	93	0	0	102	21	5	0	0	26	513	0
8:15	29	79	100	0	208	2	13	43	0	58	4	75	2	0	81	33	6	0	0	39	386	0
8:30	23	81	87	0	191	2	9	46	1	58	7	55	1	0	63	30	4	1	0	35	347	1
8:45	21	81	71	1	174	3	10	58	0	71	4	63	0	0	67	13	4	5	0	22	334	1
Total	114	339	377	1	831	11	50	252	1	314	24	286	3	0	313	97	19	6	0	122	1580	2
16:00	48	69	32	0	149	2	6	35	0	43	4	110	3	0	117	104	6	3	0	113	422	0
16:15	31	68	51	0	150	0	9	27	1	37	5	87	4	1	97	74	12	1	0	87	371	2
16:30	45	78	34	0	157	1	4	24	0	29	0	135	7	0	142	130	14	5	0	149	477	0
16:45	84	79	34	0	197	2	11	25	0	38	2	112	0	0	114	72	8	3	0	83	432	0
Total	208	294	151	0	653	5	30	111	1	147	11	444	14	1	470	380	40	12	0	432	1702	2
17:00	55	79	29	0	163	1	6	32	0	39	3	92	6	0	101	116	28	2	0	146	449	0
17:15	65	83	26	0	174	0	6	29	0	35	3	93	8	0	104	58	6	2	0	66	379	0
17:30	59	91	29	0	179	0	6	23	0	29	4	85	1	0	90	78	16	0	0	94	392	0
17:45	43	98	46	0	187	0	9	36	0	45	2	89	4	0	95	58	13	4	0	75	402	0
Total	222	351	130	0	703	1	27	120	0	148	12	359	19	0	390	310	63	8	0	381	1622	0
18:00	44	67	29	0	140	0	4	37	0	41	1	94	2	0	97	77	5	4	0	86	364	0
18:15	57	73	29	0	159	0	2	15	0	17	1	59	2	0	62	33	4	1	0	38	276	0
18:30	46	58	18	0	122	1	1	23	0	25	0	42	2	0	44	36	13	1	0	50	241	0
18:45	46	54	20	0	120	2	5	14	0	21	2	26	2	0	30	34	8	1	0	43	214	0
Total	193	252	96	0	541	3	12	89	0	104	4	221	8	0	233	180	30	7	0	217	1095	0
Grand Total	995	1823	1314	1	4133	40	160	946	2	1148	82	1840	54	1	1977	1059	166	39	0	1264	8522	4
Apprch %	24.1%	44.1%	31.8%	0.0%		3.5%	13.9%	82.4%	0.2%		4.1%	93.1%	2.7%	0.1%		83.8%	13.1%	3.1%	0.0%			
Total %	11.7%	21.4%	15.4%	0.0%	48.5%	0.5%	1.9%	11.1%	0.0%	13.5%	1.0%	21.6%	0.6%	0.0%	23.2%	12.4%	1.9%	0.5%	0.0%	14.8%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Golden Foothill Pkwy /Clubview Dr Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy /Clubview Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	56	105	107	0	268	5	11	47	0	63	5	81	2	0	88	16	1	1	0	18	437
7:45	82	104	81	0	267	5	14	104	0	123	7	83	0	0	90	10	5	1	0	16	496
8:00	41	98	119	0	258	4	18	105	0	127	9	93	0	0	102	21	5	0	0	26	513
8:15	29	79	100	0	208	2	13	43	0	58	4	75	2	0	81	33	6	0	0	39	386
Total Volume	208	386	407	0	1001	16	56	299	0	371	25	332	4	0	361	80	17	2	0	99	1832
% App Total	20.8%	38.6%	40.7%	0.0%		4.3%	15.1%	80.6%	0.0%		6.9%	92.0%	1.1%	0.0%		80.8%	17.2%	2.0%	0.0%		
PHF	.634	.919	.855	.000	.934	.800	.778	.712	.000	.730	.694	.892	.500	.000	.885	.606	.708	.500	.000	.635	.893

PM PEAK HOUR	Latrobe Rd Southbound					Golden Foothill Pkwy /Clubview Dr Westbound					Latrobe Rd Northbound					Golden Foothill Pkwy /Clubview Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	45	78	34	0	157	1	4	24	0	29	0	135	7	0	142	130	14	5	0	149	477
16:45	84	79	34	0	197	2	11	25	0	38	2	112	0	0	114	72	8	3	0	83	432
17:00	55	79	29	0	163	1	6	32	0	39	3	92	6	0	101	116	28	2	0	146	449
17:15	65	83	26	0	174	0	6	29	0	35	3	93	8	0	104	58	6	2	0	66	379
Total Volume	249	319	123	0	691	4	27	110	0	141	8	432	21	0	461	376	56	12	0	444	1737
% App Total	36.0%	46.2%	17.8%	0.0%		2.8%	19.1%	78.0%	0.0%		1.7%	93.7%	4.6%	0.0%		84.7%	12.6%	2.7%	0.0%		
PHF	.741	.961	.904	.000	.877	.500	.614	.859	.000	.904	.667	.800	.656	.000	.812	.723	.500	.600	.000	.745	.910

25-1836 D.3 Page 3439 of 4853

Analysis ID: 1475496
Analysis: Creekside #10 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Investment (Eastboun		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
7:45am	47	0	47	2	6	123	225	0.2679
8:00am	68	0	46	8	6	97	225	0.2679
8:15am	71	0	38	12	3	74	198	0.2357
8:30am	66	0	16	8	2	100	192	0.2286
Hourly Tot	252	0	147	30	17	394	840	1
Hourly Tot	1	0	0.8305	0.1695	0.0414	0.9586		
PHF	0.89	0	0.78	0.62	0.71	0.8		

All Days, Peak PM

	Latrobe north (Southb		Investment (Eastboun		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
2:30pm	119	0	27	12	7	88	253	0.2336
2:45pm	117	0	45	9	11	76	258	0.2382
3:00pm	97	0	96	14	7	62	276	0.2548
3:15pm	107	0	102	19	3	65	296	0.2733
Hourly Tot	440	0	270	54	28	291	1083	1
Hourly Tot	1	0	0.8333	0.1667	0.0878	0.9122		
PHF	0.92	0	0.66	0.71	0.64	0.83		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Investment (Eastboun		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
7:45am	45	0	64	1	9	158	277	0.2809
8:00am	67	0	65	11	9	119	271	0.2748
8:15am	71	0	49	16	6	80	222	0.2252
8:30am	71	0	24	9	4	108	216	0.2191
Hourly Tot	254	0	202	37	28	465	986	1
Hourly Tot	1	0	0.8452	0.1548	0.0568	0.9432		
PHF	0.89	0	0.78	0.58	0.78	0.74		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Investment (Eastboun		Latrobe south (Northbound)			
	Thru	Right	Left	Right	Left	Thru	Total	Total %
2:45pm	135	0	48	11	14	84	292	0.2345
3:00pm	99	0	128	20	9	72	328	0.2635
3:15pm	108	0	132	26	4	71	341	0.2739
3:30pm	105	0	72	20	0	87	284	0.2281
Hourly Tot	447	0	380	77	27	314	1245	1
Hourly Tot	1	0	0.8315	0.1685	0.0792	0.9208		
PHF	0.83	0	0.72	0.74	0.48	0.9		

#10

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-002
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Investment Blvd Westbound					Latrobe Rd Northbound					Investment Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	17	22	0	39	0	0	0	0	0	2	27	0	0	29	23	0	0	0	23	91	0
6:15	0	23	32	0	55	0	0	0	0	0	1	61	0	0	62	5	0	0	0	5	122	0
6:30	0	27	30	0	57	0	0	0	0	0	2	52	0	0	54	0	0	0	0	0	111	0
6:45	0	23	50	0	73	0	0	0	0	0	5	62	0	0	67	0	0	0	0	0	140	0
Total	0	90	134	0	224	0	0	0	0	0	10	202	0	0	212	28	0	0	0	28	464	0
7:00	0	37	36	0	73	0	0	0	0	0	1	68	0	0	69	3	0	0	0	3	145	0
7:15	0	37	40	0	77	0	0	0	0	0	2	70	0	0	72	3	0	0	0	3	152	0
7:30	0	30	87	0	117	0	0	0	0	0	2	85	0	0	87	5	0	1	0	6	210	0
7:45	0	33	75	0	108	0	0	0	0	0	6	81	0	0	87	8	0	0	0	8	203	0
Total	0	137	238	0	375	0	0	0	0	0	11	304	0	0	315	19	0	1	0	20	710	0
8:00	0	38	63	0	101	0	0	0	0	0	5	74	0	0	79	8	0	0	0	8	188	0
8:15	0	35	48	0	83	0	0	0	0	0	5	65	0	0	70	3	0	1	0	4	157	0
8:30	0	32	50	0	82	0	0	0	0	0	1	56	0	0	57	4	0	1	0	5	144	0
8:45	0	35	53	0	88	0	0	0	0	0	3	51	0	0	54	4	0	1	0	5	147	0
Total	0	140	214	0	354	0	0	0	0	0	14	246	0	0	260	19	0	3	0	22	636	0
16:00	0	74	6	0	80	0	0	0	0	0	1	36	0	0	37	71	0	5	0	76	193	0
16:15	0	65	3	0	68	0	0	0	0	0	0	40	0	0	40	39	0	0	0	39	147	0
16:30	0	76	8	0	84	0	0	0	0	0	2	49	0	0	51	112	0	7	0	119	254	0
16:45	0	75	7	0	82	0	0	0	0	0	1	40	0	0	41	55	0	3	0	58	181	0
Total	0	290	24	0	314	0	0	0	0	0	4	165	0	0	169	277	0	15	0	292	775	0
17:00	0	73	8	0	81	0	0	0	0	0	1	43	0	0	44	58	0	7	0	65	190	0
17:15	0	69	15	0	84	0	0	0	0	0	1	38	0	0	39	56	0	1	0	57	180	0
17:30	0	69	21	0	90	0	0	0	0	0	0	50	0	0	50	49	0	1	0	50	190	0
17:45	0	68	32	0	100	0	0	0	0	0	0	51	0	0	51	25	0	5	0	30	181	0
Total	0	279	76	0	355	0	0	0	0	0	2	182	0	0	184	188	0	14	0	202	741	0
18:00	0	60	9	0	69	0	0	0	0	0	0	39	0	0	39	58	0	4	0	62	170	0
18:15	0	67	8	0	75	0	0	0	0	0	0	35	0	0	35	15	0	0	0	15	125	0
18:30	0	53	5	0	58	0	0	0	0	0	0	24	0	0	24	16	0	1	0	17	99	0
18:45	0	51	6	0	57	0	0	0	0	0	1	26	0	0	27	5	0	1	0	6	90	0
Total	0	231	28	0	259	0	0	0	0	0	1	124	0	0	125	94	0	6	0	100	484	0
Grand Total	0	1167	714	0	1881	0	0	0	0	0	42	1223	0	0	1265	625	0	39	0	664	3810	0
Apprch %	0.0%	62.0%	38.0%	0.0%		0.0%	0.0%	0.0%	0.0%		3.3%	96.7%	0.0%	0.0%		94.1%	0.0%	5.9%	0.0%			
Total %	0.0%	30.6%	18.7%	0.0%	49.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	32.1%	0.0%	0.0%	33.2%	16.4%	0.0%	1.0%	0.0%	17.4%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Investment Blvd Westbound					Latrobe Rd Northbound					Investment Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	30	87	0	117	0	0	0	0	0	2	85	0	0	87	5	0	1	0	6	210
7:45	0	33	75	0	108	0	0	0	0	0	6	81	0	0	87	8	0	0	0	8	203
8:00	0	38	63	0	101	0	0	0	0	0	5	74	0	0	79	8	0	0	0	8	188
8:15	0	35	48	0	83	0	0	0	0	0	5	65	0	0	70	3	0	1	0	4	157
Total Volume	0	136	273	0	409	0	0	0	0	0	18	305	0	0	323	24	0	2	0	26	758
% App Total	0.0%	33.3%	66.7%	0.0%		0.0%	0.0%	0.0%	0.0%		5.6%	94.4%	0.0%	0.0%		92.3%	0.0%	7.7%	0.0%		
PHF	.000	.895	.784	.000	.874	.000	.000	.000	.000	.000	.750	.897	.000	.000	.928	.750	.000	.500	.000	.813	.902

PM PEAK HOUR	Latrobe Rd Southbound					Investment Blvd Westbound					Latrobe Rd Northbound					Investment Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	76	8	0	84	0	0	0	0	0	2	49	0	0	51	112	0	7	0	119	254
16:45	0	75	7	0	82	0	0	0	0	0	1	40	0	0	41	55	0	3	0	58	181
17:00	0	73	8	0	81	0	0	0	0	0	1	43	0	0	44	58	0	7	0	65	190
17:15	0	69	15	0	84	0	0	0	0	0	1	38	0	0	39	56	0	1	0	57	180
Total Volume	0	293	38	0	331	0	0	0	0	0	5	170	0	0	175	281	0	18	0	299	805
% App Total	0.0%	88.5%	11.5%	0.0%		0.0%	0.0%	0.0%	0.0%		2.9%	97.1%	0.0%	0.0%		94.0%	0.0%	6.0%	0.0%		
PHF	.000	.964	.633	.000	.985	.000	.000	.000	.000	.000	.625	.867	.000	.000	.858	.627	.000	.643	.000	.628	.792

25-1836 D.3 Page 3443 of 4853

Analysis ID: 1473012
Analysis: Creekside #11 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Avanti (Westbound)		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	0	66	0	4	88	0	158	0.2293
11:15am	0	77	0	7	92	0	176	0.2554
11:30am	0	98	0	2	85	0	185	0.2685
11:45am	0	93	0	4	73	0	170	0.2467
Hourly Tot	0	334	0	17	338	0	689	1
Hourly Tot	0	1	0	1	1	0		
PHF	0	0.85	0	0.61	0.92	0		

All Days, Peak PM

	Latrobe north (Southb		Avanti (Westbound)		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
3:45pm	2	129	0	3	82	0	216	0.2477
4:00pm	0	124	0	9	86	0	219	0.2511
4:15pm	1	107	0	16	94	0	218	0.25
4:30pm	3	101	0	17	98	0	219	0.2511
Hourly Tot	6	461	0	45	360	0	872	1
Hourly Tot	0.0128	0.9872	0	1	1	0		
PHF	0.5	0.89	0	0.66	0.92	0		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Avanti (Westbound)		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
8:00am	0	64	0	5	122	0	191	0.252
8:15am	0	72	0	5	82	0	159	0.2098
8:30am	0	75	0	16	103	0	194	0.2559
8:45am	0	84	0	13	117	0	214	0.2823
Hourly Tot	0	295	0	39	424	0	758	1
Hourly Tot	0	1	0	1	1	0		
PHF	0	0.88	0	0.61	0.87	0		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Avanti (Westbound)		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
3:45pm	0	131	0	2	88	0	221	0.2415
4:00pm	0	137	0	10	85	0	232	0.2536
4:15pm	2	111	0	19	102	0	234	0.2557
4:30pm	5	100	0	18	105	0	228	0.2492
Hourly Tot	7	479	0	49	380	0	915	1
Hourly Tot	0.0144	0.9856	0	1	1	0		
PHF	0.35	0.87	0	0.64	0.9	0		

Analysis ID: 1475498
Analysis: Creekside #12 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Royal Oaks (Westbour		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	17	47	1	14	72	11	162	0.2411
11:15am	17	60	5	15	73	5	175	0.2604
11:30am	22	73	2	15	64	0	176	0.2619
11:45am	26	64	0	14	55	0	159	0.2366
Hourly Tot	82	244	8	58	264	16	672	1
Hourly Tot	0.2515	0.7485	0.1212	0.8788	0.9429	0.0571		
PHF	0.79	0.84	0.4	0.97	0.9	0.36		

All Days, Peak PM

	Latrobe north (Southb		Royal Oaks (Westbour		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
2:15pm	22	79	3	21	67	12	204	0.2503
2:30pm	21	104	6	14	77	4	226	0.2773
2:45pm	22	102	8	11	68	0	211	0.2589
3:00pm	27	78	6	16	47	0	174	0.2135
Hourly Tot	92	363	23	62	259	16	815	1
Hourly Tot	0.2022	0.7978	0.2706	0.7294	0.9418	0.0582		
PHF	0.85	0.87	0.72	0.74	0.84	0.33		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Royal Oaks (Westbour		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
7:30am	5	27	0	36	99	7	174	0.2403
7:45am	5	35	0	35	127	18	220	0.3039
8:00am	2	61	0	20	98	7	188	0.2597
8:15am	2	65	0	12	63	0	142	0.1961
Hourly Tot	14	188	0	103	387	32	724	1
Hourly Tot	0.0693	0.9307	0	1	0.9236	0.0764		
PHF	0.7	0.72	0	0.72	0.76	0.44		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Royal Oaks (Westbour		Latrobe south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
2:15pm	22	82	4	24	68	12	212	0.234
2:30pm	22	122	7	15	91	4	261	0.2881
2:45pm	23	118	10	14	79	0	244	0.2693
3:00pm	27	85	5	16	56	0	189	0.2086
Hourly Tot	94	407	26	69	294	16	906	1
Hourly Tot	0.1876	0.8124	0.2737	0.7263	0.9484	0.0516		
PHF	0.87	0.83	0.65	0.72	0.81	0.33		

#12

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-001
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Latrobe Rd Southbound					Royal Oaks Dr Westbound					Latrobe Rd Northbound					Royal Oaks Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	17	0	0	17	0	0	4	0	4	0	24	0	0	24	0	0	0	0	0	45	0
6:15	1	20	0	0	21	0	0	9	0	9	0	46	0	0	46	0	0	0	0	0	76	0
6:30	3	27	0	0	30	0	0	12	0	12	0	48	0	0	48	0	0	0	0	0	90	0
6:45	8	23	0	0	31	2	0	8	0	10	0	49	2	0	51	0	0	0	0	0	92	0
Total	12	87	0	0	99	2	0	33	0	35	0	167	2	0	169	0	0	0	0	0	303	0
7:00	3	26	0	0	29	0	0	15	0	15	0	58	0	0	58	0	0	0	0	0	102	0
7:15	6	36	0	0	42	1	0	12	0	13	0	57	1	0	58	0	0	0	0	0	113	0
7:30	7	21	0	0	28	0	0	21	0	21	0	62	2	0	64	0	0	0	0	0	113	0
7:45	15	23	0	0	38	0	0	19	0	19	0	69	3	0	72	0	0	0	0	0	129	0
Total	31	106	0	0	137	1	0	67	0	68	0	246	6	0	252	0	0	0	0	0	457	0
8:00	13	27	0	0	40	2	0	14	0	16	0	69	0	0	69	0	0	0	0	0	125	0
8:15	4	29	0	0	33	1	0	9	0	10	0	58	0	0	58	0	0	0	0	0	101	0
8:30	5	25	0	0	30	0	0	11	0	11	0	42	0	0	42	0	0	0	0	0	83	0
8:45	6	35	0	0	41	0	0	11	0	11	0	45	1	0	46	0	0	0	0	0	98	0
Total	28	116	0	0	144	3	0	45	0	48	0	214	1	0	215	0	0	0	0	0	407	0
16:00	8	63	0	0	71	0	0	6	0	6	0	26	1	0	27	0	0	0	0	0	104	0
16:15	9	64	0	0	73	0	0	5	0	5	0	29	0	0	29	0	0	0	0	0	107	0
16:30	9	67	0	0	76	1	0	4	0	5	0	51	0	0	51	0	0	0	0	0	132	0
16:45	10	76	0	0	86	0	0	5	0	5	0	38	2	0	40	0	0	0	0	0	131	0
Total	36	270	0	0	306	1	0	20	0	21	0	144	3	0	147	0	0	0	0	0	474	0
17:00	11	68	0	0	79	0	0	7	0	7	0	31	0	0	31	0	0	0	0	0	117	0
17:15	15	56	0	0	71	0	0	5	0	5	0	34	0	0	34	0	0	0	0	0	110	0
17:30	8	68	0	0	76	0	0	6	0	6	0	43	1	0	44	0	0	0	0	0	126	0
17:45	23	52	0	0	75	2	0	3	0	5	0	50	1	0	51	0	0	0	0	0	131	0
Total	57	244	0	0	301	2	0	21	0	23	0	158	2	0	160	0	0	0	0	0	484	0
18:00	15	53	0	0	68	1	0	7	0	8	0	31	0	0	31	0	0	0	0	0	107	0
18:15	9	56	0	0	65	0	0	5	0	5	0	25	1	0	26	0	0	0	0	0	96	0
18:30	6	51	0	0	57	0	0	5	0	5	0	19	0	0	19	0	0	0	0	0	81	0
18:45	11	41	0	0	52	1	0	7	0	8	0	19	0	0	19	0	0	0	0	0	79	0
Total	41	201	0	0	242	2	0	24	0	26	0	94	1	0	95	0	0	0	0	0	363	0
Grand Total	205	1024	0	0	1229	11	0	210	0	221	0	1023	15	0	1038	0	0	0	0	0	2488	0
Apprch %	16.7%	83.3%	0.0%	0.0%		5.0%	0.0%	95.0%	0.0%		0.0%	98.6%	1.4%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	8.2%	41.2%	0.0%	0.0%	49.4%	0.4%	0.0%	8.4%	0.0%	8.9%	0.0%	41.1%	0.6%	0.0%	41.7%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

AM PEAK HOUR	Latrobe Rd Southbound					Royal Oaks Dr Westbound					Latrobe Rd Northbound					Royal Oaks Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	6	36	0	0	42	1	0	12	0	13	0	57	1	0	58	0	0	0	0	0	113
7:30	7	21	0	0	28	0	0	21	0	21	0	62	2	0	64	0	0	0	0	0	113
7:45	15	23	0	0	38	0	0	19	0	19	0	69	3	0	72	0	0	0	0	0	129
8:00	13	27	0	0	40	2	0	14	0	16	0	69	0	0	69	0	0	0	0	0	125
Total Volume	41	107	0	0	148	3	0	66	0	69	0	257	6	0	263	0	0	0	0	0	480
% App Total	27.7%	72.3%	0.0%	0.0%		4.3%	0.0%	95.7%	0.0%		0.0%	97.7%	2.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.683	.743	.000	.000	.881	.375	.000	.786	.000	.821	.000	.931	.500	.000	.913	.000	.000	.000	.000	.000	.930

PM PEAK HOUR	Latrobe Rd Southbound					Royal Oaks Dr Westbound					Latrobe Rd Northbound					Royal Oaks Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	9	67	0	0	76	1	0	4	0	5	0	51	0	0	51	0	0	0	0	0	132
16:45	10	76	0	0	86	0	0	5	0	5	0	38	2	0	40	0	0	0	0	0	131
17:00	11	68	0	0	79	0	0	7	0	7	0	31	0	0	31	0	0	0	0	0	117
17:15	15	56	0	0	71	0	0	5	0	5	0	34	0	0	34	0	0	0	0	0	110
Total Volume	45	267	0	0	312	1	0	21	0	22	0	154	2	0	156	0	0	0	0	0	490
% App Total	14.4%	85.6%	0.0%	0.0%		4.5%	0.0%	95.5%	0.0%		0.0%	98.7%	1.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.750	.878	.000	.000	.907	.250	.000	.750	.000	.786	.000	.755	.250	.000	.765	.000	.000	.000	.000	.000	.928

Analysis ID: 1473014
Analysis: #13 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-13
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	GF west (Eastbound)		GF east (Westbound)		RJM (Northbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
7:45am	26	10	238	27	2	33	336	0.294
8:00am	30	20	203	30	4	63	350	0.3062
8:15am	23	9	143	21	5	62	263	0.2301
8:30am	27	2	92	17	6	50	194	0.1697
Hourly Tot	106	41	676	95	17	208	1143	1
Hourly Tot	0.7211	0.2789	0.8768	0.1232	0.0756	0.9244		
PHF	0.88	0.51	0.71	0.79	0.71	0.83		

All Days, Peak PM

	GF west (Eastbound)		GF east (Westbound)		RJM (Northbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
2:30pm	32	6	146	26	4	42	256	0.1902
2:45pm	34	7	209	40	17	99	406	0.3016
3:00pm	41	11	132	37	32	128	381	0.2831
3:15pm	41	13	85	36	22	106	303	0.2251
Hourly Tot	148	37	572	139	75	375	1346	1
Hourly Tot	0.8	0.2	0.8045	0.1955	0.1667	0.8333		
PHF	0.9	0.71	0.68	0.87	0.59	0.73		

Tues-Thurs, Peak AM

	GF west (Eastbound)		GF east (Westbound)		RJM (Northbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
7:45am	32	15	320	39	4	45	455	0.306
8:00am	32	31	257	42	6	82	450	0.3026
8:15am	28	11	177	29	8	77	330	0.2219
8:30am	34	0	129	22	7	60	252	0.1695
Hourly Tot	126	57	883	132	25	264	1487	1
Hourly Tot	0.6885	0.3115	0.87	0.13	0.0865	0.9135		
PHF	0.93	0.46	0.69	0.79	0.78	0.8		

Tues-Thurs, Peak PM

	GF west (Eastbound)		GF east (Westbound)		RJM (Northbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
2:30pm	32	8	188	37	5	51	321	0.1929
2:45pm	40	10	216	54	23	126	469	0.2819
3:00pm	48	15	164	50	46	157	480	0.2885
3:15pm	48	15	124	44	27	136	394	0.2368
Hourly Tot	168	48	692	185	101	470	1664	1
Hourly Tot	0.7778	0.2222	0.7891	0.2109	0.1769	0.8231		
PHF	0.88	0.8	0.8	0.86	0.55	0.75		

#13

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-007
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Robert J Matthews Pkwy Southbound					Golden Foothill Pkwy Westbound					Robert J Matthews Pkwy Northbound					Golden Foothill Pkwy Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	0	0	0	0	38	13	0	0	51	8	0	20	0	28	0	2	2	0	4	83	0
6:15	0	0	0	0	0	38	8	0	0	46	1	0	6	0	7	0	0	5	0	5	58	0
6:30	0	0	0	0	0	41	13	0	0	54	2	0	9	0	11	0	4	4	0	8	73	0
6:45	0	0	0	0	0	62	32	0	0	94	1	0	4	0	5	0	3	9	0	12	111	0
Total	0	0	0	0	0	179	66	0	0	245	12	0	39	0	51	0	9	20	0	29	325	0
7:00	0	0	0	0	0	59	20	0	0	79	2	0	14	0	16	0	6	3	0	9	104	0
7:15	0	0	0	0	0	78	18	0	0	96	1	0	5	0	6	0	6	15	0	21	123	0
7:30	0	0	0	0	0	87	21	0	0	108	3	0	9	0	12	0	8	8	0	16	136	0
7:45	0	0	0	0	0	92	33	0	0	125	4	0	8	0	12	0	11	17	0	28	165	0
Total	0	0	0	0	0	316	92	0	0	408	10	0	36	0	46	0	31	43	0	74	528	0
8:00	0	0	0	0	0	91	31	0	0	122	2	0	21	0	23	0	7	6	0	13	158	0
8:15	0	0	0	0	0	102	18	0	0	120	4	0	31	0	35	0	6	14	0	20	175	0
8:30	0	0	0	0	0	69	25	0	0	94	3	0	20	0	23	0	6	8	0	14	131	0
8:45	0	0	0	0	0	68	23	0	0	91	2	0	16	0	18	0	15	14	0	29	138	0
Total	0	0	0	0	0	330	97	0	0	427	11	0	88	0	99	0	34	42	0	76	602	0
16:00	0	0	0	0	0	26	15	0	0	41	18	0	108	0	126	0	12	7	0	19	186	0
16:15	0	0	0	0	0	50	14	0	0	64	13	0	75	0	88	0	10	5	0	15	167	0
16:30	0	0	0	0	0	27	11	0	0	38	19	0	108	0	127	0	38	7	0	45	210	0
16:45	0	0	0	0	0	35	17	0	0	52	17	0	69	0	86	0	15	5	0	20	158	0
Total	0	0	0	0	0	138	57	0	0	195	67	0	360	0	427	0	75	24	0	99	721	0
17:00	0	0	0	0	0	19	16	0	1	36	17	0	111	0	128	0	27	10	0	37	201	1
17:15	0	0	0	0	0	21	17	0	0	38	14	0	56	0	70	0	16	3	0	19	127	0
17:30	0	0	0	0	0	31	13	0	0	44	11	0	71	0	82	0	22	12	0	34	160	0
17:45	0	0	0	0	0	41	10	0	0	51	9	0	49	0	58	0	25	7	0	32	141	0
Total	0	0	0	0	0	112	56	0	1	169	51	0	287	0	338	0	90	32	0	122	629	1
18:00	0	0	0	0	0	25	10	0	0	35	17	0	78	0	95	0	12	4	0	16	146	0
18:15	0	0	0	0	0	18	10	0	0	28	6	0	27	0	33	0	10	3	0	13	74	0
18:30	0	0	0	0	0	14	5	0	0	19	2	0	40	0	42	0	14	1	0	15	76	0
18:45	0	0	0	0	0	20	8	0	0	28	2	0	31	0	33	0	8	6	0	14	75	0
Total	0	0	0	0	0	77	33	0	0	110	27	0	176	0	203	0	44	14	0	58	371	0
Grand Total	0	0	0	0	0	1152	401	0	1	1554	178	0	986	0	1164	0	283	175	0	458	3176	1
Apprch %	0.0%	0.0%	0.0%	0.0%		74.1%	25.8%	0.0%	0.1%		15.3%	0.0%	84.7%	0.0%		0.0%	61.8%	38.2%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	36.3%	12.6%	0.0%	0.0%	48.9%	5.6%	0.0%	31.0%	0.0%	36.6%	0.0%	8.9%	5.5%	0.0%	14.4%	100.0%	

AM PEAK HOUR	Robert J Matthews Pkwy Southbound					Golden Foothill Pkwy Westbound					Robert J Matthews Pkwy Northbound					Golden Foothill Pkwy Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	0	0	0	0	87	21	0	0	108	3	0	9	0	12	0	8	8	0	16	136
7:45	0	0	0	0	0	92	33	0	0	125	4	0	8	0	12	0	11	17	0	28	165
8:00	0	0	0	0	0	91	31	0	0	122	2	0	21	0	23	0	7	6	0	13	158
8:15	0	0	0	0	0	102	18	0	0	120	4	0	31	0	35	0	6	14	0	20	175
Total Volume	0	0	0	0	0	372	103	0	0	475	13	0	69	0	82	0	32	45	0	77	634
% App Total	0.0%	0.0%	0.0%	0.0%		78.3%	21.7%	0.0%	0.0%		15.9%	0.0%	84.1%	0.0%		0.0%	41.6%	58.4%	0.0%		
PHF	.000	.000	.000	.000	.000	.912	.780	.000	.000	.950	.813	.000	.556	.000	.586	.000	.727	.662	.000	.688	.906

PM PEAK HOUR	Robert J Matthews Pkwy Southbound					Golden Foothill Pkwy Westbound					Robert J Matthews Pkwy Northbound					Golden Foothill Pkwy Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	0	0	0	0	50	14	0	0	64	13	0	75	0	88	0	10	5	0	15	167
16:30	0	0	0	0	0	27	11	0	0	38	19	0	108	0	127	0	38	7	0	45	210
16:45	0	0	0	0	0	35	17	0	0	52	17	0	69	0	86	0	15	5	0	20	158
17:00	0	0	0	0	0	19	16	0	1	36	17	0	111	0	128	0	27	10	0	37	201
Total Volume	0	0	0	0	0	131	58	0	1	190	66	0	363	0	429	0	90	27	0	117	736
% App Total	0.0%	0.0%	0.0%	0.0%		68.9%	30.5%	0.0%	0.5%		15.4%	0.0%	84.6%	0.0%		0.0%	76.9%	23.1%	0.0%		
PHF	.000	.000	.000	.000	.000	.655	.853	.000	.250	.742	.868	.000	.818	.000	.838	.000	.592	.675	.000	.650	.876

25-1836 D.3 Page 3454 of 4853

Analysis ID: 1473016
Analysis: Creekside #14 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-14
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	RJM north (Southbound)			Investment east (Westbound)			RJM south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	15	43	1	11	1	1	0	2	10
7:45am	8	107	1	51	5	11	1	6	21
8:00am	4	108	0	67	2	15	0	14	18
8:15am	4	61	1	33	0	8	0	18	5
Hourly Tot	31	319	3	162	8	35	1	40	54
Hourly Tot	0.0878	0.9037	0.0085	0.7902	0.039	0.1707	0.0105	0.4211	0.5684
PHF	0.52	0.74	0.75	0.6	0.4	0.58	0.25	0.56	0.64

All Days, Peak PM

	RJM north (Southbound)			Investment east (Westbound)			RJM south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	6	46	2	32	0	2	0	0	2
2:45pm	7	86	3	43	0	7	3	25	9
3:00pm	5	73	5	36	0	12	4	65	17
3:15pm	8	40	2	24	0	9	3	40	12
Hourly Tot	26	245	12	135	0	30	10	130	40
Hourly Tot	0.0919	0.8657	0.0424	0.8182	0	0.1818	0.0556	0.7222	0.2222
PHF	0.81	0.71	0.6	0.78	0	0.62	0.62	0.5	0.59

Tues-Thurs, Peak AM

	RJM north (Southbound)			Investment east (Westbound)			RJM south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	16	64	0	20	2	3	0	0	12
7:45am	6	143	0	71	7	13	0	3	28
8:00am	2	154	0	90	2	22	0	14	19
8:15am	6	82	0	44	0	8	0	22	4
Hourly Tot	30	443	0	225	11	46	0	39	63
Hourly Tot	0.0634	0.9366	0	0.7979	0.039	0.1631	0	0.3824	0.6176
PHF	0.47	0.72	0	0.62	0.39	0.52	0	0.44	0.56

Tues-Thurs, Peak PM

	RJM north (Southbound)			Investment east (Westbound)			RJM south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:30pm	8	57	4	53	0	3	0	0	3
2:45pm	4	116	6	67	0	11	2	39	14
3:00pm	3	93	8	55	0	18	5	99	25
3:15pm	10	53	4	36	0	13	2	57	17
Hourly Tot	25	319	22	211	0	45	9	195	59
Hourly Tot	0.0683	0.8716	0.0601	0.8242	0	0.1758	0.0342	0.7414	0.2243
PHF	0.62	0.69	0.69	0.79	0	0.62	0.45	0.49	0.59

Investment west (Eastbound)

Left	Thru	Right	Total	Total %
0	1	0	85	0.129
0	3	0	214	0.3247
0	2	0	230	0.349
0	0	0	130	0.1973
0	6	0	659	1
0	1	0		
0	0.5	0		

Investment west (Eastbound)

Left	Thru	Right	Total	Total %
0	4	3	97	0.1499
0	3	6	192	0.2968
0	1	2	220	0.34
0	0	0	138	0.2133
0	8	11	647	1
0	0.4211	0.5789		
0	0.5	0.46		

Investment west (Eastbound)

Left	Thru	Right	Total	Total %
0	2	0	119	0.1374
0	5	0	276	0.3187
0	2	0	305	0.3522
0	0	0	166	0.1917
0	9	0	866	1
0	1	0		
0	0.45	0		

Investment west (Eastbound)

Left	Thru	Right	Total	Total %
0	2	5	135	0.1479
0	5	10	274	0.3001
0	2	4	312	0.3417
0	0	0	192	0.2103
0	9	19	913	1
0	0.3214	0.6786		
0	0.45	0.47		

#14

ALL TRAFFIC DATA

(916) 771-8700
orders@atdtraffic.com

File Name : 17-07982-006
Date : 11/16/2017

Unshifted Count = All Vehicles & Uturns

	Robert J Matthews Pkwy Southbound					Investment Blvd Westbound					Robert J Matthews Pkwy Northbound					Investment Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	1	2	0	0	3	7	3	1	0	11	0	10	7	0	17	8	7	0	0	15	46	0
6:15	1	3	1	0	5	8	3	1	0	12	0	1	3	0	4	0	3	0	0	3	24	0
6:30	2	3	3	1	9	8	3	5	0	16	0	1	0	0	1	1	0	0	0	1	27	1
6:45	2	1	3	0	6	11	6	4	0	21	0	1	0	0	1	0	0	0	0	0	28	0
Total	6	9	7	1	23	34	15	11	0	60	0	13	10	0	23	9	10	0	0	19	125	1
7:00	0	0	0	0	0	9	3	2	0	14	0	0	1	0	1	0	0	0	0	0	15	0
7:15	1	3	1	1	6	4	7	4	0	15	0	0	0	0	0	0	2	0	0	2	23	1
7:30	2	2	4	0	8	19	4	3	0	26	0	1	0	0	1	1	2	0	0	3	38	0
7:45	4	3	2	0	9	14	9	4	0	27	0	0	2	0	2	1	1	0	0	2	40	0
Total	7	8	7	1	23	46	23	13	0	82	0	1	3	0	4	2	5	0	0	7	116	1
8:00	3	2	5	0	10	20	6	6	0	32	0	1	3	0	4	1	1	0	0	2	48	0
8:15	2	6	1	0	9	12	5	3	0	20	1	1	0	0	2	0	0	0	0	0	31	0
8:30	4	2	5	2	13	15	6	3	0	24	1	0	1	0	2	0	1	0	0	1	40	2
8:45	0	4	1	0	5	11	4	6	0	21	0	0	1	0	1	0	2	0	0	2	29	0
Total	9	14	12	2	37	58	21	18	0	97	2	2	5	0	9	1	4	0	0	5	148	2
16:00	4	0	0	0	4	0	1	3	0	4	0	7	28	0	35	2	8	0	0	10	53	0
16:15	6	1	2	1	10	0	0	1	0	1	0	7	16	0	23	0	5	0	0	5	39	1
16:30	13	1	1	0	15	3	0	4	0	7	0	5	19	0	24	4	8	0	0	12	58	0
16:45	3	2	1	0	6	2	0	4	0	6	0	6	11	0	17	2	5	0	0	7	36	0
Total	26	4	4	1	35	5	1	12	0	18	0	25	74	0	99	8	26	0	0	34	186	1
17:00	14	3	3	0	20	1	1	2	0	4	0	2	14	0	16	3	8	0	0	11	51	0
17:15	1	1	2	0	4	4	4	0	0	8	0	3	13	0	16	3	5	0	0	8	36	0
17:30	0	6	6	0	12	12	5	0	0	17	0	6	16	0	22	1	4	0	0	5	56	0
17:45	1	12	3	0	16	19	7	0	0	26	0	6	15	0	21	2	3	0	0	5	68	0
Total	16	22	14	0	52	36	17	2	0	55	0	17	58	0	75	9	20	0	0	29	211	0
18:00	3	4	1	0	8	2	0	0	0	2	0	15	28	0	43	10	11	0	0	21	74	0
18:15	2	0	0	0	2	2	0	0	0	2	0	3	4	0	7	0	0	0	0	0	11	0
18:30	0	1	0	0	1	1	0	0	0	1	0	3	2	0	5	0	5	0	0	5	12	0
18:45	2	0	0	0	2	2	2	2	0	6	0	1	1	0	2	1	0	0	0	1	11	0
Total	7	5	1	0	13	7	2	2	0	11	0	22	35	0	57	11	16	0	0	27	108	0
Grand Total	71	62	45	5	183	186	79	58	0	323	2	80	185	0	267	40	81	0	0	121	894	5
Apprch %	38.8%	33.9%	24.6%	2.7%		57.6%	24.5%	18.0%	0.0%		0.7%	30.0%	69.3%	0.0%		33.1%	66.9%	0.0%	0.0%			
Total %	7.9%	6.9%	5.0%	0.6%	20.5%	20.8%	8.8%	6.5%	0.0%	36.1%	0.2%	8.9%	20.7%	0.0%	29.9%	4.5%	9.1%	0.0%	0.0%	13.5%	100.0%	

AM PEAK HOUR	Robert J Matthews Pkwy Southbound					Investment Blvd Westbound					Robert J Matthews Pkwy Northbound					Investment Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	4	3	2	0	9	14	9	4	0	27	0	0	2	0	2	1	1	0	0	2	40
8:00	3	2	5	0	10	20	6	6	0	32	0	1	3	0	4	1	1	0	0	2	48
8:15	2	6	1	0	9	12	5	3	0	20	1	1	0	0	2	0	0	0	0	0	31
8:30	4	2	5	2	13	15	6	3	0	24	1	0	1	0	2	0	1	0	0	1	40
Total Volume	13	13	13	2	41	61	26	16	0	103	2	2	6	0	10	2	3	0	0	5	159
% App Total	31.7%	31.7%	31.7%	4.9%		59.2%	25.2%	15.5%	0.0%		20.0%	20.0%	60.0%	0.0%		40.0%	60.0%	0.0%	0.0%		
PHF	.813	.542	.650	.250	.788	.763	.722	.667	.000	.805	.500	.500	.500	.000	.625	.500	.750	.000	.000	.625	.828

PM PEAK HOUR	Robert J Matthews Pkwy Southbound					Investment Blvd Westbound					Robert J Matthews Pkwy Northbound					Investment Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:15 to 18:15																					
Peak Hour For Entire Intersection Begins at 17:15																					
17:15	1	1	2	0	4	4	4	0	0	8	0	3	13	0	16	3	5	0	0	8	36
17:30	0	6	6	0	12	12	5	0	0	17	0	6	16	0	22	1	4	0	0	5	56
17:45	1	12	3	0	16	19	7	0	0	26	0	6	15	0	21	2	3	0	0	5	68
18:00	3	4	1	0	8	2	0	0	0	2	0	15	28	0	43	10	11	0	0	21	74
Total Volume	5	23	12	0	40	37	16	0	0	53	0	30	72	0	102	16	23	0	0	39	234
% App Total	12.5%	57.5%	30.0%	0.0%		69.8%	30.2%	0.0%	0.0%		0.0%	29.4%	70.6%	0.0%		41.0%	59.0%	0.0%	0.0%		
PHF	.417	.479	.500	.000	.625	.487	.571	.000	.000	.510	.000	.500	.643	.000	.593	.400	.523	.000	.000	.464	.791

25-1836 D.3 Page 3459 of 4853

Analysis ID: 1473017
Analysis: Creekside #15 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-14
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	driveway (Southbound)			GF east (Westbound)			Carson Crossing (Northbound)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00am	0	0	0	20	17	0	2	0	17	
11:15am	0	0	0	25	12	0	0	0	21	
11:30am	0	0	0	22	8	0	1	0	26	
11:45am	0	0	0	19	13	0	1	0	27	
Hourly Tot	0	0	0	86	50	0	4	0	91	
Hourly Tot	0	0	0	0.6324	0.3676	0	0.0421	0	0.9579	
PHF	0	0	0	0.86	0.74	0	0.5	0	0.84	

All Days, Peak PM

	driveway (Southbound)			GF east (Westbound)			Carson Crossing (Northbound)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3:00pm	0	0	0	20	47	0	2	0	17	
3:15pm	0	0	0	20	36	0	2	0	21	
3:30pm	0	0	0	24	24	0	2	0	19	
3:45pm	0	0	0	31	25	0	2	0	26	
Hourly Tot	0	0	0	95	132	0	8	0	83	
Hourly Tot	0	0	0	0.4185	0.5815	0	0.0879	0	0.9121	
PHF	0	0	0	0.77	0.7	0	1	0	0.8	

Tues-Thurs, Peak AM

	driveway (Southbound)			GF east (Westbound)			Carson Crossing (Northbound)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:45am	0	0	0	15	19	0	3	0	30	
8:00am	0	0	0	12	31	0	9	0	40	
8:15am	0	0	0	11	26	0	10	0	18	
8:30am	0	0	0	11	15	0	9	0	20	
Hourly Tot	0	0	0	49	91	0	31	0	108	
Hourly Tot	0	0	0	0.35	0.65	0	0.223	0	0.777	
PHF	0	0	0	0.82	0.73	0	0.78	0	0.68	

Tues-Thurs, Peak PM

	driveway (Southbound)			GF east (Westbound)			Carson Crossing (Northbound)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3:00pm	0	0	0	22	69	0	0	0	17	
3:15pm	0	0	0	21	51	0	2	0	16	
3:30pm	0	0	0	29	36	0	3	0	15	
3:45pm	0	0	0	37	34	0	1	0	32	
Hourly Tot	0	0	0	109	190	0	6	0	80	
Hourly Tot	0	0	0	0.3645	0.6355	0	0.0698	0	0.9302	
PHF	0	0	0	0.74	0.69	0	0.5	0	0.62	

GF west (Eastbound)

Left	Thru	Right	Total	Total %
0	16	0	72	0.2416
0	17	3	78	0.2617
0	10	5	72	0.2416
0	10	6	76	0.255
0	53	14	298	1
0	0.791	0.209		
0	0.78	0.58		

GF west (Eastbound)

Left	Thru	Right	Total	Total %
0	26	5	117	0.274
0	29	4	112	0.2623
0	22	0	91	0.2131
0	22	1	107	0.2506
0	99	10	427	1
0	0.9083	0.0917		
0	0.85	0.5		

GF west (Eastbound)

Left	Thru	Right	Total	Total %
0	14	0	81	0.2269
0	21	3	116	0.3249
0	18	6	89	0.2493
0	12	4	71	0.1989
0	65	13	357	1
0	0.8333	0.1667		
0	0.77	0.54		

GF west (Eastbound)

Left	Thru	Right	Total	Total %
0	39	7	154	0.2836
0	45	6	141	0.2597
0	31	1	115	0.2118
0	28	1	133	0.2449
0	143	15	543	1
0	0.9051	0.0949		
0	0.79	0.54		

Prepared by National Data & Surveying Services

Carson Crossing Rd & Golden Foothill Pkwy

#15

Peak Hour Turning Movement Count

ID: 18-07183-016
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	06:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 07:00 PM

Carson Crossing Rd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Golden Foothill Pkwy

AM	NOON	PM	
81	0	78	⇦
1	0	0	↩ 0
0	0	0	↱ 0
62	0	65	→ 2
3	0	16	↳ 0
AM	NOON	PM	

WESTBOUND — Golden Foothill Pkwy

PM	NOON	AM	
0	0	0	↰ 0
75	0	72	← 1
102	0	44	↩ 1
2	0	1	↱ 0
118	0	135	⇨
PM	NOON	AM	

CONTROL
1-Way Stop(NB)

TEV	263 AM	0 NOON	314 PM
PHF	0.95		0.84

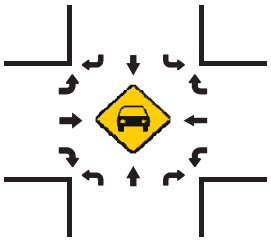
NORTHBOUND

PM	118	0	3	0	51	PM
NOON	0	0	0	0	0	NOON
AM	47	0	8	0	72	AM

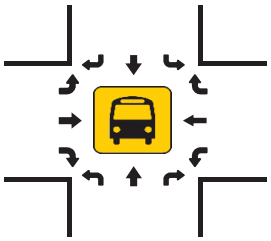
0 0 1 1 (↰ ↰ ↑ ↱)

Carson Crossing Rd

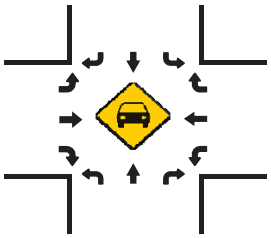
Total Vehicles (AM)



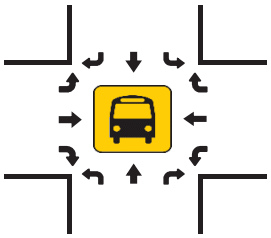
Total Vehicles (AM)



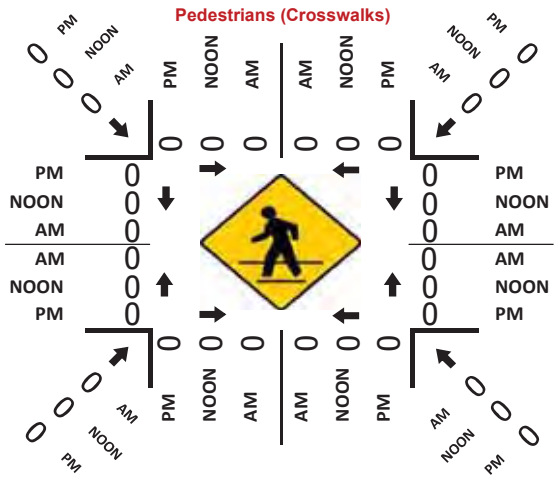
Total Vehicles (NOON)



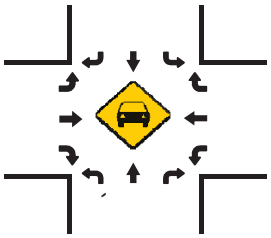
Total Vehicles (NOON)



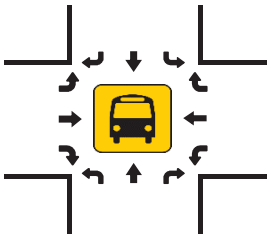
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Analysis ID: 1477557
Analysis: revised Creekside #16 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-24
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	CC east (Westbound)		Palmdale (Northboun		CC west (Eastbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	13	5	10	8	7	7	50	0.1969
11:15am	15	9	13	11	8	10	66	0.2598
11:30am	15	11	13	14	12	6	71	0.2795
11:45am	14	10	7	15	13	8	67	0.2638
Hourly Tot	57	35	43	48	40	31	254	1
Hourly Tot	0.6196	0.3804	0.4725	0.5275	0.5634	0.4366		
PHF	0.95	0.8	0.83	0.8	0.77	0.78		

All Days, Peak PM

	CC east (Westbound)		Palmdale (Northboun		CC west (Eastbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:00pm	9	33	1	11	17	10	81	0.2555
4:15pm	13	34	4	9	17	5	82	0.2587
4:30pm	11	30	6	8	15	4	74	0.2334
4:45pm	14	25	5	11	16	9	80	0.2524
Hourly Tot	47	122	16	39	65	28	317	1
Hourly Tot	0.2781	0.7219	0.2909	0.7091	0.6989	0.3011		
PHF	0.84	0.9	0.67	0.89	0.96	0.7		

Tues-Thurs, Peak AM

	CC east (Westbound)		Palmdale (Northboun		CC west (Eastbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
11:00am	13	7	9	6	9	7	51	0.1889
11:15am	17	11	16	8	11	11	74	0.2741
11:30am	17	11	15	12	12	6	73	0.2704
11:45am	18	13	5	17	12	7	72	0.2667
Hourly Tot	65	42	45	43	44	31	270	1
Hourly Tot	0.6075	0.3925	0.5114	0.4886	0.5867	0.4133		
PHF	0.9	0.81	0.7	0.63	0.92	0.7		

Tues-Thurs, Peak PM

	CC east (Westbound)		Palmdale (Northboun		CC west (Eastbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:00pm	9	44	1	16	24	11	105	0.2699
4:15pm	7	49	2	11	21	8	98	0.2519
4:30pm	9	46	5	8	20	5	93	0.2391
4:45pm	12	35	4	8	22	12	93	0.2391
Hourly Tot	37	174	12	43	87	36	389	1
Hourly Tot	0.1754	0.8246	0.2182	0.7818	0.7073	0.2927		
PHF	0.77	0.89	0.6	0.67	0.91	0.75		

Analysis ID: 1473487
Analysis: Creekside #17 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	CC north (Southbounc		Four Seasons (Westbc		CC south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
8:00am	0	28	0	1	14	0	43	0.2671
8:15am	0	23	0	2	15	0	40	0.2484
8:30am	0	19	0	1	17	0	37	0.2298
8:45am	1	17	0	2	21	0	41	0.2547
Hourly Tot	1	87	0	6	67	0	161	1
Hourly Tot	0.0114	0.9886	0	1	1	0		
PHF	0.25	0.78	0	0.75	0.8	0		

All Days, Peak PM

	CC north (Southbounc		Four Seasons (Westbc		CC south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:00pm	0	25	0	0	36	0	61	0.2618
4:15pm	0	24	0	0	39	0	63	0.2704
4:30pm	3	21	0	0	32	0	56	0.2403
4:45pm	4	27	0	1	21	0	53	0.2275
Hourly Tot	7	97	0	1	128	0	233	1
Hourly Tot	0.0673	0.9327	0	1	1	0		
PHF	0.44	0.9	0	0.25	0.82	0		

Tues-Thurs, Peak AM

	CC north (Southbounc		Four Seasons (Westbc		CC south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
7:45am	0	25	0	1	11	0	37	0.2151
8:00am	0	35	0	2	14	0	51	0.2965
8:15am	0	27	0	1	14	0	42	0.2442
8:30am	1	27	0	0	14	0	42	0.2442
Hourly Tot	1	114	0	4	53	0	172	1
Hourly Tot	0.0087	0.9913	0	1	1	0		
PHF	0.25	0.81	0	0.5	0.95	0		

Tues-Thurs, Peak PM

	CC north (Southbounc		Four Seasons (Westbc		CC south (Northbound)			
	Left	Thru	Left	Right	Thru	Right	Total	Total %
4:00pm	0	31	0	0	48	0	79	0.2508
4:15pm	1	28	0	0	51	0	80	0.254
4:30pm	5	29	0	1	48	0	83	0.2635
4:45pm	7	37	0	2	27	0	73	0.2317
Hourly Tot	13	125	0	3	174	0	315	1
Hourly Tot	0.0942	0.9058	0	1	1	0		
PHF	0.46	0.84	0	0.38	0.85	0		

Analysis ID: 1475500
Analysis: Creekside #18 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	WR north (Southbound)			CC (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	11	53	0	12	0	3	0	29	7
8:00am	14	60	3	11	0	4	0	33	10
8:15am	7	50	7	11	0	7	0	34	14
8:30am	3	56	4	14	0	5	0	36	15
Hourly Tot	35	219	14	48	0	19	0	132	46
Hourly Tot	0.1306	0.8172	0.0522	0.7164	0	0.2836	0	0.7416	0.2584
PHF	0.62	0.91	0.5	0.86	0	0.68	0	0.92	0.77

All Days, Peak PM

	WR north (Southbound)			CC (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	4	50	4	21	0	6	3	70	15
4:00pm	10	42	4	23	0	9	0	69	15
4:15pm	9	57	2	30	1	7	0	59	14
4:30pm	14	71	2	26	0	6	0	41	12
Hourly Tot	37	220	12	100	1	28	3	239	56
Hourly Tot	0.1375	0.8178	0.0446	0.7752	0.0078	0.2171	0.0101	0.802	0.1879
PHF	0.66	0.77	0.75	0.83	0.25	0.78	0.25	0.85	0.93

Tues-Thurs, Peak AM

	WR north (Southbound)			CC (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	13	69	0	12	0	2	0	29	8
8:00am	16	67	3	11	0	6	0	32	14
8:15am	6	63	8	10	0	7	0	42	18
8:30am	2	60	4	9	0	3	1	44	22
Hourly Tot	37	259	15	42	0	18	1	147	62
Hourly Tot	0.119	0.8328	0.0482	0.7	0	0.3	0.0048	0.7	0.2952
PHF	0.58	0.94	0.47	0.88	0	0.64	0.25	0.84	0.7

Tues-Thurs, Peak PM

	WR north (Southbound)			CC (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:00pm	8	46	4	34	1	9	1	87	21
4:15pm	10	60	4	40	3	9	1	69	18
4:30pm	21	90	1	42	1	5	1	46	15
4:45pm	27	70	2	22	1	2	2	63	15
Hourly Tot	66	266	11	138	6	25	5	265	69
Hourly Tot	0.1924	0.7755	0.0321	0.8166	0.0355	0.1479	0.0147	0.7817	0.2035
PHF	0.61	0.74	0.69	0.82	0.5	0.69	0.62	0.76	0.82

Terra Alta (Eastbound)

Left	Thru	Right	Total	Total %
10	0	3	128	0.2218
18	0	2	155	0.2686
18	0	1	149	0.2582
12	0	0	145	0.2513
58	0	6	577	1
0.9062	0	0.0938		
0.81	0	0.5		

Terra Alta (Eastbound)

Left	Thru	Right	Total	Total %
5	1	0	179	0.2479
8	0	3	183	0.2535
2	0	4	185	0.2562
0	0	3	175	0.2424
15	1	10	722	1
0.5769	0.0385	0.3846		
0.47	0.25	0.62		

Terra Alta (Eastbound)

Left	Thru	Right	Total	Total %
12	0	1	146	0.2236
23	0	2	174	0.2665
18	0	2	174	0.2665
13	0	1	159	0.2435
66	0	6	653	1
0.9167	0	0.0833		
0.72	0	0.75		

Terra Alta (Eastbound)

Left	Thru	Right	Total	Total %
4	1	5	221	0.2511
2	0	5	221	0.2511
0	0	6	228	0.2591
1	0	5	210	0.2386
7	1	21	880	1
0.2414	0.0345	0.7241		
0.44	0.25	0.88		

Prepared by National Data & Surveying Services

White Rock Rd & Carson Crossing Rd

#18

Peak Hour Turning Movement Count

ID: 18-07183-018
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 06:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 07:00 PM

White Rock Rd — SOUTHBOUND

AM	1	439	16	0	246	AM
NOON	0	0	0	0	0	NOON
PM	0	397	22	0	423	PM
	0	1	1	0		

Carson Crossing Rd — EASTBOUND

AM	NOON	PM	
5	0	7	
0	0	0	0
7	0	4	0
1	0	1	1
8	0	1	0
AM	NOON	PM	

CONTROL

2-Way Stop(EB/WB)

TEV	851	0	1044
	AM	NOON	PM
PHF	0.97		0.93

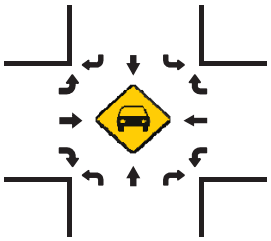
Carson Crossing Rd — WESTBOUND

PM	NOON	AM	
11	0	12	1
2	0	0	0
108	0	65	1
0	0	0	0
108	0	88	
PM	NOON	AM	

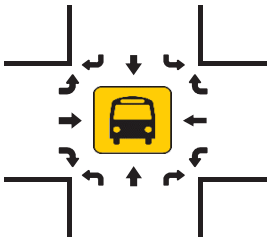
White Rock Rd — NORTHBOUND

PM	506	0	5	408	85	PM
NOON	0	0	0	0	0	NOON
AM	512	0	4	227	71	AM
		0	1	1	0	

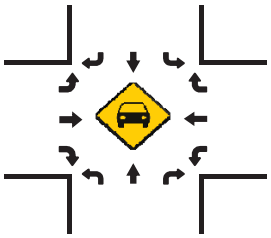
Total Vehicles (AM)



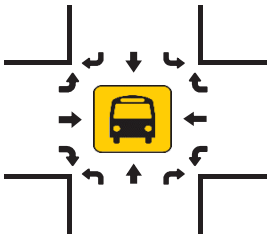
Total Vehicles (AM)



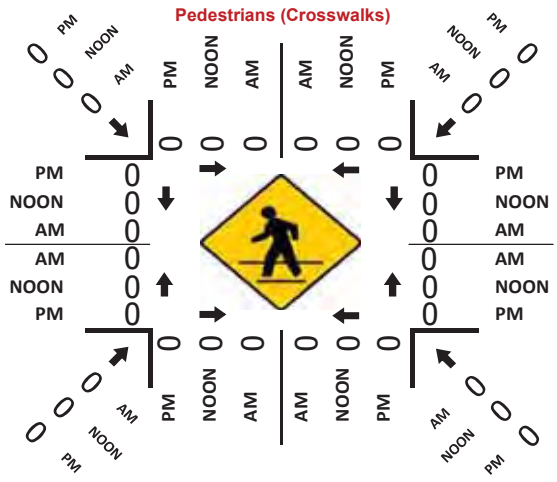
Total Vehicles (NOON)



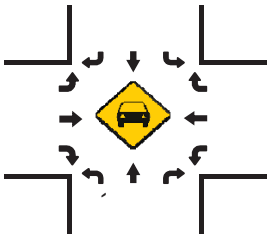
Total Vehicles (NOON)



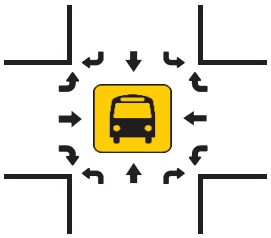
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Analysis ID: 1473494
Analysis: Creekside #19 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Town Center (Southbound)			WR east (Westbound)			Windfield (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	0	0	0	66	54	0	17	0	20
8:15am	0	0	0	60	59	0	15	0	32
8:30am	0	0	0	53	77	0	4	0	27
8:45am	0	0	0	52	79	0	2	0	18
Hourly Tot	0	0	0	231	269	0	38	0	97
Hourly Tot	0	0	0	0.462	0.538	0	0.2815	0	0.7185
PHF	0	0	0	0.88	0.85	0	0.56	0	0.76

All Days, Peak PM

	Town Center (Southbound)			WR east (Westbound)			Windfield (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	0	0	0	34	91	0	9	0	30
4:00pm	0	0	0	32	76	0	12	0	51
4:15pm	0	0	0	28	73	0	18	0	49
4:30pm	0	0	0	19	86	0	24	0	42
Hourly Tot	0	0	0	113	326	0	63	0	172
Hourly Tot	0	0	0	0.2574	0.7426	0	0.2681	0	0.7319
PHF	0	0	0	0.83	0.9	0	0.66	0	0.84

Tues-Thurs, Peak AM

	Town Center (Southbound)			WR east (Westbound)			Windfield (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	0	0	0	85	54	0	23	0	26
8:15am	0	0	0	78	66	0	20	0	42
8:30am	0	0	0	63	79	0	6	0	32
8:45am	0	0	0	58	88	0	2	0	17
Hourly Tot	0	0	0	284	287	0	51	0	117
Hourly Tot	0	0	0	0.4974	0.5026	0	0.3036	0	0.6964
PHF	0	0	0	0.84	0.82	0	0.55	0	0.7

Tues-Thurs, Peak PM

	Town Center (Southbound)			WR east (Westbound)			Windfield (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	0	0	0	41	100	0	12	0	40
4:00pm	0	0	0	38	75	0	13	0	66
4:15pm	0	0	0	37	74	0	24	0	58
4:30pm	0	0	0	28	99	0	36	0	53
Hourly Tot	0	0	0	144	348	0	85	0	217
Hourly Tot	0	0	0	0.2927	0.7073	0	0.2815	0	0.7185
PHF	0	0	0	0.88	0.87	0	0.59	0	0.82

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	69	34	260	0.2544
0	82	18	266	0.2603
0	93	10	264	0.2583
0	76	5	232	0.227
0	320	67	1022	1
0	0.8269	0.1731		
0	0.86	0.49		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	93	11	268	0.2543
0	94	11	276	0.2619
0	81	14	263	0.2495
0	68	8	247	0.2343
0	336	44	1054	1
0	0.8842	0.1158		
0	0.89	0.79		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	70	47	305	0.2554
0	93	28	327	0.2739
0	107	13	300	0.2513
0	89	8	262	0.2194
0	359	96	1194	1
0	0.789	0.211		
0	0.84	0.51		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	99	13	305	0.2496
0	101	19	312	0.2553
0	87	23	303	0.248
0	76	10	302	0.2471
0	363	65	1222	1
0	0.8481	0.1519		
0	0.9	0.71		

#19

National Data and Surveying Services

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7192-006 White Rock Rd & Windfield Way/Town Center Blvd
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	White Rock Rd Southbound					Windfield Way/Town Center Blvd Westbound					White Rock Rd Northbound					Windfield Way/Town Center Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	0	0	0	0	0	16	19	0	0	35	4	0	5	0	9	0	13	3	0	16	60	0
6:15	0	0	0	0	0	7	35	0	0	42	1	0	2	0	3	0	21	8	0	29	74	0
6:30	0	0	0	0	0	15	54	0	0	69	1	0	6	0	7	0	31	11	0	42	118	0
6:45	0	0	0	0	0	21	54	0	0	75	2	0	7	0	9	0	43	26	0	69	153	0
Total	0	0	0	0	0	59	162	0	0	221	8	0	20	0	28	0	108	48	0	156	405	0
7:00	0	0	0	0	0	35	78	0	0	113	6	0	10	0	16	0	57	16	0	73	202	0
7:15	0	0	0	0	0	42	80	0	1	123	11	0	11	0	22	0	62	20	0	82	227	1
7:30	0	0	0	0	0	32	105	0	4	141	11	0	10	0	21	0	76	24	0	100	262	4
7:45	0	0	0	0	0	73	96	0	3	172	10	0	9	0	19	0	87	33	0	120	311	3
Total	0	0	0	0	0	182	359	0	8	549	38	0	40	0	78	0	282	93	0	375	1002	8
8:00	0	0	0	0	0	76	91	0	0	167	20	0	22	0	42	0	68	28	0	96	305	0
8:15	0	0	0	0	0	77	73	0	2	152	12	0	25	0	37	0	68	27	0	95	284	2
8:30	0	0	0	0	0	74	90	0	3	167	11	0	23	0	34	0	80	27	0	107	308	3
8:45	0	0	0	0	0	55	69	0	1	125	9	0	11	0	20	0	84	30	0	114	259	1
Total	0	0	0	0	0	282	323	0	6	611	52	0	81	0	133	0	300	112	0	412	1156	6
16:00	0	0	0	0	0	27	84	0	5	116	49	0	45	0	94	0	95	8	0	103	313	5
16:15	0	0	0	0	0	24	96	0	4	124	38	0	41	0	79	0	128	18	0	146	349	4
16:30	0	0	0	0	0	22	78	0	3	103	80	0	54	0	134	0	127	14	0	141	378	3
16:45	0	0	0	0	0	27	73	0	7	107	40	0	45	0	85	0	136	22	0	158	350	7
Total	0	0	0	0	0	100	331	0	19	450	207	0	185	0	392	0	486	62	0	548	1390	19
17:00	0	0	0	0	0	21	89	0	1	111	70	0	86	0	156	0	123	17	0	140	407	1
17:15	0	0	0	0	0	29	109	0	3	141	48	0	54	0	102	0	134	18	0	152	395	3
17:30	0	0	0	0	0	24	81	0	3	108	38	0	38	0	76	0	134	21	0	155	339	3
17:45	0	0	0	0	0	38	77	0	0	115	31	0	44	0	75	0	117	21	0	138	328	0
Total	0	0	0	0	0	112	356	0	7	475	187	0	222	0	409	0	508	77	0	585	1469	7
18:00	0	0	0	0	0	10	69	0	2	81	43	0	56	0	99	0	86	11	0	97	277	2
18:15	0	0	0	0	0	12	84	0	3	99	16	0	27	0	43	0	60	3	0	63	205	3
18:30	0	0	0	0	0	9	55	0	0	64	15	0	17	0	32	0	76	8	0	84	180	0
18:45	0	0	0	0	0	14	37	0	0	51	19	0	16	0	35	0	47	5	0	52	138	0
Total	0	0	0	0	0	45	245	0	5	295	93	0	116	0	209	0	269	27	0	296	800	5
Grand Total	0	0	0	0	0	780	1776	0	45	2601	585	0	664	0	1249	0	1953	419	0	2372	6222	45
Apprch %	0.0%	0.0%	0.0%	0.0%		30.0%	68.3%	0.0%	1.7%		46.8%	0.0%	53.2%	0.0%		0.0%	82.3%	17.7%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	28.5%	0.0%	0.7%	41.8%	9.4%	0.0%	10.7%	0.0%	20.1%	0.0%	31.4%	6.7%	0.0%	38.1%	100.0%	

AM PEAK HOUR	White Rock Rd Southbound					Windfield Way/Town Center Blvd Westbound					White Rock Rd Northbound					Windfield Way/Town Center Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	0	0	0	0	0	73	96	0	3	172	10	0	9	0	19	0	87	33	0	120	311
8:00	0	0	0	0	0	76	91	0	0	167	20	0	22	0	42	0	68	28	0	96	305
8:15	0	0	0	0	0	77	73	0	2	152	12	0	25	0	37	0	68	27	0	95	284
8:30	0	0	0	0	0	74	90	0	3	167	11	0	23	0	34	0	80	27	0	107	308
Total Volume	0	0	0	0	0	300	350	0	8	658	53	0	79	0	132	0	303	115	0	418	1208
% App Total	0.0%	0.0%	0.0%	0.0%		45.6%	53.2%	0.0%	1.2%		40.2%	0.0%	59.8%	0.0%		0.0%	72.5%	27.5%	0.0%		
PHF	.000	.000	.000	.000	.000	.974	.911	.000	.667	.956	.663	.000	.790	.000	.786	.000	.871	.871	.000	.871	.971

PM PEAK HOUR	White Rock Rd Southbound					Windfield Way/Town Center Blvd Westbound					White Rock Rd Northbound					Windfield Way/Town Center Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	22	78	0	3	103	80	0	54	0	134	0	127	14	0	141	378
16:45	0	0	0	0	0	27	73	0	7	107	40	0	45	0	85	0	136	22	0	158	350
17:00	0	0	0	0	0	21	89	0	1	111	70	0	86	0	156	0	123	17	0	140	407
17:15	0	0	0	0	0	29	109	0	3	141	48	0	54	0	102	0	134	18	0	152	395
Total Volume	0	0	0	0	0	99	349	0	14	462	238	0	239	0	477	0	520	71	0	591	1530
% App Total	0.0%	0.0%	0.0%	0.0%		21.4%	75.5%	0.0%	3.0%		49.9%	0.0%	50.1%	0.0%		0.0%	88.0%	12.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.853	.800	.000	.500	.819	.744	.000	.695	.000	.764	.000	.956	.807	.000	.935	.940

251836 D.3 Page 3480 of 4853

Analysis ID: 1473497
Analysis: Creekside #20 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Post (Southbound)			WR east (Westbound)			Drwy (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
11:00am	35	1	37	10	98	41	18	3	8
11:15am	27	2	29	13	168	44	11	3	3
11:30am	26	2	33	11	106	50	14	2	3
11:45am	29	1	40	8	118	45	12	0	3
Hourly Tot	117	6	139	42	490	180	55	8	17
Hourly Tot	0.4466	0.0229	0.5305	0.059	0.6882	0.2528	0.6875	0.1	0.2125
PHF	0.84	0.75	0.87	0.81	0.73	0.9	0.76	0.67	0.53

All Days, Peak PM

	Post (Southbound)			WR east (Westbound)			Drwy (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:15pm	21	2	35	4	96	30	10	1	1
3:30pm	33	0	35	7	94	31	11	3	5
3:45pm	36	0	43	4	99	43	9	3	8
4:00pm	38	0	38	5	92	47	7	3	7
Hourly Tot	128	2	151	20	381	151	37	10	21
Hourly Tot	0.4555	0.0071	0.5374	0.0362	0.6902	0.2736	0.5441	0.1471	0.3088
PHF	0.84	0.25	0.88	0.71	0.96	0.8	0.84	0.83	0.66

Tues-Thurs, Peak AM

	Post (Southbound)			WR east (Westbound)			Drwy (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
11:00am	26	1	40	11	87	31	22	2	9
11:15am	27	2	31	15	106	37	13	2	5
11:30am	28	1	31	16	102	45	12	2	4
11:45am	33	0	45	11	119	49	10	1	2
Hourly Tot	114	4	147	53	414	162	57	7	20
Hourly Tot	0.4302	0.0151	0.5547	0.0843	0.6582	0.2576	0.6786	0.0833	0.2381
PHF	0.86	0.5	0.82	0.83	0.87	0.83	0.65	0.88	0.56

Tues-Thurs, Peak PM

	Post (Southbound)			WR east (Westbound)			Drwy (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:30pm	36	0	44	19	143	39	11	0	7
4:45pm	46	1	53	28	121	45	13	0	5
5:00pm	36	2	52	24	93	49	9	0	6
5:15pm	28	1	28	15	99	37	6	1	8
Hourly Tot	146	4	177	86	456	170	39	1	26
Hourly Tot	0.4465	0.0122	0.5413	0.1208	0.6404	0.2388	0.5909	0.0152	0.3939
PHF	0.79	0.5	0.83	0.77	0.8	0.87	0.75	0.25	0.81

WR west (Eastbound)

Left	Thru	Right	Total	Total %
27	80	4	362	0.224
35	109	2	446	0.276
36	118	4	405	0.2506
38	105	4	403	0.2494
136	412	14	1616	1
0.242	0.7331	0.0249		
0.89	0.87	0.88		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
27	176	0	403	0.2492
35	146	1	401	0.248
36	128	5	414	0.256
51	105	6	399	0.2468
149	555	12	1617	1
0.2081	0.7751	0.0168		
0.73	0.79	0.5		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
28	89	2	348	0.2222
31	116	1	386	0.2465
41	121	4	407	0.2599
45	105	5	425	0.2714
145	431	12	1566	1
0.2466	0.733	0.0204		
0.81	0.89	0.6		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
32	122	1	454	0.2397
42	148	2	504	0.2661
44	179	1	495	0.2614
38	180	0	441	0.2328
156	629	4	1894	1
0.1977	0.7972	0.0051		
0.89	0.87	0.5		

#20

National Data and Surveying Services

City of El Dorado Hills
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7192-007 White Rock Rd & Post St
Date : 3/14/2017

Unshifted Count = All Vehicles & Uturns

	White Rock Rd Southbound					Post St Westbound					White Rock Rd Northbound					Post St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	2	1	7	0	10	2	22	29	0	53	6	1	0	0	7	6	14	0	0	20	90	0
6:15	10	0	11	0	21	1	47	23	0	71	2	1	1	0	4	5	7	0	0	12	108	0
6:30	14	0	16	0	30	5	58	41	0	104	1	2	2	0	5	7	17	1	0	25	164	0
6:45	7	1	30	0	38	4	82	34	0	120	4	1	1	0	6	7	27	1	0	35	199	0
Total	33	2	64	0	99	12	209	127	0	348	13	5	4	0	22	25	65	2	0	92	561	0
7:00	9	0	17	0	26	5	95	35	0	135	6	1	1	0	8	11	26	2	1	40	209	1
7:15	21	1	24	0	46	4	97	47	0	148	12	3	0	0	15	14	31	1	0	46	255	0
7:30	10	1	26	0	37	6	92	32	0	130	7	1	2	0	10	12	38	1	1	52	229	1
7:45	11	4	26	0	41	11	150	60	0	221	5	2	6	0	13	16	51	4	0	71	346	0
Total	51	6	93	0	150	26	434	174	0	634	30	7	9	0	46	53	146	8	2	209	1039	2
8:00	11	4	21	0	36	9	134	60	0	203	10	0	7	0	17	24	49	0	0	73	329	0
8:15	10	3	28	0	41	8	107	36	0	151	10	1	2	0	13	18	61	1	0	80	285	0
8:30	8	0	29	0	37	14	117	48	0	179	7	1	5	0	13	17	51	4	0	72	301	0
8:45	20	8	34	0	62	4	101	54	0	159	14	3	3	0	20	12	44	2	1	59	300	1
Total	49	15	112	0	176	35	459	198	0	692	41	5	17	0	63	71	205	7	1	284	1215	1
16:00	43	2	38	0	83	10	75	58	0	143	9	7	5	0	21	50	148	5	1	204	451	1
16:15	31	4	33	0	68	15	91	35	0	141	15	3	5	0	23	37	137	4	1	179	411	1
16:30	38	4	30	0	72	9	71	34	0	114	13	6	5	0	24	53	177	5	0	235	445	0
16:45	31	3	33	0	67	10	91	51	0	152	10	5	8	0	23	50	151	7	0	208	450	0
Total	143	13	134	0	290	44	328	178	0	550	47	21	23	0	91	190	613	21	2	826	1757	2
17:00	75	6	62	0	143	13	66	56	0	135	15	3	10	0	28	61	191	5	2	259	565	2
17:15	42	2	50	0	94	11	105	37	0	153	12	2	6	0	20	41	165	4	1	211	478	1
17:30	47	6	40	0	93	12	68	40	0	120	11	0	2	0	13	43	167	1	1	212	438	1
17:45	39	4	30	0	73	5	80	43	0	128	14	5	5	0	24	34	128	0	0	162	387	0
Total	203	18	182	0	403	41	319	176	0	536	52	10	23	0	85	179	651	10	4	844	1868	4
18:00	48	2	31	0	81	6	64	30	0	100	15	1	13	0	29	26	127	1	2	156	366	2
18:15	29	3	29	0	61	8	75	22	0	105	7	0	4	0	11	16	105	1	0	122	299	0
18:30	37	0	19	0	56	5	63	40	0	108	16	3	5	0	24	17	101	4	2	124	312	2
18:45	35	4	20	0	59	6	49	28	0	83	9	5	4	0	18	16	58	2	0	76	236	0
Total	149	9	99	0	257	25	251	120	0	396	47	9	26	0	82	75	391	8	4	478	1213	4
Grand Total	628	63	684	0	1375	183	2000	973	0	3156	230	57	102	0	389	593	2071	56	13	2733	7653	13
Apprch %	45.7%	4.6%	49.7%	0.0%		5.8%	63.4%	30.8%	0.0%		59.1%	14.7%	26.2%	0.0%		21.7%	75.8%	2.0%	0.5%			
Total %	8.2%	0.8%	8.9%	0.0%	18.0%	2.4%	26.1%	12.7%	0.0%	41.2%	3.0%	0.7%	1.3%	0.0%	5.1%	7.7%	27.1%	0.7%	0.2%	35.7%	100.0%	

AM PEAK HOUR	White Rock Rd Southbound					Post St Westbound					White Rock Rd Northbound					Post St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	11	4	26	0	41	11	150	60	0	221	5	2	6	0	13	16	51	4	0	71	346
8:00	11	4	21	0	36	9	134	60	0	203	10	0	7	0	17	24	49	0	0	73	329
8:15	10	3	28	0	41	8	107	36	0	151	10	1	2	0	13	18	61	1	0	80	285
8:30	8	0	29	0	37	14	117	48	0	179	7	1	5	0	13	17	51	4	0	72	301
Total Volume	40	11	104	0	155	42	508	204	0	754	32	4	20	0	56	75	212	9	0	296	1261
% App Total	25.8%	7.1%	67.1%	0.0%		5.6%	67.4%	27.1%	0.0%		57.1%	7.1%	35.7%	0.0%		25.3%	71.6%	3.0%	0.0%		
PHF	.909	.688	.897	.000	.945	.750	.847	.850	.000	.853	.800	.500	.714	.000	.824	.781	.869	.563	.000	.925	.911

PM PEAK HOUR	White Rock Rd Southbound					Post St Westbound					White Rock Rd Northbound					Post St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	38	4	30	0	72	9	71	34	0	114	13	6	5	0	24	53	177	5	0	235	445
16:45	31	3	33	0	67	10	91	51	0	152	10	5	8	0	23	50	151	7	0	208	450
17:00	75	6	62	0	143	13	66	56	0	135	15	3	10	0	28	61	191	5	2	259	565
17:15	42	2	50	0	94	11	105	37	0	153	12	2	6	0	20	41	165	4	1	211	478
Total Volume	186	15	175	0	376	43	333	178	0	554	50	16	29	0	95	205	684	21	3	913	1938
% App Total	49.5%	4.0%	46.5%	0.0%		7.8%	60.1%	32.1%	0.0%		52.6%	16.8%	30.5%	0.0%		22.5%	74.9%	2.3%	0.3%		
PHF	.620	.625	.706	.000	.657	.827	.793	.795	.000	.905	.833	.667	.725	.000	.848	.840	.895	.750	.375	.881	.858

25-1836 D.3 Page 3485 of 4853

Analysis ID: 1473504
Analysis: Creekside #21 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Vine (Southbound)			WR east (Westbound)			Valley View (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
11:00am	29	11	8	16	109	49	22	12	39
11:15am	36	15	15	13	111	53	30	12	31
11:30am	38	15	12	18	109	68	22	20	21
11:45am	35	10	9	28	100	69	17	17	16
Hourly Tot	138	51	44	75	429	239	91	61	107
Hourly Tot	0.5923	0.2189	0.1888	0.1009	0.5774	0.3217	0.3514	0.2355	0.4131
PHF	0.91	0.85	0.73	0.67	0.97	0.87	0.76	0.76	0.69

All Days, Peak PM

	Vine (Southbound)			WR east (Westbound)			Valley View (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:15pm	46	22	6	50	98	47	14	13	56
4:30pm	51	21	8	36	108	42	8	16	60
4:45pm	51	24	8	37	118	60	7	18	48
5:00pm	53	24	10	42	100	60	9	19	41
Hourly Tot	201	91	32	165	424	209	38	66	205
Hourly Tot	0.6204	0.2809	0.0988	0.2068	0.5313	0.2619	0.123	0.2136	0.6634
PHF	0.95	0.95	0.8	0.82	0.9	0.87	0.68	0.87	0.85

Tues-Thurs, Peak AM

	Vine (Southbound)			WR east (Westbound)			Valley View (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	8	1	1	38	178	65	23	14	61
8:15am	20	8	4	18	137	63	29	13	30
8:30am	54	11	19	12	130	60	25	11	16
8:45am	73	16	22	12	136	50	18	12	26
Hourly Tot	155	36	46	80	581	238	95	50	133
Hourly Tot	0.654	0.1519	0.1941	0.089	0.6463	0.2647	0.3417	0.1799	0.4784
PHF	0.53	0.56	0.52	0.53	0.82	0.92	0.82	0.89	0.55

Tues-Thurs, Peak PM

	Vine (Southbound)			WR east (Westbound)			Valley View (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:00pm	60	23	4	80	109	44	12	13	63
4:15pm	58	26	6	70	119	37	10	13	71
4:30pm	58	24	9	43	130	32	9	16	78
4:45pm	54	27	9	41	129	44	8	19	56
Hourly Tot	230	100	28	234	487	157	39	61	268
Hourly Tot	0.6425	0.2793	0.0782	0.2665	0.5547	0.1788	0.106	0.1658	0.7283
PHF	0.96	0.93	0.78	0.73	0.94	0.89	0.81	0.8	0.86

WR west (Eastbound)

Left	Thru	Right	Total	Total %
11	77	16	399	0.2409
18	74	10	418	0.2524
13	76	14	426	0.2572
7	82	23	413	0.2494
49	309	63	1656	1
0.1164	0.734	0.1496		
0.68	0.94	0.68		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
6	96	22	476	0.242
5	97	17	469	0.2384
13	112	21	517	0.2628
13	113	21	505	0.2567
37	418	81	1967	1
0.069	0.7799	0.1511		
0.71	0.92	0.92		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
11	27	7	434	0.258
12	36	11	381	0.2265
21	52	9	420	0.2497
24	55	3	447	0.2658
68	170	30	1682	1
0.2537	0.6343	0.1119		
0.71	0.77	0.68		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
6	134	28	576	0.2619
4	108	25	547	0.2487
7	108	18	532	0.2419
16	124	17	544	0.2474
33	474	88	2199	1
0.0555	0.7966	0.1479		
0.52	0.88	0.79		

Prepared by National Data & Surveying Services

Valley View Pkwy & White Rock Rd

Peak Hour Turning Movement Count

#21

ID: 18-07183-021
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	06:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 07:00 PM

Valley View Pkwy — SOUTHBOUND

AM	27	19	50	0	229	AM
NOON	0	0	0	0	0	NOON
PM	36	66	222	0	231	PM

White Rock Rd — EASTBOUND

AM	NOON	PM		
691	0	411	⇦	
0	0	0	↶	0
19	0	31	↰	1
194	0	514	←	1
25	0	121	↶	0
AM	NOON	PM		

White Rock Rd — WESTBOUND

PM	NOON	AM		
158	0	172	↶	0
318	0	578	←	1
130	0	162	↶	1
0	0	0	↶	0
880	0	500	⇨	
PM	NOON	AM		

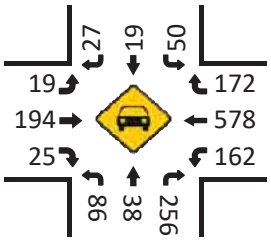
	0	1	1	0
	↶	↰	↑	↱

CONTROL			
Signalized			
TEV	1626	0	1839
	AM	NOON	PM
PHF	0.87		0.97

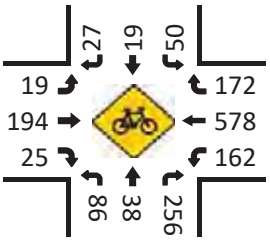
NORTHBOUND — Valley View Pkwy

PM	317	0	57	42	144	PM
NOON	0	0	0	0	0	NOON
AM	206	0	86	38	256	AM

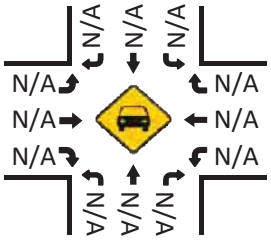
Total Vehicles (AM)



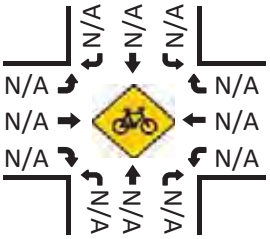
(AM)



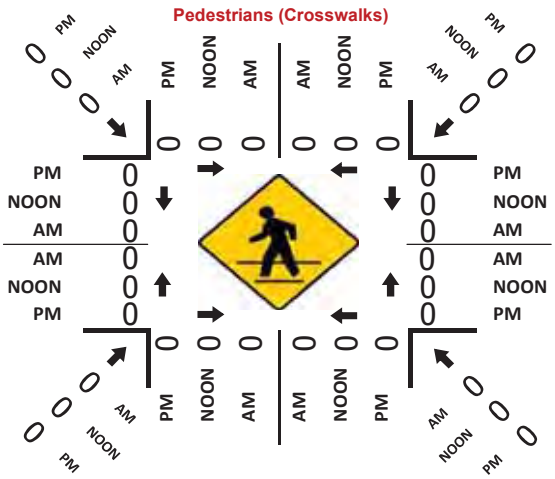
Total Vehicles (Noon)



(NOON)



Pedestrians (Crosswalks)


PM
NOON
AM
0
0
0

Analysis ID: 1473513
Analysis: Creekside #22 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Clarksville north (Southbound)			WR east (Westbound)			Clarksville south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	0	0	92	0	190	0	0	0	0
8:15am	0	0	87	0	148	0	0	0	0
8:30am	0	0	74	0	141	0	0	0	0
8:45am	0	0	60	0	182	0	0	0	0
Hourly Tot	0	0	313	0	661	0	0	0	0
Hourly Tot	0	0	1	0	1	0	0	0	0
PHF	0	0	0.85	0	0.87	0	0	0	0

All Days, Peak PM

	Clarksville north (Southbound)			WR east (Westbound)			Clarksville south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
4:00pm	0	0	83	0	137	0	0	0	0
4:15pm	0	0	71	0	140	0	0	0	0
4:30pm	0	0	59	0	147	0	0	0	0
4:45pm	0	0	73	0	207	0	0	0	0
Hourly Tot	0	0	286	0	631	0	0	0	0
Hourly Tot	0	0	1	0	1	0	0	0	0
PHF	0	0	0.86	0	0.76	0	0	0	0

Tues-Thurs, Peak AM

	Clarksville north (Southbound)			WR east (Westbound)			Clarksville south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
8:00am	0	0	103	0	214	0	0	0	0
8:15am	0	0	100	0	161	0	0	0	0
8:30am	0	0	87	0	157	0	0	0	0
8:45am	0	0	64	0	167	0	0	0	0
Hourly Tot	0	0	354	0	699	0	0	0	0
Hourly Tot	0	0	1	0	1	0	0	0	0
PHF	0	0	0.86	0	0.82	0	0	0	0

Tues-Thurs, Peak PM

	Clarksville north (Southbound)			WR east (Westbound)			Clarksville south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	1	0	76	0	159	0	0	0	0
4:00pm	0	0	100	0	150	0	0	0	0
4:15pm	0	0	88	0	159	0	0	0	0
4:30pm	0	0	70	0	152	0	0	0	0
Hourly Tot	1	0	334	0	620	0	0	0	0
Hourly Tot	0.003	0	0.997	0	1	0	0	0	0
PHF	0.25	0	0.83	0	0.97	0	0	0	0

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	97	0	379	0.2647
0	94	0	329	0.2297
0	123	0	338	0.236
0	144	0	386	0.2696
0	458	0	1432	1
0	1	0		
0	0.8	0		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	242	0	462	0.2577
0	195	0	406	0.2264
0	223	0	429	0.2393
0	216	0	496	0.2766
0	876	0	1793	1
0	1	0		
0	0.9	0		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	98	0	415	0.2693
0	92	0	353	0.2291
0	133	0	377	0.2446
0	165	0	396	0.257
0	488	0	1541	1
0	1	0		
0	0.74	0		

WR west (Eastbound)

Left	Thru	Right	Total	Total %
0	250	0	486	0.2406
1	315	0	566	0.2802
0	250	0	497	0.246
0	249	0	471	0.2332
1	1064	0	2020	1
0.0009	0.9991	0		
0.25	0.84	0		

Prepared by National Data & Surveying Services

White Rock Rd & Clarksville Crossing

#22

Peak Hour Turning Movement Count

ID: 18-07183-022
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	06:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 07:00 PM

White Rock Rd — SOUTHBOUND

AM	3	599	0	0	493
NOON	0	0	0	0	0
PM	2	404	0	0	889
	1	2	1	0	

Clarksville Crossing — EASTBOUND

AM	NOON	PM	
6	0	10	
0	0	0	0
1	0	2	0.5
0	0	0	0.5
310	0	181	1
AM	NOON	PM	

Clarksville Crossing — WESTBOUND

PM	NOON	AM	
1	0	0	1
0	0	0	0.5
0	0	0	0.5
0	0	0	0
0	0	0	
PM	NOON	AM	

CONTROL

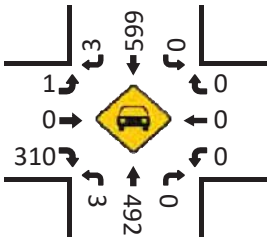
Signalized

TEV	1408	0	1484
	AM	NOON	PM
PHF	0.78		0.96

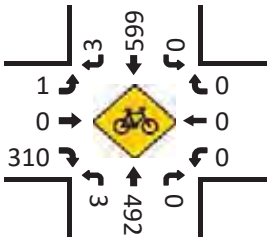
White Rock Rd — NORTHBOUND

PM	585	0	8	886	0
NOON	0	0	0	0	0
AM	909	0	3	492	0
		0	1	1.5	0.5

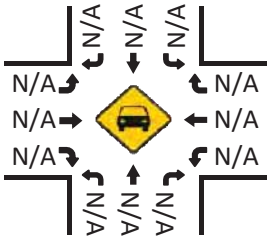
Total Vehicles (AM)



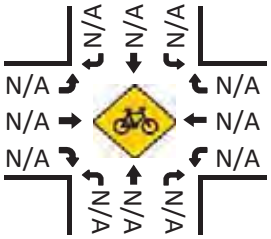
(AM)



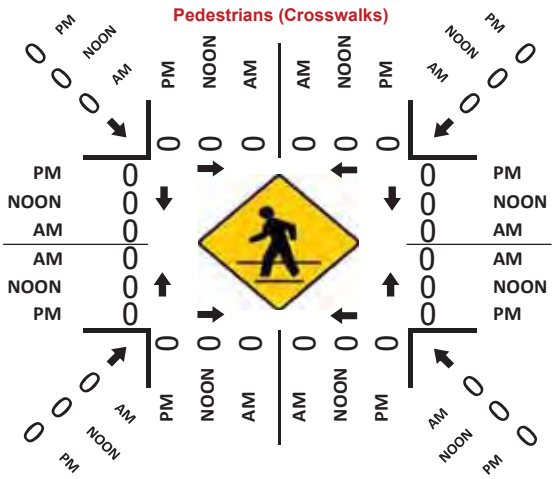
Total Vehicles (Noon)



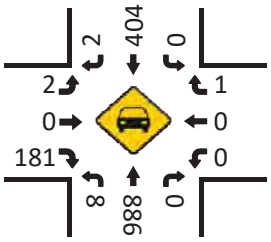
(NOON)



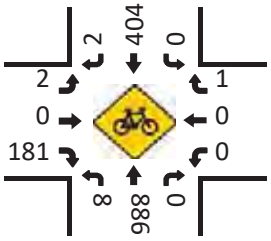
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1475501
Analysis: Creekside #23 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-19
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R126-M128

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	WR north (Southboun		WR south (Northboun		WB ramps (Westbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
11:00am	106	33	85	89	59	23	395	0.2552
11:15am	119	23	93	82	45	12	374	0.2416
11:30am	115	21	95	78	52	27	388	0.2506
11:45am	125	15	89	69	64	29	391	0.2526
Hourly Tot	465	92	362	318	220	91	1548	1
Hourly Tot	0.8348	0.1652	0.5324	0.4676	0.7074	0.2926		
PHF	0.93	0.7	0.95	0.89	0.86	0.78		

All Days, Peak PM

	WR north (Southboun		WR south (Northboun		WB ramps (Westbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
4:15pm	125	35	119	123	122	23	547	0.24
4:30pm	135	39	130	119	112	21	556	0.244
4:45pm	206	45	129	113	107	16	616	0.2703
5:00pm	142	46	138	107	112	15	560	0.2457
Hourly Tot	608	165	516	462	453	75	2279	1
Hourly Tot	0.7865	0.2135	0.5276	0.4724	0.858	0.142		
PHF	0.74	0.9	0.93	0.94	0.93	0.82		

Tues-Thurs, Peak AM

	WR north (Southboun		WR south (Northboun		WB ramps (Westbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
8:00am	207	39	73	41	53	10	423	0.2622
8:15am	153	29	55	57	42	13	349	0.2164
8:30am	161	39	77	95	28	6	406	0.2517
8:45am	176	28	90	108	33	0	435	0.2697
Hourly Tot	697	135	295	301	156	29	1613	1
Hourly Tot	0.8377	0.1623	0.495	0.505	0.8432	0.1568		
PHF	0.84	0.87	0.82	0.7	0.74	0.56		

Tues-Thurs, Peak PM

	WR north (Southboun		WR south (Northboun		WB ramps (Westbound)			
	Thru	Right	Left	Thru	Left	Right	Total	Total %
4:15pm	141	42	145	144	138	26	636	0.2534
4:30pm	140	47	152	140	125	23	627	0.2498
4:45pm	158	56	156	125	121	12	628	0.2502
5:00pm	148	55	170	114	120	12	619	0.2466
Hourly Tot	587	200	623	523	504	73	2510	1
Hourly Tot	0.7459	0.2541	0.5436	0.4564	0.8735	0.1265		
PHF	0.93	0.89	0.92	0.91	0.91	0.7		

Prepared by National Data & Surveying Services

White Rock Rd & U.S. 50 EB

#23

Peak Hour Turning Movement Count

ID: 18-07183-023
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

SOUTHBOUND (White Rock Rd)

PEAK HOURS		COUNT PERIODS
AM	07:30 AM - 08:30 AM	AM
NOON	NONE	NOON
PM	04:45 PM - 05:45 PM	PM

AM	118	562	0	0	426	AM
NOON	0	0	0	0	0	NOON
PM	111	342	0	0	925	PM
	1	2	0	0		

EASTBOUND (U.S. 50 EB)

AM	NOON	PM	
292	0	518	
0	0	0	0
111	0	429	1.5
0	0	0	0
33	0	56	1.5
AM	NOON	PM	

WESTBOUND (U.S. 50 EB)

	PM	NOON	AM
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
	0	0	0
	PM	NOON	AM

CONTROL

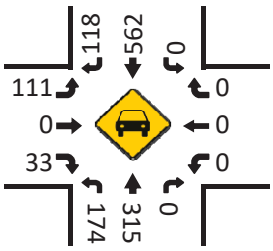
Signalized

TEV	1313	0	1841
	AM	NOON	PM
PHF	0.83		0.91

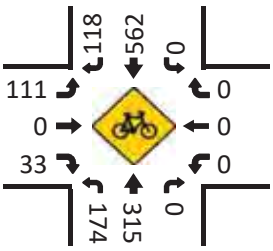
NORTHBOUND (White Rock Rd)

	0	2	2	0	
PM	398	0	407	496	0 PM
NOON	0	0	0	0	0 NOON
AM	595	0	174	315	0 AM

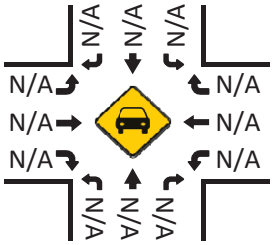
Total Vehicles (AM)



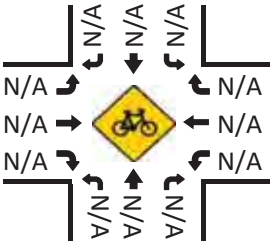
(AM)



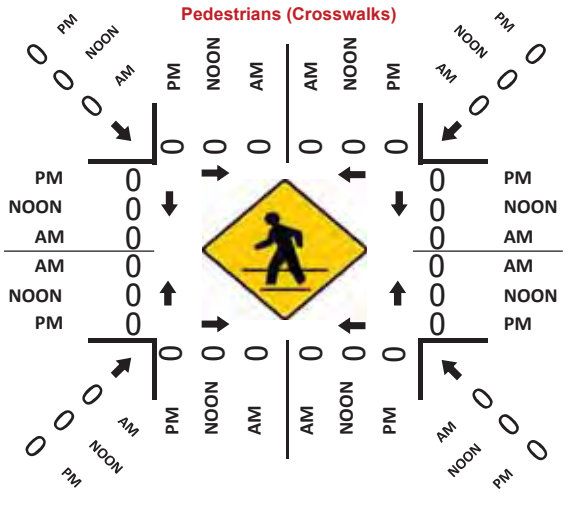
Total Vehicles (Noon)



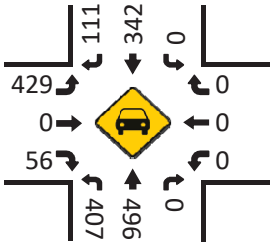
(NOON)



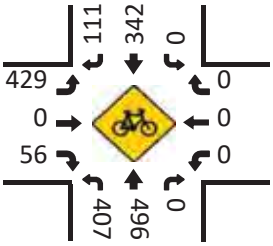
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1473534
Analysis: Creekside #24 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	WR north (Southbound)			offramp (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	0	30	129	149	0	41	9	93	0
7:45am	0	51	184	203	0	36	14	81	0
8:00am	0	74	124	139	0	24	23	69	0
8:15am	0	66	107	102	0	17	24	70	0
Hourly Tot	0	221	544	593	0	118	70	313	0
Hourly Tot	0	0.2889	0.7111	0.834	0	0.166	0.1828	0.8172	0
PHF	0	0.75	0.74	0.73	0	0.72	0.73	0.84	0

All Days, Peak PM

	WR north (Southbound)			offramp (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	0	66	68	100	0	40	27	216	0
4:00pm	0	62	53	89	0	44	37	192	0
4:15pm	0	77	51	83	0	49	37	188	0
4:30pm	0	81	52	92	0	46	22	224	0
Hourly Tot	0	286	224	364	0	179	123	820	0
Hourly Tot	0	0.5608	0.4392	0.6703	0	0.3297	0.1304	0.8696	0
PHF	0	0.88	0.82	0.91	0	0.91	0.83	0.92	0

Tues-Thurs, Peak AM

	WR north (Southbound)			offramp (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:15am	0	15	106	147	0	44	6	110	0
7:30am	0	29	151	187	0	52	7	114	0
7:45am	0	55	186	201	0	43	17	87	0
8:00am	0	83	147	159	0	30	22	67	0
Hourly Tot	0	182	590	694	0	169	52	378	0
Hourly Tot	0	0.2358	0.7642	0.8042	0	0.1958	0.1209	0.8791	0
PHF	0	0.55	0.79	0.86	0	0.81	0.59	0.83	0

Tues-Thurs, Peak PM

	WR north (Southbound)			offramp (Westbound)			WR south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:45pm	0	68	64	113	1	41	35	213	0
4:00pm	0	62	51	101	0	42	48	215	0
4:15pm	0	83	42	97	0	61	43	229	0
4:30pm	0	89	50	94	0	54	26	224	0
Hourly Tot	0	302	207	405	1	198	152	881	0
Hourly Tot	0	0.5933	0.4067	0.6705	0.0017	0.3278	0.1471	0.8529	0
PHF	0	0.85	0.81	0.9	0.25	0.81	0.79	0.96	0

onramp (Eastbound)

Left	Thru	Right	Total	Total %
0	0	0	451	0.2426
0	0	0	569	0.3061
0	0	0	453	0.2437
0	0	0	386	0.2076
0	0	0	1859	1
0	0	0		
0	0	0		

onramp (Eastbound)

Left	Thru	Right	Total	Total %
0	0	0	517	0.259
0	0	0	477	0.239
0	0	0	485	0.243
0	0	0	517	0.259
0	0	0	1996	1
0	0	0		
0	0	0		

onramp (Eastbound)

Left	Thru	Right	Total	Total %
0	0	0	428	0.2073
0	0	0	540	0.2615
0	0	0	589	0.2852
0	0	0	508	0.246
0	0	0	2065	1
0	0	0		
0	0	0		

onramp (Eastbound)

Left	Thru	Right	Total	Total %
0	0	0	535	0.2493
0	0	0	519	0.2418
0	0	0	555	0.2586
0	0	0	537	0.2502
0	0	0	2146	1
0	0	0		
0	0	0		

Prepared by National Data & Surveying Services

#24

Silva Valley Pkwy & U.S. 50 WB

Peak Hour Turning Movement Count

ID: 18-07183-024
City: El Dorado Hills

Day: Wednesday
Date: 05/16/2018

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	06:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 07:00 PM

Silva Valley Pkwy — SOUTHBOUND

AM	483	223	0	0	494	AM
NOON	0	0	0	0	0	NOON
PM	207	200	0	0	1019	PM

U.S. 50 WB — EASTBOUND

AM	NOON	PM		
561	0	279		
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
AM	NOON	PM		

CONTROL

Signalized

TEV	1721 AM	0 NOON	1755 PM
PHF	0.79		0.90

U.S. 50 WB — WESTBOUND

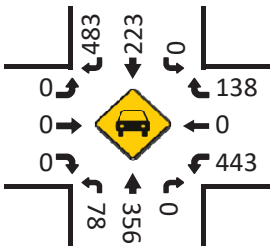
PM	NOON	AM	
154	0	138	1
0	0	0	0.5
256	0	443	1.5
0	0	0	0
0	0	0	
PM	NOON	AM	

Silva Valley Pkwy — NORTHBOUND

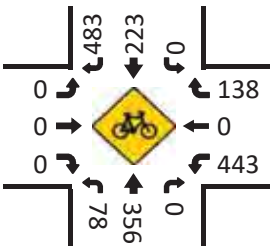
PM	457	1	72	865	0	PM
NOON	0	0	0	0	0	NOON
AM	666	0	78	356	0	AM

0 1 2 0

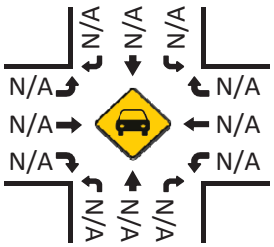
Total Vehicles (AM)



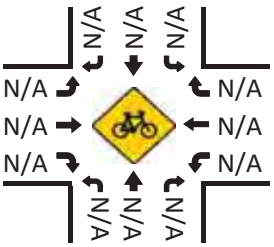
(AM)



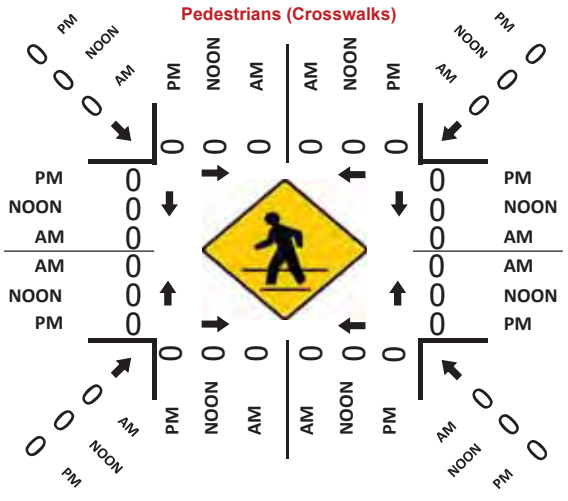
Total Vehicles (Noon)



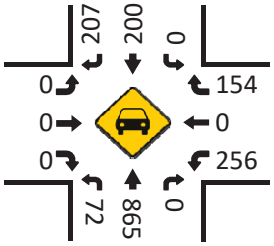
(NOON)



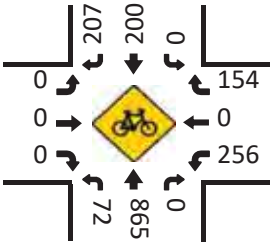
Pedestrians (Crosswalks)



Total Vehicles (PM)



(PM)



Analysis ID: 1473537
Analysis: Creekside #26 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southb		Latrobe south (Northb		Wetsel-Oviatt (Eastbound)			
	Thru	Right	Left	Right	Left	Right	Total	Total %
8:00am	60	1	0	89	0	0	150	0.2613
8:15am	66	0	0	61	0	0	127	0.2213
8:30am	56	3	0	82	2	0	143	0.2491
8:45am	58	3	0	91	2	0	154	0.2683
Hourly Tot	240	7	0	323	4	0	574	1
Hourly Tot	0.9717	0.0283	0	1	1	0		
PHF	0.91	0.58	0	0.89	0.5	0		

All Days, Peak PM

	Latrobe north (Southb		Latrobe south (Northb		Wetsel-Oviatt (Eastbound)			
	Thru	Right	Left	Right	Left	Right	Total	Total %
2:00pm	69	0	0	70	4	0	143	0.2072
2:15pm	87	0	0	79	1	0	167	0.242
2:30pm	112	0	0	81	3	0	196	0.2841
2:45pm	112	2	0	64	6	0	184	0.2667
Hourly Tot	380	2	0	294	14	0	690	1
Hourly Tot	0.9948	0.0052	0	1	1	0		
PHF	0.85	0.25	0	0.91	0.58	0		

Tues-Thurs, Peak AM

	Latrobe north (Southb		Latrobe south (Northb		Wetsel-Oviatt (Eastbound)			
	Thru	Right	Left	Right	Left	Right	Total	Total %
7:45am	33	3	0	149	0	0	185	0.2859
8:00am	63	1	0	111	0	0	175	0.2705
8:15am	68	0	0	68	1	0	137	0.2117
8:30am	62	1	0	84	3	0	150	0.2318
Hourly Tot	226	5	0	412	4	0	647	1
Hourly Tot	0.9784	0.0216	0	1	1	0		
PHF	0.83	0.42	0	0.69	0.33	0		

Tues-Thurs, Peak PM

	Latrobe north (Southb		Latrobe south (Northb		Wetsel-Oviatt (Eastbound)			
	Thru	Right	Left	Right	Left	Right	Total	Total %
2:15pm	88	0	0	81	1	0	170	0.2196
2:30pm	130	0	0	93	3	0	226	0.292
2:45pm	128	3	0	73	11	0	215	0.2778
3:00pm	95	3	0	53	12	0	163	0.2106
Hourly Tot	441	6	0	300	27	0	774	1
Hourly Tot	0.9866	0.0134	0	1	1	0		
PHF	0.85	0.5	0	0.81	0.56	0		

Analysis ID: 1473546
Analysis: Creekside #27 4/18-27/2023
Created by: tkear@tkearinc.com
Created on: 2023-07-17
Organization: T. Kear/Creekside Village Intersection Studies

Analysis Setup Details:
Analysis Type: Turning Movement Analysis
Unit of Measurement: Miles
Mode of Travel: All Vehicles CVD+
Output Type: StL All Vehicles Volume

Analysis Options:
Data Periods: Apr 18, 2023 - Apr 27, 2023

Day Type:
0: All Days (M-Su)
1: Tues-Thurs (Tu-Th)

Day Part:
00: 6:00am-6:15am
01: 6:15am-6:30am
02: 6:30am-6:45am
03: 6:45am-7:00am
04: 7:00am-7:15am
05: 7:15am-7:30am
06: 7:30am-7:45am
07: 7:45am-8:00am
08: 8:00am-8:15am
09: 8:15am-8:30am
10: 8:30am-8:45am
11: 8:45am-9:00am
12: 9:00am-9:15am
13: 9:15am-9:30am
14: 9:30am-9:45am
15: 9:45am-10:00am
16: 3:00pm-3:15pm
17: 3:15pm-3:30pm
18: 3:30pm-3:45pm
19: 3:45pm-4:00pm
20: 4:00pm-4:15pm
21: 4:15pm-4:30pm
22: 4:30pm-4:45pm
23: 4:45pm-5:00pm
24: 5:00pm-5:15pm
25: 5:15pm-5:30pm
26: 5:30pm-5:45pm
27: 5:45pm-6:00pm
28: 6:00pm-6:15pm
29: 6:15pm-6:30pm
30: 6:30pm-6:45pm
31: 6:45pm-7:00pm

Country: USA
Metrics Version: R125-M127

Metric results for this analysis include rows generated using an upsampling technique that uses data from adjacent day parts and analogous day parts outside of the original data period to synthesize a representative metric in cases where sample size would have been otherwise too low to provide a high-quality result. Please contact support@streetlightdata.com with any questions.

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All Days, Peak AM

	Latrobe north (Southbound)			SS east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:45am	4	30	2	4	8	5	1	39	0
8:00am	10	40	1	1	1	9	0	35	1
8:15am	21	38	0	7	0	7	0	47	1
8:30am	17	39	0	7	0	5	0	54	0
Hourly Tot	52	147	3	19	9	26	1	175	2
Hourly Tot	0.2574	0.7277	0.0149	0.3519	0.1667	0.4815	0.0056	0.9831	0.0112
PHF	0.62	0.92	0.38	0.68	0.28	0.72	0.25	0.81	0.5

All Days, Peak PM

	Latrobe north (Southbound)			SS east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:00pm	6	43	12	3	2	3	0	45	10
2:15pm	5	52	5	3	1	13	0	40	14
2:30pm	9	67	7	3	2	29	0	34	15
2:45pm	15	74	3	4	8	16	1	28	10
Hourly Tot	35	236	27	13	13	61	1	147	49
Hourly Tot	0.1174	0.7919	0.0906	0.1494	0.1494	0.7011	0.0051	0.7462	0.2487
PHF	0.58	0.8	0.56	0.81	0.41	0.53	0.25	0.82	0.82

Tues-Thurs, Peak AM

	Latrobe north (Southbound)			SS east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:30am	0	29	2	6	21	3	4	60	0
7:45am	5	27	5	5	10	8	2	47	0
8:00am	16	34	2	3	0	15	0	37	0
8:15am	31	35	0	4	0	12	0	53	0
Hourly Tot	52	125	9	18	31	38	6	197	0
Hourly Tot	0.2796	0.672	0.0484	0.2069	0.3563	0.4368	0.0296	0.9704	0
PHF	0.42	0.89	0.45	0.75	0.37	0.63	0.38	0.82	0

Tues-Thurs, Peak PM

	Latrobe north (Southbound)			SS east (Westbound)			Latrobe south (Northbound)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2:00pm	8	45	11	1	0	4	0	38	11
2:15pm	3	50	6	0	0	18	0	40	21
2:30pm	13	75	8	1	2	37	0	33	22
2:45pm	19	71	6	3	11	20	0	30	12
Hourly Tot	43	241	31	5	13	79	0	141	66
Hourly Tot	0.1365	0.7651	0.0984	0.0515	0.134	0.8144	0	0.6812	0.3188
PHF	0.57	0.8	0.7	0.42	0.3	0.53	0	0.88	0.75

SS west (Eastbound)

Left	Thru	Right	Total	Total %
19	20	0	132	0.2645
7	10	0	115	0.2305
2	1	0	124	0.2485
6	0	0	128	0.2565
34	31	0	499	1
0.5231	0.4769	0		
0.45	0.39	0		

SS west (Eastbound)

Left	Thru	Right	Total	Total %
6	20	2	152	0.2424
1	9	0	143	0.2281
2	2	0	170	0.2711
2	0	1	162	0.2584
11	31	3	627	1
0.2444	0.6889	0.0667		
0.46	0.39	0.38		

SS west (Eastbound)

Left	Thru	Right	Total	Total %
14	22	0	161	0.272
22	33	0	164	0.277
7	16	0	130	0.2196
1	1	0	137	0.2314
44	72	0	592	1
0.3793	0.6207	0		
0.5	0.55	0		

SS west (Eastbound)

Left	Thru	Right	Total	Total %
6	23	0	147	0.2217
2	9	0	149	0.2247
0	0	0	191	0.2881
2	0	2	176	0.2655
10	32	2	663	1
0.2273	0.7273	0.0455		
0.42	0.35	0.25		

PHASE TIMING

LOCATION: El Dorado Hills Boulevard at Serrano Parkway/Lassen Lane

PROGRAM: C7 DATE: 3/24/92

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK		7						7	CLK RST
1	DON'T WALK		12						19	CHK SUM
2	MIN GREEN	3	6			3	3	3	3	
3	TYPE 3 DET		10				10		5	
4	ADD/VEH	0.0	2.5			0.0	2.5	0.0	1.0	
5	PASSAGE	2.0	2.0			2.0	2.0	2.0	4.0	
6	MAX GAP									
7	MIN GAP									
8	MAX EXT	25	40			25	40	35	35	
9	MAX 2									YEAR
A	MAX 3									MONTH
B										DAY
C	REDUCE BY									DAY OF WEEK
D	REDUCE EVERY									HOUR
E	YELLOW	3.0	4.7			3.0	4.7	3.0	3.0	MINUTE
F	RED	~~0~~ 0	~~0.5~~ 0			0	0.5	~~0.0~~ 0	~~0.0~~ 0	SECOND

PRE-EMPTION	E
EV SELECT	
RR1 CLEAR	
EVA DELAY	0
EVA CLEAR	5
EVB DELAY	0
EVB CLEAR	5
EVC DELAY	10
EVC CLEAR	5
EVD DELAY	5
EVD CLEAR	5
MAX EV	30
RR2 CLEAR	

	FLAGS	F 1	2	3	4	5	6	7	8	
0	PERMIT	X	X			X	X	X	X	0
1	RED LOCK									1
2	YEL LOCK									2
3	V RECALL		X				X			3
4	P RECALL									4
5	PED PHASES		X						X	5
6	ARROW A									6
7	ARROW B									7
8	DBL ENTRY									8
9	MAX 2 PH									9
A	LAG PHASES	FOR OBSERVATION ONLY								A
B	RED REST									B
C	REST IN WALK									C
D	MAX 3 PH									D
E	YEL STARTUP								X	E
F	FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

LOCATION: El Dorado Hills Boulevard at Serrano Parkway/Lassen Lane

PROGRAM: C7 DATE: 3/24/92

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1	1.2	D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1	1.2	D-A-1
2I2L	D-1-2		D-7-2	D-3-2	1.2	D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2	1.2	D-A-2
2I3U	D-1-3		D-7-3	D-3-3	1.2	D-9-3	3	6J3U	D-2-3		D-8-3	D-4-3	1.2	D-A-3
2I3L	D-1-4		D-7-4	D-3-4	1.2	D-9-4	4	6J3L	D-2-4		D-8-4	D-4-4	1.2	D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6	2.0	D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7	2.0	D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8	2.0	D-8-8	D-4-8		D-A-8
4I7U	D-1-9		D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9	2.0	D-8-9	D-4-9		D-A-9
4I7L	D-1-A		D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A	8.0	D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B		D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D		D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D	8.0	D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext../Cnt. i.e. TYPE)
5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

PHASE TIMING

LOCATION: El Dorado Hills Bl @ Park Dr BY: _____

PROGRAM: C8 DATE: 6/28/2005

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK		7				7	6	6	CLK RST
1	DON'T WALK		18				16	24	24	CHK SUM
2	MIN GREEN	4	5			4	4	5	5	
3	TYPE 3 DET		15				15			
4	ADD/VEH	0	0			0	0	0	0	
5	PASSAGE	2.0	3.5			2.0	3.5	2.0	2.0	
6	MAX GAP		4.2				4.2			
7	MIN GAP		1.2				1.2			
8	MAX EXT	20	50			20	50	20	20	
9	MAX 2									YEAR
A	MAX 3									MONTH
B										DAY
C	REDUCE BY		0.1				0.1			DAY OF WK
D	REDUCE EVERY		1.0				1.0			HOUR
E	YELLOW	3.0	4.7			3.0	4.7	3.0	3.0	MINUTE
F	RED	1.0	1.0			1.0	1.0	1.0	1.0	SECOND
	PED XING - FT									

	PRE-EMPTION	E
	EV SELECT	
	RR1 CLR	
	EVA DLY	
	EVA CLR	5
	EVB DLY	
	EVB CLR	5
	EVC DLY	
	EVC CLR	5
	EVD DLY	
	EVD CLR	5
	MAX EV	40
	RR2 CLR	

	F FLAGS	1	2	3	4	5	6	7	8
0	PERMIT	X	X			X	X	X	X
1	RED LOCK								
2	YEL LOCK		X				X		
3	V RECALL		X				X		
4	P RECALL								
5	PED PHASES		X				X	X	X
6	ARROW A								
7	ARROW B								
8	DBL ENTRY								
9	MAX 2 PH								
A	LAG PHASES	FOR OBSERVATION ONLY							
B	RED REST								
C	REST IN WALK								
D	MAX 3 PH								
E	YEL STARTUP							X	
F	FIRST PHASE		X				X		

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	2.0
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

LOCATION: El Dorado Hills Bl @ Park Dr

PROGRAM: C8 **DATE:** 6/28/2005

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1		D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1		D-A-1
2I2L	D-1-2		D-7-2	D-3-2		D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2		D-A-2
2I3U	D-1-3		D-7-3	D-3-3		D-9-3	3	6J3U	D-2-3		D-8-3	D-4-3		D-A-3
2I3L	D-1-4		D-7-4	D-3-4		D-9-4	4	6J3L	D-2-4		D-8-4	D-4-4		D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6	5.0	D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7		D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8		D-8-8	D-4-8		D-A-8
4I7U	D-1-9		D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9	15.0	D-8-9	D-4-9		D-A-9
4I7L	D-1-A		D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A	10.0	D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B	5.0	D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D		D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D	10.0	D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext../Cnt. i.e. TYPE)
*5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

LOCATION: El Dorado Hills Bl @ Park Dr

PROGRAM: C8

DATE: 6/28/2005

D PAGE

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																											
B																											
C																											
D																											
E										VER.																	
F										BAT.																	

E PAGE

	E	FLAGS								F	FLAGS								
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										"Y" RCL C									2
3										"Y" RCL D									3
4	Bike - A									Bike - B									4
5	OLA OUT									2 PED		X							5
6	OLB OUT									6 PED						X			6
7	OLC OUT									4 PED							X		7
8	OLD OUT									8 PED								X	8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F

C8 VERSION NUMBER = D-E-E

CONTROL CODE "D"				
		A	B	C
LAST PWR FAIL	E	H	M	D
LAST FLASH	F	H	M	D

CONTROL CODE "D" SYSTEM DETECTOR	
	0
0	
1	
2	
3	
4	
5	
6	
7	
8	

NOTE: IF THIS IS THE MASTER FOR SYSTEM, ENTER NO. OF SLAVES IN RAM LOCATION D-0-0

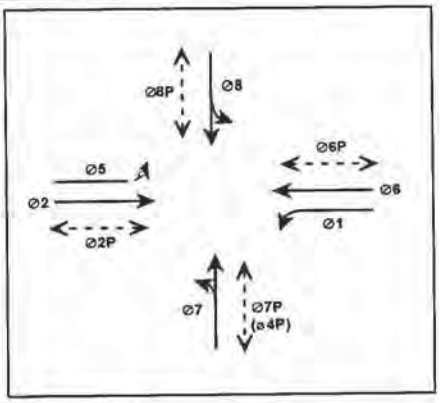
LOCATION: El Dorado Hills Bl @ Park Dr BY: SLK

DATE: 6/28/2005

TYPE 170 CONTROLLER MODEL 210
CONFLICT MONITOR PROGRAMMING INSTRUCTIONS

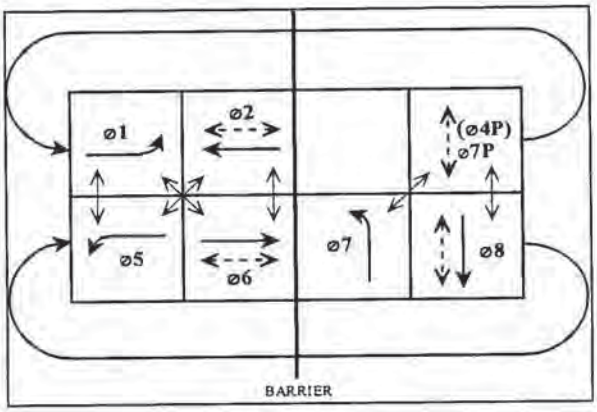
CHANNELS AND PHASES

CHANNEL 16 = Ø8 PED	CHANNEL 15 = Ø6 PED	CHANNEL 14 = Ø4 PED	CHANNEL 13 = Ø2 PED	CHANNEL 12 = SPECIAL	CHANNEL 11 = SPECIAL	CHANNEL 10 = OVERLAP "B"	CHANNEL 9 = OVERLAP "A"
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	
10	10	10	10	10	10		
11	11	11	11	11			
12	12	12	12				
13	13	13					
14	14						
15							



CHANNELS AND PHASES

CHANNEL 8 = Ø8	CHANNEL 7 = Ø7	CHANNEL 6 = Ø6	CHANNEL 5 = Ø5	CHANNEL 4 = Ø4	CH. 3 = Ø3	CH2= Ø2
1	1	1	1	1	1	1
2	2	2	2	2	2	
3	3	3	3	3		
4	4	4	4			
5	5	5				
6	6					
7						



The conflict monitor program card is supplied with all 120 diodes installed. Diodes for phases **NOT** in conflict must be removed.

1. Mark channels (phases) that are not conflicting.
2. Remove corresponding diodes from diode board.
3. Mark diode board with name of intersection.

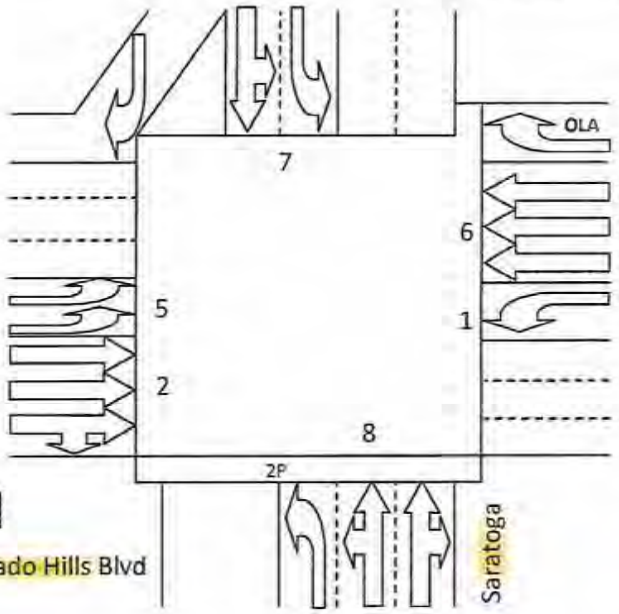
Location: ED 50 @ El Dorado Hills WB Ramp
System: **District:**
Master At: This Location **I/C:**

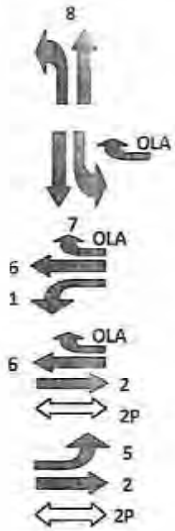
Designed By: El Dorado Co, Y&C Trans.
Installed By: EA 03-2E5104
Service Info: 03250500000860b

Timing Change: **Date Start:** **Date End:** **Designed:** **Installed:**

		FLASH
PHASE	1) SB El Dorado Hills LT to Saratoga	[ ]
	2) NB El Dorado Hills	[ ]
	3)	[ ]
	4)	[ ]
	5) NB LT to WB on	[ ]
	6) SB El Dorado Hills	[ ]
	7) WB Off	[ ]
	8) WB On from Saratoga Shopping Cente	[ ]
OVERLAP	A) 6+7 ***load resistor on 4 Ped Green***	[ ]
	B)	[ ]
	C)	[ ]
	D)	[ ]
	E)	[ ]
	F)	[ ]

Intersection Layout





Comments and Notes:
2000-01-04 MODIFIED SIGNAL: CHANGED TO 6 PHASE OPERATION BY: P.A.DIAZ, A. HEBERT, B. MURPHY, J. ELAM AND S. KOCH (ED CO) AND M. VAN DORMICK (ED CO)
2000-04-19 APPLIED QUICNET
2003-08-27 CHANGED FROM C8V3 TO C8V4 BY P.A.DIAZ
2005-11-11 REMOVED PHASE 5 & 7 BY: P.A.DIAZ & S. KOCH
2009-03-20 installed 2070 by PAD
2013-07-28 Upgrade to TSCP 2.17, prohibit 1 & 5 due to new on-ramp.
2014-08-22 New 332 w/new 2070E TSCP v2.20 Build 118 at SE corner, new location: dh

RAM Checksum

Page 2: 2A0C	Page 8: 69C8 CF64
Page 3: 76FB	Page 9: D2FD
Page 4: 6FD6	Page 10: 6F66
Page 5: 191A	Page 11: FDAC
Page 6: 191A	Page 12: 27C3
Page 7: 554E	Page 13: 86F7

Post Mile: ED 50 @ (EDH) El Dorado Hills WB Ramp ***Printed: 4/2/2018***

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

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Appendix A

CONFIGURATION PHASE FLAGS

Cabinet
332
Configuration
CALTRANS

Phases (2-1-1-1)	
Permitted	12..5678
Restricted	.....

Phase Recalls (2-1-1-2)	
Vehicle Min	.2...6..
Vehicle Max	.....
Pedestrian	.....
Bicycle	.....

Phase Locks (2-1-1-3)	
Red	.....
Yellow	.....
Force/Max	.....

Phase Features (2-1-1-4)	
Double Entry	.....
Rest In Walk	.....
Rest In Red	.....
Walk 2	.....
Max Green 2	.....
Max Green 3	.....

Startup (2-1-1-5)	
First Green Phases	.2...6..
Yellow Start Phases	.....
Vehicle Calls	12..5678
Pedestrian Calls	.2.....
Yellow Start Overlaps	.....
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	.....	1	.....
2	.....	2	.....
3	.....	3	.....
4	.....	4	.....
5	.....	5	.....
6	.....	6	.....
7	.....	7	.....
8	.....	8	.....

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	.....
Yellow Flash Overlap	.....
Flash In Red Phases	.....
Flash In Red Overlap	.....

Special Operation (2-1-2-3)	
Single Exit Phase	.....
Driveway Signal Phases	.....
Driveway Signal Overlaps	.....
Leading Ped Phases	.....

Protected Permissive (2-1-2-4)	
Protected Permissive	.....

Pedestrian (2-1-3)	
P1	.....
P2	.2.....
P3	.....
P4	...4....
P5	.....
P6	.....
P7	.....
P8	.....

Overlap (2-1-4)				
Overlap	Parent	Omit	No Start	Not
A	.....67.	.....6..	.....	.....
B	.....	.....	.....	.....
C	.....	.....	.....	.....
D	.....	.....	.....	.....
E	.....	.....	.....	.....
F	.....	.....	.....	.....

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	7	0	0	0	0	0	0
Flash Don't Walk	0	19	0	0	0	0	0	0
Minimum Green	8	10	0	0	10	10	10	10
Det Limit	10	10	0	0	10	10	10	10
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	15	60	0	0	60	40	40	20
Max Green 2	50	50	0	0	40	50	50	50
Max Green 3	50	50	0	0	50	50	50	50
Extension	2.0	3.0	0.0	0.0	2.0	2.0	2.5	2.0
Maximum Gap	2.0	3.5	0.0	0.0	5.0	2.5	2.5	2.0
Minimum Gap	2.0	1.0	0.0	0.0	2.0	1.0	2.5	2.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0
Reduce Every	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0
Yellow	3.6	4.8	3.0	3.0	3.6	4.8	4.1	3.6
All-Red	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	20	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	4.3	5.0	5.0	5.0	5.0	5.0
Red	1.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	OFF

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90		.....				10	26			15	18	20	14
Plan 2	Green Factor	120		.....				10	51			26	33	21	16
Plan 3	Green Factor	136		.....				14	62			35	39	22	16
Plan 4	Green Factor	136		.....				14	62			45	29	22	16
Plan 5	Green Factor			.....											
Plan 6	Green Factor			.....											
Plan 7	Green Factor			.....											
Plan 8	Green Factor			.....											
Plan 9	Green Factor			.....											

Master Timer Sync (7-A)	
Enable in Plans	
1-9	.....
11-19	.....
21-29	.....

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
.2.45.7.	.....
Veh Min	Veh Max
.....	.....
Ped	Bike
.....	.....
Cond	Cond Grn
.....	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	.2.45.7.	.2...6..	.....	.....	.....	.....	.....	.....
Plan 2	.2.45.7.	.2...6..	.....	.....	.....	.....	.....	.....
Plan 3	.2.45.7.	.2...6..	.....	.....	.....	.....	.....	.....
Plan 4	.2.45.7.	.2...6..	.....	.....	.....	.....	.....	....5...
Plan 5	.....	.....	.....	.....	.....	.....	.....	.....
Plan 6	.....	.....	.....	.....	.....	.....	.....	.....
Plan 7	.....	.....	.....	.....	.....	.....	.....	.....
Plan 8	.....	.....	.....	.....	.....	.....	.....	.....
Plan 9	.....	.....	.....	.....	.....	.....	.....	.....

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

DETECTORS

Detector Attributes (5-1)				Slot	Detector Configuration (5-2)				
Det	Type	Phases	Lock		Det	Delay	Extend	Recall	Port
1	COUNT+CALL+EXTEND	1.....	NO	I1U	1			10	3.2
2	COUNT+CALL+EXTEND	1.....	NO	I1L	2			10	7.2
3	COUNT+CALL+EXTEND	.2.....	NO	I2U	3		2.0	10	1.1
4	COUNT+CALL+EXTEND	.2.....	NO	I2L	4		2.0	10	1.5
5	COUNT+CALL+EXTEND	.2.....	NO	I3U	5		2.0	10	4.5
6	CALL+EXTEND	.2.....	NO	I3L	6		2.0	10	6.2
7	LIMITED	.2.....	NO	I4U	7			10	2.1
8	LIMITED	.2.....	NO	I4L	8			10	7.4
9	LIMITED	.2.....	NO	I5U	9			10	3.4
10	LIMITED	.2.....	NO	I5L	10			10	7.6
11	LIMITED	.....6..	NO	I6U	11			10	1.3
12	LIMITED	.....6..	NO	I6L	12			10	1.7
13	COUNT+CALL+EXTEND	.....7.	NO	I7U	13		2.0	10	4.7
14	COUNT+CALL+EXTEND	.....7.	NO	I7L	14		2.0	10	6.4
15	LIMITED	.....7.	NO	I8U	15			10	2.3
16	LIMITED	.....7.	NO	I8L	16			10	7.8
17	COUNT+CALL+EXTEND	1.....	NO	I9U	17		2.0	10	3.6
18	COUNT+CALL+EXTEND	..3....	NO	I9L	18			10	3.8
19	COUNT+CALL+EXTEND	.2.....	NO	I10U	19			10	4.1
20	COUNT+CALL+EXTEND	...4....	NO	I10L	20			10	4.2
21	COUNT+CALL+EXTEND	....5...	NO	J1U	21			10	3.1
22	COUNT+CALL+EXTEND	....5...	NO	J1L	22			10	7.1
23	COUNT+CALL+EXTEND	.....6..	NO	J2U	23		2.0	10	1.2
24	COUNT+CALL+EXTEND	.....6..	NO	J2L	24		2.0	10	1.6
25	COUNT+CALL+EXTEND	.....6..	NO	J3U	25		2.0	10	4.6
26	COUNT+CALL+EXTEND	.....6..	NO	J3L	26		2.0	10	6.3
27	LIMITED	.....6..	NO	J4U	27			10	2.2
28	LIMITED	.....6..	NO	J4L	28			10	7.3
29	COUNT+CALL+EXTEND	.....7.	NO	J5U	29			10	3.3
30	COUNT+CALL+EXTEND	.....7.	NO	J5L	30			10	7.5
31	COUNT+CALL+EXTEND	8	NO	J6U	31			10	1.4
32	COUNT+CALL+EXTEND	8	NO	J6L	32			10	1.8
33	COUNT+CALL+EXTEND	....5...	NO	J7U	33		3.0	10	4.8
34	CALL+EXTEND	8	NO	J7L	34			10	6.5
35	COUNT+CALL+EXTEND	8	NO	J8U	35			10	2.4
36	COUNT+CALL+EXTEND	8	NO	J8L	36			10	7.7
37	COUNT+CALL+EXTEND	.2.....	NO	J9U	37			10	3.5
38	COUNT+CALL+EXTEND	.2.....	NO	J9L	38			10	3.7
39	COUNT+CALL+EXTEND	.....6..	NO	J10U	39			10	4.3
40	COUNT+CALL+EXTEND	8	NO	J10L	40			10	4.4
41	PEDESTRIAN	.2.....	NO	I12U	41			10	5.1
42	PEDESTRIAN	...4....	NO	I12L	42			10	5.3
43	PEDESTRIAN	.....6..	NO	I13U	43			10	5.2
44	PEDESTRIAN	8	NO	I13L	44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)	
Detectors 1-8	.....
Detectors 9-16	.....
Detectors17-24	.....
Detectors 25-32	.....
Detectors 33-40	.....
Detectors 41-44	.....

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu	2	3	23	24				
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)	
Enable in Plans	.....

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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Appendix A

TOD SCHEDULE

Table 1 (8-2-1)		
Time	Plan	OS
0001	255	A
0600	2	A
0700	3	A
1500	4	A
1900	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 2 (8-2-2)		
Time	Plan	OS
0001	255	A
0600	2	A
1900	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 3 (8-2-3)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 4 (8-2-4)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 5 (8-2-5)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 6 (8-2-6)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

Location: ED 50 @ Latrobe Rd & EB Ramps — Designed By:

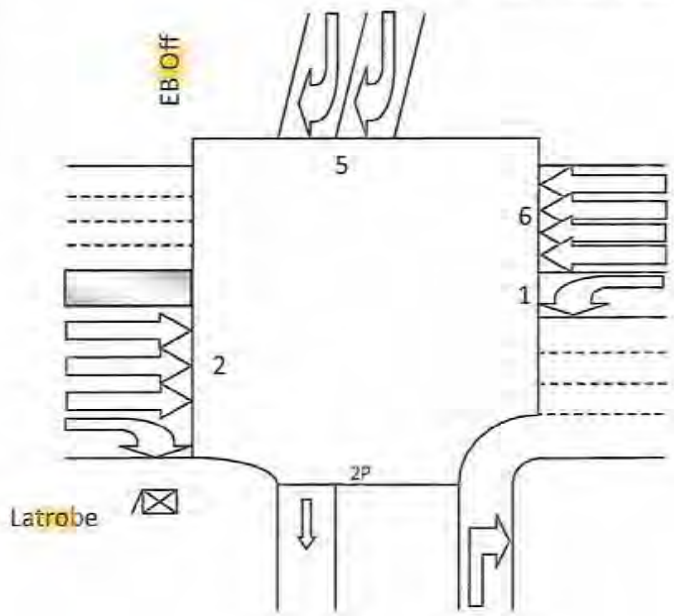
System: — District: — Installed By:

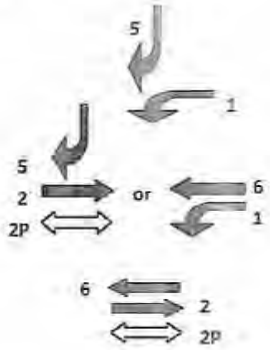
Master At: WB off to El Dorado — I/C: — Service Info:

Timing Change: — Date Start: — Date End: — Designed: — Installed:

		FLASH
PHASE	1) SB El Dorado LT to EB on	[ ]
	2) NB thru to El Dorado Hills Blvd	[ ]
	3)	[ ]
	4)	[ ]
	5) EB off to Latrobe	[ ]
	6) SB thru to Latrobe	[ ]
	7)	[ ]
	8)	[ ]
OVERLAP	A)	[ ]
	B)	[ ]
	C)	[ ]
	D)	[ ]
	E)	[ ]
	F)	[ ]

Intersection Layout





Comments and Notes:

2000-01-05 O.T.O. @ 12:40 BY P.A. DIAZ, A. HEBERT, J. ELEM (CT), S. KOCH, M. VAN DORMICK (ED CO)
2000-04-19 APPLIED QUICNET BY P.A.DIAZ
2002-05-09 @ Appproximate 11:05 Removed phase 8 & Permitted Phase 5. Modified Traffic Signal Interseciton - New EB Off-Ramp. By P.A.Diaz, State Maintenance: Gary B. & Robert R.
2003-08-29 Changed from C8V3 to C8V4 and Applied CTNet by P.A.Diaz
????-??-?? Upgrade to 2070 w/TSCP Vers. 2.16 - add bicycle detection.
2013-07-28 Upgraded to TSCP 2.17
2014-08-29 Upgraded to TSCP 2.20 Build 118 dh

RAM Checksum

Page 2: 2F29	Page 8: ~~E578~~ 69C8
Page 3: 407E	Page 9: D2FD
Page 4: D732	Page 10: 8564
Page 5: 191A	Page 11: FDAC
Page 6: 191A	Page 12: EF20
Page 7: 2980	Page 13: 86F7

Post Mile: ED 50 @ (EDH) Latrobe Rd & EB Ramps

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CONFIGURATION PHASE FLAGS

Cabinet
332
Configuration
CALTRANS

Phases (2-1-1-1)	
Permitted	1 2 . . 5 6 . .
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	1 . . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. 2 . . . 6 . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	1 2 . . 5 6 . .
Pedestrian Calls	. 2 . . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. 2 . . . . .
P3	. . . . .
P4	. . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)				
Overlap	Parent	Omit	No Start	Not
A	. . . . .	. . . . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	7	0	0	0	0	0	0
Flash Don't Walk	0	22	0	0	0	0	0	0
Minimum Green	10	15	0	0	10	15	0	0
Det Limit	10	10	0	0	10	10	0	0
Max Initial	6	9	0	0	5	9	0	0
Max Green 1	39	50	0	0	45	50	0	0
Max Green 2	20	50	0	0	50	15	0	0
Max Green 3	10	50	0	0	50	50	0	0
Extension	2.5	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Maximum Gap	2.5	3.2	0.0	0.0	2.5	3.2	0.0	0.0
Minimum Gap	2.5	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0
Reduce Every	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Yellow	3.6	5.2	3.0	3.0	3.6	5.2	3.0	3.0
All-Red	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	0	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	OFF

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90		.....	74			39	39			30	48		
Plan 2	Green Factor	60		.....	59			18	30			20	28		
Plan 3	Green Factor	68		.....	26			26	30			22	34		
Plan 4	Green Factor	68		.....	26			26	30			22	34		
Plan 5	Green Factor			.....											
Plan 6	Green Factor			.....											
Plan 7	Green Factor			.....											
Plan 8	Green Factor			.....											
Plan 9	Green Factor			.....											

Master Timer Sync (7-A)	
Enable in Plans	
1-9	.....
11-19	.....
21-29	.....

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
.2.4.6.8	.....
Veh Min	Veh Max
.....	.....
Ped	Bike
.....	.....
Cond	Cond Grn
.....	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 2	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 3	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 4	.2.4.6.8	.2...6..	.....	.....	.....	.....	.....	.....
Plan 5	.....	.....	.....	.....	.....	.....	.....	.....
Plan 6	.....	.....	.....	.....	.....	.....	.....	.....
Plan 7	.....	.....	.....	.....	.....	.....	.....	.....
Plan 8	.....	.....	.....	.....	.....	.....	.....	.....
Plan 9	.....	.....	.....	.....	.....	.....	.....	.....

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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DETECTORS

Detector Attributes (5-1)				Slot	Detector Configuration (5-2)				
Det	Type	Phases	Lock		Det	Delay	Extend	Recall	Port
1	COUNT+CALL+EXTEND	1.....	NO	I1U	1	2		10	3.2
2	COUNT+CALL+EXTEND	1.....	NO	I1L	2	2		10	7.2
3	COUNT+CALL+EXTEND	.2.....	YEL	I2U	3		1.2	10	1.1
4	COUNT+CALL+EXTEND	.2.....	NO	I2L	4		1.0	10	1.5
5	LIMITED	.2.....	NO	I3U	5			10	4.5
6	CALL+EXTEND	.2.....	NO	I3L	6			10	6.2
7	LIMITED	.2.....	NO	I4U	7			10	2.1
8	COUNT+CALL+EXTEND	.2.....	NO	I4L	8			10	7.4
9	LIMITED	.2.....	NO	I5U	9			10	3.4
10	LIMITED	.2.....	NO	I5L	10			10	7.6
11	LIMITED	.2.....	NO	I6U	11			10	1.3
12	COUNT+CALL+EXTEND	...4....	NO	I6L	12			10	1.7
13	COUNT+CALL+EXTEND	...4....	NO	I7U	13			10	4.7
14	CALL+EXTEND	...4....	NO	I7L	14			10	6.4
15	LIMITED	.....6..	NO	I8U	15			10	2.3
16	LIMITED	.....6..	NO	I8L	16			10	7.8
17	COUNT+CALL+EXTEND	1.....	NO	I9U	17			10	3.6
18	COUNT+CALL+EXTEND	..3....	NO	I9L	18		2.2	10	3.8
19	COUNT+CALL+EXTEND	.2.....	NO	I10U	19			10	4.1
20	COUNT+CALL+EXTEND	...4....	NO	I10L	20			10	4.2
21	COUNT+CALL+EXTEND	....5...	NO	J1U	21	2	2.0	10	3.1
22	COUNT+CALL+EXTEND	....5...	NO	J1L	22	2	2.0	10	7.1
23	COUNT+CALL+EXTEND	.....6..	YEL	J2U	23		1.2	10	1.2
24	COUNT+CALL+EXTEND	.....6..	YEL	J2L	24		1.2	10	1.6
25	COUNT+CALL+EXTEND	.....6..	YEL	J3U	25		1.2	10	4.6
26	CALL+EXTEND	.....6..	NO	J3L	26		1.0	10	6.3
27	LIMITED	.....6..	NO	J4U	27			10	2.2
28	LIMITED	.....6..	NO	J4L	28			10	7.3
29	LIMITED	.....6..	NO	J5U	29			10	3.3
30	LIMITED	.....6..	NO	J5L	30			10	7.5
31	COUNT+CALL+EXTEND	.....6..	NO	J6U	31		1.0	10	1.4
32	COUNT+CALL+EXTEND	.2.....	NO	J6L	32			10	1.8
33	LIMITED	.....6..	NO	J7U	33			10	4.8
34	LIMITED	.....6..	NO	J7L	34			10	6.5
35	CALL+EXTEND	....5...	NO	J8U	35		0.5	10	2.4
36	CALL+EXTEND	....5...	NO	J8L	36		2.0	10	7.7
37	COUNT+CALL+EXTEND	....5...	NO	J9U	37		0.5	10	3.5
38	COUNT+CALL+EXTEND	....5...	NO	J9L	38		0.5	10	3.7
39	COUNT+CALL+EXTEND	.....6..	NO	J10U	39			10	4.3
40	COUNT+CALL+EXTEND	8	NO	J10L	40			10	4.4
41	PEDESTRIAN	.2.....	NO	I12U	41			10	5.1
42	PEDESTRIAN	...4....	NO	I12L	42			10	5.3
43	PEDESTRIAN	.....6..	NO	I13U	43			10	5.2
44	PEDESTRIAN	8	NO	I13L	44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)	
Detectors 1-8	.....
Detectors 9-16	.....
Detectors17-24	.....
Detectors 25-32	.....
Detectors 33-40	.....
Detectors 41-44	.....

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu	3	4	23	24				
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)

Enable in Plans	.....

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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TOD SCHEDULE

Table 1 (8-2-1)		
Time	Plan	OS
0001	255	A
0600	2	A
0700	3	A
1500	4	A
1900	~~2~~ 255	A
~~2100~~	~~255~~	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 2 (8-2-2)		
Time	Plan	OS
0001	255	A
0600	2	A
2100	255	A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 3 (8-2-3)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 4 (8-2-4)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 5 (8-2-5)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 6 (8-2-6)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

PHASE TIMING

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C8 - V3 DATE: 5/15/2004

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK		7		10		7			CLK RST
1	DON'T WALK		15		20		15			CHK SUM
2	MIN GREEN	4	5	6	6	4	5			
3	TYPE 3 DET									
4	ADD/VEH		1.2				1.2			
5	PASSAGE	2.0	2.0	2.5	2.5	2.0	2.0			
6	MAX GAP									
7	MIN GAP									
8	MAX EXT	20	50	15	20	15	50			
9	MAX 2	20	40	15	20	12	60			YEAR
A	MAX 3	20	65	15	20	12	40			MONTH
B										DAY
C	REDUCE BY									DAY OF WEEK
D	REDUCE EVERY									HOUR
E	YELLOW	3.0	4.5	3.0	3.0	3.0	4.5			MINUTE
F	RED	0.5	1.0	0.5	0.5	0.5	1.0			SECOND

PRE-EMPTION	E
EV SELECT	
RR1 CLEAR	
EVA DELAY	0
EVA CLEAR	5
EVB DELAY	0
EVB CLEAR	5
EVC DELAY	0
EVC CLEAR	5
EVD DELAY	0
EVD CLEAR	5
MAX EV	30
RR2 CLEAR	

	F FLAGS	1	2	3	4	5	6	7	8	
0	PERMIT	X	X	X	X	X	X			0
1	RED LOCK									1
2	YEL LOCK									2
3	V RECALL		X				X			3
4	P RECALL									4
5	PED PHASES		X		X		X			5
6	ARROW A									6
7	ARROW B									7
8	DBL ENTRY									8
9	MAX 2 PH	X	X	X	X	X	X			9
A	LAG PHASES	FOR OBSERVATION ONLY								A
B	RED REST									B
C	REST IN WALK									C
D	MAX 3 PH	X	X	X	X	X	X			D
E	YEL STARTUP				X					E
F	FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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PHASE TIMING

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C7 DATE: 9/17/2001

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK		7		10		7			CLK RST
1	DON'T WALK		12		20		12			CHK SUM
2	MIN GREEN	4	5	6	6	4	5			
3	TYPE 3 DET									
4	ADD/VEH		1.2				1.2			
5	PASSAGE	2.0	2.0	2.5	2.5	2.0	2.0			
6	MAX GAP									
7	MIN GAP									
8	MAX EXT	~~15~~	50	~~20~~	20	15	50			
9	MAX 2	~~12~~	40	~~20~~	15	12	60			YEAR
A	MAX 3	~~12~~	65	~~20~~	12	12	40			MONTH
B										DAY
C	REDUCE BY									DAY OF WEEK
D	REDUCE EVERY									HOUR
E	YELLOW	3.0	4.5	3.0	3.0	3.0	4.5			MINUTE
F	RED	0.5	1.0	0.5	0.5	0.5	1.0			SECOND

PRE-EMPTION	E
EV SELECT	
RR1 CLEAR	
EVA DELAY	0
EVA CLEAR	5
EVB DELAY	0
EVB CLEAR	5
EVC DELAY	0
EVC CLEAR	5
EVD DELAY	0
EVD CLEAR	5
MAX EV	30
RR2 CLEAR	

F FLAGS	1	2	3	4	5	6	7	8
PERMIT	X	X	X	X	X	X		
RED LOCK								
YEL LOCK								
V RECALL		X				X		
P RECALL								
PED PHASES		X		X		X		
ARROW A								
ARROW B								
DBL ENTRY								
MAX 2 PH	X	X	X	X	X	X		
LAG PHASES	FOR OBSERVATION ONLY							
RED REST								
REST IN WALK								
MAX 3 PH	X	X	X	X	X	X		
YEL STARTUP				X				
FIRST PHASE		X				X		

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

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Appendix A

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C7 DATE: 9/17/2001

7-KEY

TIME OF DAY ACTIVITY TABLE

7 + EVENT + HR + MIN + ACT + "E" + on/off + DOW LTS

	HR	MIN	ACT	on/off		M	T	W	T	F	S	S
				0		1	2	3	4	5	6	7
0	07	30	2	on		X	X	X	X	X		
1	09	00	2		off	X	X	X	X	X		
2	16	30	3	on		X	X	X	X	X		
3	18	00	3		off	X	X	X	X	X		
4												
5												
6												
7												
8												
9												
A												
B												
C												
D												
E												
F												

ACTIVITY CODES

1	TYPE OF SIMULTANEOUS PHASE TERMINATION
2	MAX 2
3	MAX 3
4	CONDITIONAL SERVICE (1st SELECT)
5	CONDITIONAL SERVICE (2nd SELECT)
6	ENERGIZE AUXILLARY OUTPUT - RED
7	ENERGIZE AUXILLARY OUTPUT - GREEN
8	ENERGIZE AUXILLARY OUTPUT - YELLOW
9	
A	TRAFFIC ACTUATED MAX 2 OPERATION
B	
C	YELLOW YIELD COORDINATION "C"
D	YELLOW YIELD COORDINATION "D"
E	
F	FLASHING OPERATION

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C7

DATE: 9/17/2001

C PAGE

(DOF = 123)

(DOF = 000 = Default Condition)

D	FLAGS								E	FLAGS								F	FLAGS							
RST	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	MAX	1	2	3	4	5	6	7	8
0 WLK									RCL									RCL								
1 CP 1									CP 1									CP 1								
2 CP 2									CP 2									CP 2								
3 CP 3									CP 3									CP 3								
4 CP 4									CP 4									CP 4								
5 CP 5									CP 5									CP 5								
6 CP 6									CP 6									CP 6								
7 CP 7									CP 7									CP 7								
8 CP 8									CP 8									CP 8								
9 CP 9									CP 9									CP 9								
A																										
B																										
C																										
D																										
E									VER.																	
F									BAT.																	

E PAGE

E	FLAGS								F	FLAGS							
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8
0										CODE 4								
1										CODE 5								
2										"Y" RCL C								
3										"Y" RCL D								
4	Bike - A									Bike - B								
5	OLA OUT									2 PED	X							
6	OLB OUT									6 PED						X		
7	OLC OUT									4 PED				X				
8	OLD OUT									8 PED								
9																		
A	OLA NOT									OLA ON								
B	OLB NOT									OLB ON								
C	OLC NOT									OLC ON								
D	OLD NOT									OLD ON								
E																		
F																		

LOCATION: Latrobe Rd @ Town Center Dr

PROGRAM: C7 DATE: 9/17/2001

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1		D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1		D-A-1
2I2L	D-1-2		D-7-2	D-3-2		D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2		D-A-2
2I3U	D-1-3		D-7-3	D-3-3		D-9-3	3	6J3U	D-2-3		D-8-3	D-4-3		D-A-3
2I3L	D-1-4		D-7-4	D-3-4		D-9-4	4	6J3L	D-2-4	8.0	D-8-4	D-4-4		D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6		D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7		D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8		D-8-8	D-4-8		D-A-8
4I7U	D-1-9		D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9		D-8-9	D-4-9		D-A-9
4I7L	D-1-A		D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A		D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B		D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D	10.0	D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D		D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext./Cnt. i.e. TYPE)
*5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

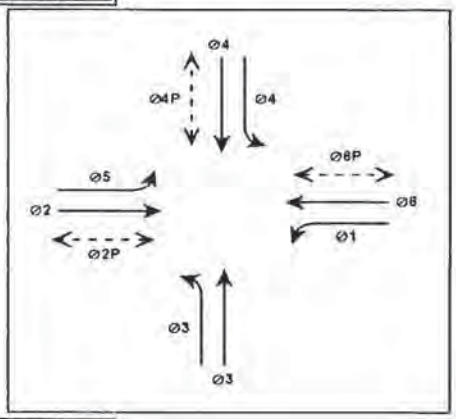
NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

LOCATION: Latrobe Rd @ Town Center Dr BY: S.L. Koch
DATE: 9/17/2001

TYPE 170 CONTROLLER MODEL 210
CONFLICT MONITOR PROGRAMMING INSTRUCTIONS

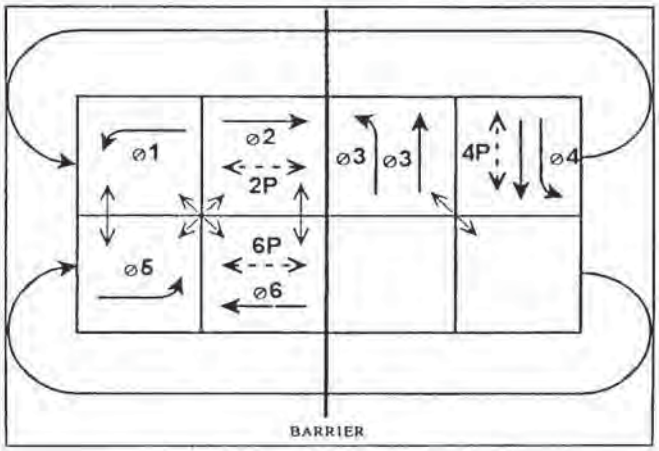
CHANNELS AND PHASES

CHANNEL 16 = Ø8 PED	CHANNEL 15 = Ø6 PED	CHANNEL 14 = Ø4 PED	CHANNEL 13 = Ø2 PED	CHANNEL 12 = SPECIAL	CHANNEL 11 = SPECIAL	CHANNEL 10 = OVERLAP "B"	CHANNEL 9 = OVERLAP "A"
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	
10	10	10	10	10	10		
11	11	11	11	11			
12	12	12	12				
13	13	13					
14	14						
15							



CHANNELS AND PHASES

CHANNEL 8 = Ø8	CHANNEL 7 = Ø7	CHANNEL 6 = Ø6	CHANNEL 5 = Ø5	CHANNEL 4 = Ø4	CH. 3 = Ø3	CH2= Ø2
1	1	1	1	1	1	1
2	2	2	2	2	2	
3	3	3	3	3		
4	4	4	4			
5	5	5				
6	6					
7						



The conflict monitor program card is supplied with all 120 diodes installed. Diodes for phases NOT in conflict must be removed.

1. Mark channels (phases) that are not conflicting.
2. Remove corresponding diodes from diode board.
3. Mark diode board with name of intersection.

Movement	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB
Times [1.1.1]	1	2	3	4	5	6	7	8
Min Green	10	10	10	10	10	10	10	10
Gap, Ext	1.5	3	1.5	2	1.5	3	1.5	2
Max 1	25	45	20	25	15	45	30	35
Max 2	35	50	15	15	25	50	25	25
Yel Clearance	4	4.7	4.5	4.7	4	4.7	4.5	4.7
Red Clearance	1	1	1.5	1	1	1	1.5	1
Walk		7		7		7		7
Ped Clearance		39		48		37		50
Red Revert	2	2	2	2	2	2	2	2
Add Initial		1		1		1		1
Max Initial		12		12		12		12
Time B4 Reduct		6		6		6		6
Cars B4 Reduct								
Time To Reduce		10		10		10		10
Reduce By								
Min Gap	2	2	2	2	2	2	2	2
DyMaxLim								
Max Step								
Options [1.1.2]	1	2	3	4	5	6	7	8
Enable	X	X	X	X	X	X	X	X
Min Recall	-	-	-	-	-	-	-	-
Max Recall	-	-	-	-	-	-	-	-
Ped Recall	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	X	-	-
Lock Calls	X	-	X	-	X	-	X	-
Auto Flash Entry	-	-	-	-	-	-	-	-
Auto Flash Exit	-	-	-	-	-	-	-	-
Dual Entry	-	X	-	-	-	X	-	-
Enable Simul Gap	-	-	-	-	-	-	-	-
Gaurantee Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Conditon Service	-	-	-	-	-	-	-	-
Non-Actuated 1	-	-	-	-	-	-	-	-
Non-Actuated 2	-	-	-	-	-	-	-	-
Add Init Calc								

Pattern Tables [2.4]

Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq
1	0	0	1	1	13					25					37				
2	0	0	2	1	14					26					38				
3	0	0	0	1	15					27					39				
4	0	0	0	1	16					28					40				
5	0	0	0	1	17					29					41				
6	0	0	0	1	18					30					42				
7					19					31					43				
8					20					32					44				
9					21					33					45				
10					22					34					46				
11					23					35					47				
12					24					36					48				

Split	[2.7]	1	2	3	4	5	6	7	8	Split	[2.7]	1	2	3	4	5	6	7	8
1	Coord	0	0	0	0	0	0	0	0	13	Coord								
2	Coord	0	0	0	0	0	0	0	0	14	Coord								
3	Coord	0	0	0	0	0	0	0	0	15	Coord								
4	Coord	0	0	0	0	0	0	0	0	16	Coord								
5	Coord	0	0	0	0	0	0	0	0	17	Coord								
6	Coord									18	Coord								
7	Coord									19	Coord								
8	Coord									20	Coord								
9	Coord									21	Coord								
10	Coord									22	Coord								
11	Coord									23	Coord								
12	Coord									24	Coord								

STD8

Ring/Startup [1.1.4]			[1.1.2]
Phs	Ring	Start	Enable
1	1	RED	X
2	1	RED	X
3	1	RED	X
4	1	RED	X
5	2	RED	X
6	2	RED	X
7	2	RED	X
8	2	YELLOW	X

Coord Modes [2.1]	
Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX INH
Force-Off	FIXED
Closed Loop	OFF
Stop-in-Walk	OFF
Auto Reset	OFF
Expand Split	OFF
Ped Recycle	NO_RECYCLE
Before	TIMED
After	TIMED
Auto Flash [1.4.1]	
Auto Flash	CHANNEL
Flash Yel	3.5
Flash Red	1.5
Unit Params [1.2.1]	
Phase Mode	STD8
IO Mode	AUTO
Loc Flsh Start	OFF
Start Flash(s)	0
Start AllRed(s)	0
Yellow < 3*	OFF
Display Time	10
Red Revert	2
MCE Timeout	
Feature Profile	0
Free Ring Seq	1
SDLC Retry	0
TS2 Det Faults	ON
Auto Ped Clear	OFF
Date Printed:	10/20/08
	Page 1

Latrobe @ White Rock (ID 7014) (Standard File)

IP Address:

Mask:

Gateway:

Port:

Date Installed:

Date Superceded:

Phase Options+ [1.1.3]

Options+ [1.1.3]	1	2	3	4	5	6	7	8
Reservice	-	-	-	-	-	-	-	-
PedClr Thru Yel	-	-	-	-	-	-	-	-
SkipRed-NoCall	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max II	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Grn/Ped Delay								
Conflicting Phase								
Omit Yel, Yel P								
Ped Out/Olp Ped								
StartYel, Next P				2				6

Phase Concurrency [1.1.4]

Phase	Ring	StartUp	Concurrent Phases				
1	1	RED	5	6	0	0	0
2	1	RED	5	6	0	0	0
3	1	RED	7	8	0	0	0
4	1	RED	7	8	0	0	0
5	2	RED	1	2	0	0	0
6	2	RED	1	2	0	0	0
7	2	RED	3	4	0	0	0
8	2	YELLOW	3	4	0	0	0
9	0	RED	0	0	0	0	0
10	0	RED	0	0	0	0	0
11	0	RED	0	0	0	0	0
12	0	RED	0	0	0	0	0

User Defined Sequences (MM>1>2>4)

Sequence No.	Ring	Phase						
1	1	1	2	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
2	1	1	2	3	4	0	0	0
	2	6	5	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
3	1	2	1	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0

Overlap 1-8 Program Parms & Parm+ [1.5.2.1] [1.5.2.2]

1	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
A	Conflict Olap									Red	1.5
	Conflict Ped									LG	
2	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
B	Conflict Olap									Red	1.5
	Conflict Ped									LG	
3	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
C	Conflict Olap									Red	1.5
	Conflict Ped									LG	
4	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
D	Conflict Olap									Red	1.5
	Conflict Ped									LG	
5	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
E	Conflict Olap									Red	1.5
	Conflict Ped									LG	
6	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
F	Conflict Olap									Red	1.5
	Conflict Ped									LG	
7	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
G	Conflict Olap									Red	1.5
	Conflict Ped									LG	
8	Included Ø									NORMAL	
	Modifier Ø									Grn	
	Conflict Ø									Yel	3.5
H	Conflict Olap									Red	1.5
	Conflict Ped									LG	

Coord Transition, CoorPhs - [2.5]

Pat#	Short	Long	Dwell	No Shortway Ø				E-Yld	Offset	Min Perms Veh	Min Perms Ped
1	10	17							BegGRN		
2	10	17						10	BegGRN		
3		17							BegGRN		
4		17							BegGRN		
5		17							BegGRN		
6		17							BegGRN		
7		17							BegGRN		
8		17							BegGRN		
9		17							BegGRN		
10		17							BegGRN		
11		17							BegGRN		
12		17							BegGRN		
13		17							BegGRN		
14		17							BegGRN		

Default Phase Sequence Chart [1.2.4]

Seq #	Ring	Phases				
1	1	1	2	3	4	
	2	5	6	7	8	
2	1	1	2	3	4	
	2	6	5	7	8	
3	1	2	1	3	4	
	2	5	6	7	8	
4	1	2	1	3	4	
	2	6	5	7	8	
5	1	1	2	3	4	
	2	5	6	8	7	
6	1	1	2	3	4	
	2	6	5	8	7	
7	1	2	1	3	4	
	2	5	6	8	7	
8	1	2	1	3	4	
	2	6	5	8	7	
9	1	1	2	4	3	
	2	5	6	7	8	
10	1	1	2	4	3	
	2	6	5	7	8	
11	1	2	1	4	3	
	2	5	6	7	8	
12	1	2	1	4	3	
	2	6	5	7	6	
13	1	1	2	4	3	
	2	5	6	8	7	
14	1	1	2	4	3	
	2	6	5	8	7	
15	1	2	1	4	3	
	2	5	6	8	7	
16	1	2	1	4	3	
	2	6	5	8	7	

Coord Trans [2.5] cont.

Patt #	Ret Hold	Flt	Max2
1	-		X
2	-		-
3	-		-
4	-		-
5	-		-
6	-		-
7	-		-
8	-		-
9	-		-
10	-		-
11	-		-
12	-		-
13	-		-
14	-		-

Latrobe @ White Rock (ID 7014) (Standard File) 10/20/08

PHASE TIMING

LOCATION: Latrobe Road at Golden Foothill Pw (N) BY: _____

PROGRAM: C8 DATE: 5/24/2005

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK			4	4		4			CLK RST
1	DON'T WALK			20	12		20			CHK SUM
2	MIN GREEN	3	5	5	5	5	5			
3	TYPE 3 DET									
4	ADD/VEH									
5	PASSAGE	2.0	4.0	2.0	3.0	2.0	4.0			
6	MAX GAP									
7	MIN GAP									
8	MAX EXT	15	40	20	20	12	40			
9	MAX 2									YEAR
A	MAX 3									MONTH
B										DAY
C	REDUCE BY									DAY OF WK
D	REDUCE EVERY									HOUR
E	YELLOW	3.0	5.0	3.0	3.0	3.0	5.0			MINUTE
F	RED	1.0	1.0	1.0	1.0	1.0	1.0			SECOND
	PED XING - FT									

PRE-EMPTION	E
EV SELECT	
RR1 CLR	
EVA DLY	
EVA CLR	
EVB DLY	
EVB CLR	
EVC DLY	
EVC CLR	
EVD DLY	
EVD CLR	
MAX EV	
RR2 CLR	

F FLAGS	1	2	3	4	5	6	7	8	
PERMIT	X	X	X	X	X	X			0
RED LOCK				X					1
YEL LOCK									2
V RECALL		X				X			3
P RECALL									4
PED PHASES		X	X			X			5
ARROW A									6
ARROW B									7
DBL ENTRY									8
MAX 2 PH									9
LAG PHASES	FOR OBSERVATION ONLY								A
RED REST									B
REST IN WALK									C
MAX 3 PH									D
YEL STARTUP				X					E
FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

LOCATION: Latrobe Road at Golden Foothill (N)

PROGRAM: C7

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1	1.5	D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1	1.5	D-A-1
2I2L	D-1-2		D-7-2	D-3-2	1.0	D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2	1.0	D-A-2
2I3U	D-1-3		D-7-3	D-3-3		D-9-3	3	6J3U	D-2-3	8.0	D-8-3	D-4-3		D-A-3
2I3L	D-1-4		D-7-4	D-3-4		D-9-4	4	6J3L	D-2-4		D-8-4	D-4-4		D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6		D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7		D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8		D-8-8	D-4-8		D-A-8
4I7U	D-1-9	8.0	D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9		D-8-9	D-4-9		D-A-9
4I7L	D-1-A		D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A		D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B		D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D		D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D		D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext../Cnt. i.e. TYPE)
*5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

LOCATION: Latrobe Road at Golden Foothill (N)

PROGRAM: C7 DATE: 4/26/2000

7-KEY

TIME OF DAY ACTIVITY TABLE

7 + EVENT + HR + MIN + ACT + "E" + on/off + DOW LTS

	HR	MIN	ACT	on/off	M	T	W	T	F	S	S
				0	1	2	3	4	5	6	7
0	16	30	2	on	X	X	X	X	X		
1	18	00	2	off	X	X	X	X	X		
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODES

1	TYPE OF SIMULTANEOUS PHASE TERMINATION
2	MAX 2
3	MAX 3
4	CONDITIONAL SERVICE (1st SELECT)
5	CONDITIONAL SERVICE (2nd SELECT)
6	ENERGIZE AUXILLARY OUTPUT - RED
7	ENERGIZE AUXILLARY OUTPUT - GREEN
8	ENERGIZE AUXILLARY OUTPUT - YELLOW
9	
A	TRAFFIC ACTUATED MAX 2 OPERATION
B	
C	YELLOW YIELD COORDINATION "C"
D	YELLOW YIELD COORDINATION "D"
E	
F	FLASHING OPERATION

LOCATION: Latrobe Road @ Golden Foothill Pkwy (N)

PROGRAM: C7

DATE: 4/19/1999

D PAGE

D	FLAGS								E	FLAGS								F	FLAGS							
MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0 RCL									RCL									RCL								
1 CP 1									CP 1									CP 1								
2 CP 2									CP 2									CP 2								
3 CP 3									CP 3									CP 3								
4 CP 4									CP 4									CP 4								
5 CP 5									CP 5									CP 5								
6 CP 6									CP 6									CP 6								
7 CP 7									CP 7									CP 7								
8 CP 8									CP 8									CP 8								
9 CP 9									CP 9									CP 9								
A																										
B																										
C																										
D																										
E									VER.																	
F									BAT.																	

E PAGE

E	FLAGS								F	FLAGS							
FUNCTIO	1	2	3	4	5	6	7	8	UNCTIO	1	2	3	4	5	6	7	8
0									CODE 4								
1									CODE 5								
2									"Y" RCL C								
3									"Y" RCL D								
4																	
5									2 PED								
6									6 PED						X		
7									4 PED					X			
8									8 PED				X				
9																	
A	OLA NOT								OLA ON								
B	OLB NOT								OLB ON								
C	OLC NOT								OLC ON								
D	OLD NOT								OLD ON								
E																	
F																	

PHASE TIMING

LOCATION: Latrobe Road at Suncast Lane

PROGRAM: C8 ver 4 DATE: 6/18/2004

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9
0	WALK			4			4			CLK RST
1	DON'T WALK			12			20			CHK SUM
2	MIN GREEN		5	5		5	5			
3	TYPE 3 DET		10	10		10	10			
4	ADD/VEH		1.0	1.0		1.0	1.0			
5	PASSAGE		4.0	3.0		2.0	4.0			
6	MAX GAP		5.0	5.0		5.0	5.0			
7	MIN GAP		5.0	5.0		5.0	5.0			
8	MAX EXT		40	20		12	40			
9	MAX 2		50	50		50	50			YEAR
A	MAX 3		50	50		50	50			MONTH
B										DAY
C	REDUCE BY									DAY OF WEEK
D	REDUCE EVERY		1.0	1.0		1.0	1.0			HOUR
E	YELLOW		5.0	3.0		3.0	5.0			MINUTE
F	RED		1.0	1.0		1.0	1.0			SECOND

PRE-EMPTION	E
EV SELECT	
RR1 CLEAR	10
EVA DELAY	0
EVA CLEAR	5
EVB DELAY	0
EVB CLEAR	5
EVC DELAY	0
EVC CLEAR	5
EVD DELAY	
EVD CLEAR	
MAX EV	30
RR2 CLEAR	10

	FLAGS	F 1	2	3	4	5	6	7	8	
0	PERMIT		X	X		X	X			0
1	RED LOCK			X						1
2	YEL LOCK									2
3	V RECALL		X				X			3
4	P RECALL									4
5	PED PHASES			X			X			5
6	ARROW A									6
7	ARROW B									7
8	DBL ENTRY									8
9	MAX 2 PH									9
A	LAG PHASES	FOR OBSERVATION ONLY								A
B	RED REST									B
C	REST IN WALK									C
D	MAX 3 PH									D
E	YEL STARTUP			X						E
F	FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	2.0
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

LOCATION: Latrobe Road @ Suncast Lane

PROGRAM: C8 ver 4

DATE: 6/18/2004

D PAGE

D	FLAGS								E	FLAGS								F	FLAGS							
MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0 RCL									RCL									RCL								
1 CP 1									CP 1									CP 1								
2 CP 2									CP 2									CP 2								
3 CP 3									CP 3									CP 3								
4 CP 4									CP 4									CP 4								
5 CP 5									CP 5									CP 5								
6 CP 6									CP 6									CP 6								
7 CP 7									CP 7									CP 7								
8 CP 8									CP 8									CP 8								
9 CP 9									CP 9									CP 9								
A																										
B																										
C																										
D																										
E									VER																	
F									BAT																	

E PAGE

E	FLAGS								F	FLAGS							
FUNCTIO	1	2	3	4	5	6	7	8	UNCTIO	1	2	3	4	5	6	7	8
0									CODE 4								
1									CODE 5								
2									"Y" RCL C								
3									"Y" RCL D								
4																	
5									2 PED								
6									6 PED							X	
7									4 PED								
8									8 PED		X						
9																	
A	OLA NOT								OLA ON								
B	OLB NOT								OLB ON								
C	OLC NOT								OLC ON								
D	OLD NOT								OLD ON								
E																	
F																	

Movement	SBLT	NB		WB	NBLT	SB		EB
Times [1.1.1]	1	2	3	4	5	6	7	8
Min Green	5	5		5	5	5		5
Gap, Ext	1	1	1	1	1	1	1	1
Max 1	12	25		15	12	25		15
Max 2								
Yel Clearance	3	4.3	3.5	3.5	3	4.3	3.5	3
Red Clearance	1	1	1.5	1.5	1	1	1.5	1.5
Walk		7		X		7		7
Ped Clearance		30.2		X		X		X
Red Revert	2	2		2	2	2		2
Add Initial							30	
Max Initial					22			
Time B4 Reduct								
Cars B4 Reduct								
Time To Reduce								
Reduce By								
Min Gap								
DyMaxLim								
Max Step								
Options [1.1.2]	1	2	3	4	5	6	7	8
Enable	X	X	-	X	X	X	-	X
Min Recall	-	-	-	-	-	-	-	-
Max Recall	-	-	-	-	-	-	-	-
Ped Recall	-	-	-	-	-	-	-	-
Soft Recall	-	X	-	-	-	X	-	-
Lock Calls	X	-	-	-	X	-	-	-
Auto Flash Entry	-	-	-	-	-	-	-	-
Auto Flash Exit	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enable Simul Gap	-	X	-	-	-	X	-	-
Gaurantee Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Conditon Service	-	-	-	-	-	-	-	-
Non-Actuated 1	-	-	-	-	-	-	-	-
Non-Actuated 2	-	-	-	-	-	-	-	-
Add Init Calc								

Pattern Tables [2.4]

Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq
1	0	0	0	1	13					25					37				
2	0	0	0	1	14					26					38				
3	0	0	0	1	15					27					39				
4	0	0	0	1	16					28					40				
5	0	0	0	1	17					29					41				
6	0	0	0	1	18					30					42				
7					19					31					43				
8					20					32					44				
9					21					33					45				
10					22					34					46				
11					23					35					47				
12					24					36					48				

Split	[2.7]	1	2	3	4	5	6	7	8	Split	[2.7]	1	2	3	4	5	6	7	8
1	Coord	0	0	0	0	0	0	0	0	13	Coord								
2	Coord	0	0	0	0	0	0	0	0	14	Coord								
3	Coord	0	0	0	0	0	0	0	0	15	Coord								
4	Coord	0	0	0	0	0	0	0	0	16	Coord								
5	Coord	0	0	0	0	0	0	0	0	17	Coord								
6	Coord									18	Coord								
7	Coord									19	Coord								
8	Coord									20	Coord								
9	Coord									21	Coord								
10	Coord									22	Coord								
11	Coord									23	Coord								
12	Coord									24	Coord								

QSeq

Ring/Startup [1.1.4]			[1.1.2]
Phs	Ring	Start	Enable
1	1	RED	X
2	1	RED	X
3	1	RED	-
4	1	RED	X
5	2	RED	X
6	2	RED	X
7	1	RED	-
8	1	RED	X

Coord Modes [2.1]	
Test OpMode	0
Correction	LONG
Maximum	MAX 1
Force-Off	FIXED
Closed Loop	OFF
Stop-in-Walk	OFF
Auto Reset	OFF
Expand Splt	OFF
Ped Recycle	NO_RECYCLE
Before	TIMED
After	TIMED
Auto Flash [1.4.1]	
Auto Flash	CHANNEL
Flash Yel	3.5
Flash Red	1.5
Unit Params [1.2.1]	
Phase Mode	QSeq
IO Mode	AUTO
Loc Fish Start	OFF
Start Flash(s)	0
Start AllRed(s)	0
Yellow < 3"	OFF
Display Time	10
Red Revert	2
MCE Timeout	
Feature Profile	0
Free Ring Seq	1
SDLC Retry	0
TS2 Det Faults	ON
Auto Ped Clear	OFF
Date Printed:	01/12/09
	Page 1

Latrobe Rd @ GFH Pw (S) (ID 7047) (Standard File)

IP Address:

Mask:

Gateway:

Port:

Date Installed:

Date Superceded:

Phase Options+ [1.1.3]

Options+ [1.1.3]	1	2	3	4	5	6	7	8
Reservice	-	-	-	-	-	-	-	-
PedClr Thru Yel	-	-	-	-	-	-	-	-
SkipRed-NoCall	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max II	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Grn/Ped Delay								
Conflicting Phase								
Omit Yel, Yel P								
Ped Out/Olp Ped								
StartYel, Next P								

Phase Concurrency [1.1.4]

Phase	Ring	StartUp	Concurrent Phases				
1	1	RED	5	6	0	0	0
2	1	RED	5	6	0	0	0
3	1	RED	0	0	0	0	0
4	1	RED	0	0	0	0	0
5	2	RED	1	2	0	0	0
6	2	RED	1	2	0	0	0
7	1	RED	0	0	0	0	0
8	1	RED	0	0	0	0	0
9	0	RED	0	0	0	0	0
10	0	RED	0	0	0	0	0
11	0	RED	0	0	0	0	0
12	0	RED	0	0	0	0	0

User Defined Sequences (MM>1>2>4)

Sequence No.	Ring	Phase						
1	1	1	2	0	3	4	7	8
	2	5	6	0	0	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
2	1	1	2	3	4	0	0	0
	2	6	5	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
3	1	2	1	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0

Overlap 1-8 Program Parms & Parm+ [1.5.2.1] [1.5.2.2]

		NORMAL	
1	Included Ø		
	Modifier Ø	Grn	
	Conflict Ø	Yel	3.5
A	Conflict Olap	Red	1.5
	Conflict Ped	LG	
2	Included Ø		
	Modifier Ø	Grn	
	Conflict Ø	Yel	3.5
B	Conflict Olap	Red	1.5
	Conflict Ped	LG	
3	Included Ø		
	Modifier Ø	Grn	
	Conflict Ø	Yel	3.5
C	Conflict Olap	Red	1.5
	Conflict Ped	LG	
4	Included Ø		
	Modifier Ø	Grn	
	Conflict Ø	Yel	3.5
D	Conflict Olap	Red	1.5
	Conflict Ped	LG	
5	Included Ø		
	Modifier Ø	Grn	
	Conflict Ø	Yel	3.5
E	Conflict Olap	Red	1.5
	Conflict Ped	LG	
6	Included Ø		
	Modifier Ø	Grn	
	Conflict Ø	Yel	3.5
F	Conflict Olap	Red	1.5
	Conflict Ped	LG	
7	Included Ø		
	Modifier Ø	Grn	
	Conflict Ø	Yel	3.5
G	Conflict Olap	Red	1.5
	Conflict Ped	LG	
8	Included Ø		
	Modifier Ø	Grn	
	Conflict Ø	Yel	3.5
H	Conflict Olap	Red	1.5
	Conflict Ped	LG	

Coord Transition, CoorPhs - [2.5]

Pat#	Short	Long	Dwell	No Shortway Ø	E-Yld	Offset	Min Perms Veh	Min Perms Ped
1		17				BegGRN		
2		17				BegGRN		
3		17				BegGRN		
4		17				BegGRN		
5		17				BegGRN		
6		17				BegGRN		
7		17				BegGRN		
8		17				BegGRN		
9		17				BegGRN		
10		17				BegGRN		
11		17				BegGRN		
12		17				BegGRN		
13		17				BegGRN		
14		17				BegGRN		

Default Phase Sequence Chart [1.2.4]

Seq #	Ring	Phases				
1	1	1	2	3	4	
	2	5	6	7	8	
2	1	1	2	3	4	
	2	6	5	7	8	
3	1	2	1	3	4	
	2	5	6	7	8	
4	1	2	1	3	4	
	2	6	5	7	8	
5	1	1	2	3	4	
	2	5	6	8	7	
6	1	1	2	3	4	
	2	6	5	8	7	
7	1	2	1	3	4	
	2	5	6	8	7	
8	1	2	1	3	4	
	2	6	5	8	7	
9	1	1	2	4	3	
	2	5	6	7	8	
10	1	1	2	4	3	
	2	6	5	7	8	
11	1	2	1	4	3	
	2	5	6	7	8	
12	1	2	1	4	3	
	2	6	5	7	6	
13	1	1	2	4	3	
	2	5	6	8	7	
14	1	1	2	4	3	
	2	6	5	8	7	
15	1	2	1	4	3	
	2	5	6	8	7	
16	1	2	1	4	3	
	2	6	5	8	7	

Coord Trans [2.5] cont.

Patt #	Ret Hold	Flt	Max2
1	-		-
2	-		-
3	-		-
4	-		-
5	-		-
6	-		-
7	-		-
8	-		-
9	-		-
10	-		-
11	-		-
12	-		-
13	-		-
14	-		-

Latrobe Rd @ GFH Pw (S) (ID 7047) (Standard File)

01/12/09

PHASE TIMING

LOCATION: Latrobe Road at Investment Boulevard

PROGRAM: ~~8~~ C8 DATE: 4/19/99

F PAGE

	INTERVAL	PHASE 1	2	3	4	5	6	7	8	9	PRE-EMPTION	E
0	WALK				4		4			CLK RST	EV SELECT	
1	DON'T WALK				12		20			CHK SUM	RR1 CLEAR	10
2	MIN GREEN		5		5	5	5				EVA DELAY	0
3	TYPE 3 DET		10		16	10	10				EVA CLEAR	5
4	ADD/VEH		1.0		1.0	1.0	1.0				EVB DELAY	0
5	PASSAGE		4.0		3.0	2.0	4.0				EVB CLEAR	5
6	MAX GAP		5.0		5.0	5.0	5.0				EVC DELAY	0
7	MIN GAP		5.0		5.0	5.0	5.0				EVC CLEAR	5
8	MAX EXT		40		20	12	40				EVD DELAY	
9	MAX 2		50		50	50	50			YEAR	EVD CLEAR	
A	MAX 3		50		50	50	50			MONTH	MAX EV	30
B										DAY	RR2 CLEAR	10
C	REDUCE BY									DAY OF WEEK		
D	REDUCE EVERY		1.0		1.0	1.0	1.0			HOUR		
E	YELLOW		5.0		3.0	3.0	5.0			MINUTE		
F	RED		1.0		1.0	1.0	1.0			SECOND		

	F FLAGS	1	2	3	4	5	6	7	8	
0	PERMIT		X		X	X	X			0
1	RED LOCK				X					1
2	YEL LOCK									2
3	V RECALL		X				X			3
4	P RECALL									4
5	PED PHASES				X		X			5
6	ARROW A									6
7	ARROW B									7
8	DBL ENTRY									8
9	MAX 2 PH									9
A	LAG PHASES	FOR OBSERVATION ONLY								A
B	RED REST									B
C	REST IN WALK									C
D	MAX 3 PH									D
E	YEL STARTUP				X					E
F	FIRST PHASE		X				X			F

F0E	MAX VAR INITIAL	
FC0	GAP SET	
FC1	MAX SET	
FC2		
FCA	OLA-GREEN	
FCB	OLB-GREEN	
FCC	OLC-GREEN	
FCD	OLD-GREEN	

F0F	RED REVERT	
FD0	TIME BASE SELECT	
FD3	PED SELECT	
FD4	7 - WIRE SELECT	
FD8	OFFSET SEEKING	
C05	FLASH TYPE	
F0C	LONG FAIL	
F0D	SHORT FAIL	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices, Pt 3

LOCATION: Latrobe Road at Investment Boulevard

PROGRAM: C7

D PAGE

INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY		INPUT	ADDRESS	DELAY	OBSV DELAY	ADDRESS	CARRY	OBSV CARRY
1I1	D-1-0		D-7-0	D-3-0		D-9-0	0	5J1	D-2-0		D-8-0	D-4-0		D-A-0
2I2U	D-1-1		D-7-1	D-3-1	1.5	D-9-1	1	6J2U	D-2-1		D-8-1	D-4-1	1.5	D-A-1
2I2L	D-1-2		D-7-2	D-3-2	1.0	D-9-2	2	6J2L	D-2-2		D-8-2	D-4-2	1.0	D-A-2
2I3U	D-1-3		D-7-3	D-3-3		D-9-3	3	6J3U	D-2-3	8.0	D-8-3	D-4-3		D-A-3
2I3L	D-1-4		D-7-4	D-3-4		D-9-4	4	6J3L	D-2-4		D-8-4	D-4-4		D-A-4
2I4	D-1-5		D-7-5	D-3-5		D-9-5	5	6J4	D-2-5		D-8-5	D-4-5		D-A-5
3I5	D-1-6		D-7-6	D-3-6		D-9-6	6	7J5	D-2-6		D-8-6	D-4-6		D-A-6
4I6U	D-1-7		D-7-7	D-3-7		D-9-7	7	8J6U	D-2-7		D-8-7	D-4-7		D-A-7
4I6L	D-1-8		D-7-8	D-3-8		D-9-8	8	8J6L	D-2-8		D-8-8	D-4-8		D-A-8
4I7U	D-1-9	8.0	D-7-9	D-3-9		D-9-9	9	8J7U	D-2-9		D-8-9	D-4-9		D-A-9
4I7L	D-1-A	5.0	D-7-A	D-3-A		D-9-A	A	8J7L	D-2-A		D-8-A	D-4-A		D-A-A
4I8	D-1-B		D-7-B	D-3-B		D-9-B	B	8J8	D-2-B		D-8-B	D-4-B		D-A-B
1I9U	D-1-C		D-7-C	D-3-C		D-9-C	C	5J9U	D-2-C		D-8-C	D-4-C		D-A-C
3I9L	D-1-D		D-7-D	D-3-D		D-9-D	D	7J9L	D-2-D		D-8-D	D-4-D		D-A-D

Assignable Detectors - (FCF)=123
Key Action = "E" + X Coord. + Y Coord. (See Shaded Areas)
Select Phase/Function Using Call Lights
EX. E-C-0 = 1 (FZ 1) E-D-0 =5,6 (Ext../Cnt. i.e. TYPE)
5 = Ext..
6 = Cnt.
7 = Call
8 = Type 3

NOTE: Reset location F-C-F to zero after viewing or assigning detectors.

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

STD8

Movement	SBLT	NB	WBLT	EB		SB	EBLT	WB
Times [1.1.1]	1	2	3	4	5	6	7	8
Min Green	3	7	3	3		7	3	3
Gap, Ext	1	3.6	1	1		3.6	1	1
Max 1	45	41	17	34		92	17	36
Max 2	45	41	17	34		92	17	36
Yel Clearance	3.6	5	3.6	3.6		5	3.6	3.6
Red Clearance	2	1	1	1		1	1	1
Walk		7				7		7
Ped Clearance		13				20		26
Red Revert	2	2	2	2		2	2	2
Add Initial								
Max Initial								
Time B4 Reduct								
Cars B4 Reduct								
Time To Reduce								
Reduce By								
Min Gap								
DyMaxLim								
Max Step								
Options [1.1.2]	1	2	3	4	5	6	7	8
Enable	X	X	X	X	-	X	X	X
Min Recall	-	X	-	-	-	X	-	-
Max Recall	-	-	-	-	-	-	-	-
Ped Recall	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Lock Calls	-	-	-	-	-	-	-	-
Auto Flash Entry	-	-	-	-	-	-	-	-
Auto Flash Exit	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enable Simul Gap	-	-	-	-	-	-	-	-
Gaurantee Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Conditon Service	-	-	-	-	-	-	-	-
Non-Actuated 1	-	-	-	-	-	-	-	-
Non-Actuated 2	-	-	-	-	-	-	-	-
Add Init Calc								

Pattern Tables [2.4]

Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq
1	135	31	1	14	13					25					37				
2	135	73	2	14	14					26					38				
3					15					27					39				
4					16					28					40				
5					17					29					41				
6					18					30					42				
7					19					31					43				
8					20					32					44				
9					21					33					45				
10					22					34					46				
11					23					35					47				
12					24					36					48				

Split	[2.7]	1	2	3	4	5	6	7	8	Split	[2.7]	1	2	3	4	5	6	7	8
1	Coord	51	46	0	38	0	97	0	38	13	Coord								
	2		MAX				MAX												
2	Coord	26	49	0	60	0	75	0	60	14	Coord								
	2		MIN				MIN												
3	Coord									15	Coord								
	2																		
4	Coord									16	Coord								
5	Coord									17	Coord								
6	Coord									18	Coord								
7	Coord									19	Coord								
8	Coord									20	Coord								
9	Coord									21	Coord								
10	Coord									22	Coord								
11	Coord									23	Coord								
12	Coord									24	Coord								

White Rock & Windfield (ID 95) (Standard File)

IP Address:

Mask:

Gateway:

Port:

Date Installed:

Date Superceded:

Ring/Startup [1.1.4]			[1.1.2]
Phs	Ring	Start	Enable
1	1	RED	X
2	1	GREEN	X
3	1	RED	X
4	1	RED	X
5	2	RED	-
6	2	GREEN	X
7	2	RED	X
8	2	RED	X

Coord Modes [2.1]	
Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX 1
Force-Off	FLOAT
Closed Loop	OFF
Stop-in-Walk	ON
Auto Reset	ON
Expand Split	OFF
Ped Recycle	P3478_INH
Before	TIMED
After	TIMED
Auto Flash [1.4.1]	
Auto Flash	CHANNEL
Flash Yel	0
Flash Red	0
Unit Params [1.2.1]	
Phase Mode	STD8
IO Mode	AUTO
Loc Flsh Start	OFF
Start Flash(s)	8
Start AllRed(s)	2
Yellow < 3"	OFF
Display Time	30
Red Revert	2
MCE Timeout	
Feature Profile	1
Free Ring Seq	14
SDLC Retry	0
TS2 Det Faults	OFF
Auto Ped Clear	OFF
Date Printed:	02/23/12
	Page 1

Veh Par 1-32 [5.1]										Vehicle Options 1-32 [5.2]									Parameters+ 1-32 [5.3]								Info Only			
Det #	Call Ø	Swi Ø	Dlay	Ext	Que	No Act	Max Pres	Err Cnt	Fail Time	Det #	Call	Ext	Que	Add Init	Red Lock	Yell Lock	occ	vol	Det #	Occupancy G	Y	R	Delay 1	2	Type	Src	Type of Detection Prnc	Near	Adv	Det #
1	1					0	0	0	0	1	X	X	-	-	-	-	X	X	1	X	X				NORM					1
2						0	0	0	0	2			-	-	-	-	X	X	2	X	X				NORM					2
3	2					0	0	0	0	3	X	X	-	-	-	-	X	X	3	X	X				NORM					3
4	2					0	0	0	0	4	X	X	-	-	-	-	X	X	4	X	X				NORM					4
5	2					0	0	0	0	5	X	X	-	-	-	-	X	X	5	X	X				NORM					5
6	2					0	0	0	0	6	X	X	-	-	-	-	X	X	6	X	X				NORM					6
7	2					0	0	0	0	7	X	X	-	-	-	-	X	X	7	X	X				NORM					7
8	2					0	0	0	0	8	X	X	-	-	-	-	X	X	8	X	X				NORM					8
9	3					0	0	0	0	9	X	X	-	-	-	-	-	-	9	-	-				NORM					9
10						0	0	0	0	10	-	-	-	-	-	-	-	-	10	-	-				NORM					10
11						0	0	0	0	11	-	-	-	-	-	-	-	-	11	-	-				NORM					11
12						0	0	0	0	12	-	-	-	-	-	-	-	-	12	-	-				NORM					12
13	4					0	0	0	0	13	X	X	-	-	-	-	-	-	13	-	-				NORM					13
14						0	0	0	0	14	-	-	-	-	-	-	-	-	14	-	-				NORM					14
15	4					0	0	0	0	15	X	X	-	-	-	-	-	-	15	-	-				NORM					15
16						0	0	0	0	16	-	-	-	-	-	-	-	-	16	-	-				NORM					16
17	5					0	0	0	0	17	X	X	-	-	-	-	-	-	17	-	-				NORM					17
18						0	0	0	0	18	-	-	-	-	-	-	-	-	18	-	-				NORM					18
19	6					0	0	0	0	19	X	X	-	-	-	-	-	-	19	-	-				NORM					19
20	6					0	0	0	0	20	X	X	-	-	-	-	-	-	20	-	-				NORM					20
21	6					0	0	0	0	21	X	X	-	-	-	-	-	-	21	-	-				NORM					21
22						0	0	0	0	22	-	-	-	-	-	-	-	-	22	-	-				NORM					22
23	6					0	0	0	0	23	X	X	-	-	-	-	-	-	23	-	-				NORM					23
24	7					0	0	0	0	24	X	X	-	-	-	-	-	-	24	-	-				NORM					24
25						0	0	0	0	25	-	-	-	-	-	-	-	-	25	-	-				NORM					25
26						0	0	0	0	26	-	-	-	-	-	-	-	-	26	-	-				NORM					26
27						0	0	0	0	27	-	-	-	-	-	-	-	-	27	-	-				NORM					27
28						0	0	0	0	28	-	-	-	-	-	-	-	-	28	-	-				NORM					28
29	8					0	0	0	0	29	X	X	-	-	-	-	-	-	29	-	-				NORM					29
30						0	0	0	0	30	-	-	-	-	-	-	-	-	30	-	-				NORM					30
31	8					0	0	0	0	31	X	X	-	-	-	-	-	-	31	-	-				NORM					31
32						0	0	0	0	32	-	-	-	-	-	-	-	-	32	-	-				NORM					32
33						0	0	0	0	33	-	-	-	-	-	-	-	-	33	-	-				NORM					33
34						0	0	0	0	34	-	-	-	-	-	-	-	-	34	-	-				NORM					34
35						0	0	0	0	35	-	-	-	-	-	-	-	-	35	-	-				NORM					35
36						0	0	0	0	36	-	-	-	-	-	-	-	-	36	-	-				NORM					36
37						0	0	0	0	37	-	-	-	-	-	-	-	-	37	-	-				NORM					37
38						0	0	0	0	38	-	-	-	-	-	-	-	-	38	-	-				NORM					38
39						0	0	0	0	39	-	-	-	-	-	-	-	-	39	-	-				NORM					39
40						0	0	0	0	40	-	-	-	-	-	-	-	-	40	-	-				NORM					40
41						0	0	0	0	41	-	-	-	-	-	-	-	-	41	-	-				NORM					41
42						0	0	0	0	42	-	-	-	-	-	-	-	-	42	-	-				NORM					42
43						0	0	0	0	43	-	-	-	-	-	-	-	-	43	-	-				NORM					43
44						0	0	0	0	44	-	-	-	-	-	-	-	-	44	-	-				NORM					44

Annual Schedule [4.3] — White Rock & Windfield (ID 95) (Standard File)

Month of Year: J F M A M J J A S O N D
Day of Week: S M T W T F S
Date: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

	Month of Year	Day of Week	Date	Day Plan	Link To
1	X X X X X X X X X X X X	X X X X X X X	X X X X X X X X X X X X X X X X X X X X X X X X X X X X X	1	
2	- - - - - - - - - - - -	- - - - - - -	- -	1	
3	- - - - - - - - - - - -	- - - - - - -	- -	1	
4	- - - - - - - - - - - -	- - - - - - -	- -	1	
5	- - - - - - - - - - - -	- - - - - - -	- -	1	
6	- - - - - - - - - - - -	- - - - - - -	- -	1	
7	- - - - - - - - - - - -	- - - - - - -	- -	1	
8	- - - - - - - - - - - -	- - - - - - -	- -	1	
9	- - - - - - - - - - - -	- - - - - - -	- -	1	
10	- - - - - - - - - - - -	- - - - - - -	- -	1	
11	- - - - - - - - - - - -	- - - - - - -	- -	1	
12	- - - - - - - - - - - -	- - - - - - -	- -	1	

DAY PLANS [4.4]

Day Plan 1

Evt	Hour	Min	Act
1		1	54
2	7		1
3	9		54
4	16		2
5	18		54
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Day Plan 2

Evt	Hour	Min	Act
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Day Plan 3

Evt	Hour	Min	Act
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Day Plan 4

Evt	Hour	Min	Act
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

ACTION TABLE

Action Table [4.5]

Act#	Pat#	A1	A2	A3	S1	S2	S3	S4	S5	S6	S7	S8
1	1											
2	2											
3	0											
4	0											
5	0											
6	0											
7	0											
8	0											
9	0											
10	0											
11	0											
12	0											
13	0											
14	0											
15	0											
16	0											
54	254											
55	255											

ALTERNATE PROGRAMS

Alt Progs+ [2.6]

Pat#	ØOpt	ØTime	DetG	CIR	CIC	Max2
1						-
2						-
3						-
4						-
5						-
6						-
7						-
8						-
9						-
10						-
11						-
12						-
13						-
14						-
15						-
16						-
17						-
18						-

Movement	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB
Times [1.1.1]	1	2	3	4	5	6	7	8
Min Green	3	7	3	3	3	7	3	3
Gap, Ext	1	3.6	1	1	1	3.6	1	1
Max 1	8	62	16	31	21	48	14	34
Max 2	8	62	16	31	21	48	14	34
Yel Clearance	3.5	5	3.5	3.5	3.5	5	3.5	3.5
Red Clearance	1	1	1.5	1	1.7	1	2	1
Walk		7				7		7
Ped Clearance		9				11		22
Red Revert	2	2	2	2	2	2	2	2
Add Initial								
Max Initial								
Time B4 Reduct								
Cars B4 Reduct								
Time To Reduce								
Reduce By								
Min Gap								
DyMaxLim								
Max Step								
Options [1.1.2]	1	2	3	4	5	6	7	8
Enable	X	X	X	X	X	X	X	X
Min Recall	-	X	-	-	-	X	-	-
Max Recall	-	-	-	-	-	-	-	-
Ped Recall	-	-	-	-	-	-	-	-
Soft Recall	-	-	-	-	-	-	-	-
Lock Calls	-	X	-	-	-	X	-	-
Auto Flash Entry	-	-	-	-	-	-	-	-
Auto Flash Exit	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Enable Simul Gap	-	-	-	-	-	-	-	-
Gaurantee Passage	-	-	-	-	-	-	-	-
Rest In Walk	-	-	-	-	-	-	-	-
Conditon Service	-	-	-	-	-	-	-	-
Non-Actuated 1	-	-	-	-	-	-	-	-
Non-Actuated 2	-	-	-	-	-	-	-	-
Add Init Calc								

Pattern Tables [2.4]

Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq	Pat#	Cyc	Off	Split	Seq
1	135	71	1	14	13					25					37				
2	135	55	2	14	14					26					38				
3					15					27					39				
4					16					28					40				
5					17					29					41				
6					18					30					42				
7					19					31					43				
8					20					32					44				
9					21					33					45				
10					22					34					46				
11					23					35					47				
12					24					36					48				

Split	[2.7]	1	2	3	4	5	6	7	8	Split	[2.7]	1	2	3	4	5	6	7	8
1	Coord	12	67	21	35	26	53	19	37	13	Coord								
	2		MIN				MIN												
2	Coord	10	71	27	27	40	41	19	35	14	Coord								
	2		MIN				MIN												
3	Coord									15	Coord								
4	Coord									16	Coord								
5	Coord									17	Coord								
6	Coord									18	Coord								
7	Coord									19	Coord								
8	Coord									20	Coord								
9	Coord									21	Coord								
10	Coord									22	Coord								
11	Coord									23	Coord								
12	Coord									24	Coord								

STD8

Ring/Startup [1.1.4]			[1.1.2]
Phs	Ring	Start	Enable
1	1	RED	X
2	1	GREEN	X
3	1	RED	X
4	1	RED	X
5	2	RED	X
6	2	GREEN	X
7	2	RED	X
8	2	RED	X

Coord Modes [2.1]	
Test OpMode	0
Correction	SHRT/LNG
Maximum	MAX 1
Force-Off	FLOAT
Closed Loop	OFF
Stop-in-Walk	ON
Auto Reset	ON
Expand Split	OFF
Ped Recycle	P3478_INH
Before	TIMED
After	TIMED
Auto Flash [1.4.1]	
Auto Flash	CHANNEL
Flash Yel	0
Flash Red	0
Unit Params [1.2.1]	
Phase Mode	STD8
IO Mode	AUTO
Loc Flsh Start	OFF
Start Flash(s)	8
Start AllRed(s)	2
Yellow < 3"	OFF
Display Time	30
Red Revert	2
MCE Timeout	
Feature Profile	1
Free Ring Seq	14
SDLC Retry	0
TS2 Det Faults	OFF
Auto Ped Clear	OFF
Date Printed:	02/23/12

Page 1

White Rock & Post (ID 99) (Standard File)

IP Address:

Mask:

Gateway:

Port:

Date Installed:

Date Superceded:

Phase Options+ [1.1.3]

Options+ [1.1.3]	1	2	3	4	5	6	7	8
Reservice	-	-	-	-	-	-	-	-
PedClr Thru Yel	-	-	-	-	-	-	-	-
SkipRed-NoCall	-	-	-	-	-	-	-	-
Red Rest	-	-	-	-	-	-	-	-
Max II	-	-	-	-	-	-	-	-
Ped Delay	-	-	-	-	-	-	-	-
Grn/Ped Delay								
Conflicting Phase								
Omit Yel, Yel P								
Ped Out/Olp Ped								
StartYel, Next P								

Phase Concurrency [1.1.4]

Phase	Ring	StartUp	Concurrent Phases				
1	1	RED	5	6	0	0	0
2	1	GREEN	5	6	0	0	0
3	1	RED	7	8	0	0	0
4	1	RED	7	8	0	0	0
5	2	RED	1	2	0	0	0
6	2	GREEN	1	2	0	0	0
7	2	RED	3	4	0	0	0
8	2	RED	3	4	0	0	0
9	0	NONE	0	0	0	0	0
10	0	NONE	0	0	0	0	0
11	0	NONE	0	0	0	0	0
12	0	NONE	0	0	0	0	0

User Defined Sequences (MM>1>2>4)

Sequence No.	Ring	Phase						
1	1	1	2	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
2	1	1	2	3	4	0	0	0
	2	6	5	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0
3	1	2	1	3	4	0	0	0
	2	5	6	7	8	0	0	0
	3	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0

Overlap 1-8 Program Parms & Parm+ [1.5.2.1] [1.5.2.2]

		NOTVAL
1 A	Included Ø	
	Modifier Ø	Grn
	Conflict Ø	Yel
	Conflict Olap	Red
	Conflict Ped	LG
2 B	Included Ø	NOTVAL
	Modifier Ø	Grn
	Conflict Ø	Yel
	Conflict Olap	Red
	Conflict Ped	LG
3 C	Included Ø	NOTVAL
	Modifier Ø	Grn
	Conflict Ø	Yel
	Conflict Olap	Red
	Conflict Ped	LG
4 D	Included Ø	NOTVAL
	Modifier Ø	Grn
	Conflict Ø	Yel
	Conflict Olap	Red
	Conflict Ped	LG
5 E	Included Ø	NOTVAL
	Modifier Ø	Grn
	Conflict Ø	Yel
	Conflict Olap	Red
	Conflict Ped	LG
6 F	Included Ø	NOTVAL
	Modifier Ø	Grn
	Conflict Ø	Yel
	Conflict Olap	Red
	Conflict Ped	LG
7 G	Included Ø	NOTVAL
	Modifier Ø	Grn
	Conflict Ø	Yel
	Conflict Olap	Red
	Conflict Ped	LG
8 H	Included Ø	NOTVAL
	Modifier Ø	Grn
	Conflict Ø	Yel
	Conflict Olap	Red
	Conflict Ped	LG

Coord Transition, CoorPhs - [2.5]

Pat#	Short	Long	Dwell	No Shortway Ø	E-Yld	Offset
1	10	17				BegGRN
2	10	17				BegGRN
3	10	17				BegGRN
4	10	17				BegGRN
5	10	17				BegGRN
6	10	17				BegGRN
7						BegGRN
8						BegGRN
9						BegGRN
10						BegGRN
11						BegGRN
12						BegGRN
13						BegGRN
14						BegGRN

Min Perms

Veh	Ped

Default Phase Sequence Chart [1.2.4]

Seq #	Ring	Phases				
1	1	1	2	3	4	
	2	5	6	7	8	
2	1	1	2	3	4	
	2	6	5	7	8	
3	1	2	1	3	4	
	2	5	6	7	8	
4	1	2	1	3	4	
	2	6	5	7	8	
5	1	1	2	3	4	
	2	5	6	8	7	
6	1	1	2	3	4	
	2	6	5	8	7	
7	1	2	1	3	4	
	2	5	6	8	7	
8	1	2	1	3	4	
	2	6	5	8	7	
9	1	1	2	4	3	
	2	5	6	7	8	
10	1	1	2	4	3	
	2	6	5	7	8	
11	1	2	1	4	3	
	2	5	6	7	8	
12	1	2	1	4	3	
	2	6	5	7	6	
13	1	1	2	4	3	
	2	5	6	8	7	
14	1	1	2	4	3	
	2	6	5	8	7	
15	1	2	1	4	3	
	2	5	6	8	7	
16	1	2	1	4	3	
	2	6	5	8	7	

Coord Trans [2.5] cont.

Patt #	Ret Hold	Flt	Max2
1	-		-
2	-		-
3	-		-
4	-		-
5	-		-
6	-		-
7	-		-
8	-		-
9	-		-
10	-		-
11	-		-
12	-		-
13	-		-
14	-		-

White Rock & Post (ID 99) (Standard File)

02/23/12

Intersection No. 038 Date: 6-2-07

Phase Times [1.1.1]

	1	2	3	4	5	6	7	8
Min Green	5	5		5	5	5		5
Gap, Ext	2	3		3.6	2	3.7		3.6
Max 1	25	45		35	25	45		40
Max 2	25	45		35	25	45		40
Yel Clearance	3	4.3		3.2	3	5		3.2
Red Clearance	0.5	1		1	0.5	1		1
Walk		7		7		7		
Ped Clearance		17		18		18		
Red Revert								
Add Initial								
Max Initial								
Time B4 Reduct								
Cars B4 Reduct								
Time To Reduce								
Reduce By								
Min Gap								
DyMaxLim								
Max Step								

Phase Options [1.1.2]

	1	2	3	4	5	6	7	8
Enable	X	X		X	X	X		X
Min Recall								
Max Recall								
Ped Recall								
Soft Recall								
Lock Calls								
Auto Flash Entry								
Auto Flash Exit								
Dual Entry								
Enable Simul Gap		X				X		
Gaurant Passage	X			X	X			X
Rest In Walk								
Conditon Service								
Non-Actuated 1								
Non-Actuated 2								
Add Init Calc								

Phase Options+ [1.1.3]

Reservice								
Walk Thru Yel								
Skip Red No Call								
Red Rest								
Max II								
Conflicting Phase								
Conflicting Phase	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Omit Yellow								
Ped Out/Olap								
Start Yel, Next Ph								

Auto Flash Parms [1.4.1]

Flash Parameter		Clearance Time	
Mode	CHANNEL	Yellow	3.5
		Red	1.5

Auto Flash, Phases/Overlaps [1.4.2]

Yel (phases)								
Yel (overlaps)								

White Rock Rd at Valley View Pw
06/02/07

Inhibit Phases [1.1.5]

Phase	Inhibit Phases							
	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Call Phases, Call Redirection [1.1.5]

Phase	Call Phases				Redirection			
					From	To	From	To
1								
2								
3								
4								
5								
6								
7								
8								

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Appendix A

White Rock Rd at Valley View Pw

Intersection No. 038 Date: 6-2-07

Detector, Vehicle Parameters 1-16 [5.1]

Det#	Call Φ	Switch Φ	Delay	Extend	Queue	NoAct	Ma	ErrCnt	FailTime
1	1		1.5						15
2	2								35
3	2								35
4	2								35
5	2								35
6	2				10				35
7	3								
8	4								25
9	4								25
10	4								25
11	4								25
12	4		1.5		10				25
13	1								15
14	3								
15	5		1.5						15
16	6								35

Detector, Vehicle Parameters 17-32 [5.1]

Det#	Call Φ	Switch Φ	Delay	Extend	Queue	NoAct	Ma	ErrCnt
17	6							35
18	6							35
19	6							35
20	6				10			35
21	7							
22	8							25
23	8							25
24	8							25
25	8							25
26	8		1.5		10			25
27	5							
28	7							
29								
30								
31								
32								

Location: ED 50 @ Silva Valley Old White Rock (Cat3) **Designed By:** 0300000258

System: **District:** **Installed By:**

Master At: EB Ramp **I/C:** **Service Info:**

Timing Change:	Date Start:	Date End:	Designed:	Installed:
				5/31/2016

		FLASH
	1) SB LT to Clarsville	[ ]
P	2) NB White Rock	[ ]
H	3) WB Clarksville	[ ]
A	4) EB Clarksville	[ ]
S	5) NB LT to Clarksville	[ ]
E	6) SB White Rock	[ ]
	7)	[ ]
	8)	[ ]
O	A)	[ ]
V	B)	[ ]
L	C)	[ ]
A	D)	[ ]
P	E)	[ ]
	F)	[ ]

Intersection Layout

Comments and Notes:
2016-05-31 OTO 0400 TSCP 2.20 B125 DH, Hassane Haffouda, Shane Cohen EDC

RAM Checksum

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GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

CONFIGURATION PHASE FLAGS

Phases (2-1-1-1)	
Permitted	1 2 3 4 5 6 . .
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	. . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. . . . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	1 2 3 4 5 6 . .
Pedestrian Calls	. . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	5.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. . . . .
P3	. . . . .
P4	. . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)				
Overlap	Parent	Omit	No Start	Not
A	. . . . .	. . . . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	0	0	0	0	0	0	0
Flash Don't Walk	0	0	0	0	0	0	0	0
Minimum Green	8	9	8	9	8	9	0	0
Det Limit	10	10	10	10	10	10	0	0
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	20	50	20	20	20	50	0	0
Max Green 2	50	50	50	50	50	50	0	0
Max Green 3	50	50	50	50	50	50	0	0
Extension	2.0	1.0	2.0	2.0	2.0	1.0	0.0	0.0
Maximum Gap	2.0	3.0	2.0	2.0	2.0	3.0	0.0	0.0
Minimum Gap	2.0	1.5	2.0	2.0	2.0	1.5	0.0	0.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Reduce Every	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Yellow	3.7	4.8	3.7	3.7	3.7	4.8	3.0	3.0
All-Red	0.5	2.0	1.0	1.0	0.5	2.0	0.0	0.0
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	9	0	9	0	9	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	SEC

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90						16	21	16	16	16	21		
Plan 2	Green Factor	100						16	31	16	16	16	31		
Plan 3	Green Factor	90						16	21	16	16	16	21		
Plan 4	Green Factor	100						16	31	16	16	16	31		
Plan 5	Green Factor	110						16	41	16	16	16	41		
Plan 6	Green Factor														
Plan 7	Green Factor														
Plan 8	Green Factor														
Plan 9	Green Factor														

Master Timer Sync (7-A)	
Enable in Plans	
1-9	1 2 3 4 5 . . . .
11-19	. . . . .
21-29	. . . . .

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
. 2 . 4 . 6 . 8	. . . . .
Veh Min	Veh Max
. . . . .	. . . . .
Ped	Bike
. . . . .	. . . . .
Cond	Cond Grn
. . . . .	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 2	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 3	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 4	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 5	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 6	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 7	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 9	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

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Appendix A

Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor														
Plan 12	Green Factor														
Plan 13	Green Factor														
Plan 14	Green Factor														
Plan 15	Green Factor														
Plan 16	Green Factor														
Plan 17	Green Factor														
Plan 18	Green Factor														
Plan 19	Green Factor														

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	.....	.....	.....	.....	.....	.....	.....	.....
Plan 12	.....	.....	.....	.....	.....	.....	.....	.....
Plan 13	.....	.....	.....	.....	.....	.....	.....	.....
Plan 14	.....	.....	.....	.....	.....	.....	.....	.....
Plan 15	.....	.....	.....	.....	.....	.....	.....	.....
Plan 16	.....	.....	.....	.....	.....	.....	.....	.....
Plan 17	.....	.....	.....	.....	.....	.....	.....	.....
Plan 18	.....	.....	.....	.....	.....	.....	.....	.....
Plan 19	.....	.....	.....	.....	.....	.....	.....	.....

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Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor														
Plan 22	Green Factor														
Plan 23	Green Factor														
Plan 24	Green Factor														
Plan 25	Green Factor														
Plan 26	Green Factor														
Plan 27	Green Factor														
Plan 28	Green Factor														
Plan 29	Green Factor														

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	.....	.....	.....	.....	.....	.....	.....	.....
Plan 22	.....	.....	.....	.....	.....	.....	.....	.....
Plan 23	.....	.....	.....	.....	.....	.....	.....	.....
Plan 24	.....	.....	.....	.....	.....	.....	.....	.....
Plan 25	.....	.....	.....	.....	.....	.....	.....	.....
Plan 26	.....	.....	.....	.....	.....	.....	.....	.....
Plan 27	.....	.....	.....	.....	.....	.....	.....	.....
Plan 28	.....	.....	.....	.....	.....	.....	.....	.....
Plan 29	.....	.....	.....	.....	.....	.....	.....	.....

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DETECTORS

Detector Attributes (5-1)

Det	Type	Phases	Lock	Slot
1	COUNT+CALL+EXTEND	1	NO	I1U
2	COUNT+CALL+EXTEND	1	NO	I1L
3	COUNT+CALL+EXTEND	. 2	NO	I2U
4	COUNT+CALL+EXTEND	. 2	NO	I2L
5	COUNT+CALL+EXTEND	. 2	NO	I3U
6	BICYCLE	. 2	NO	I3L
7	LIMITED	. 2	NO	I4U
8	COUNT+CALL+EXTEND	. 2	NO	I4L
9	COUNT+CALL+EXTEND	. . 3	NO	I5U
10	COUNT+CALL+EXTEND	. . 3	NO	I5L
11	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6U
12	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6L
13	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I7U
14	CALL+EXTEND	. . . 4 . . .	NO	I7L
15	LIMITED	. . . 4 . . .	NO	I8U
16	BICYCLE	. . . 4 . . .	NO	I8L
17	COUNT+CALL+EXTEND	. . 3	NO	I9U
18	COUNT+CALL+EXTEND	. . 3	NO	I9L
19	COUNT+CALL+EXTEND	. 2	NO	I10U
20	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I10L
21	COUNT+CALL+EXTEND	. . . . 5 . .	NO	J1U
22	COUNT+CALL+EXTEND	. . . . 5 . .	NO	J1L
23	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2U
24	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2L
25	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J3U
26	CALL+EXTEND	. . . . . 6 . .	NO	J3L
27	LIMITED	. . . . . 6 . .	NO	J4U
28	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J4L
29	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5U
30	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5L
31	BICYCLE	. . . . . 6 . .	NO	J6U
32	COUNT+CALL+EXTEND	 8	NO	J6L
33	COUNT+CALL+EXTEND	 8	NO	J7U
34	CALL+EXTEND	 8	NO	J7L
35	LIMITED	 8	NO	J8U
36	COUNT+CALL+EXTEND	 8	NO	J8L
37	COUNT+CALL+EXTEND	. . . . 5 . .	NO	J9U
38	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J9L
39	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J10U
40	COUNT+CALL+EXTEND	 8	NO	J10L
41	PEDESTRIAN	. 2	NO	I12U
42	PEDESTRIAN	. . . 4 . . .	NO	I12L
43	PEDESTRIAN	. . . . . 6 . .	NO	I13U
44	PEDESTRIAN	 8	NO	I13L

Detector Configuration (5-2)

Det	Delay	Extend	Recall	Port
1			10	3.2
2			10	7.2
3			10	1.1
4			10	1.5
5			10	4.5
6			10	6.2
7			10	2.1
8			10	7.4
9			10	3.4
10			10	7.6
11			10	1.3
12			10	1.7
13			10	4.7
14	10		10	6.4
15			10	2.3
16			10	7.8
17			10	3.6
18	10		10	3.8
19			10	4.1
20			10	4.2
21			10	3.1
22			10	7.1
23			10	1.2
24			10	1.6
25			10	4.6
26			10	6.3
27			10	2.2
28			10	7.3
29			10	3.3
30			10	7.5
31			10	1.4
32			10	1.8
33			10	4.8
34			10	6.5
35			10	2.4
36			10	7.7
37			10	3.5
38			10	3.7
39			10	4.3
40			10	4.4
41			10	5.1
42			10	5.3
43			10	5.2
44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)	
Detectors 1-8	. . . . .
Detectors 9-16	. . . . .
Detectors17-24	. . . . .
Detectors 25-32	. . . . .
Detectors 33-40	. . . . .
Detectors 41-44	. . . . .

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu								
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)	
Enable in Plans	. . . . .

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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Appendix A

TOD SCHEDULE

Table 1 (8-2-1)			Table 2 (8-2-2)			Table 3 (8-2-3)			Table 4 (8-2-4)			Table 5 (8-2-5)			Table 6 (8-2-6)		
Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	.....
Holiday	.....

Daylight Saving (8-6)

Enabled	YES

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1			.....		.....
2			.....		.....
3			.....		.....
4			.....		.....
5			.....		.....
6			.....		.....
7			.....		.....
8			.....		.....
9			.....		.....
10			.....		.....
11			.....		.....
12			.....		.....
13			.....		.....
14			.....		.....
15			.....		.....
16			.....		.....

Action Codes:

0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11. Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed

200+Action Code = Phases replaced

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Appendix A

COMMUNICATIONS

C2 (6-1-1)	
Address	3
Protocol	AB3418
Limit Access	0
Baud	9600
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C20 (6-1-2)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C21 (6-1-3)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

Limit Access:
0-None
1-Status Only
2-Status, Set Pattern, Time
3-Status, Set Pattern, Time, Manual Plan

SOFT LOGIC

Soft Logic (6-2)

#	Data	OP	Data	OP	Data	OP	Data
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

*Refer to User's Manual for Data and OP Codes

CALLBACK NUMBERS

Callback Numbers (6-3...3)	
Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

NETWORK

Network (6-4)	
Address	
Protocol	AB3418
Port	27000
IP Mode	STATIC

IP Address	0	.	0	.	0	.	0
Netmask	255	.	255	.	255	.	0
Broadcast	0	.	0	.	0	.	254
Gateway	0	.	0	.	0	.	1

RAILROAD PREEMPTION

RR 1

(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. 2 . . 5 . . .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		. . . . .	. . . . .	1 2 3 4 5 6 7 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	A B C D E F
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)			
Port	Gate Port	Latching	Power-Up
2.5	0.0	YES	FLASHING

RR 2

(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. . . 4 . . 7 .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		1 2 3 . . 6 . .	. . . . .	. . . . .	. 2 . . . 6 . .	. . . . .	. . . 4 . . . 8	. . . . .	. . . . .	. . . . .
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-2-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	. . . 4 . . 7 .	. . . . .

Configuration (3-2-6)			
Port	Gate Port	Latching	Power-up
2.6	0.0	YES	DARK

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. 2 . . 5 . . .	. . . . .

Port	Latching	Phase Termination
5.5	NO	ADVANCE

EVB (3-B)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. . . 4	. . . . .

Port	Latching	Phase Termination
5.6	NO	ADVANCE

EVC (3-C)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	1 . . . . 6 . .	. . . . .

Port	Latching	Phase Termination
5.7	NO	ADVANCE

EVD (3-D)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. . 3	. . . . .

Port	Latching	Phase Termination
5.8	NO	ADVANCE

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INPUTS

		7 Wire I/C (2-1-5-1)			
		Input	Port	Input	Port
Enable	NO	R1	3.8	Free	3.6
Max ON		R2	3.5	D2	2.8
Max OFF		R3	3.7	D3	6.1

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Cabinet Status (2-1-5-3)	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Y-Coordination (2-1-5-6)	
Port C	Port D
0.0	0.0

OUTPUTS

Loadswitch Assignments (2-1-6)							+
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:

0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7
51-57 Special Functions
71-72 Seven Wire I/C

+ middle output of loadswitches 3 and 6 Channel 9 and 10

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TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Transit Priority Configuration (3-E-A)				Indicator Output	
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	.....	0.0	OPT	0	0
Plan 11-19	.....	0.0	OPT	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
	.....
	.....

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	.....

Access Utilities (9-5)	
Password	***
Timeout	30

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													.2...6..	.2.4.6.8	.....	.....
Plan D													.2...6..	.2.4.6.8	.....	.....

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					.....	0.0	0.0	0.0	0	0.0	0

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Appendix A

Location: ED 50 @ Silva Valley #2 EB
Designed By: 0300000258
System: | **District:** | **Installed By:**
Master At: | **I/C:** | **Service Info:** 0325050R001827A

Timing Change:	Date Start:	Date End:	Designed:	Installed:
				5/31/2016

Intersection Layout

PHASE		FLASH
	1)	[ ]
P	2) NB Silva Valley	[ ]
H	3)	[ ]
A	4) EB Off rramp	[ ]
S	5) NB LT to EB On ramp	[ ]
E	6) SB Silva Valley	[ ]
	7)	[ ]
	8)	[ ]

OVLP		
	A)	[ ]
	B)	[ ]
	C)	[ ]
	D)	[ ]
	E)	[ ]
	F)	[ ]

Comments and Notes:
2016-05-31 OTO 0400 TSCP 2.20 B125 DH, Hassane Haffouda, Shane Cohen EDC

RAM Checksum

Page 2: EA5F	Page 8: 85AF
Page 3: CEBB	Page 9: D2FD
Page 4: 33E4	Page 10: 8673
Page 5: 191A	Page 11: 1030
Page 6: 191A	Page 12: 78E4
Page 7: 985F	Page 13: 86F7

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Appendix A

CONFIGURATION PHASE FLAGS

Phases (2-1-1-1)	
Permitted	. 2 . 4 5 6 . .
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	. . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. . . . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	. 2 . 4 5 6 . .
Pedestrian Calls	. . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. . . . .
P3	. . . . .
P4	. . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)

Overlap	Parent	Omit	No Start	Not
A	. . . . .	. . . . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	0	0	0	0	0	0	0
Flash Don't Walk	0	0	0	0	0	0	0	0
Minimum Green	0	9	0	8	8	9	0	0
Det Limit	0	10	0	10	10	10	0	0
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	0	50	0	25	30	50	0	0
Max Green 2	0	50	0	50	50	50	0	0
Max Green 3	0	50	0	50	50	50	0	0
Extension	0.0	1.0	0.0	2.0	2.0	1.0	0.0	0.0
Maximum Gap	0.0	3.0	0.0	2.0	2.0	3.0	0.0	0.0
Minimum Gap	0.0	1.5	0.0	2.0	2.0	1.5	0.0	0.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Reduce Every	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Yellow	3.0	4.8	3.0	4.8	3.7	4.8	3.0	3.0
All-Red	0.0	2.0	0.0	1.0	0.5	2.0	0.0	0.0
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	9	0	0	0	9	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	SEC

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90			16				61		16	21	32		
Plan 2	Green Factor	100			16				70		17	25	37		
Plan 3	Green Factor	90			18				61		16	22	31		
Plan 4	Green Factor	100			16				70		17	25	37		
Plan 5	Green Factor	110			79				79		18	27	47		
Plan 6	Green Factor														
Plan 7	Green Factor														
Plan 8	Green Factor														
Plan 9	Green Factor														

Master Timer Sync (7-A)	
Enable in Plans	
1-9	1 2 3 4 5 . . . .
11-19	. . . . .
21-29	. . . . .

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
. 2 . 4 . 6 . 8	. . . . .
Veh Min	Veh Max
. . . . .	. . . . .
Ped	Bike
. . . . .	. . . . .
Cond	Cond Grn
. . . . .	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 2	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 3	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 4	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 5	. 2 . 4 . 6 . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 6	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 7	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 9	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor														
Plan 12	Green Factor														
Plan 13	Green Factor														
Plan 14	Green Factor														
Plan 15	Green Factor														
Plan 16	Green Factor														
Plan 17	Green Factor														
Plan 18	Green Factor														
Plan 19	Green Factor														

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	.....	.....	.....	.....	.....	.....	.....	.....
Plan 12	.....	.....	.....	.....	.....	.....	.....	.....
Plan 13	.....	.....	.....	.....	.....	.....	.....	.....
Plan 14	.....	.....	.....	.....	.....	.....	.....	.....
Plan 15	.....	.....	.....	.....	.....	.....	.....	.....
Plan 16	.....	.....	.....	.....	.....	.....	.....	.....
Plan 17	.....	.....	.....	.....	.....	.....	.....	.....
Plan 18	.....	.....	.....	.....	.....	.....	.....	.....
Plan 19	.....	.....	.....	.....	.....	.....	.....	.....

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor														
Plan 22	Green Factor														
Plan 23	Green Factor														
Plan 24	Green Factor														
Plan 25	Green Factor														
Plan 26	Green Factor														
Plan 27	Green Factor														
Plan 28	Green Factor														
Plan 29	Green Factor														

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	.....	.....	.....	.....	.....	.....	.....	.....
Plan 22	.....	.....	.....	.....	.....	.....	.....	.....
Plan 23	.....	.....	.....	.....	.....	.....	.....	.....
Plan 24	.....	.....	.....	.....	.....	.....	.....	.....
Plan 25	.....	.....	.....	.....	.....	.....	.....	.....
Plan 26	.....	.....	.....	.....	.....	.....	.....	.....
Plan 27	.....	.....	.....	.....	.....	.....	.....	.....
Plan 28	.....	.....	.....	.....	.....	.....	.....	.....
Plan 29	.....	.....	.....	.....	.....	.....	.....	.....

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Appendix A

DETECTORS

Detector Attributes (5-1)

Det	Type	Phases	Lock	Slot
1	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	I1U
2	COUNT+CALL+EXTEND	1	NO	I1L
3	COUNT+CALL+EXTEND	. 2	NO	I2U
4	COUNT+CALL+EXTEND	. 2	NO	I2L
5	COUNT+CALL+EXTEND	. 2	NO	I3U
6	BICYCLE	. 2	NO	I3L
7	LIMITED	. 2	NO	I4U
8	COUNT+CALL+EXTEND	. 2	NO	I4L
9	COUNT+CALL+EXTEND	. . 3	NO	I5U
10	COUNT+CALL+EXTEND	. . 3	NO	I5L
11	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6U
12	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6L
13	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I7U
14	CALL+EXTEND	. . . 4 . . .	NO	I7L
15	LIMITED	. . . 4 . . .	NO	I8U
16	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I8L
17	COUNT+CALL+EXTEND	1	NO	I9U
18	COUNT+CALL+EXTEND	. . 3	NO	I9L
19	COUNT+CALL+EXTEND	. 2	NO	I10U
20	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I10L
21	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J1U
22	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J1L
23	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2U
24	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2L
25	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J3U
26	LIMITED	. . . . . 6 . .	NO	J3L
27	LIMITED	. . . . . 6 . .	NO	J4U
28	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J4L
29	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5U
30	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5L
31	COUNT+CALL+EXTEND	 8	NO	J6U
32	COUNT+CALL+EXTEND	 8	NO	J6L
33	LIMITED	. . . . . 6 . .	NO	J7U
34	CALL+EXTEND	 8	NO	J7L
35	LIMITED	 8	NO	J8U
36	COUNT+CALL+EXTEND	 8	NO	J8L
37	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J9U
38	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J9L
39	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J10U
40	COUNT+CALL+EXTEND	 8	NO	J10L
41	PEDESTRIAN	. 2	NO	I12U
42	PEDESTRIAN	. . . 4 . . .	NO	I12L
43	PEDESTRIAN	. . . . . 6 . .	NO	I13U
44	PEDESTRIAN	 8	NO	I13L

Detector Configuration (5-2)

Det	Delay	Extend	Recall	Port
1			10	3.2
2			10	7.2
3			10	1.1
4			10	1.5
5			10	4.5
6			10	6.2
7			10	2.1
8			10	7.4
9			10	3.4
10			10	7.6
11			10	1.3
12			10	1.7
13			10	4.7
14	10		10	6.4
15			10	2.3
16			10	7.8
17			10	3.6
18			10	3.8
19			10	4.1
20			10	4.2
21			10	3.1
22			10	7.1
23			10	1.2
24			10	1.6
25			10	4.6
26			10	6.3
27			10	2.2
28			10	7.3
29			10	3.3
30			10	7.5
31			10	1.4
32			10	1.8
33			10	4.8
34			10	6.5
35			10	2.4
36			10	7.7
37			10	3.5
38			10	3.7
39			10	4.3
40			10	4.4
41			10	5.1
42			10	5.3
43			10	5.2
44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)

Detectors 1-8	. . . . .
Detectors 9-16	. . . . .
Detectors17-24	. . . . .
Detectors 25-32	. . . . .
Detectors 33-40	. . . . .
Detectors 41-44	. . . . .

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu								
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)

Enable in Plans	. . . . .

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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Appendix A

TOD SCHEDULE

Table 1 (8-2-1)			Table 2 (8-2-2)			Table 3 (8-2-3)			Table 4 (8-2-4)			Table 5 (8-2-5)			Table 6 (8-2-6)		
Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	.....
Holiday	.....

Daylight Saving (8-6)

Enabled	YES

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1			.....		.....
2			.....		.....
3			.....		.....
4			.....		.....
5			.....		.....
6			.....		.....
7			.....		.....
8			.....		.....
9			.....		.....
10			.....		.....
11			.....		.....
12			.....		.....
13			.....		.....
14			.....		.....
15			.....		.....
16			.....		.....

Action Codes:

0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11. Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed

200+Action Code = Phases replaced

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Appendix A

COMMUNICATIONS

C2 (6-1-1)	
Address	2
Protocol	AB3418
Limit Access	0
Baud	9600
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C20 (6-1-2)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C21 (6-1-3)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

Limit Access:
0-None
1-Status Only
2-Status, Set Pattern, Time
3-Status, Set Pattern, Time, Manual Plan

SOFT LOGIC

Soft Logic (6-2)

#	Data	OP	Data	OP	Data	OP	Data
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

*Refer to User's Manual for Data and OP Codes

CALLBACK NUMBERS

Callback Numbers (6-3...3)	
Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

NETWORK

Network (6-4)	
Address	
Protocol	AB3418
Port	27000
IP Mode	STATIC

IP Address	0	.	0	.	0	.	0
Netmask	255	.	255	.	255	.	0
Broadcast	0	.	0	.	0	.	254
Gateway	0	.	0	.	0	.	1

RAILROAD PREEMPTION

RR 1

(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. 2 . . 5 . . .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		. . . . .	. . . . .	1 2 3 4 5 6 7 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	A B C D E F
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-1-5)

Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)

Port	Gate Port	Latching	Power-Up
2.5	0.0	YES	FLASHING

RR 2

(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. . . 4 . . 7 .	. . . . .	. . . . .	. . . . .	. . . . .	. 2 . 4 . 6 . 8	. . . . .	. . . . .	. . . . .
Clear 2		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Clear 3		. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Hold		1 2 3 . . 6 . .	. . . . .	. . . . .	. 2 . . . 6 . .	. . . . .	. . . 4 . . . 8	. . . . .	. . . . .	. . . . .
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-2-5)

Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . . .	. . . . .	. . . 4 . . 7 .	. . . . .

Configuration (3-2-6)

Port	Gate Port	Latching	Power-up
2.6	0.0	YES	DARK

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. 2 . . 5 . . .	. . . . .

Port	Latching	Phase Termination
5.5	NO	ADVANCE

EVB (3-B)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. . . 4	. . . . .

Port	Latching	Phase Termination
5.6	NO	ADVANCE

EVC (3-C)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. . . . . 6 . .	. . . . .

Port	Latching	Phase Termination
5.7	NO	ADVANCE

EVD (3-D)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. . 3 8	. . . . .

Port	Latching	Phase Termination
5.8	NO	ADVANCE

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Appendix A

INPUTS

		7 Wire I/C (2-1-5-1)			
		Input	Port	Input	Port
Enable	NO	R1	3.8	Free	3.6
Max ON		R2	3.5	D2	2.8
Max OFF		R3	3.7	D3	6.1

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Cabinet Status (2-1-5-3)	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Y-Coordination (2-1-5-6)	
Port C	Port D
0.0	0.0

OUTPUTS

Loadswitch Assignments (2-1-6)							+
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:

0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7
51-57 Special Functions
71-72 Seven Wire I/C

+ middle output of loadswitches 3 and 6 Channel 9 and 10

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TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Transit Priority Configuration (3-E-A)				Indicator Output	
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	.....	0.0	OPT	0	0
Plan 11-19	.....	0.0	OPT	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
	.....
	.....

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	.....

Access Utilities (9-5)	
Password	***
Timeout	30

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													.2...6..	.2.4.6.8	.....	.....
Plan D													.2...6..	.2.4.6.8	.....	.....

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					.....	0.0	0.0	0.0	0	0.0	0

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Appendix A

Location: ED 50 @ Silva Valley #1 WB
System: 2070
Master At:
District:
I/C:
Designed By: 0300000258
Installed By:
Service Info: 0325050R001826B

Timing Change:	Date Start:	Date End:	Designed:	Installed:
				5/31/2016

		FLASH
	1)	[ ]
P	2) NB Silva Valley Pkwy	[ ]
H	3)	[ ]
A	4)	[ ]
S	5) NBLT to WB On	[ ]
E	6) SB Silva Valley Pkwy	[ ]
	7)	[ ]
	8) WB ff ramp	[ ]

O	A)	[ ]
V	B)	[ ]
L	C)	[ ]
A	D)	[ ]
P	E)	[ ]
	F)	[ ]

Intersection Layout

Comments and Notes:
2016-05-31 OTO 0400 TSCP 2.20 B125 DH, Hassane Haffouda, Shane Cohen EDC

RAM Checksum

Page 2: F85C	Page 8: 85AF
Page 3: 754D	Page 9: D2FD
Page 4: FAF5	Page 10: 6C71
Page 5: 191A	Page 11: 886B
Page 6: 191A	Page 12: 78E4
Page 7: 0C2F	Page 13: 86F7

Post Mile: ED 50 @ (Silva Valley #1) WB ***Printed: 1/11/2017***

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CONFIGURATION PHASE FLAGS

Phases (2-1-1-1)	
Permitted	. 2 . . 5 6 . 8
Restricted	. . . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . . .
Pedestrian	. . . . .
Bicycle	. . . . .

Phase Locks (2-1-1-3)	
Red	. . . . .
Yellow	. . . . .
Force/Max	. . . . .

Phase Features (2-1-1-4)	
Double Entry	. . . . .
Rest In Walk	. . . . .
Rest In Red	. . . . .
Walk 2	. . . . .
Max Green 2	. . . . .
Max Green 3	. . . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . . .
Vehicle Calls	. 2 . . 5 6 . 8
Pedestrian Calls	. . . . .
Yellow Start Overlaps	. . . . .
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . . .	1	. . . . .
2	. . . . .	2	. . . . .
3	. . . . .	3	. . . . .
4	. . . . .	4	. . . . .
5	. . . . .	5	. . . . .
6	. . . . .	6	. . . . .
7	. . . . .	7	. . . . .
8	. . . . .	8	. . . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . . .
Yellow Flash Overlap	. . . . .
Flash In Red Phases	. . . . .
Flash In Red Overlap	. . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . . .
Driveway Signal Phases	. . . . .
Driveway Signal Overlaps	. . . . .
Leading Ped Phases	. . . . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . . .

Pedestrian (2-1-3)	
P1	. . . . .
P2	. . . . .
P3	. . . . .
P4	. . . . .
P5	. . . . .
P6	. . . . .
P7	. . . . .
P8	. . . . .

Overlap (2-1-4)

Overlap	Parent	Omit	No Start	Not
A	. . . . .	. . . . .	. . . . .	. . . . .
B	. . . . .	. . . . .	. . . . .	. . . . .
C	. . . . .	. . . . .	. . . . .	. . . . .
D	. . . . .	. . . . .	. . . . .	. . . . .
E	. . . . .	. . . . .	. . . . .	. . . . .
F	. . . . .	. . . . .	. . . . .	. . . . .

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Appendix A

PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	0	0	0	0	0	0	0
Flash Don't Walk	0	0	0	0	0	0	0	0
Minimum Green	0	8	0	0	8	8	0	8
Det Limit	0	10	0	0	10	10	0	10
Max Initial	0	0	0	0	0	0	0	0
Max Green 1	0	50	0	0	25	50	0	30
Max Green 2	0	50	0	0	50	50	0	50
Max Green 3	0	50	0	0	50	50	0	50
Extension	0.0	1.0	0.0	0.0	2.0	1.0	0.0	1.0
Maximum Gap	0.0	3.0	0.0	0.0	2.0	3.0	0.0	2.0
Minimum Gap	0.0	1.5	0.0	0.0	2.0	1.5	0.0	2.0
Add Per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Reduce Every	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Yellow	3.0	4.8	3.0	3.0	3.7	4.8	3.0	4.8
All-Red	0.0	2.0	0.0	0.0	0.5	2.0	0.0	1.0

Ped/Bike (2-3)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	0	0	0	0	0	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	8	0	0	0	8	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	SEC

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Appendix A

Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor	90							54			20	26		23
Plan 2	Green Factor	100							62			23	31		25
Plan 3	Green Factor	90							49			18	23		28
Plan 4	Green Factor	100							54			20	26		33
Plan 5	Green Factor	110							60			23	29		37
Plan 6	Green Factor														
Plan 7	Green Factor														
Plan 8	Green Factor														
Plan 9	Green Factor														

Master Timer Sync (7-A)	
Enable in Plans	
1-9	1 2 3 4 5 . . . .
11-19	. . . . .
21-29	. . . . .

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
. 2 . 4 . 6 . 8	. . . . .
Veh Min	Veh Max
. . . . .	. . . . .
Ped	Bike
. . . . .	. . . . .
Cond	Cond Grn
. . . . .	10

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 2	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 3	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 4	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 5	. 2 . 4 5 . . 8	. 2 . . . 6 . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 6	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 7	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 8	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Plan 9	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-9
15 or 254 = Flash
14 or 255 = Free
Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

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Appendix A

Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor														
Plan 12	Green Factor														
Plan 13	Green Factor														
Plan 14	Green Factor														
Plan 15	Green Factor														
Plan 16	Green Factor														
Plan 17	Green Factor														
Plan 18	Green Factor														
Plan 19	Green Factor														

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	.....	.....	.....	.....	.....	.....	.....	.....
Plan 12	.....	.....	.....	.....	.....	.....	.....	.....
Plan 13	.....	.....	.....	.....	.....	.....	.....	.....
Plan 14	.....	.....	.....	.....	.....	.....	.....	.....
Plan 15	.....	.....	.....	.....	.....	.....	.....	.....
Plan 16	.....	.....	.....	.....	.....	.....	.....	.....
Plan 17	.....	.....	.....	.....	.....	.....	.....	.....
Plan 18	.....	.....	.....	.....	.....	.....	.....	.....
Plan 19	.....	.....	.....	.....	.....	.....	.....	.....

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Appendix A

Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor														
Plan 22	Green Factor														
Plan 23	Green Factor														
Plan 24	Green Factor														
Plan 25	Green Factor														
Plan 26	Green Factor														
Plan 27	Green Factor														
Plan 28	Green Factor														
Plan 29	Green Factor														

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	.....	.....	.....	.....	.....	.....	.....	.....
Plan 22	.....	.....	.....	.....	.....	.....	.....	.....
Plan 23	.....	.....	.....	.....	.....	.....	.....	.....
Plan 24	.....	.....	.....	.....	.....	.....	.....	.....
Plan 25	.....	.....	.....	.....	.....	.....	.....	.....
Plan 26	.....	.....	.....	.....	.....	.....	.....	.....
Plan 27	.....	.....	.....	.....	.....	.....	.....	.....
Plan 28	.....	.....	.....	.....	.....	.....	.....	.....
Plan 29	.....	.....	.....	.....	.....	.....	.....	.....

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Appendix A

DETECTORS

Detector Attributes (5-1)

Det	Type	Phases	Lock	Slot
1	BICYCLE	. . . . . 6 . .	YEL	I1U
2	COUNT+CALL+EXTEND	1	NO	I1L
3	COUNT+CALL+EXTEND	. 2	NO	I2U
4	COUNT+CALL+EXTEND	. 2	NO	I2L
5	COUNT+CALL+EXTEND	. 2	NO	I3U
6	BICYCLE	. 2	YEL	I3L
7	LIMITED	. 2	NO	I4U
8	COUNT+CALL+EXTEND	. 2	NO	I4L
9	COUNT+CALL+EXTEND	. . 3	NO	I5U
10	COUNT+CALL+EXTEND	. . 3	NO	I5L
11	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6U
12	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I6L
13	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I7U
14	CALL+EXTEND	. . . 4 . . .	NO	I7L
15	LIMITED	. . . 4 . . .	NO	I8U
16	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I8L
17	COUNT+CALL+EXTEND	1	NO	I9U
18	COUNT+CALL+EXTEND	. . 3	NO	I9L
19	COUNT+CALL+EXTEND	. 2	NO	I10U
20	COUNT+CALL+EXTEND	. . . 4 . . .	NO	I10L
21	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J1U
22	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J1L
23	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2U
24	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J2L
25	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J3U
26	LIMITED	. . . . . 6 . .	NO	J3L
27	LIMITED	. . . . . 6 . .	NO	J4U
28	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J4L
29	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5U
30	COUNT+CALL+EXTEND	. . . . . 7 .	NO	J5L
31	COUNT+CALL+EXTEND	 8	YEL	J6U
32	COUNT+CALL+EXTEND	 8	YEL	J6L
33	COUNT+CALL+EXTEND	 8	YEL	J7U
34	LIMITED	 8	NO	J7L
35	COUNT+CALL+EXTEND	 8	NO	J8U
36	COUNT+CALL+EXTEND	 8	NO	J8L
37	COUNT+CALL+EXTEND	. . . . 5 . . .	NO	J9U
38	LIMITED	 8	NO	J9L
39	COUNT+CALL+EXTEND	. . . . . 6 . .	NO	J10U
40	COUNT+CALL+EXTEND	 8	NO	J10L
41	PEDESTRIAN	. 2	NO	I12U
42	PEDESTRIAN	. . . 4 . . .	NO	I12L
43	PEDESTRIAN	. . . . . 6 . .	NO	I13U
44	PEDESTRIAN	 8	NO	I13L

Detector Configuration (5-2)

Det	Delay	Extend	Recall	Port
1			10	3.2
2			10	7.2
3		1.0	10	1.1
4		1.0	10	1.5
5		1.5	10	4.5
6			10	6.2
7			10	2.1
8			10	7.4
9			10	3.4
10			10	7.6
11			10	1.3
12			10	1.7
13			10	4.7
14			10	6.4
15			10	2.3
16			10	7.8
17			10	3.6
18			10	3.8
19			10	4.1
20			10	4.2
21			10	3.1
22			10	7.1
23		1.0	10	1.2
24		1.0	10	1.6
25		1.5	10	4.6
26			10	6.3
27			10	2.2
28			10	7.3
29			10	3.3
30			10	7.5
31		2.0	10	1.4
32		2.0	10	1.8
33	2	2.0	10	4.8
34	10		10	6.5
35			10	2.4
36			10	7.7
37			10	3.5
38			10	3.7
39			10	4.3
40			10	4.4
41			10	5.1
42			10	5.3
43			10	5.2
44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)	
Detectors 1-8	. . . . .
Detectors 9-16	. . . . .
Detectors17-24	. . . . .
Detectors 25-32	. . . . .
Detectors 33-40	. . . . .
Detectors 41-44	. . . . .

System Detector Assignment (5-5)

Sys Det	1	2	3	4	5	6	7	8
Det Nu								
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)	
Enable in Plans	. . . . .

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)

Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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Appendix A

TOD SCHEDULE

Table 1 (8-2-1)			Table 2 (8-2-2)			Table 3 (8-2-3)			Table 4 (8-2-4)			Table 5 (8-2-5)			Table 6 (8-2-6)		
Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS	Time	Plan	OS
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A
		A			A			A			A			A			A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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Appendix A

HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			.....	
2			.....	
3			.....	
4			.....	
5			.....	
6			.....	
7			.....	
8			.....	
9			.....	
10			.....	
11			.....	
12			.....	
13			.....	
14			.....	
15			.....	
16			.....	

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	.....
Holiday	.....

Daylight Saving (8-6)

Enabled	YES

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1			.....		.....
2			.....		.....
3			.....		.....
4			.....		.....
5			.....		.....
6			.....		.....
7			.....		.....
8			.....		.....
9			.....		.....
10			.....		.....
11			.....		.....
12			.....		.....
13			.....		.....
14			.....		.....
15			.....		.....
16			.....		.....

Action Codes:

0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11. Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting

100+Action Code = Phases removed

200+Action Code = Phases replaced

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Appendix A

COMMUNICATIONS

C2 (6-1-1)	
Address	1
Protocol	AB3418
Limit Access	0
Baud	9600
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C20 (6-1-2)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

C21 (6-1-3)	
Address	
Protocol	AB3418
Limit Access	0
Baud	1200
Parity	NONE
Data Bits	8
Stop Bits	1
RTS On Time	20
RTS Off Time	20
Handshaking	NORMAL

Limit Access:
0-None
1-Status Only
2-Status, Set Pattern, Time
3-Status, Set Pattern, Time, Manual Plan

SOFT LOGIC

Soft Logic (6-2)

#	Data	OP	Data	OP	Data	OP	Data
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

*Refer to User's Manual for Data and OP Codes

CALLBACK NUMBERS

Callback Numbers (6-3...3)	
Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

Line Out	
Local Toll	
Long Distance	
Delay	10
Area Code	
Phone Number	

NETWORK

Network (6-4)	
Address	
Protocol	AB3418
Port	27000
IP Mode	STATIC

IP Address	0	.	0	.	0	.	0
Netmask	255	.	255	.	255	.	0
Broadcast	0	.	0	.	0	.	254
Gateway	0	.	0	.	0	.	1

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Appendix A

RAILROAD PREEMPTION

RR 1

(3-1-1)	Timing	Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. 2 . . 5 . . .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
Clear 2		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Clear 3		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Hold		. . . .	. . . .	1 2 3 4 5 6 7 8	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	A B C D E F
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-1-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . .	. . . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)			
Port	Gate Port	Latching	Power-Up
2.5	0.0	YES	FLASHING

RR 2

(3-2-1)	Timing	Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
Delay		Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
Clear 1	10	. . . 4 . . 7 .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
Clear 2		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Clear 3		. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
Hold		1 2 3 . . 6 . .	. . . .	. . . .	. 2 . . . 6 . .	. . . .	. . . 4 . . . 8	. . . . . .	. . . . . .	. . . . . .
Exit										
Min Grn										
Ped Clr										

Exit Parameters (3-2-5)			
Phase Green	Overlap Green	Vehicle Call	Ped Call
. . . .	. . . . . .	. . . 4 . . 7 .	. . . .

Configuration (3-2-6)			
Port	Gate Port	Latching	Power-up
2.6	0.0	YES	DARK

EMERGENCY VEHICLE PREEMPTION

EVA (3-A)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. 2 . . 5 . . .	. . . . . .

Port	Latching	Phase Termination
5.5	NO	ADVANCE

EVB (3-B)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	30	30	. . . 4 . . 7 .	. . . . . .

Port	Latching	Phase Termination
5.6	NO	ADVANCE

EVC (3-C)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	. . . . . 6 . .	. . . . . .

Port	Latching	Phase Termination
5.7	NO	ADVANCE

EVD (3-D)

Preempt Timers			Phase Green	Overlap Green
Delay	Clear	Max		
	5	30	 8	. . . . . .

Port	Latching	Phase Termination
5.8	NO	ADVANCE

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INPUTS

		7 Wire I/C (2-1-5-1)			
		Input	Port	Input	Port
Enable	NO	R1	3.8	Free	3.6
Max ON		R2	3.5	D2	2.8
Max OFF		R3	3.7	D3	6.1

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Cabinet Status (2-1-5-3)	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Y-Coordination (2-1-5-6)	
Port C	Port D
0.0	0.0

OUTPUTS

Loadswitch Assignments (2-1-6)							+
A	1	2	22	3	4	24	9
B	5	6	26	7	8	28	10
X	13	14	0	11	12	0	0

Loadswitch Codes:

0 Unused (no output)
1-8 Vehicle 1-8
9-14 Overlap A-F
21-28 Ped 1-8
41-47 Special Functions
41 Protected Permissive Flashing Phase 1
43 Protected Permissive Flashing Phase 3
45 Protected Permissive Flashing Phase 5
47 Protected Permissive Flashing Phase 7
51-57 Special Functions
71-72 Seven Wire I/C

+ middle output of loadswitches 3 and 6
Channel 9 and 10

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TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Transit Priority Configuration (3-E-A)				Indicator Output	
Enable in Plans		Input	Type	Stop	Go
Plan 1-9	.....	0.0	OPT	0	0
Plan 11-19	.....	0.0	OPT	0	0

Queue Jump (3-E-B)	
Grn Hold	Hold Phase
	.....
	.....

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	.....

Access Utilities (9-5)	
Password	***
Timeout	30

YELLOW YIELD COORDINATION

					Force-Offs											
Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													.2...6..	.2.4.6.8	.....	.....
Plan D													.2...6..	.2.4.6.8	.....	.....

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					.....	0.0	0.0	0.0	0	0.0	0

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Appendix A

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Appendix B: Level-of-Service and Signal Warrant Calculations

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Existing AM no Project

Vistro File: C:\...\AM 918 DU 20240213.vistro Scenario 1 2023 AM, No Project
Report File: C:\...\1 2023 AM no Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.047	112.9	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.337	147.8	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.153	94.1	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	NB Thru	1.055	23.0	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	WB Right	0.804	21.1	C
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.629	33.0	C
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.849	20.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	EB Left	0.732	9.3	A
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	0.785	26.0	C
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.615	10.8	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Right	0.077	12.7	B
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.037	20.1	C
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	0.212	66.2	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.869	25.0	C
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.048	10.5	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.073	11.0	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.081	7.9	A
	White Rock Rd/Carson		HCM 7th				

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18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	SB Left	0.243	22.1	C
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.398	25.8	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.453	39.2	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	0.983	75.0	E
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	NB Right	0.733	23.4	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.452	16.9	B
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.847	34.2	C
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.005	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.009	13.5	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.131	19.6	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	112.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.047

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	194	705	301	68	1419	40	18	11	260	467	57	108
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	12	0	0	78	0	0	32
Total Hourly Volume [veh/h]	5	194	705	301	68	1419	28	18	11	182	467	57	76
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	56	203	86	20	408	8	5	3	52	134	16	22
Total Analysis Volume [veh/h]	5	223	810	346	78	1631	32	21	13	209	537	66	87
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	122	122	122	122	122	122	122	122	122	122
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	51	51	7	40	40	19	19	28	28
g / C, Green / Cycle	0.14	0.42	0.42	0.06	0.33	0.33	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.23	0.22	0.04	0.45	0.45	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1857	1781	1604	1781	1744
c, Capacity [veh/h]	257	1481	661	100	613	609	277	250	404	396
d1, Uniform Delay [s]	51.21	26.93	26.59	56.79	40.98	40.98	43.99	50.45	45.30	45.34
k, delay calibration	0.11	0.04	0.14	0.04	0.50	0.50	0.04	0.04	0.25	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.29	0.12	0.83	4.79	171.34	173.88	0.04	4.28	11.80	12.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.55	0.52	0.78	1.36	1.36	0.08	0.89	0.86	0.86
d, Delay for Lane Group [s/veh]	61.50	27.05	27.42	61.58	212.32	214.86	44.03	54.73	57.10	57.65
Lane Group LOS	E	C	C	E	F	F	D	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.37	8.51	7.31	2.45	46.67	46.78	0.55	6.91	11.39	11.25
50th-Percentile Queue Length [ft/ln]	184.31	212.64	182.67	61.18	1166.65	1169.53	13.73	172.86	284.81	281.33
95th-Percentile Queue Length [veh/ln]	11.83	13.29	11.74	4.40	69.02	69.30	0.99	11.23	16.93	16.75
95th-Percentile Queue Length [ft/ln]	295.64	332.21	293.50	110.12	1725.58	1732.54	24.71	280.67	423.20	418.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.50	61.50	27.05	27.42	61.58	213.56	214.86	44.03	54.73	54.73	57.29	57.65	57.65
Movement LOS	E	E	C	C	E	F	F	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	32.82				206.78			53.81			57.37		
Approach LOS	C				F			D			E		
d_I, Intersection Delay [s/veh]	112.88												
Intersection LOS	F												
Intersection V/C	1.047												

Emissions

Vehicle Miles Traveled [mph]	54.45	193.45	82.64	11.47	122.41	122.09	0.90	9.48	18.21	17.89
Stops [stops/h]	217.96	502.91	216.02	72.34	1379.61	1383.01	16.23	204.42	336.80	332.68
Fuel consumption [US gal/h]	7.43	17.34	7.45	2.27	57.31	57.68	0.31	3.99	6.65	6.59
CO [g/h]	519.32	1212.25	520.70	158.67	4006.30	4032.11	22.00	279.04	465.12	460.34
NOx [g/h]	101.04	235.86	101.31	30.87	779.48	784.50	4.28	54.29	90.49	89.56
VOC [g/h]	120.36	280.95	120.68	36.77	928.50	934.48	5.10	64.67	107.80	106.69

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	50.38	50.38	50.38
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.122	2.278	2.377
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	662	662	575	575
d_b, Bicycle Delay [s]	27.25	27.25	30.92	30.92
l_b,int, Bicycle LOS Score for Intersection	2.697	3.006	2.089	2.751
Bicycle LOS	B	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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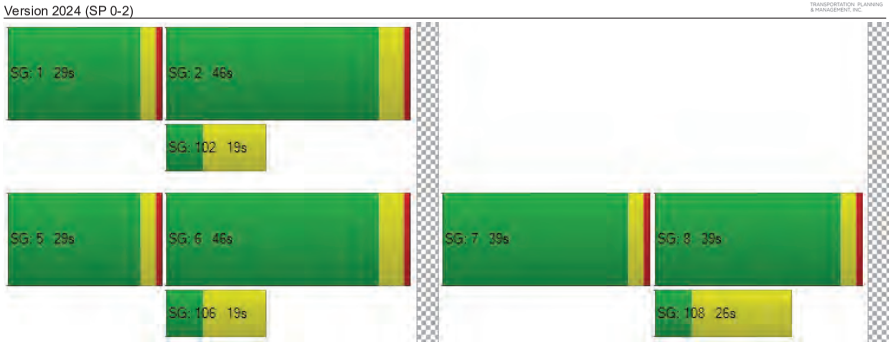

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	147.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.337

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	348	988	150	1	148	1611	391	132	61	682	11	13	84
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	117	0	0	205	0	0	25
Total Hourly Volume [veh/h]	1	348	988	105	1	148	1611	274	132	61	477	11	13	59
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	94	266	28	0	40	433	74	35	16	128	3	3	16
Total Analysis Volume [veh/h]	1	374	1062	113	1	159	1732	295	142	66	513	12	14	63
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	58	58	12	50	50	20	20	20	7	7
g / C, Green / Cycle	0.17	0.50	0.50	0.11	0.44	0.44	0.17	0.17	0.17	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.21	0.22	0.22	0.09	0.54	0.57	0.06	0.06	0.32	0.01	0.05
s, saturation flow rate [veh/h]	1781	3560	1779	1781	1870	1779	1781	1836	1589	1781	1634
c, Capacity [veh/h]	310	1792	896	190	815	775	310	320	277	110	101
d1, Uniform Delay [s]	47.39	18.15	18.15	50.33	32.39	32.39	41.53	41.51	47.39	50.87	53.03
k, delay calibration	0.50	0.13	0.13	0.04	0.50	0.50	0.04	0.04	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	120.05	0.20	0.41	3.87	120.16	147.87	0.23	0.22	397.12	0.16	4.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.44	0.44	0.84	1.24	1.31	0.33	0.33	1.85	0.11	0.76
d, Delay for Lane Group [s/veh]	167.43	18.36	18.56	54.19	152.54	180.25	41.76	41.73	444.51	51.03	57.49
Lane Group LOS	F	B	B	D	F	F	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	18.90	6.20	6.25	4.58	47.99	51.61	2.58	2.63	38.41	0.33	2.31
50th-Percentile Queue Length [ft/ln]	472.42	155.00	156.23	114.60	1199.84	1290.32	64.38	65.86	960.27	8.29	57.73
95th-Percentile Queue Length [veh/ln]	28.47	10.28	10.35	8.10	68.88	75.59	4.64	4.74	60.51	0.60	4.16
95th-Percentile Queue Length [ft/ln]	711.78	257.09	258.72	202.38	1721.98	1889.73	115.88	118.55	1512.63	14.92	103.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	167.4	167.4	18.41	18.56	54.19	54.19	164.0	180.2	41.76	41.73	444.51	51.03	57.49	57.49
Movement LOS	F	F	B	B	D	D	F	F	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	54.48				158.19				328.31			56.62		
Approach LOS	D				F				F			E		
d_I, Intersection Delay [s/veh]	147.82													
Intersection LOS	F													
Intersection V/C	1.337													

Emissions

Vehicle Miles Traveled [mph]	70.57	147.43	73.70	38.21	242.06	242.06	6.41	6.56	31.99	0.59	3.75
Stops [stops/h]	592.99	389.11	196.10	143.84	1506.06	1619.63	80.81	82.67	1205.35	10.40	72.47
Fuel consumption [US gal/h]	22.57	12.82	6.44	4.86	58.48	65.60	1.58	1.62	54.37	0.21	1.46
CO [g/h]	1577.43	895.99	450.39	339.90	4087.67	4585.76	110.70	113.26	3800.47	14.41	101.75
NOx [g/h]	306.91	174.33	87.63	66.13	795.31	892.22	21.54	22.04	739.43	2.80	19.80
VOC [g/h]	365.58	207.66	104.38	78.78	947.36	1062.79	25.66	26.25	880.80	3.34	23.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	46.89	46.89	46.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.507	2.855	2.149
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	877	877	349	349
d_b, Bicycle Delay [s]	18.09	18.09	39.10	39.10
l_b,int, Bicycle LOS Score for Intersection	2.436	3.329	3.088	1.748
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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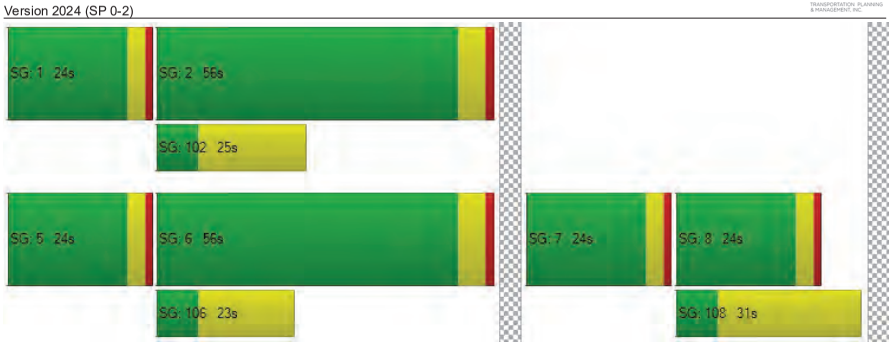

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	94.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.153

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1181	1173	138	3	49	1285	968	256	92	816	146	92	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	41	0	0	0	290	0	0	245	0	0	17
Total Hourly Volume [veh/h]	1	1181	1173	97	3	49	1285	678	256	92	571	146	92	38
Peak Hour Factor	1.000	0.840	0.840	0.840	1.000	0.840	0.840	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	351	349	29	1	15	382	202	76	27	170	43	27	11
Total Analysis Volume [veh/h]	1	1406	1396	115	3	58	1530	807	305	110	680	174	110	45
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	69	69	7	39	73	29	29	11	11	11
g / C, Green / Cycle	0.28	0.51	0.51	0.05	0.29	0.54	0.21	0.21	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.41	0.28	0.29	0.03	0.30	0.51	0.12	0.12	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1800	1781	5094	1589	1781	1826	1781	1817	1742
c, Capacity [veh/h]	951	1819	920	95	1473	853	375	384	139	141	136
d1, Uniform Delay [s]	36.83	5.71	5.77	63.12	48.34	29.62	47.92	47.92	61.63	61.59	61.67
k, delay calibration	0.22	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	218.20	1.18	2.52	2.72	34.21	20.13	0.93	0.90	3.81	3.60	4.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.48	0.54	0.57	0.64	1.04	0.95	0.55	0.55	0.79	0.78	0.80
d, Delay for Lane Group [s/veh]	255.03	6.89	8.29	65.84	82.55	49.75	48.85	48.82	65.44	65.19	65.72
Lane Group LOS	F	A	A	E	F	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	42.57	2.87	3.35	2.11	20.76	27.60	6.33	6.49	3.88	3.92	3.84
50th-Percentile Queue Length [ft/ln]	1064.21	71.66	83.79	52.65	518.97	690.05	158.34	162.23	97.06	97.96	96.10
95th-Percentile Queue Length [veh/ln]	64.85	5.16	6.03	3.79	28.93	36.22	10.46	10.67	6.99	7.05	6.92
95th-Percentile Queue Length [ft/ln]	1621.26	128.99	150.82	94.76	723.19	905.45	261.52	266.67	174.71	176.32	172.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	255.0	255.0	7.30	8.29	65.84	65.84	82.55	49.75	48.84	48.82	0.00	65.34	65.50	65.72
Movement LOS	F	F	A	A	E	E	F	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	126.79				71.09				20.55			65.45		
Approach LOS	F				E				C			E		
d_I, Intersection Delay [s/veh]	94.14													
Intersection LOS	F													
Intersection V/C	1.153													

Emissions

Vehicle Miles Traveled [mph]	240.80	169.55	89.05	11.48	287.94	151.87	9.48	9.72	3.49	3.53	3.44
Stops [stops/h]	2253.62	151.76	88.72	55.74	1648.48	730.64	167.65	171.77	102.77	103.72	101.75
Fuel consumption [US gal/h]	95.37	9.21	5.03	1.90	56.06	22.46	3.35	3.44	2.17	2.19	2.15
CO [g/h]	6666.28	643.57	351.84	133.08	3918.92	1569.91	234.41	240.16	151.82	153.10	150.46
NOx [g/h]	1297.02	125.22	68.46	25.89	762.48	305.45	45.61	46.73	29.54	29.79	29.27
VOC [g/h]	1544.98	149.15	81.54	30.84	908.25	363.84	54.33	55.66	35.19	35.48	34.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.338	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
I_b,int, Bicycle LOS Score for Intersection	3.187		3.006		2.244		1.845	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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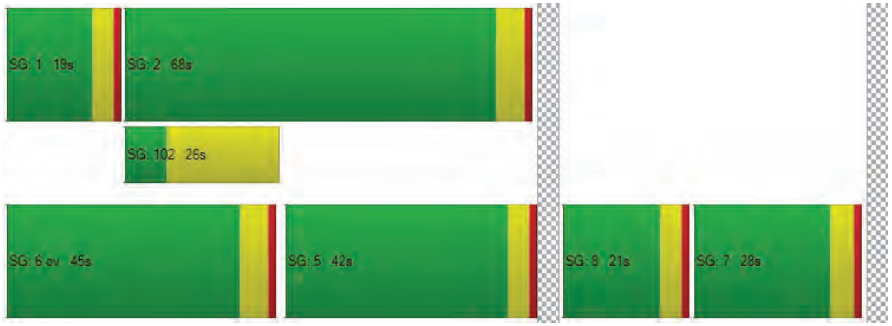

Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.055

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

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Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	1965	463	0	520	1728	0	0	0	1058	0	0	528
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	139	0	0	0	0	0	0	317	0	0	158
Total Hourly Volume [veh/h]	0	1965	324	0	520	1728	0	0	0	741	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	585	96	0	155	514	0	0	0	221	0	0	110
Total Analysis Volume [veh/h]	0	2339	386	0	619	2057	0	0	0	882	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	25	35	22	
g / C, Green / Cycle	0.47	0.47	0.37	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.46	0.24	0.35	0.30	0.31	
s, saturation flow rate [veh/h]	5094	1589	1781	6792	2813	
c, Capacity [veh/h]	2395	747	661	3476	927	
d1, Uniform Delay [s]	17.65	12.61	20.61	11.63	22.27	
k, delay calibration	0.50	0.50	0.14	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	13.69	2.54	8.51	0.75	2.72	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.98	0.52	0.94	0.59	0.95	
d, Delay for Lane Group [s/veh]	31.35	15.15	29.13	12.37	24.99	
Lane Group LOS	C	B	C	B	C	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	12.30	3.80	9.47	4.35	6.63	
50th-Percentile Queue Length [ft/ln]	307.47	95.09	236.75	108.84	165.86	
95th-Percentile Queue Length [veh/ln]	18.05	6.85	14.52	7.78	10.86	
95th-Percentile Queue Length [ft/ln]	451.26	171.17	362.92	194.39	271.47	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	31.35	15.15	29.13	29.13	12.37	0.00	0.00	0.00	24.99	0.00	0.00	0.00
Movement LOS		C	B	C	C	B				C			
d_A, Approach Delay [s/veh]	29.05			16.25			24.99			0.00			
Approach LOS	C			B			C			A			
d_I, Intersection Delay [s/veh]	23.03												
Intersection LOS	C												
Intersection V/C	1.055												

Emissions

Vehicle Miles Traveled [mph]	338.73	55.90	105.94	352.05	62.99	
Stops [stops/h]	1953.36	201.37	501.35	921.93	702.47	
Fuel consumption [US gal/h]	50.82	5.61	13.53	28.71	10.96	
CO [g/h]	3552.31	392.17	946.02	2006.85	766.11	
NOx [g/h]	691.15	76.30	184.06	390.46	149.06	
VOC [g/h]	823.28	90.89	219.25	465.11	177.55	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.257
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	3.135	2.408	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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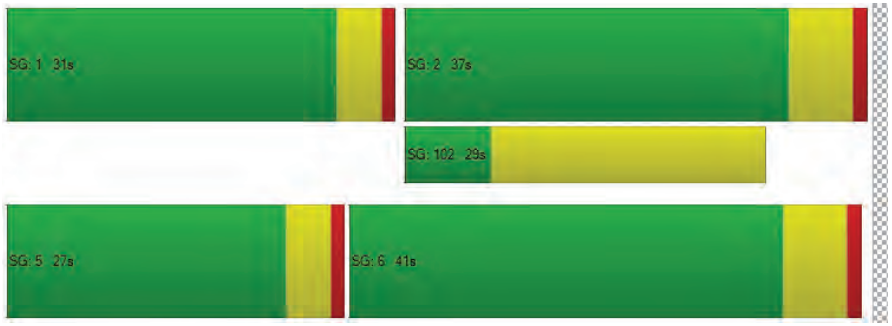

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

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Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	61	1808	235	4	440	1970	372	140	8	20	1	70	30	476
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	71	0	0	0	112	0	0	6	0	0	0	143
Total Hourly Volume [veh/h]	1	61	1808	164	4	440	1970	260	140	8	14	1	70	30	333
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	16	461	42	1	112	503	66	36	2	4	0	18	8	85
Total Analysis Volume [veh/h]	1	62	1845	167	4	449	2010	265	143	8	14	1	71	31	340
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	83	83	83	83	83	83	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	3	37	37	13	47	47	6	6	6	12	12	12
g / C, Green / Cycle	0.04	0.44	0.44	0.15	0.56	0.56	0.07	0.07	0.07	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.36	0.11	0.13	0.39	0.17	0.04	0.00	0.01	0.04	0.12	0.12
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1630	1589
c, Capacity [veh/h]	128	2250	702	536	2851	890	243	132	112	252	230	225
d1, Uniform Delay [s]	39.44	20.40	14.54	34.30	13.36	9.71	37.64	36.24	36.40	32.08	34.79	34.79
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	0.29	0.06	1.44	0.12	0.07	1.68	0.14	0.37	0.46	9.30	9.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.82	0.24	0.85	0.70	0.30	0.59	0.06	0.13	0.29	0.82	0.82
d, Delay for Lane Group [s/veh]	40.54	20.69	14.60	35.74	13.48	9.78	39.31	36.38	36.77	32.54	44.09	44.31
Lane Group LOS	D	C	B	D	B	A	D	D	D	C	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.64	9.75	1.89	4.46	8.13	2.34	1.45	0.16	0.27	1.31	4.21	4.12
50th-Percentile Queue Length [ft/ln]	16.07	243.81	47.20	111.45	203.27	58.61	36.19	3.88	6.87	32.71	105.13	102.90
95th-Percentile Queue Length [veh/ln]	1.16	14.87	3.40	7.92	12.81	4.22	2.61	0.28	0.49	2.35	7.57	7.41
95th-Percentile Queue Length [ft/ln]	28.92	371.85	84.96	198.02	320.18	105.49	65.14	6.98	12.37	58.87	189.21	185.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.54	40.54	20.69	14.60	35.74	35.74	13.48	9.78	39.31	36.38	36.77	32.54	32.54	44.09	44.21
Movement LOS	D	D	C	B	D	D	B	A	D	D	D	C	C	D	D
d_A, Approach Delay [s/veh]	20.81				16.82				38.96			42.30			
Approach LOS	C				B				D			D			
d_I, Intersection Delay [s/veh]	21.11														
Intersection LOS	C														
Intersection V/C	0.804														

Emissions

Vehicle Miles Traveled [mph]	14.06	411.76	37.27	65.60	291.09	38.38	18.24	1.02	1.79	25.27	65.92	64.29
Stops [stops/h]	55.49	1263.04	81.51	384.90	1053.01	101.20	124.98	6.69	11.87	56.48	181.54	177.68
Fuel consumption [US gal/h]	1.41	31.70	2.48	8.12	23.32	2.67	2.59	0.14	0.24	1.83	5.40	5.28
CO [g/h]	98.22	2215.78	173.42	567.74	1629.88	186.38	180.72	9.66	17.04	127.85	377.55	369.09
NOx [g/h]	19.11	431.11	33.74	110.46	317.11	36.26	35.16	1.88	3.32	24.87	73.46	71.81
VOC [g/h]	22.76	513.53	40.19	131.58	377.74	43.20	41.88	2.24	3.95	29.63	87.50	85.54

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.42	0.00	31.42	31.42
l_p,int, Pedestrian LOS Score for Intersectio	3.406	0.000	2.561	2.749
Crosswalk LOS	C	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1211	1211	492	372
d_b, Bicycle Delay [s]	6.49	6.49	23.72	27.64
l_b,int, Bicycle LOS Score for Intersection	2.739	2.875	1.701	2.409
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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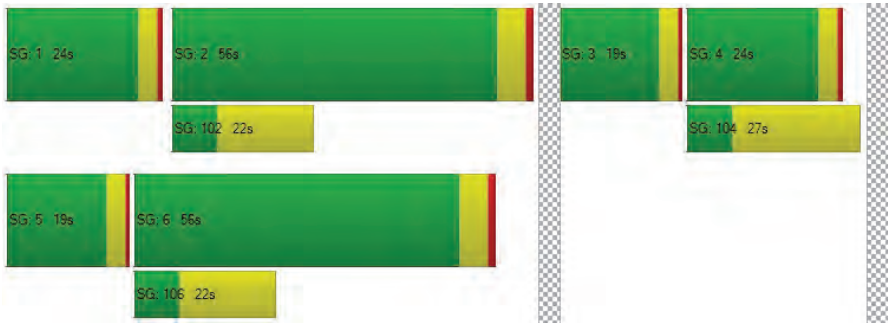

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.629

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	84	1607	388	1	92	1561	407	2	310	108	60	298	227	187
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	116	0	0	0	122	0	0	0	18	0	0	56
Total Hourly Volume [veh/h]	2	84	1607	272	1	92	1561	285	2	310	108	42	298	227	131
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	22	427	72	0	24	415	76	1	82	29	11	79	60	35
Total Analysis Volume [veh/h]	2	89	1710	289	1	98	1661	303	2	330	115	45	317	241	139
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	91	91	10	91	91	17	17	17	16	16	16
g / C, Green / Cycle	0.06	0.58	0.58	0.06	0.58	0.58	0.11	0.11	0.11	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.18	0.03	0.33	0.19	0.10	0.04	0.05	0.09	0.07	0.09
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1682	3431	3532	1577
c, Capacity [veh/h]	111	3915	916	217	2939	917	379	201	182	360	362	162
d1, Uniform Delay [s]	72.72	18.46	16.87	70.94	20.46	17.01	68.78	65.37	65.44	69.30	67.85	69.33
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.36	0.90	0.56	0.79	0.97	2.58	0.51	0.58	2.81	0.79	5.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.44	0.32	0.46	0.57	0.33	0.88	0.41	0.42	0.88	0.67	0.86
d, Delay for Lane Group [s/veh]	78.35	18.82	17.77	71.50	21.26	17.97	71.35	65.87	66.02	72.11	68.63	74.37
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.82	8.90	5.67	1.92	12.31	5.75	6.74	3.16	2.94	6.45	4.73	5.75
50th-Percentile Queue Length [ft/ln]	95.46	222.54	141.70	47.95	307.86	143.69	168.40	78.95	73.40	161.36	118.21	143.84
95th-Percentile Queue Length [veh/ln]	6.87	13.79	9.57	3.45	18.07	9.68	10.99	5.68	5.28	10.62	8.29	9.69
95th-Percentile Queue Length [ft/ln]	171.83	344.86	239.31	86.30	451.73	241.99	274.81	142.10	132.11	265.52	207.37	242.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.35	78.35	18.82	17.77	71.50	71.50	21.26	17.97	71.35	71.35	65.91	66.02	72.11	68.63	74.37
Movement LOS	E	E	B	B	E	E	C	B	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	21.26				23.19				69.59				71.36		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	32.99														
Intersection LOS	C														
Intersection V/C	0.629														

Emissions

Vehicle Miles Traveled [mph]	36.23	680.80	115.06	22.09	370.70	67.62	82.74	20.68	19.19	33.36	25.36	14.63
Stops [stops/h]	87.56	816.45	129.97	87.95	847.10	131.80	308.91	72.41	67.32	295.99	216.85	131.93
Fuel consumption [US gal/h]	3.43	39.08	6.50	3.29	30.42	5.06	9.93	2.36	2.20	7.66	5.61	3.43
CO [g/h]	239.46	2732.01	454.32	230.05	2126.64	354.02	694.30	165.24	153.51	535.43	391.98	240.07
NOx [g/h]	46.59	531.55	88.39	44.76	413.77	68.88	135.09	32.15	29.87	104.17	76.26	46.71
VOC [g/h]	55.50	633.17	105.29	53.32	492.87	82.05	160.91	38.30	35.58	124.09	90.84	55.64

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.501	3.813	2.710	2.891
Crosswalk LOS	D	D	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.469	2.707	1.708	2.181
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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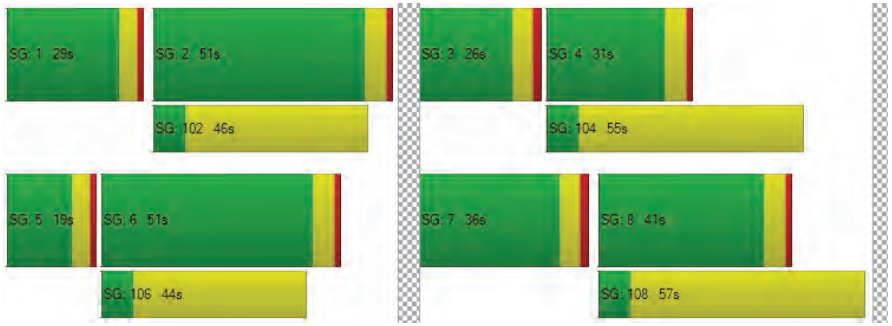

Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	38	1287	2	2	8	1439	388	167	4	10	3	7	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	116	0	0	3	0	0	4
Total Hourly Volume [veh/h]	1	38	1287	1	2	8	1439	272	167	4	7	3	7	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	370	0	1	2	414	78	48	1	2	1	2	3
Total Analysis Volume [veh/h]	1	44	1479	1	2	9	1654	313	192	5	8	3	8	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	69	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	42	42	1	40	40	6	6	2
g / C, Green / Cycle	0.04	0.61	0.61	0.01	0.58	0.58	0.09	0.09	0.03
(v / s)_i Volume / Saturation Flow Rate	0.03	0.40	0.40	0.01	0.53	0.56	0.06	0.06	0.01
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1870	1771	1781	1768	1708
c, Capacity [veh/h]	77	1145	1145	16	1082	1024	162	161	45
d1, Uniform Delay [s]	32.40	8.58	8.58	34.06	12.92	13.78	30.24	30.24	33.11
k, delay calibration	0.04	0.24	0.24	0.04	0.38	0.41	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	1.35	1.35	15.90	10.09	17.55	4.05	4.10	3.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.65	0.65	0.67	0.91	0.96	0.63	0.64	0.49
d, Delay for Lane Group [s/veh]	35.06	9.93	9.93	49.96	23.01	31.33	34.29	34.35	36.12
Lane Group LOS	D	A	A	D	C	C	C	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.77	5.94	5.94	0.24	11.35	13.87	1.76	1.76	0.39
50th-Percentile Queue Length [ft/ln]	19.19	148.60	148.59	5.95	283.86	346.68	44.05	43.90	9.70
95th-Percentile Queue Length [veh/ln]	1.38	9.94	9.94	0.43	16.88	19.97	3.17	3.16	0.70
95th-Percentile Queue Length [ft/ln]	34.54	248.56	248.54	10.70	422.01	499.36	79.30	79.02	17.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.06	35.06	9.93	9.93	49.96	49.96	26.38	31.33	34.32	34.35	34.35	36.12	36.12	36.12
Movement LOS	D	D	A	A	D	D	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	10.67				27.30				34.32			36.12		
Approach LOS	B				C				C			D		
d_I, Intersection Delay [s/veh]	20.94													
Intersection LOS	C													
Intersection V/C	0.849													

Emissions

Vehicle Miles Traveled [mph]	15.92	261.88	261.84	4.38	391.56	391.56	24.74	24.63	0.42
Stops [stops/h]	40.18	311.22	311.20	12.45	594.50	726.07	92.27	91.94	20.32
Fuel consumption [US gal/h]	1.20	14.00	13.99	0.49	28.75	32.85	2.25	2.24	0.29
CO [g/h]	83.78	978.31	978.17	34.22	2009.41	2296.52	156.95	156.32	20.35
NOx [g/h]	16.30	190.34	190.32	6.66	390.96	446.82	30.54	30.42	3.96
VOC [g/h]	19.42	226.73	226.70	7.93	465.70	532.24	36.37	36.23	4.72

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.84	0.00	26.84	26.84
l_p,int, Pedestrian LOS Score for Intersectio	2.913	0.000	2.158	1.730
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1164	1164	582	582
d_b, Bicycle Delay [s]	6.01	6.01	17.29	17.29
l_b,int, Bicycle LOS Score for Intersection	2.818	3.280	1.903	1.603
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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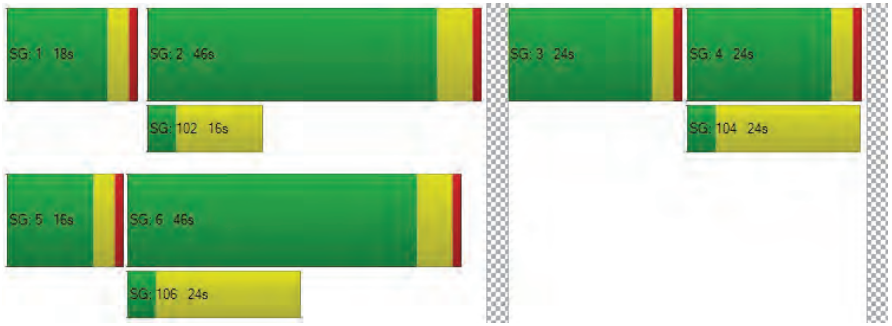

Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

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Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	60	1194	1152	301	134	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	90	0	2
Total Hourly Volume [veh/h]	1	60	1194	1152	211	134	3
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	343	331	61	39	1
Total Analysis Volume [veh/h]	1	69	1372	1324	243	154	3
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	3	37	30	30	6	6
g / C, Green / Cycle	0.06	0.70	0.56	0.56	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.39	0.42	0.44	0.09	0.00
s, saturation flow rate [veh/h]	1781	3560	1870	1773	1781	1589
c, Capacity [veh/h]	108	2483	1051	996	206	184
d1, Uniform Delay [s]	24.55	3.98	8.83	9.20	22.90	20.96
k, delay calibration	0.04	0.15	0.16	0.18	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.40	0.28	1.59	2.33	5.38	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.55	0.75	0.79	0.75	0.02
d, Delay for Lane Group [s/veh]	26.95	4.26	10.42	11.53	28.28	20.99
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	1.88	5.34	5.72	2.03	0.03
50th-Percentile Queue Length [ft/ln]	21.92	47.06	133.41	142.98	50.82	0.81
95th-Percentile Queue Length [veh/ln]	1.58	3.39	9.13	9.64	3.66	0.06
95th-Percentile Queue Length [ft/ln]	39.45	84.70	228.13	241.03	91.47	1.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.95	26.95	4.26	10.87	11.53	28.28	20.99
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	5.36			10.98		28.14	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	9.27						
Intersection LOS	A						
Intersection V/C	0.732						

Emissions

Vehicle Miles Traveled [mph]	48.84	957.26	277.25	277.25	51.96	1.01
Stops [stops/h]	59.13	253.91	359.93	385.74	137.10	2.20
Fuel consumption [US gal/h]	2.72	42.00	15.06	15.38	3.78	0.07
CO [g/h]	190.20	2935.65	1052.98	1075.30	264.41	4.66
NOx [g/h]	37.01	571.17	204.87	209.21	51.44	0.91
VOC [g/h]	44.08	680.37	244.04	249.21	61.28	1.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.29	0.00	19.29
l_p,int, Pedestrian LOS Score for Intersectio	2.816	0.000	2.101
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1499	1499	749
d_b, Bicycle Delay [s]	1.68	1.68	10.43
l_b,int, Bicycle LOS Score for Intersection	2.748	2.927	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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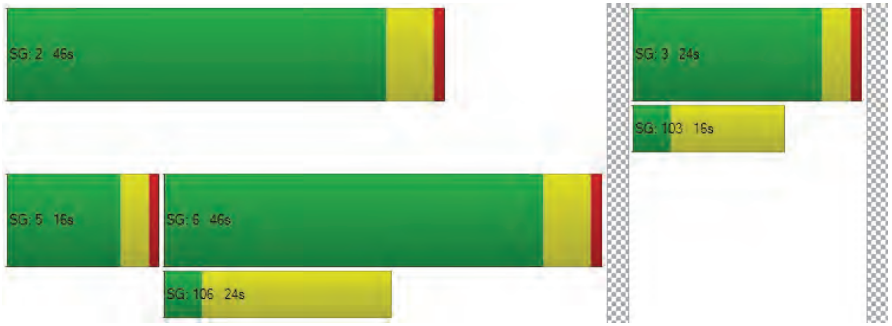

Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

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Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	41	605	21	209	386	563	314	41	5	136	94	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	169	0	0	2	0	0	101
Total Hourly Volume [veh/h]	41	605	15	209	386	394	314	41	3	136	94	234
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	170	4	59	108	111	88	12	1	38	26	66
Total Analysis Volume [veh/h]	46	680	17	235	434	443	353	46	3	153	106	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	63	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	3	14	14	10	21	21	9	9	12	12
g / C, Green / Cycle	0.04	0.22	0.22	0.16	0.33	0.33	0.14	0.14	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.19	0.13	0.23	0.28	0.11	0.11	0.15	0.15
s, saturation flow rate [veh/h]	1781	1870	1854	1781	1870	1589	1781	1797	1800	1589
c, Capacity [veh/h]	79	405	402	282	619	526	254	256	332	293
d1, Uniform Delay [s]	29.63	23.85	23.85	25.77	18.41	19.60	26.16	26.16	24.84	24.84
k, delay calibration	0.04	0.04	0.04	0.13	0.06	0.15	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	2.17	2.20	7.37	0.77	5.17	2.05	2.03	2.13	2.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.86	0.86	0.83	0.70	0.84	0.79	0.79	0.83	0.83
d, Delay for Lane Group [s/veh]	32.18	26.02	26.05	33.14	19.18	24.77	28.22	28.19	26.96	27.25
Lane Group LOS	C	C	C	C	B	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.71	4.91	4.87	3.48	4.48	5.48	2.88	2.90	3.93	3.49
50th-Percentile Queue Length [ft/ln]	17.74	122.67	121.76	86.96	112.04	137.07	71.97	72.57	98.21	87.37
95th-Percentile Queue Length [veh/ln]	1.28	8.54	8.49	6.26	7.95	9.32	5.18	5.22	7.07	6.29
95th-Percentile Queue Length [ft/ln]	31.93	213.50	212.24	156.53	198.84	233.07	129.54	130.62	176.77	157.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.18	26.03	26.05	33.14	19.18	24.77	28.21	28.19	28.19	26.96	26.96	27.24
Movement LOS	C	C	C	C	B	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	26.41			24.36			28.21			27.09		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.98											
Intersection LOS	C											
Intersection V/C	0.785											

Emissions

Vehicle Miles Traveled [mph]	26.57	202.08	200.45	163.96	302.81	309.09	15.05	15.19	30.65	27.09
Stops [stops/h]	40.54	280.31	278.23	198.71	256.02	313.20	164.45	165.82	224.40	199.65
Fuel consumption [US gal/h]	1.62	11.72	11.63	10.76	16.58	18.39	2.68	2.70	4.02	3.58
CO [g/h]	113.16	819.26	812.84	752.18	1158.84	1285.47	187.15	188.71	281.13	249.95
NOx [g/h]	22.02	159.40	158.15	146.35	225.47	250.11	36.41	36.72	54.70	48.63
VOC [g/h]	26.23	189.87	188.38	174.33	268.57	297.92	43.37	43.74	65.15	57.93

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.47	0.00	21.47	21.47
l_p,int, Pedestrian LOS Score for Intersectio	2.550	0.000	2.303	2.365
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	784	784	492	635
d_b, Bicycle Delay [s]	11.65	11.65	17.92	14.68
l_b,int, Bicycle LOS Score for Intersection	2.178	2.616	2.226	2.588
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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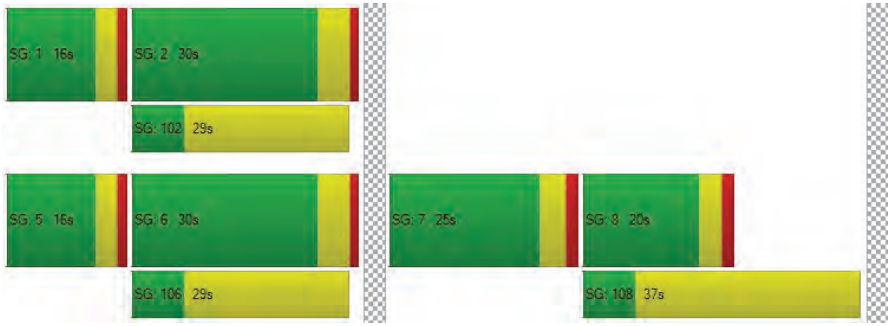

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	465	254	273	202	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	465	254	273	202	55
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	129	71	76	56	15
Total Analysis Volume [veh/h]	136	517	282	303	224	61
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	18	11	11	6	6
g / C, Green / Cycle	0.11	0.53	0.31	0.31	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.28	0.15	0.19	0.13	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	190	988	574	488	329	294
d1, Uniform Delay [s]	15.07	5.36	9.86	10.34	13.26	12.05
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.89	0.61	0.93	1.84	2.48	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.52	0.49	0.62	0.68	0.21
d, Delay for Lane Group [s/veh]	16.96	5.97	10.78	12.18	15.73	12.40
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.78	0.55	1.03	1.25	1.50	0.34
50th-Percentile Queue Length [ft/ln]	19.42	13.69	25.84	31.19	37.59	8.61
95th-Percentile Queue Length [veh/ln]	1.40	0.99	1.86	2.25	2.71	0.62
95th-Percentile Queue Length [ft/ln]	34.95	24.64	46.50	56.13	67.67	15.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.96	5.97	10.78	12.18	15.73	12.40
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	8.26		11.51		15.02	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	10.77					
Intersection LOS	B					
Intersection V/C	0.615					

Emissions

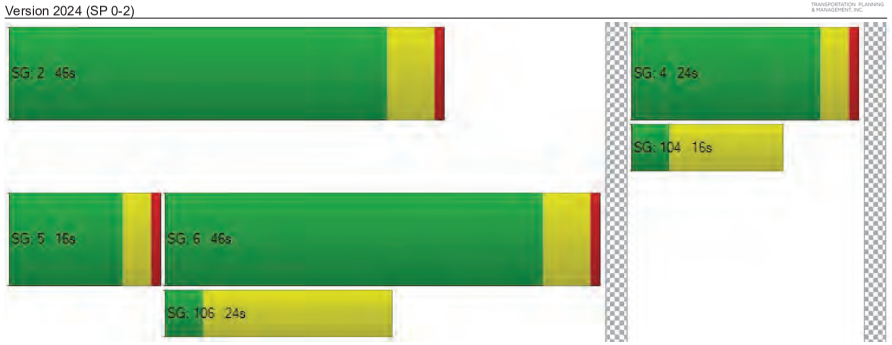
Vehicle Miles Traveled [mph]	16.78	63.79	162.86	174.99	52.61	14.33
Stops [stops/h]	80.55	56.78	107.16	129.36	155.94	35.73
Fuel consumption [US gal/h]	2.53	3.82	8.06	9.01	3.74	0.94
CO [g/h]	176.63	266.79	563.21	629.62	261.75	65.78
NOx [g/h]	34.37	51.91	109.58	122.50	50.93	12.80
VOC [g/h]	40.94	61.83	130.53	145.92	60.66	15.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	10.28	0.00	10.28
l_p,int, Pedestrian LOS Score for Intersectio	2.484	0.000	2.126
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2304	2304	1152
d_b, Bicycle Delay [s]	0.40	0.40	3.12
l_b,int, Bicycle LOS Score for Intersection	2.637	2.525	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.077

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	548	0	14	295	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	548	0	14	295	0	0	0	0	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	149	0	4	80	0	0	0	0	0	0	10
Total Analysis Volume [veh/h]	0	596	0	14	321	0	0	0	0	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	7.91	0.00	0.00	8.69	0.00	0.00	21.93	18.99	10.00	20.75	19.59	12.75
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.25	0.25	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.59	0.59	0.59	0.00	0.00	0.00	6.27	6.27	6.27
d_A, Approach Delay [s/veh]	0.00			0.36			16.97			12.75		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.64											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	20.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.037

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	387	32	41	254	0	0	0	0	10	0	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	387	32	41	254	0	0	0	0	10	0	161
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	104	9	11	68	0	0	0	0	3	0	43
Total Analysis Volume [veh/h]	0	416	34	44	273	0	0	0	0	11	0	173
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.28
d_M, Delay for Movement [s/veh]	7.79	0.00	0.00	8.38	0.00	0.00	24.41	16.96	9.70	20.07	19.50	13.59
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	1.34	1.34	1.34
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	3.09	0.00	0.00	0.00	0.00	0.00	33.62	33.62	33.62
d_A, Approach Delay [s/veh]	0.00			1.16			17.02			13.98		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	3.09											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	66.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.212

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	232	128	45	0	546	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	232	128	45	0	546	152
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	64	35	12	0	151	42
Total Analysis Volume [veh/h]	0	14	256	141	50	0	603	168
Pedestrian Volume [ped/h]	0			0		0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.21	0.29	0.00	0.00	0.00	0.44	0.00
d_M, Delay for Movement [s/veh]	66.24	66.24	15.72	0.00	0.00	11.86	8.61	0.00
Movement LOS	F	F	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	2.81	2.81	2.81	0.00	0.00	1.50	1.50	1.50
95th-Percentile Queue Length [ft/ln]	70.23	70.23	70.23	0.00	0.00	37.41	37.41	37.41
d_A, Approach Delay [s/veh]	18.34			0.00		6.73		
Approach LOS	C			A		A		
d_I, Intersection Delay [s/veh]	8.23							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	25.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	2	39	63	2	30	443	13	2	9	0	225	26	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	39	63	2	30	443	13	2	9	0	225	26	46
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	12	19	1	9	133	4	1	3	0	68	8	14
Total Analysis Volume [veh/h]	2	47	76	2	36	534	16	2	11	0	271	31	55
Pedestrian Volume [ped/h]	0			0				0			0		

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	631	676	532	604
Degree of Utilization, x	0.20	0.87	0.02	0.59

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.73	10.32	0.08	3.86
95th-Percentile Queue Length [ft]	18.30	257.99	1.88	96.60
Approach Delay [s/veh]	10.10	33.20	9.94	17.25
Approach LOS	B	D	A	C
Intersection Delay [s/veh]	25.00			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.048

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	31	108	1	65	13	0	49	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	108	1	65	13	0	49	91
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	28	0	17	3	0	13	24
Total Analysis Volume [veh/h]	33	114	1	68	14	0	52	96
Pedestrian Volume [ped/h]	0		0			0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.12	0.00	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	10.48	9.13	8.60	0.00	0.00	9.07	7.46	0.00
Movement LOS	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.15	0.39	0.00	0.00	0.00	0.11	0.11	0.00
95th-Percentile Queue Length [ft/ln]	3.76	9.77	0.04	0.04	0.04	2.66	2.66	0.00
d_A, Approach Delay [s/veh]	9.43		0.10			2.62		
Approach LOS	A		A			A		
d_I, Intersection Delay [s/veh]	4.72							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.073

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	45	43	78	31	65	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	43	78	31	65	51
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	12	21	8	18	14
Total Analysis Volume [veh/h]	49	47	85	34	71	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.05	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	10.97	9.32	0.00	0.00	7.58	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.41	0.41	0.00	0.00	0.15	0.00
95th-Percentile Queue Length [ft/ln]	10.27	10.27	0.00	0.00	3.81	0.00
d_A, Approach Delay [s/veh]	10.16		0.00		4.27	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.44					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	7.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.081

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	1	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	10	114	18	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	10	10	114	18	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	3	3	31	5	5
Total Analysis Volume [veh/h]	73	11	11	124	20	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	734	763	692	765	765	749
Degree of Utilization, x	0.06	0.06	0.02	0.08	0.08	0.05

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.18	0.17	0.05	0.26	0.26	0.17
95th-Percentile Queue Length [ft]	4.54	4.36	1.21	6.59	6.59	4.22
Approach Delay [s/veh]	7.80		7.83			8.08
Approach LOS	A		A			A
Intersection Delay [s/veh]	7.86					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	22.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.243

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	227	71	37	439	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	0	18	66	1	8	4	227	71	37	439	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	5	17	0	2	1	59	18	10	113	4
Total Analysis Volume [veh/h]	67	0	19	68	1	8	4	234	73	38	453	15
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.00	0.02	0.24	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	22.00	17.32	9.81	22.11	21.78	15.15	8.30	0.00	0.00	7.91	0.00	0.00
Movement LOS	C	C	A	C	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.92	0.08	0.08	1.02	1.02	1.02	0.01	0.00	0.00	0.06	0.06	0.03
95th-Percentile Queue Length [ft/ln]	22.99	1.90	1.90	25.42	25.42	25.42	0.28	0.00	0.00	1.62	1.62	0.81
d_A, Approach Delay [s/veh]	19.30			21.38			0.11			0.59		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	3.71											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	Windfield Way				White Rock Rd				White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	53	5	117	5	5	5	5	359	115	0	300	415	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	35	0	0	2	0	0	35	0	0	0	2
Total Hourly Volume [veh/h]	53	5	82	5	5	3	5	359	80	0	300	415	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	1	21	1	1	1	1	93	21	0	77	107	1
Total Analysis Volume [veh/h]	55	5	85	5	5	3	5	370	82	0	309	428	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	5	8	1	4	1	66	66	23	88	88
g / C, Green / Cycle	0.04	0.07	0.01	0.04	0.01	0.55	0.55	0.19	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.00	0.00	0.00	0.12	0.13	0.17	0.12	0.12
s, saturation flow rate [veh/h]	1781	1603	1781	1754	1781	1870	1755	1781	1870	1865
c, Capacity [veh/h]	72	111	12	62	12	1034	970	335	1373	1370
d1, Uniform Delay [s]	57.02	55.09	59.37	56.07	59.37	13.69	13.73	47.86	4.79	4.79
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.19	5.30	21.73	0.34	21.99	0.50	0.55	4.53	0.24	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.81	0.42	0.13	0.42	0.22	0.23	0.92	0.16	0.16
d, Delay for Lane Group [s/veh]	63.21	60.38	81.09	56.41	81.36	14.19	14.27	52.39	5.04	5.04
Lane Group LOS	E	E	F	E	F	B	B	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.78	2.85	0.22	0.24	0.22	3.31	3.18	9.46	1.55	1.54
50th-Percentile Queue Length [ft/ln]	44.40	71.18	5.59	6.03	5.60	82.81	79.51	236.57	38.67	38.59
95th-Percentile Queue Length [veh/ln]	3.20	5.13	0.40	0.43	0.40	5.96	5.72	14.51	2.78	2.78
95th-Percentile Queue Length [ft/ln]	79.91	128.13	10.06	10.85	10.08	149.05	143.12	362.69	69.61	69.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.21	60.38	60.38	81.09	56.41	56.41	81.36	14.22	14.27	52.39	52.39	5.04	5.04
Movement LOS	E	E	E	F	E	E	F	B	B	D	D	A	A
d_A, Approach Delay [s/veh]	61.45			65.91			14.97			24.81			
Approach LOS	E			E			B			C			
d_I, Intersection Delay [s/veh]	25.81												
Intersection LOS	C												
Intersection V/C	0.398												

Emissions

Vehicle Miles Traveled [mph]	21.19	34.68	0.17	0.28	4.21	194.56	185.81	77.01	53.77	53.64
Stops [stops/h]	53.28	85.42	6.71	7.23	6.72	99.37	95.42	283.88	46.41	46.31
Fuel consumption [US gal/h]	1.87	3.01	0.13	0.14	0.29	9.23	8.82	8.03	2.69	2.68
CO [g/h]	131.00	210.07	8.86	10.02	20.49	644.92	616.35	561.47	188.10	187.67
NOx [g/h]	25.49	40.87	1.72	1.95	3.99	125.48	119.92	109.24	36.60	36.51
VOC [g/h]	30.36	48.68	2.05	2.32	4.75	149.47	142.85	130.13	43.59	43.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
d_p, Pedestrian Delay [s]	49.50		49.50		49.50			0.00		
l_p,int, Pedestrian LOS Score for Intersectio	2.202		1.967		2.555			0.000		
Crosswalk LOS	B		A		B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417		167		317			900		
d_b, Bicycle Delay [s]	37.60		50.42		42.50			18.15		
l_b,int, Bicycle LOS Score for Intersection	1.857		1.584		1.966			1.917		
Bicycle LOS	A		A		A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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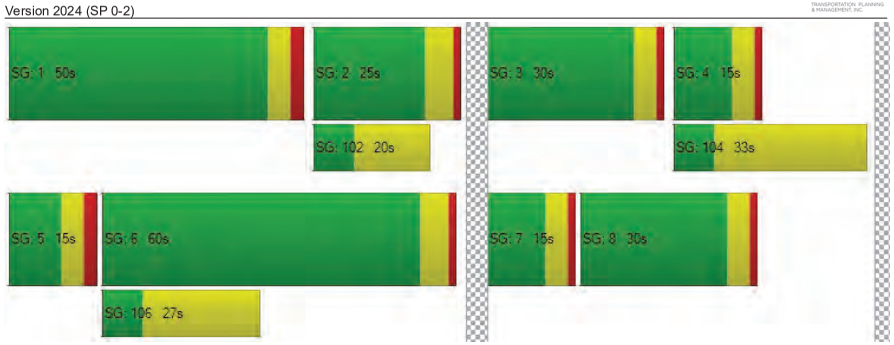

Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.453

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

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Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	57	7	20	114	11	147	0	145	431	12	53	508	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	44	0	0	0	4	0	0	61
Total Hourly Volume [veh/h]	57	7	14	114	11	103	0	145	431	8	53	508	143
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	4	31	3	28	0	40	118	2	15	140	39
Total Analysis Volume [veh/h]	63	8	15	125	12	113	0	159	474	9	58	558	157
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	6	12	9	13	14	94	94	6	85	85
g / C, Green / Cycle	0.05	0.08	0.06	0.09	0.10	0.67	0.67	0.04	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.08	0.09	0.13	0.01	0.03	0.20	0.20
s, saturation flow rate [veh/h]	1781	1677	1781	1613	1781	3560	1589	1781	1870	1731
c, Capacity [veh/h]	81	140	108	152	182	2388	1066	75	1135	1050
d1, Uniform Delay [s]	66.12	59.59	65.75	62.29	61.92	8.76	7.63	66.41	13.51	13.52
k, delay calibration	0.04	0.13	0.40	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.91	0.68	125.62	12.93	4.94	0.19	0.01	6.26	0.77	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.16	1.16	0.82	0.87	0.20	0.01	0.78	0.33	0.33
d, Delay for Lane Group [s/veh]	72.03	60.26	191.37	75.22	66.86	8.94	7.65	72.66	14.27	14.35
Lane Group LOS	E	E	F	E	E	A	A	E	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.37	0.79	7.65	4.93	5.84	2.77	0.09	2.19	5.97	5.57
50th-Percentile Queue Length [ft/ln]	59.23	19.76	191.15	123.24	146.02	69.22	2.35	54.77	149.34	139.22
95th-Percentile Queue Length [veh/ln]	4.26	1.42	12.73	8.57	9.80	4.98	0.17	3.94	9.98	9.44
95th-Percentile Queue Length [ft/ln]	106.62	35.57	318.26	214.27	245.10	124.59	4.22	98.59	249.55	235.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.03	60.26	60.26	191.37	75.22	75.22	66.86	66.86	8.94	7.65	72.66	14.30	14.35
Movement LOS	E	E	E	F	E	E	E	E	A	A	E	B	B
d_A, Approach Delay [s/veh]	68.88			133.30			23.27				18.69		
Approach LOS	E			F			C				B		
d_I, Intersection Delay [s/veh]	39.20												
Intersection LOS	D												
Intersection V/C	0.453												

Emissions

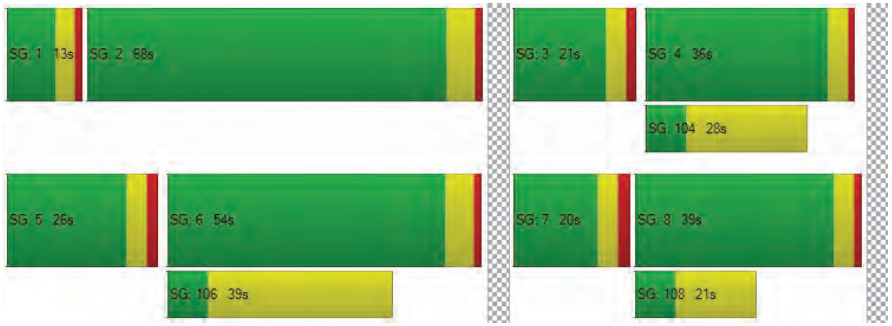
Vehicle Miles Traveled [mph]	3.15	1.15	5.81	5.81	16.73	49.88	0.95	20.29	129.67	120.39
Stops [stops/h]	60.92	20.33	196.61	126.76	150.19	142.39	2.41	56.34	153.61	143.20
Fuel consumption [US gal/h]	1.39	0.44	6.19	2.85	3.68	3.70	0.07	2.00	7.26	6.75
CO [g/h]	97.14	30.88	432.86	199.41	257.34	258.82	4.64	140.07	507.75	472.00
NOx [g/h]	18.90	6.01	84.22	38.80	50.07	50.36	0.90	27.25	98.79	91.83
VOC [g/h]	22.51	7.16	100.32	46.21	59.64	59.98	1.07	32.46	117.68	109.39

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.027	2.245	2.711	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.711	2.045	1.961	2.248
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	75.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.983

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

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Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	95	50	256	155	36	46	68	194	30	162	653	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	77	0	0	14	0	0	9	0	0	71
Total Hourly Volume [veh/h]	95	50	179	155	36	32	68	194	21	162	653	167
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	14	51	45	10	9	20	56	6	47	188	48
Total Analysis Volume [veh/h]	109	57	206	178	41	37	78	223	24	186	751	192
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	19	19	13	13	6	39	12	45
g / C, Green / Cycle	0.19	0.19	0.13	0.13	0.06	0.39	0.12	0.45
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.10	0.05	0.04	0.13	0.10	0.52
s, saturation flow rate [veh/h]	1781	1643	1781	1726	1781	1838	1781	1805
c, Capacity [veh/h]	338	312	227	220	102	712	221	808
d1, Uniform Delay [s]	35.16	39.30	42.53	40.09	46.73	21.80	43.05	27.79
k, delay calibration	0.13	0.13	0.13	0.13	0.04	0.11	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	7.58	7.22	1.21	4.39	0.29	3.27	88.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.84	0.78	0.35	0.76	0.35	0.84	1.17
d, Delay for Lane Group [s/veh]	35.85	46.88	49.76	41.30	51.12	22.09	46.32	116.39
Lane Group LOS	D	D	D	D	D	C	D	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.35	6.83	4.70	1.83	2.03	4.10	4.68	38.15
50th-Percentile Queue Length [ft/ln]	58.85	170.80	117.47	45.67	50.86	102.53	116.89	953.78
95th-Percentile Queue Length [veh/ln]	4.24	11.12	8.25	3.29	3.66	7.38	8.22	53.91
95th-Percentile Queue Length [ft/ln]	105.93	277.97	206.35	82.20	91.54	184.55	205.55	1347.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.85	46.88	46.88	49.76	41.30	41.30	51.12	22.09	22.09	46.32	116.39	116.39
Movement LOS	D	D	D	D	D	D	D	C	C	D	F	F
d_A, Approach Delay [s/veh]	43.65			47.18			29.06			104.85		
Approach LOS	D			D			C			F		
d_I, Intersection Delay [s/veh]	74.99											
Intersection LOS	E											
Intersection V/C	0.983											

Emissions

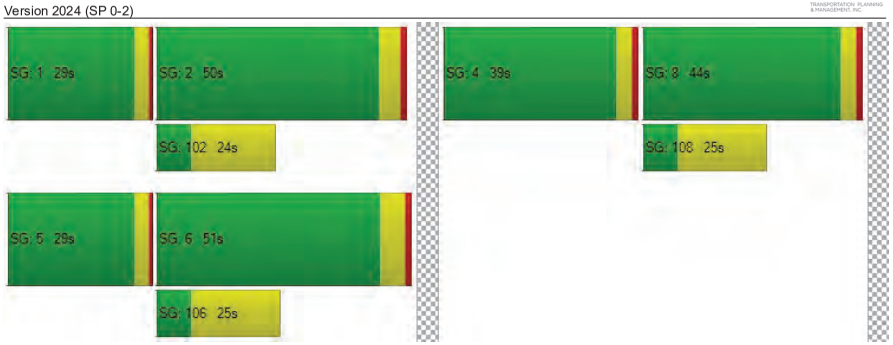
Vehicle Miles Traveled [mph]	187.55	452.53	36.09	15.81	27.28	86.39	83.93	425.50
Stops [stops/h]	84.42	245.01	168.51	65.51	72.95	147.07	167.68	1368.18
Fuel consumption [US gal/h]	8.98	22.49	4.22	1.67	2.34	5.48	6.13	47.41
CO [g/h]	627.86	1572.18	294.89	116.62	163.39	383.00	428.82	3313.76
NOx [g/h]	122.16	305.89	57.38	22.69	31.79	74.52	83.43	644.74
VOC [g/h]	145.51	364.37	68.34	27.03	37.87	88.76	99.38	768.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	39.80		39.80		39.80		0.00	
l_p,int, Pedestrian LOS Score for Intersectio	2.285		2.182		2.363		0.000	
Crosswalk LOS	B		B		B		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	693		793		891		897	
d_b, Bicycle Delay [s]	21.42		18.28		15.44		15.28	
l_b,int, Bicycle LOS Score for Intersection	2.300		2.005		2.111		3.540	
Bicycle LOS	B		B		B		D	

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	4	4	0	354	3	602	0	0	699	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	4	4	0	354	3	602	0	0	699	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	1	0	113	1	193	0	0	224	10
Total Analysis Volume [veh/h]	0	0	5	5	0	454	4	772	0	0	896	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	62	62	62	62	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	19	19	0	20	20	0	20	20
g / C, Green / Cycle	0.01	0.01	0.31	0.31	0.01	0.32	0.32	0.00	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.21	0.21	0.00	0.25	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	13	11	557	497	10	606	606	0	1135	507
d1, Uniform Delay [s]	0.00	30.58	14.64	20.43	30.64	17.79	17.79	0.00	19.17	14.72
k, delay calibration	0.11	0.11	0.11	0.32	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	26.65	0.01	16.85	23.88	1.12	1.12	0.00	1.27	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.46	0.01	0.91	0.40	0.64	0.64	0.00	0.79	0.08
d, Delay for Lane Group [s/veh]	0.00	57.24	14.64	37.28	54.52	18.91	18.91	0.00	20.44	14.78
Lane Group LOS	A	E	B	D	D	B	B	A	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.15	0.05	7.98	0.12	4.42	4.42	0.00	5.46	0.37
50th-Percentile Queue Length [ft/ln]	0.00	3.80	1.14	199.41	3.07	110.44	110.44	0.00	136.53	9.25
95th-Percentile Queue Length [veh/ln]	0.00	0.27	0.08	12.61	0.22	7.86	7.86	0.00	9.29	0.67
95th-Percentile Queue Length [ft/ln]	0.00	6.85	2.05	315.20	5.53	196.62	196.62	0.00	232.35	16.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	57.24	14.64	14.64	37.28	54.52	18.91	18.91	0.00	20.44	14.78
Movement LOS	A	A	E	B	B	D	D	B	B	A	C	B
d_A, Approach Delay [s/veh]	57.24			37.03			19.09			20.20		
Approach LOS	E			D			B			C		
d_I, Intersection Delay [s/veh]	23.44											
Intersection LOS	C											
Intersection V/C	0.733											

Emissions

Vehicle Miles Traveled [mph]	0.00	0.25	2.37	215.36	1.80	174.17	174.17	0.00	156.30	6.98
Stops [stops/h]	0.00	8.89	2.66	465.84	7.18	258.01	258.01	0.00	637.91	21.60
Fuel consumption [US gal/h]	0.00	0.12	0.13	14.88	0.16	10.08	10.08	0.00	13.69	0.53
CO [g/h]	0.00	8.22	8.89	1040.37	11.07	704.66	704.66	0.00	956.67	36.83
NOx [g/h]	0.00	1.60	1.73	202.42	2.15	137.10	137.10	0.00	186.13	7.17
VOC [g/h]	0.00	1.91	2.06	241.12	2.57	163.31	163.31	0.00	221.72	8.54

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	649	649	1622	1622
d_b, Bicycle Delay [s]	14.07	14.07	1.10	1.10
l_b,int, Bicycle LOS Score for Intersection	1.568	2.317	2.200	2.332
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	295	315	697	220	156	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	295	315	697	220	156	21
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	95	210	66	47	6
Total Analysis Volume [veh/h]	355	380	840	265	188	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	11	69	54	54	8	8	8
g / C, Green / Cycle	0.13	0.77	0.60	0.60	0.09	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.24	0.17	0.05	0.05	0.02
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	442	2744	2123	948	159	159	142
d1, Uniform Delay [s]	38.14	2.65	9.60	8.80	39.41	39.41	37.93
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.31	0.11	0.55	0.74	1.31	1.31	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.14	0.40	0.28	0.59	0.59	0.18
d, Delay for Lane Group [s/veh]	39.46	2.75	10.15	9.54	40.72	40.72	38.15
Lane Group LOS	D	A	B	A	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.82	0.64	4.12	2.48	2.03	2.03	0.51
50th-Percentile Queue Length [ft/ln]	95.60	16.09	102.94	62.03	50.80	50.80	12.85
95th-Percentile Queue Length [veh/ln]	6.88	1.16	7.41	4.47	3.66	3.66	0.93
95th-Percentile Queue Length [ft/ln]	172.08	28.95	185.29	111.66	91.45	91.45	23.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.46	2.75	10.15	9.54	40.72	38.15
Movement LOS	D	A	B	A	D	D
d_A, Approach Delay [s/veh]	20.48		10.00		40.42	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	16.91					
Intersection LOS	B					
Intersection V/C	0.452					

Emissions

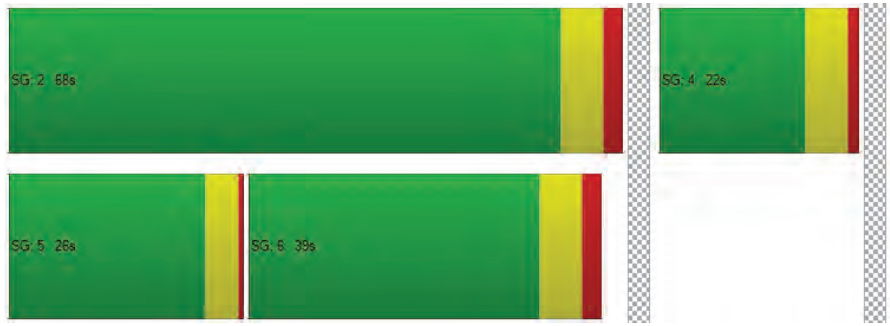
Vehicle Miles Traveled [mph]	61.93	66.29	148.85	46.96	5.69	5.69	1.51
Stops [stops/h]	305.92	51.47	329.40	99.25	81.29	81.29	20.56
Fuel consumption [US gal/h]	7.09	3.23	9.68	3.00	1.46	1.46	0.37
CO [g/h]	495.57	225.50	676.86	209.41	102.22	102.22	25.86
NOx [g/h]	96.42	43.87	131.69	40.74	19.89	19.89	5.03
VOC [g/h]	114.85	52.26	156.87	48.53	23.69	23.69	5.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.166	2.471	1.931
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

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Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	78	393	0	0	223	590	694	0	169	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	78	393	0	0	223	543	694	0	139	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	124	0	0	71	172	220	0	44	0	0	0
Total Analysis Volume [veh/h]	0	99	497	0	0	282	687	878	0	176	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	7	54	42	42	24	24	24	
g / C, Green / Cycle	0.08	0.59	0.47	0.47	0.27	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.08	0.43	0.25	0.25	0.11	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	147	2118	1658	740	472	472	422	
d1, Uniform Delay [s]	40.10	8.59	13.96	22.64	32.25	32.25	27.32	
k, delay calibration	0.04	0.50	0.50	0.50	0.26	0.26	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.00	0.26	0.22	19.60	17.03	17.03	0.24	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.23	0.17	0.93	0.93	0.93	0.42	
d, Delay for Lane Group [s/veh]	42.10	8.85	14.18	42.24	49.28	49.28	27.57	
Lane Group LOS	D	A	B	D	D	D	C	
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	2.18	2.17	1.65	16.69	11.26	11.26	3.09	
50th-Percentile Queue Length [ft/ln]	54.62	54.23	41.33	417.19	281.43	281.43	77.34	
95th-Percentile Queue Length [veh/ln]	3.93	3.90	2.98	23.39	16.76	16.76	5.57	
95th-Percentile Queue Length [ft/ln]	98.32	97.61	74.40	584.68	418.99	418.99	139.21	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	42.10	8.85	0.00	0.00	14.18	42.24	49.28	49.28	27.57	0.00	0.00	0.00
Movement LOS	D	D	A			B	D	D	D	C			
d_A, Approach Delay [s/veh]	14.37				34.07			45.65			0.00		
Approach LOS	B				C			D			A		
d_I, Intersection Delay [s/veh]	34.25												
Intersection LOS	C												
Intersection V/C	0.847												

Emissions

Vehicle Miles Traveled [mph]	17.54	88.07	38.56	93.94	15.21	15.21	6.10	
Stops [stops/h]	87.40	173.54	132.26	667.50	450.28	450.28	123.74	
Fuel consumption [US gal/h]	2.05	5.48	3.13	13.46	7.52	7.52	1.92	
CO [g/h]	143.52	383.00	218.92	940.83	525.37	525.37	134.35	
NOx [g/h]	27.92	74.52	42.59	183.05	102.22	102.22	26.14	
VOC [g/h]	33.26	88.76	50.74	218.05	121.76	121.76	31.14	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00	
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000	
Crosswalk LOS	F	F	F	F	
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0	
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00	
l_b,int, Bicycle LOS Score for Intersection	2.051	2.398	3.348	4.132	
Bicycle LOS	B	B	C	D	

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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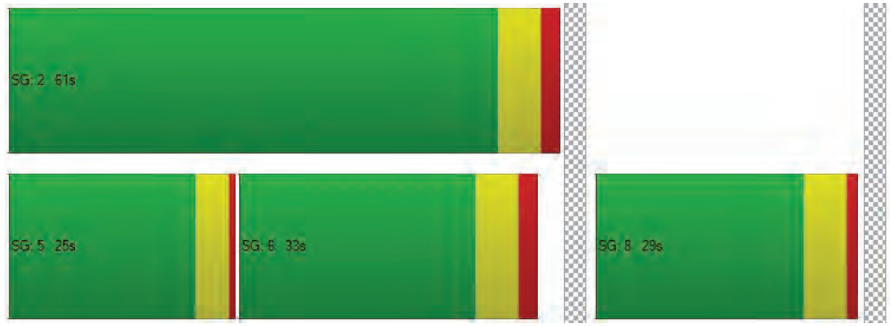

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	548	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	548	295	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	137	74	0	0	0
Total Analysis Volume [veh/h]	0	548	295	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	9.84
Movement LOS		A	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		9.84	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	415	226	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	415	226	38	4	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	104	57	10	1	0
Total Analysis Volume [veh/h]	0	415	226	38	4	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.77	0.00	0.00	0.00	13.49	9.61
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.71	0.71
d_A, Approach Delay [s/veh]	0.00		0.00		13.49	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.131

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	238	41	52	127	9	44	72	0	37	72	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	238	41	52	127	9	44	72	0	37	72	38
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	60	10	13	32	2	11	18	0	9	18	10
Total Analysis Volume [veh/h]	6	238	41	52	127	9	44	72	0	37	72	38
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.13	0.17	0.00	0.10	0.16	0.05
d_M, Delay for Movement [s/veh]	7.49	0.00	0.00	7.87	0.00	0.00	19.60	17.14	12.77	18.44	16.58	13.08
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.09	0.09	0.09	1.22	1.22	1.22	1.33	1.33	1.33
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.26	2.26	2.26	30.61	30.61	30.61	33.16	33.16	33.16
d_A, Approach Delay [s/veh]	0.16			2.18			18.07			16.14		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	6.69											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	548	309	39	0
2	532	300	38	0
3	521	294	37	0
4	488	275	35	0
5	433	244	31	0
6	427	241	30	0
7	422	238	30	0
8	384	216	27	0
9	378	213	27	0
10	373	210	27	0
11	323	182	23	0
12	301	170	21	0
13	296	167	21	0
14	219	124	16	0
15	219	124	16	0
16	153	87	11	0
17	88	49	6	0
18	88	49	6	0
19	49	28	4	0
20	27	15	2	0
21	16	9	1	0
22	5	3	0	0
23	5	3	0	0
24	5	3	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	857	1	39	No	No	No	No	No	No	No	No	No	No
2	1	832	1	38	No	No	No	No	No	No	No	No	No	No
3	1	815	1	37	No	No	No	No	No	No	No	No	No	No
4	1	763	1	35	No	No	No	No	No	No	No	No	No	No
5	1	677	1	31	No	No	No	No	No	No	No	No	No	No
6	1	668	1	30	No	No	No	No	No	No	No	No	No	No
7	1	660	1	30	No	No	No	No	No	No	No	No	No	No
8	1	600	1	27	No	No	No	No	No	No	No	No	No	No
9	1	591	1	27	No	No	No	No	No	No	No	No	No	No
10	1	583	1	27	No	No	No	No	No	No	No	No	No	No
11	1	505	1	23	No	No	No	No	No	No	No	No	No	No
12	1	471	1	21	No	No	No	No	No	No	No	No	No	No
13	1	463	1	21	No	No	No	No	No	No	No	No	No	No
14	1	343	1	16	No	No	No	No	No	No	No	No	No	No
15	1	343	1	16	No	No	No	No	No	No	No	No	No	No
16	1	240	1	11	No	No	No	No	No	No	No	No	No	No
17	1	137	1	6	No	No	No	No	No	No	No	No	No	No
18	1	137	1	6	No	No	No	No	No	No	No	No	No	No
19	1	77	1	4	No	No	No	No	No	No	No	No	No	No
20	1	42	1	2	No	No	No	No	No	No	No	No	No	No
21	1	25	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.7	17
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:08	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	896	896
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	419	295	171	0
2	406	286	166	0
3	398	280	162	0
4	373	263	152	0
5	331	233	135	0
6	327	230	133	0
7	323	227	132	0
8	293	207	120	0
9	289	204	118	0
10	285	201	116	0
11	247	174	101	0
12	230	162	94	0
13	226	159	92	0
14	168	118	68	0
15	168	118	68	0
16	117	83	48	0
17	67	47	27	0
18	67	47	27	0
19	38	27	15	0
20	21	15	9	0
21	13	9	5	0
22	4	3	2	0
23	4	3	2	0
24	4	3	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	714	1	171	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	2	692	1	166	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	2	678	1	162	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	2	636	1	152	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	2	564	1	135	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	557	1	133	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	550	1	132	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	500	1	120	No	Yes	Yes	Yes	No	No	No	No	No	No
9	2	493	1	118	No	No	Yes	Yes	No	No	No	No	No	No
10	2	486	1	116	No	No	Yes	Yes	No	No	No	No	No	No
11	2	421	1	101	No	No	No	Yes	No	No	No	No	No	No
12	2	392	1	94	No	No	No	Yes	No	No	No	No	No	No
13	2	385	1	92	No	No	No	Yes	No	No	No	No	No	No
14	2	286	1	68	No	No	No	No	No	No	No	No	No	No
15	2	286	1	68	No	No	No	No	No	No	No	No	No	No
16	2	200	1	48	No	No	No	No	No	No	No	No	No	No
17	2	114	1	27	No	No	No	No	No	No	No	No	No	No
18	2	114	1	27	No	No	No	No	No	No	No	No	No	No
19	2	65	1	15	No	No	No	No	No	No	No	No	No	No
20	2	36	1	9	No	No	No	No	No	No	No	No	No	No
21	2	22	1	5	No	No	No	No	No	No	No	No	No	No
22	2	7	1	2	No	No	No	No	No	No	No	No	No	No
23	2	7	1	2	No	No	No	No	No	No	No	No	No	No
24	2	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	8	10	13	0	0	4	7	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14	17
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:39	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	171	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	885	885
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	698	173	245
2	677	168	238
3	663	164	233
4	621	154	218
5	551	137	194
6	544	135	191
7	537	133	189
8	489	121	172
9	482	119	169
10	475	118	167
11	412	102	145
12	384	95	135
13	377	93	132
14	279	69	98
15	279	69	98
16	195	48	69
17	112	28	39
18	112	28	39
19	63	16	22
20	35	9	12
21	21	5	7
22	7	2	2
23	7	2	2
24	7	2	2

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	871	1	245	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	845	1	238	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	827	1	233	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	775	1	218	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	688	1	194	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	1	679	1	191	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	1	670	1	189	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	610	1	172	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
9	1	601	1	169	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
10	1	593	1	167	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	514	1	145	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	479	1	135	No	Yes	Yes	Yes	No	No	No	Yes	No	No
13	1	470	1	132	No	Yes	Yes	Yes	No	No	No	Yes	No	No
14	1	348	1	98	No	No	No	Yes	No	No	No	No	No	No
15	1	348	1	98	No	No	No	Yes	No	No	No	No	No	No
16	1	243	1	69	No	No	No	No	No	No	No	No	No	No
17	1	140	1	39	No	No	No	No	No	No	No	No	No	No
18	1	140	1	39	No	No	No	No	No	No	No	No	No	No
19	1	79	1	22	No	No	No	No	No	No	No	No	No	No
20	1	44	1	12	No	No	No	No	No	No	No	No	No	No
21	1	26	1	7	No	No	No	No	No	No	No	No	No	No
22	1	9	1	2	No	No	No	No	No	No	No	No	No	No
23	1	9	1	2	No	No	No	No	No	No	No	No	No	No
24	1	9	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	4	9	10	13	6	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	245
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1116
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	104	488	297	11
2	101	473	288	11
3	99	464	282	10
4	93	434	264	10
5	82	386	235	9
6	81	381	232	9
7	80	376	229	8
8	73	342	208	8
9	72	337	205	8
10	71	332	202	7
11	61	288	175	6
12	57	268	163	6
13	56	264	160	6
14	42	195	119	4
15	42	195	119	4
16	29	137	83	3
17	17	78	48	2
18	17	78	48	2
19	9	44	27	1
20	5	24	15	1
21	3	15	9	0
22	1	5	3	0
23	1	5	3	0
24	1	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	592	1	297	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	1	574	1	288	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	1	563	1	282	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	527	1	264	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	468	1	235	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	462	1	232	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	456	1	229	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	415	1	208	No	Yes	Yes	Yes	No	No	No	No	No	No
9	1	409	1	205	No	Yes	Yes	Yes	No	No	No	No	No	No
10	1	403	1	202	No	Yes	Yes	Yes	No	No	No	No	No	No
11	1	349	1	175	No	No	No	Yes	No	No	No	No	No	No
12	1	325	1	163	No	No	No	Yes	No	No	No	No	No	No
13	1	320	1	160	No	No	No	Yes	No	No	No	No	No	No
14	1	237	1	119	No	No	No	No	No	No	No	No	No	No
15	1	237	1	119	No	No	No	No	No	No	No	No	No	No
16	1	166	1	83	No	No	No	No	No	No	No	No	No	No
17	1	95	1	48	No	No	No	No	No	No	No	No	No	No
18	1	95	1	48	No	No	No	No	No	No	No	No	No	No
19	1	53	1	27	No	No	No	No	No	No	No	No	No	No
20	1	29	1	15	No	No	No	No	No	No	No	No	No	No
21	1	18	1	9	No	No	No	No	No	No	No	No	No	No
22	1	6	1	3	No	No	No	No	No	No	No	No	No	No
23	1	6	1	3	No	No	No	No	No	No	No	No	No	No
24	1	6	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	10	13	0	0	4	7	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.2	9.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:25	0:01
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	297	11
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	900	900
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	140	79	139
2	136	77	135
3	133	75	132
4	125	70	124
5	111	62	110
6	109	62	108
7	108	61	107
8	98	55	97
9	97	55	96
10	95	54	95
11	83	47	82
12	77	43	76
13	76	43	75
14	56	32	56
15	56	32	56
16	39	22	39
17	22	13	22
18	22	13	22
19	13	7	13
20	7	4	7
21	4	2	4
22	1	1	1
23	1	1	1
24	1	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	219	2	139	No	No	No	No	No	No	No	No	No	No
2	2	213	2	135	No	No	No	No	No	No	No	No	No	No
3	2	208	2	132	No	No	No	No	No	No	No	No	No	No
4	2	195	2	124	No	No	No	No	No	No	No	No	No	No
5	2	173	2	110	No	No	No	No	No	No	No	No	No	No
6	2	171	2	108	No	No	No	No	No	No	No	No	No	No
7	2	169	2	107	No	No	No	No	No	No	No	No	No	No
8	2	153	2	97	No	No	No	No	No	No	No	No	No	No
9	2	152	2	96	No	No	No	No	No	No	No	No	No	No
10	2	149	2	95	No	No	No	No	No	No	No	No	No	No
11	2	130	2	82	No	No	No	No	No	No	No	No	No	No
12	2	120	2	76	No	No	No	No	No	No	No	No	No	No
13	2	119	2	75	No	No	No	No	No	No	No	No	No	No
14	2	88	2	56	No	No	No	No	No	No	No	No	No	No
15	2	88	2	56	No	No	No	No	No	No	No	No	No	No
16	2	61	2	39	No	No	No	No	No	No	No	No	No	No
17	2	35	2	22	No	No	No	No	No	No	No	No	No	No
18	2	35	2	22	No	No	No	No	No	No	No	No	No	No
19	2	20	2	13	No	No	No	No	No	No	No	No	No	No
20	2	11	2	7	No	No	No	No	No	No	No	No	No	No
21	2	6	2	4	No	No	No	No	No	No	No	No	No	No
22	2	2	2	1	No	No	No	No	No	No	No	No	No	No
23	2	2	2	1	No	No	No	No	No	No	No	No	No	No
24	2	2	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.4
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:21
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	139
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	358
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	116	109	88
2	113	106	85
3	110	104	84
4	103	97	78
5	92	86	70
6	90	85	69
7	89	84	68
8	81	76	62
9	80	75	61
10	79	74	60
11	68	64	52
12	64	60	48
13	63	59	48
14	46	44	35
15	46	44	35
16	32	31	25
17	19	17	14
18	19	17	14
19	10	10	8
20	6	5	4
21	3	3	3
22	1	1	1
23	1	1	1
24	1	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	225	1	88	No	No	No	No	No	No	No	No	No	No
2	2	219	1	85	No	No	No	No	No	No	No	No	No	No
3	2	214	1	84	No	No	No	No	No	No	No	No	No	No
4	2	200	1	78	No	No	No	No	No	No	No	No	No	No
5	2	178	1	70	No	No	No	No	No	No	No	No	No	No
6	2	175	1	69	No	No	No	No	No	No	No	No	No	No
7	2	173	1	68	No	No	No	No	No	No	No	No	No	No
8	2	157	1	62	No	No	No	No	No	No	No	No	No	No
9	2	155	1	61	No	No	No	No	No	No	No	No	No	No
10	2	153	1	60	No	No	No	No	No	No	No	No	No	No
11	2	132	1	52	No	No	No	No	No	No	No	No	No	No
12	2	124	1	48	No	No	No	No	No	No	No	No	No	No
13	2	122	1	48	No	No	No	No	No	No	No	No	No	No
14	2	90	1	35	No	No	No	No	No	No	No	No	No	No
15	2	90	1	35	No	No	No	No	No	No	No	No	No	No
16	2	63	1	25	No	No	No	No	No	No	No	No	No	No
17	2	36	1	14	No	No	No	No	No	No	No	No	No	No
18	2	36	1	14	No	No	No	No	No	No	No	No	No	No
19	2	20	1	8	No	No	No	No	No	No	No	No	No	No
20	2	11	1	4	No	No	No	No	No	No	No	No	No	No
21	2	6	1	3	No	No	No	No	No	No	No	No	No	No
22	2	2	1	1	No	No	No	No	No	No	No	No	No	No
23	2	2	1	1	No	No	No	No	No	No	No	No	No	No
24	2	2	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	88
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	313
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	77	124	36
2	75	120	35
3	73	118	34
4	69	110	32
5	61	98	28
6	60	97	28
7	59	95	28
8	54	87	25
9	53	86	25
10	52	84	24
11	45	73	21
12	42	68	20
13	42	67	19
14	31	50	14
15	31	50	14
16	22	35	10
17	12	20	6
18	12	20	6
19	7	11	3
20	4	6	2
21	2	4	1
22	1	1	0
23	1	1	0
24	1	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	201	1	36	No	No	No	No	No	No	No	No	No	No
2	3	195	1	35	No	No	No	No	No	No	No	No	No	No
3	3	191	1	34	No	No	No	No	No	No	No	No	No	No
4	3	179	1	32	No	No	No	No	No	No	No	No	No	No
5	3	159	1	28	No	No	No	No	No	No	No	No	No	No
6	3	157	1	28	No	No	No	No	No	No	No	No	No	No
7	3	154	1	28	No	No	No	No	No	No	No	No	No	No
8	3	141	1	25	No	No	No	No	No	No	No	No	No	No
9	3	139	1	25	No	No	No	No	No	No	No	No	No	No
10	3	136	1	24	No	No	No	No	No	No	No	No	No	No
11	3	118	1	21	No	No	No	No	No	No	No	No	No	No
12	3	110	1	20	No	No	No	No	No	No	No	No	No	No
13	3	109	1	19	No	No	No	No	No	No	No	No	No	No
14	3	81	1	14	No	No	No	No	No	No	No	No	No	No
15	3	81	1	14	No	No	No	No	No	No	No	No	No	No
16	3	57	1	10	No	No	No	No	No	No	No	No	No	No
17	3	32	1	6	No	No	No	No	No	No	No	No	No	No
18	3	32	1	6	No	No	No	No	No	No	No	No	No	No
19	3	18	1	3	No	No	No	No	No	No	No	No	No	No
20	3	10	1	2	No	No	No	No	No	No	No	No	No	No
21	3	6	1	1	No	No	No	No	No	No	No	No	No	No
22	3	2	1	0	No	No	No	No	No	No	No	No	No	No
23	3	2	1	0	No	No	No	No	No	No	No	No	No	No
24	3	2	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	36
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	237
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	491	302	83	75
2	476	293	81	73
3	466	287	79	71
4	437	269	74	67
5	388	239	66	59
6	383	236	65	59
7	378	233	64	58
8	344	211	58	53
9	339	208	57	52
10	334	205	56	51
11	290	178	49	44
12	270	166	46	41
13	265	163	45	41
14	196	121	33	30
15	196	121	33	30
16	137	85	23	21
17	79	48	13	12
18	79	48	13	12
19	44	27	7	7
20	25	15	4	4
21	15	9	2	2
22	5	3	1	1
23	5	3	1	1
24	5	3	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	793	1	83	No	No	No	No	No	Yes	Yes	Yes	No	No
2	2	769	1	81	No	No	No	No	No	Yes	Yes	Yes	No	No
3	2	753	1	79	No	No	No	No	No	Yes	Yes	Yes	No	No
4	2	706	1	74	No	No	No	No	No	No	Yes	Yes	No	No
5	2	627	1	66	No	No	No	No	No	No	No	Yes	No	No
6	2	619	1	65	No	No	No	No	No	No	No	Yes	No	No
7	2	611	1	64	No	No	No	No	No	No	No	Yes	No	No
8	2	555	1	58	No	No	No	No	No	No	No	Yes	No	No
9	2	547	1	57	No	No	No	No	No	No	No	Yes	No	No
10	2	539	1	56	No	No	No	No	No	No	No	Yes	No	No
11	2	468	1	49	No	No	No	No	No	No	No	No	No	No
12	2	436	1	46	No	No	No	No	No	No	No	No	No	No
13	2	428	1	45	No	No	No	No	No	No	No	No	No	No
14	2	317	1	33	No	No	No	No	No	No	No	No	No	No
15	2	317	1	33	No	No	No	No	No	No	No	No	No	No
16	2	222	1	23	No	No	No	No	No	No	No	No	No	No
17	2	127	1	13	No	No	No	No	No	No	No	No	No	No
18	2	127	1	13	No	No	No	No	No	No	No	No	No	No
19	2	71	1	7	No	No	No	No	No	No	No	No	No	No
20	2	40	1	4	No	No	No	No	No	No	No	No	No	No
21	2	24	1	2	No	No	No	No	No	No	No	No	No	No
22	2	8	1	1	No	No	No	No	No	No	No	No	No	No
23	2	8	1	1	No	No	No	No	No	No	No	No	No	No
24	2	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	3	4	10	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	19.3	21.4
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:26	0:26
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	83	75
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	951	951
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	548	295	0
2	532	286	0
3	521	280	0
4	488	263	0
5	433	233	0
6	427	230	0
7	422	227	0
8	384	207	0
9	378	204	0
10	373	201	0
11	323	174	0
12	301	162	0
13	296	159	0
14	219	118	0
15	219	118	0
16	153	83	0
17	88	47	0
18	88	47	0
19	49	27	0
20	27	15	0
21	16	9	0
22	5	3	0
23	5	3	0
24	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	843	1	0	No	No	No	No	No	No	No	No	No	No
2	1	818	1	0	No	No	No	No	No	No	No	No	No	No
3	1	801	1	0	No	No	No	No	No	No	No	No	No	No
4	1	751	1	0	No	No	No	No	No	No	No	No	No	No
5	1	666	1	0	No	No	No	No	No	No	No	No	No	No
6	1	657	1	0	No	No	No	No	No	No	No	No	No	No
7	1	649	1	0	No	No	No	No	No	No	No	No	No	No
8	1	591	1	0	No	No	No	No	No	No	No	No	No	No
9	1	582	1	0	No	No	No	No	No	No	No	No	No	No
10	1	574	1	0	No	No	No	No	No	No	No	No	No	No
11	1	497	1	0	No	No	No	No	No	No	No	No	No	No
12	1	463	1	0	No	No	No	No	No	No	No	No	No	No
13	1	455	1	0	No	No	No	No	No	No	No	No	No	No
14	1	337	1	0	No	No	No	No	No	No	No	No	No	No
15	1	337	1	0	No	No	No	No	No	No	No	No	No	No
16	1	236	1	0	No	No	No	No	No	No	No	No	No	No
17	1	135	1	0	No	No	No	No	No	No	No	No	No	No
18	1	135	1	0	No	No	No	No	No	No	No	No	No	No
19	1	76	1	0	No	No	No	No	No	No	No	No	No	No
20	1	42	1	0	No	No	No	No	No	No	No	No	No	No
21	1	25	1	0	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	843
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	415	264	4
2	403	256	4
3	394	251	4
4	369	235	4
5	328	209	3
6	324	206	3
7	320	203	3
8	291	185	3
9	286	182	3
10	282	180	3
11	245	156	2
12	228	145	2
13	224	143	2
14	166	106	2
15	166	106	2
16	116	74	1
17	66	42	1
18	66	42	1
19	37	24	0
20	21	13	0
21	12	8	0
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	679	1	4	No	No	No	No	No	No	No	No	No	No
2	1	659	1	4	No	No	No	No	No	No	No	No	No	No
3	1	645	1	4	No	No	No	No	No	No	No	No	No	No
4	1	604	1	4	No	No	No	No	No	No	No	No	No	No
5	1	537	1	3	No	No	No	No	No	No	No	No	No	No
6	1	530	1	3	No	No	No	No	No	No	No	No	No	No
7	1	523	1	3	No	No	No	No	No	No	No	No	No	No
8	1	476	1	3	No	No	No	No	No	No	No	No	No	No
9	1	468	1	3	No	No	No	No	No	No	No	No	No	No
10	1	462	1	3	No	No	No	No	No	No	No	No	No	No
11	1	401	1	2	No	No	No	No	No	No	No	No	No	No
12	1	373	1	2	No	No	No	No	No	No	No	No	No	No
13	1	367	1	2	No	No	No	No	No	No	No	No	No	No
14	1	272	1	2	No	No	No	No	No	No	No	No	No	No
15	1	272	1	2	No	No	No	No	No	No	No	No	No	No
16	1	190	1	1	No	No	No	No	No	No	No	No	No	No
17	1	108	1	1	No	No	No	No	No	No	No	No	No	No
18	1	108	1	1	No	No	No	No	No	No	No	No	No	No
19	1	61	1	0	No	No	No	No	No	No	No	No	No	No
20	1	34	1	0	No	No	No	No	No	No	No	No	No	No
21	1	20	1	0	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	4
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	683
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	285	188	147	116
2	276	182	143	113
3	271	179	140	110
4	254	167	131	103
5	225	149	116	92
6	222	147	115	90
7	219	145	113	89
8	200	132	103	81
9	197	130	101	80
10	194	128	100	79
11	168	111	87	68
12	157	103	81	64
13	154	102	79	63
14	114	75	59	46
15	114	75	59	46
16	80	53	41	32
17	46	30	24	19
18	46	30	24	19
19	26	17	13	10
20	14	9	7	6
21	9	6	4	3
22	3	2	1	1
23	3	2	1	1
24	3	2	1	1

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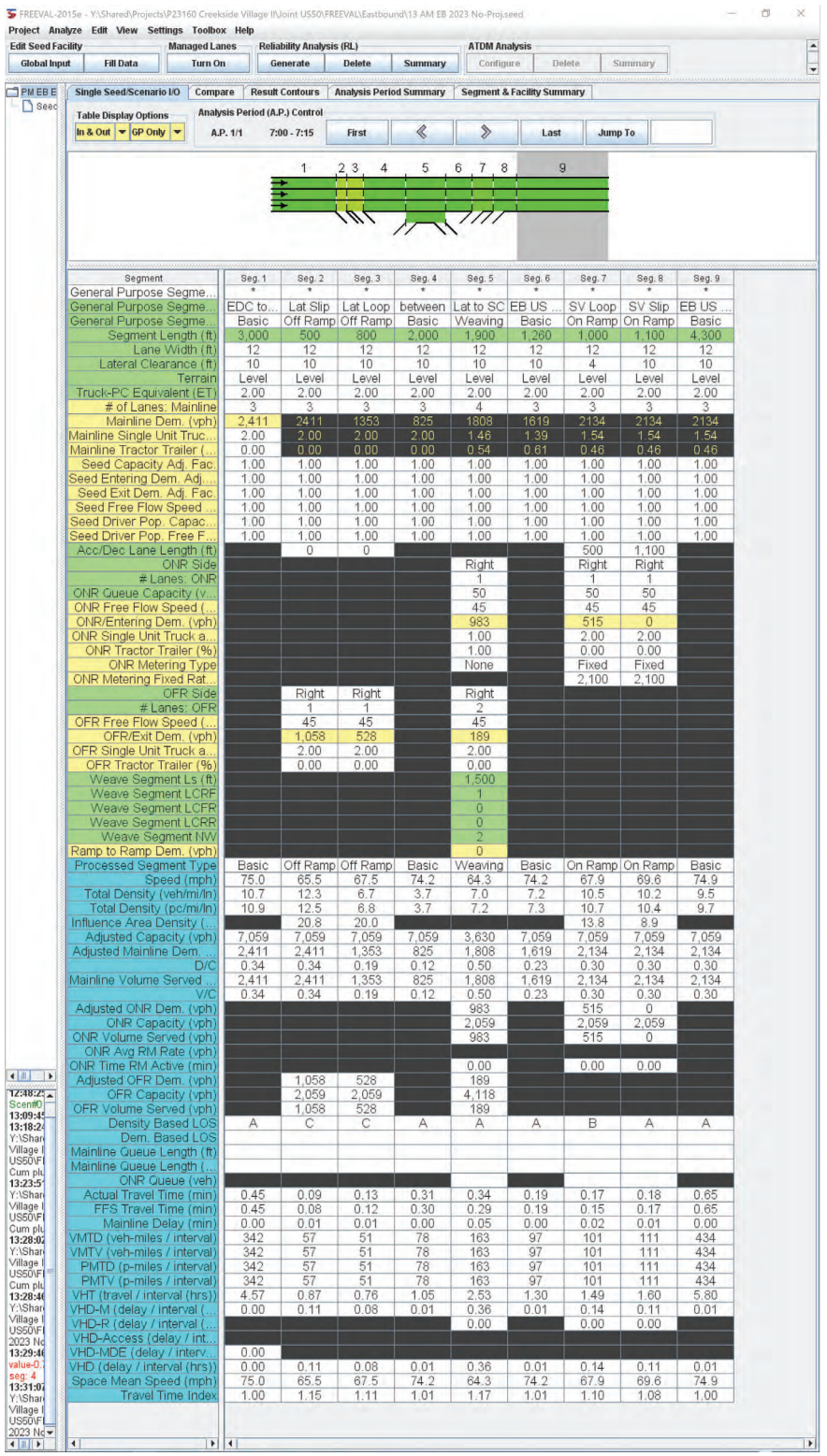
Warrant Analysis by Hour

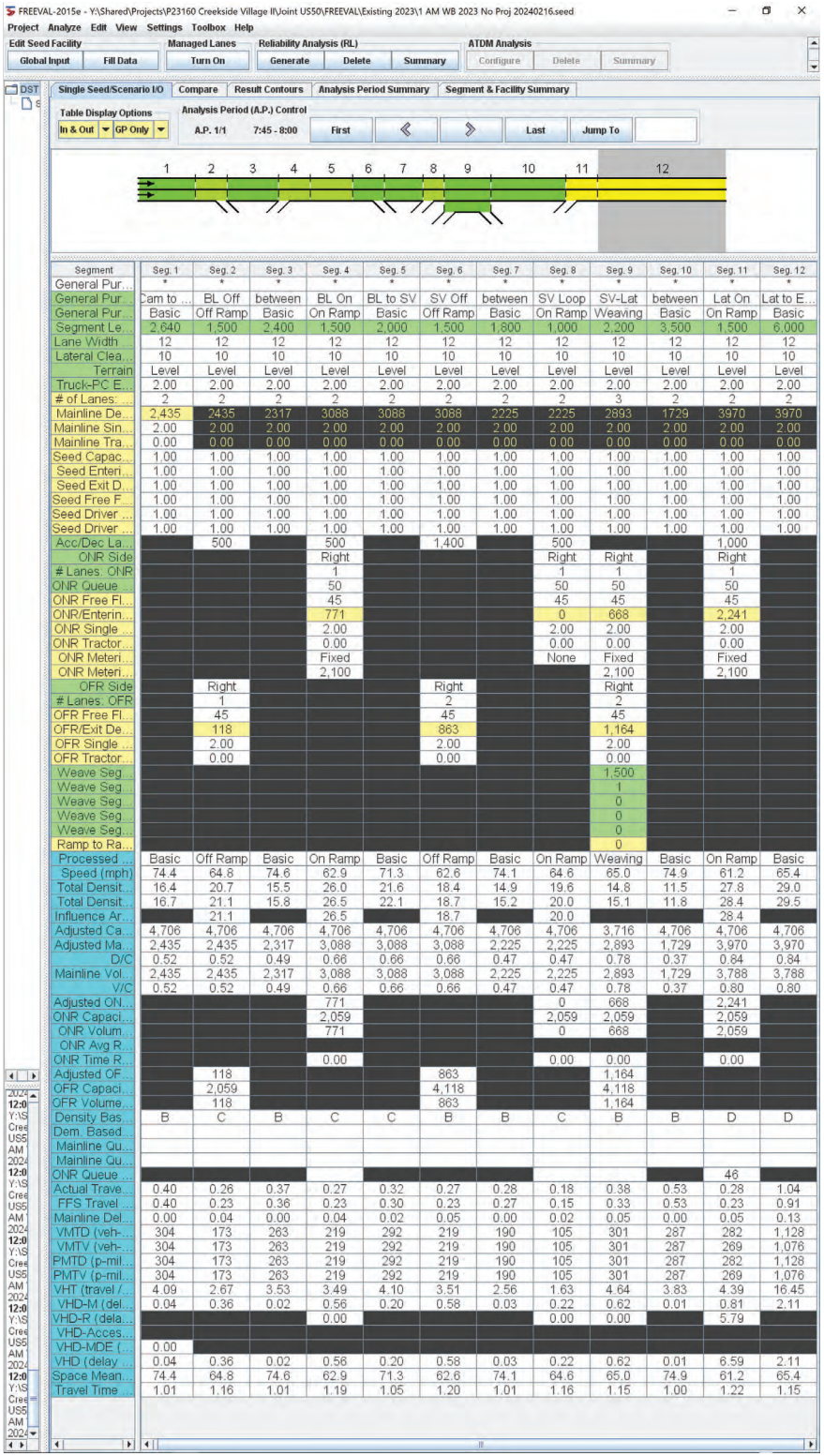
Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	473	1	147	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	458	1	143	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	450	1	140	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	421	1	131	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	1	374	1	116	No	No	Yes	Yes	No	No	No	No	No	No
6	1	369	1	115	No	No	Yes	Yes	No	No	No	No	No	No
7	1	364	1	113	No	No	Yes	Yes	No	No	No	No	No	No
8	1	332	1	103	No	No	No	Yes	No	No	No	No	No	No
9	1	327	1	101	No	No	No	Yes	No	No	No	No	No	No
10	1	322	1	100	No	No	No	Yes	No	No	No	No	No	No
11	1	279	1	87	No	No	No	No	No	No	No	No	No	No
12	1	260	1	81	No	No	No	No	No	No	No	No	No	No
13	1	256	1	79	No	No	No	No	No	No	No	No	No	No
14	1	189	1	59	No	No	No	No	No	No	No	No	No	No
15	1	189	1	59	No	No	No	No	No	No	No	No	No	No
16	1	133	1	41	No	No	No	No	No	No	No	No	No	No
17	1	76	1	24	No	No	No	No	No	No	No	No	No	No
18	1	76	1	24	No	No	No	No	No	No	No	No	No	No
19	1	43	1	13	No	No	No	No	No	No	No	No	No	No
20	1	23	1	7	No	No	No	No	No	No	No	No	No	No
21	1	15	1	4	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	4	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.1	18.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:39	0:34
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	147	116
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	736	736
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	



Segment	Seg.1	Seg.2	Seg.3	Seg.4	Seg.5	Seg.6	Seg.7	Seg.8	Seg.9
General Purpose Segme...	EDC to...	Lat Slip	Lat Loop	between	Lat to SC	EB US ...	SV Loop	SV Slip	EB US ...
General Purpose Segme...	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Segment Length (ft)	3,000	500	800	2,000	1,900	1,260	1,000	1,100	4,300
Lane Width (ft)	12	12	12	12	12	12	12	12	12
Lateral Clearance (ft)	10	10	10	10	10	10	4	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: Mainline	3	3	3	3	4	3	3	3	3
Mainline Dem. (vph)	2,411	2411	1353	825	1808	1619	2134	2134	2134
Mainline Single Unit Truc...	2.00	2.00	2.00	2.00	1.46	1.39	1.54	1.54	1.54
Mainline Tractor Trailer (...	0.00	0.00	0.00	0.00	0.54	0.61	0.46	0.46	0.46
Seed Capacity Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Entering Dem. Adj....	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit Dem. Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free Flow Speed ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec Lane Length (ft)		0	0				500	1,100	
ONR Side					Right		Right	Right	
# Lanes: ONR					1		1	1	
ONR Queue Capacity (v...					50		50	50	
ONR Free Flow Speed (...					45		45	45	
ONR/Entering Dem. (vph)					983		515	0	
ONR Single Unit Truck a...					1.00		2.00	2.00	
ONR Tractor Trailer (%)					1.00		0.00	0.00	
ONR Metering Type					None		Fixed	Fixed	
ONR Metering Fixed Rat...							2,100	2,100	
OFR Side		Right	Right		Right				
# Lanes: OFR		1	1		2				
OFR Free Flow Speed (...		45	45		45				
OFR/Exit Dem. (vph)		1,058	528		189				
OFR Single Unit Truck a...		2.00	2.00		2.00				
OFR Tractor Trailer (%)		0.00	0.00		0.00				
Weave Segment Ls (ft)					1,500				
Weave Segment LCRF					1				
Weave Segment LCFR					0				
Weave Segment LCRR					0				
Weave Segment NW					2				
Ramp to Ramp Dem. (vph)					0				
Processed Segment Type	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Speed (mph)	75.0	65.5	67.5	74.2	64.3	74.2	67.9	69.6	74.9
Total Density (veh/mi/ln)	10.7	12.3	6.7	3.7	7.0	7.2	10.5	10.2	9.5
Total Density (pc/mi/ln)	10.9	12.5	6.8	3.7	7.2	7.3	10.7	10.4	9.7
Influence Area Density (...		20.8	20.0				13.8	8.9	
Adjusted Capacity (vph)	7,059	7,059	7,059	7,059	3,630	7,059	7,059	7,059	7,059
Adjusted Mainline Dem. ...	2,411	2,411	1,353	825	1,808	1,619	2,134	2,134	2,134
D/C	0.34	0.34	0.19	0.12	0.50	0.23	0.30	0.30	0.30
Mainline Volume Served ...	2,411	2,411	1,353	825	1,808	1,619	2,134	2,134	2,134
V/C	0.34	0.34	0.19	0.12	0.50	0.23	0.30	0.30	0.30
Adjusted ONR Dem. (vph)					983		515	0	
ONR Capacity (vph)					2,059		2,059	2,059	
ONR Volume Served (vph)					983		515	0	
ONR Avg RM Rate (vph)									
ONR Time RM Active (min)					0.00		0.00	0.00	
Adjusted OFR Dem. (vph)		1,058	528		189				
OFR Capacity (vph)		2,059	2,059		4,118				
OFR Volume Served (vph)		1,058	528		189				
Density Based LOS	A	C	C	A	A	A	B	A	A
Dem. Based LOS									
Mainline Queue Length (ft)									
Mainline Queue Length (...									
ONR Queue (veh)									
Actual Travel Time (min)	0.45	0.09	0.13	0.31	0.34	0.19	0.17	0.18	0.65
FFS Travel Time (min)	0.45	0.08	0.12	0.30	0.29	0.19	0.15	0.17	0.65
Mainline Delay (min)	0.00	0.01	0.01	0.00	0.05	0.00	0.02	0.01	0.00
VMTD (veh-miles / interval)	342	57	51	78	163	97	101	111	434
VMTV (veh-miles / interval)	342	57	51	78	163	97	101	111	434
PMTD (p-miles / interval)	342	57	51	78	163	97	101	111	434
PMTV (p-miles / interval)	342	57	51	78	163	97	101	111	434
VHT (travel / interval (hrs))	4.57	0.87	0.76	1.05	2.53	1.30	1.49	1.60	5.80
VHD-M (delay / interval (...	0.00	0.11	0.08	0.01	0.36	0.01	0.14	0.11	0.01
VHD-R (delay / interval (...					0.00		0.00	0.00	
VHD-Access (delay / int...									
VHD-MDE (delay / interv...	0.00								
VHD (delay / interval (hrs))	0.00	0.11	0.08	0.01	0.36	0.01	0.14	0.11	0.01
Space Mean Speed (mph)	75.0	65.5	67.5	74.2	64.3	74.2	67.9	69.6	74.9
Travel Time Index	1.00	1.15	1.11	1.01	1.17	1.01	1.10	1.08	1.00



Existing PM no Project

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Report File: C:\...\2 2023 PM no Proj.pdf

Scenario 1 2023 PM, No Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.957	46.8	D
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	NB Left	1.222	107.8	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	WB Right	0.989	47.9	D
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.912	22.8	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.925	38.1	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	WB Left	0.630	51.0	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.825	20.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.728	10.8	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	0.845	37.5	D
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.779	18.0	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Right	0.077	11.1	B
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.278	28.6	D
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	5.387	2,479.7	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.735	19.6	C
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.019	14.8	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.021	11.1	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.127	8.1	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.767	69.3	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.452	29.1	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.522	70.4	E
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	0.917	54.2	D
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	NB Right	0.755	23.4	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.659	31.7	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	NB Left	0.528	19.3	B
25	New Intersection	Two-way stop	HCM 6th Edition	SB Thru	0.005	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.071	15.2	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	WB Left	0.133	18.2	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 3670 of 4853

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	46.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.957

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	91	1766	401	35	1038	55	36	17	54	339	52	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	17	0	0	16	0	0	7
Total Hourly Volume [veh/h]	3	91	1766	401	35	1038	38	36	17	38	339	52	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	26	507	115	10	298	11	10	5	11	97	15	4
Total Analysis Volume [veh/h]	3	105	2030	461	40	1193	44	41	20	44	390	60	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	40	40	2	36	36	5	5	14	14
g / C, Green / Cycle	0.08	0.51	0.51	0.03	0.46	0.46	0.06	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.57	0.29	0.02	0.33	0.33	0.02	0.04	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1847	1781	1668	1781	1787
c, Capacity [veh/h]	141	1810	808	51	856	846	105	99	318	320
d1, Uniform Delay [s]	35.52	19.35	13.40	37.98	17.33	17.34	35.66	36.23	30.54	30.54
k, delay calibration	0.04	0.05	0.06	0.04	0.13	0.13	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.22	55.62	0.36	9.10	1.45	1.48	0.87	2.66	4.58	4.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	1.12	0.57	0.78	0.73	0.73	0.39	0.65	0.73	0.73
d, Delay for Lane Group [s/veh]	38.75	74.97	13.76	47.08	18.78	18.82	36.53	38.89	35.13	35.11
Lane Group LOS	D	F	B	D	B	B	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	27.13	4.72	0.85	8.03	7.95	0.77	1.25	4.44	4.46
50th-Percentile Queue Length [ft/ln]	50.70	678.35	117.97	21.28	200.64	198.68	19.16	31.20	111.04	111.39
95th-Percentile Queue Length [veh/ln]	3.65	38.84	8.28	1.53	12.67	12.57	1.38	2.25	7.90	7.92
95th-Percentile Queue Length [ft/ln]	91.26	971.05	207.04	38.31	316.79	314.26	34.49	56.16	197.45	197.94

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.75	38.75	74.97	13.76	47.08	18.80	18.82	36.53	38.89	38.89	35.12	35.11	35.11
Movement LOS	D	D	F	B	D	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	62.61				19.69			37.97			35.12		
Approach LOS	E				B			D			D		
d_I, Intersection Delay [s/veh]	46.82												
Intersection LOS	D												
Intersection V/C	0.957												

Emissions

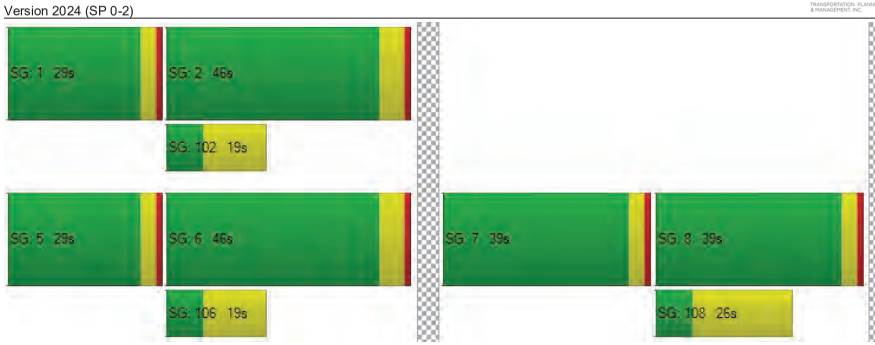
Vehicle Miles Traveled [mph]	25.79	484.83	110.10	5.88	91.45	90.42	1.75	2.73	12.20	12.24
Stops [stops/h]	92.93	2486.77	216.24	39.01	367.77	364.16	35.12	57.19	203.53	204.18
Fuel consumption [US gal/h]	2.89	78.51	7.75	1.07	10.08	9.98	0.57	0.93	3.29	3.30
CO [g/h]	202.09	5487.61	541.97	74.78	704.93	697.83	39.91	65.35	230.16	230.88
NOx [g/h]	39.32	1067.69	105.45	14.55	137.15	135.77	7.76	12.72	44.78	44.92
VOC [g/h]	46.84	1271.81	125.61	17.33	163.37	161.73	9.25	15.15	53.34	53.51

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			11.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00		0.00	
d_p, Pedestrian Delay [s]	0.00			29.05			29.05		29.05	
l_p,int, Pedestrian LOS Score for Intersectio	0.000			3.308			2.068		2.266	
Crosswalk LOS	F			C			B		B	
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1026			1026			891		891	
d_b, Bicycle Delay [s]	9.32			9.32			12.08		12.08	
l_b,int, Bicycle LOS Score for Intersection	3.701			2.627			1.759		2.342	
Bicycle LOS	D			B			A		B	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 3673 of 4853

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	107.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.222

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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TKEAR TRANSPORTATION, PLANNING & MANAGEMENT, INC.

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	75	4	164	1068	198	365	41	525	59	107	276
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	23	0	0	0	59	0	0	158	0	0	83
Total Hourly Volume [veh/h]	5	442	1616	52	4	164	1068	139	365	41	367	59	107	193
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	119	434	14	1	44	287	37	98	11	99	16	29	52
Total Analysis Volume [veh/h]	5	475	1738	56	4	176	1148	149	392	44	395	63	115	208
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	125	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	53	53	15	48	48	20	20	20	20	20
g / C, Green / Cycle	0.16	0.42	0.42	0.12	0.38	0.38	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.27	0.33	0.33	0.10	0.35	0.36	0.12	0.12	0.25	0.04	0.19
s, saturation flow rate [veh/h]	1781	3560	1840	1781	1870	1796	1781	1798	1589	1781	1679
c, Capacity [veh/h]	284	1504	777	208	710	682	284	287	254	284	268
d1, Uniform Delay [s]	52.62	31.26	31.34	54.33	37.19	37.41	50.37	50.34	52.62	45.84	52.62
k, delay calibration	0.50	0.13	0.34	0.11	0.37	0.37	0.22	0.22	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	324.32	1.13	5.49	10.32	15.95	17.98	8.37	8.05	268.77	0.14	121.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.69	0.79	0.79	0.86	0.93	0.94	0.76	0.76	1.56	0.22	1.20
d, Delay for Lane Group [s/veh]	376.95	32.39	36.83	64.65	53.14	55.39	58.74	58.38	321.39	45.98	174.53
Lane Group LOS	F	C	D	E	D	E	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	34.31	14.82	16.37	6.04	21.44	21.27	7.19	7.19	26.91	1.73	17.48
50th-Percentile Queue Length [ft/ln]	857.63	370.47	409.33	150.92	536.09	531.83	179.64	179.85	672.64	43.29	437.12
95th-Percentile Queue Length [veh/ln]	53.37	21.13	23.01	10.07	29.04	28.84	11.58	11.59	42.07	3.12	26.51
95th-Percentile Queue Length [ft/ln]	1334.16	528.30	575.24	251.65	725.94	720.93	289.55	289.82	1051.84	77.92	662.71

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	376.9	376.9	33.81	36.83	64.65	64.65	54.10	55.39	58.58	58.38	321.39	45.98	174.53	174.53
Movement LOS	F	F	C	D	E	E	D	E	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	106.31				55.52				183.49			153.55		
Approach LOS	F				E				F			F		
d_I, Intersection Delay [s/veh]	107.79													
Intersection LOS	F													
Intersection V/C	1.222													

Emissions

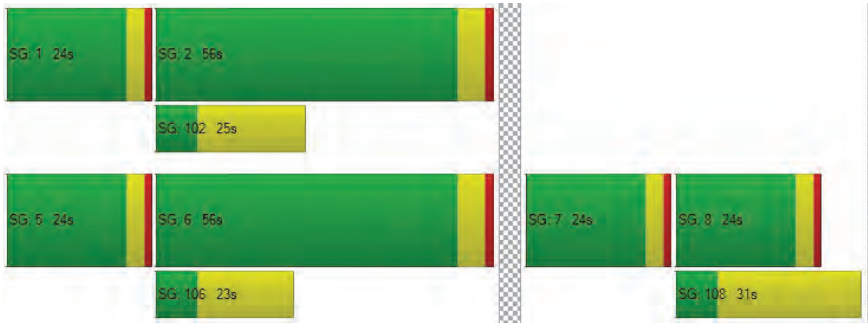
Vehicle Miles Traveled [mph]	90.33	222.20	115.42	42.99	157.18	152.59	13.56	13.63	24.63	3.07	15.75
Stops [stops/h]	986.38	852.17	470.79	173.57	616.57	611.67	206.61	206.85	773.63	49.79	502.75
Fuel consumption [US gal/h]	52.17	25.99	14.41	6.00	20.17	20.04	4.30	4.30	31.12	0.99	14.90
CO [g/h]	3646.85	1816.93	1006.98	419.36	1409.93	1400.56	300.50	300.57	2175.04	69.27	1041.21
NOx [g/h]	709.54	353.51	195.92	81.59	274.32	272.50	58.47	58.48	423.18	13.48	202.58
VOC [g/h]	845.19	421.09	233.38	97.19	326.76	324.59	69.64	69.66	504.09	16.05	241.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	52.08	52.08	52.08
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.517	2.807	2.324
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	803	803	319	319
d_b, Bicycle Delay [s]	22.41	22.41	44.20	44.20
l_b,int, Bicycle LOS Score for Intersection	2.820	2.682	3.191	2.333
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	47.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.989

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	980	1679	319	0	37	1192	428	208	130	290	236	80	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	96	0	0	0	128	0	0	87	0	0	75
Total Hourly Volume [veh/h]	1	980	1679	223	0	37	1192	300	208	130	203	236	80	176
Peak Hour Factor	1.000	0.840	0.990	0.840	1.000	0.840	0.990	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	292	424	66	0	11	301	89	62	39	60	70	24	52
Total Analysis Volume [veh/h]	1	1167	1696	265	0	44	1204	357	248	155	242	281	95	210
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	73	73	7	34	57	18	18	18	18	18
g / C, Green / Cycle	0.33	0.54	0.54	0.05	0.25	0.42	0.13	0.13	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.34	0.36	0.39	0.02	0.24	0.22	0.11	0.11	0.10	0.10	0.13
s, saturation flow rate [veh/h]	3459	3532	1735	1781	5053	1589	1781	1847	1781	1824	1589
c, Capacity [veh/h]	1155	1901	934	86	1275	668	232	241	241	247	216
d1, Uniform Delay [s]	45.29	22.80	23.74	63.17	49.89	29.48	57.87	57.86	56.74	56.71	58.54
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.15	0.15	0.20	0.20	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.50	1.95	4.85	1.76	14.94	3.05	11.47	11.02	9.28	8.86	46.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.68	0.72	0.51	0.94	0.53	0.85	0.85	0.77	0.77	0.97
d, Delay for Lane Group [s/veh]	55.80	24.75	28.59	64.94	64.83	32.54	69.34	68.88	66.02	65.57	104.89
Lane Group LOS	F	C	C	E	E	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	21.00	15.22	17.34	1.50	14.76	9.01	7.41	7.65	6.81	6.92	9.98
50th-Percentile Queue Length [ft/ln]	525.05	380.44	433.45	37.60	369.01	225.17	185.34	191.29	170.24	173.01	249.49
95th-Percentile Queue Length [veh/ln]	28.74	21.62	24.17	2.71	21.06	13.93	11.88	12.19	11.09	11.23	15.16
95th-Percentile Queue Length [ft/ln]	718.46	540.38	604.17	67.67	526.53	348.21	296.97	304.71	277.23	280.87	379.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.80	55.80	25.68	28.59	64.94	64.94	64.83	32.54	69.25	68.88	0.00	65.87	65.57	104.89
Movement LOS	E	F	C	C	E	E	E	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	37.17				57.65				45.96			79.80		
Approach LOS	D				E				D			E		
d_I, Intersection Delay [s/veh]	47.90													
Intersection LOS	D													
Intersection V/C	0.989													

Emissions

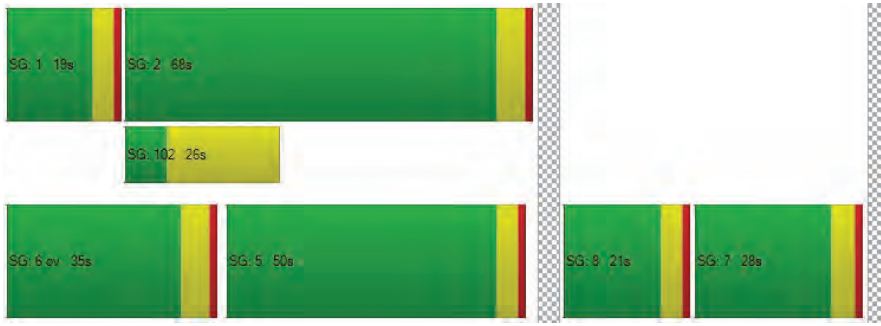
Vehicle Miles Traveled [mph]	200.04	220.20	115.65	8.28	226.59	67.19	9.15	9.49	5.92	6.04	6.68
Stops [stops/h]	1111.86	805.64	458.95	39.81	1172.16	238.41	196.24	202.55	180.25	183.19	264.17
Fuel consumption [US gal/h]	27.64	19.99	11.23	1.36	38.22	7.63	4.25	4.38	3.74	3.79	6.22
CO [g/h]	1931.92	1397.45	784.63	95.08	2671.78	533.39	297.32	306.43	261.35	265.23	434.50
NOx [g/h]	375.88	271.89	152.66	18.50	519.83	103.78	57.85	59.62	50.85	51.60	84.54
VOC [g/h]	447.74	323.87	181.85	22.03	619.21	123.62	68.91	71.02	60.57	61.47	100.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.555
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.333	2.489	2.225	2.105
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2117	609	1	388	1330	0	0	0	1197	0	0	861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	183	0	0	0	0	0	0	359	0	0	258
Total Hourly Volume [veh/h]	0	2117	426	1	388	1330	0	0	0	838	0	0	603
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	557	127	0	115	350	0	0	0	249	0	0	179
Total Analysis Volume [veh/h]	0	2228	507	1	462	1400	0	0	0	998	0	0	718
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.44	0.32	0.26	0.21	0.35	
s, saturation flow rate [veh/h]	5094	1589	1781	6792	2813	
c, Capacity [veh/h]	2809	876	516	3476	927	
d1, Uniform Delay [s]	12.16	10.05	23.17	10.21	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.40	2.78	8.80	0.35	36.65	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.79	0.58	0.90	0.40	1.08	
d, Delay for Lane Group [s/veh]	14.56	12.83	31.97	10.56	59.45	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	7.08	4.32	7.43	2.58	11.48	
50th-Percentile Queue Length [ft/ln]	177.08	107.99	185.84	64.46	286.92	
95th-Percentile Queue Length [veh/ln]	11.45	7.73	11.90	4.64	17.80	
95th-Percentile Queue Length [ft/ln]	286.20	193.20	297.62	116.02	444.96	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	14.56	12.83	31.97	31.97	10.56	0.00	0.00	0.00	59.45	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]	14.24			15.88			59.45			0.00			
Approach LOS	B			B			E			A			
d_I, Intersection Delay [s/veh]	22.85												
Intersection LOS	C												
Intersection V/C	0.912												

Emissions

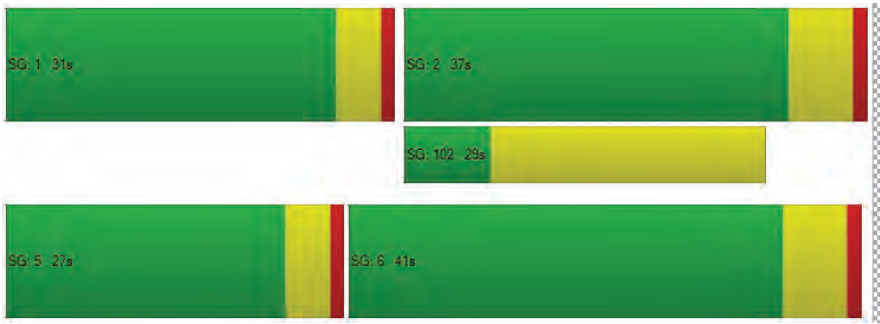
Vehicle Miles Traveled [mph]	322.38	73.36	79.30	239.78	71.42	
Stops [stops/h]	1125.01	228.68	393.53	545.99	1215.17	
Fuel consumption [US gal/h]	31.64	6.68	10.62	18.02	21.73	
CO [g/h]	2211.68	467.03	742.59	1259.31	1518.63	
NOx [g/h]	430.31	90.87	144.48	245.02	295.47	
VOC [g/h]	512.58	108.24	172.10	291.86	351.96	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.067
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	3.165	2.138	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.925

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1820	215	3	532	1803	189	299	33	67	1	91	6	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	65	0	0	0	57	0	0	20	0	0	0	181
Total Hourly Volume [veh/h]	1	24	1820	150	3	532	1803	132	299	33	47	1	91	6	423
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	474	39	1	139	470	34	78	9	12	0	24	2	110
Total Analysis Volume [veh/h]	1	25	1896	156	3	554	1878	138	311	34	49	1	95	6	441
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	4	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	20	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.5	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	7	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	20	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	1.5	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	24	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	Lag	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	6	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	2.5	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	92	92	92	92	92	92	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	38	38	12	48	48	11	11	11	15	15	15
g / C, Green / Cycle	0.02	0.42	0.42	0.13	0.53	0.53	0.12	0.12	0.12	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.37	0.10	0.16	0.37	0.09	0.09	0.02	0.03	0.05	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	75	2120	662	452	2676	835	408	221	187	286	257	256
d1, Uniform Delay [s]	44.25	24.91	17.34	39.89	16.38	11.33	39.23	36.36	36.84	34.16	37.59	37.59
k, delay calibration	0.04	0.04	0.04	0.08	0.04	0.04	0.08	0.08	0.08	0.08	0.32	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.01	0.57	0.07	107.68	0.13	0.03	2.23	0.24	0.54	0.51	21.97	22.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.89	0.24	1.23	0.70	0.17	0.76	0.15	0.26	0.34	0.87	0.87
d, Delay for Lane Group [s/veh]	45.26	25.48	17.41	147.56	16.51	11.36	41.45	36.60	37.38	34.67	59.57	59.64
Lane Group LOS	D	C	B	F	B	B	D	D	D	C	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.30	12.16	2.08	11.76	9.14	1.40	3.47	0.69	1.02	1.91	6.38	6.36
50th-Percentile Queue Length [ft/ln]	7.47	304.01	52.07	294.05	228.38	34.88	86.70	17.30	25.43	47.85	159.41	158.91
95th-Percentile Queue Length [veh/ln]	0.54	17.88	3.75	18.89	14.09	2.51	6.24	1.25	1.83	3.45	10.52	10.49
95th-Percentile Queue Length [ft/ln]	13.45	446.98	93.72	472.34	352.30	62.79	156.06	31.14	45.77	86.13	262.94	262.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.26	45.26	25.48	17.41	147.5	147.5	16.51	11.36	41.45	36.60	37.38	34.67	34.67	59.57	59.61
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	C	C	E	E
d_A, Approach Delay [s/veh]	25.12				44.60				40.53			55.20			
Approach LOS	C				D				D			E			
d_I, Intersection Delay [s/veh]	38.10														
Intersection LOS	D														
Intersection V/C	0.925														

Emissions

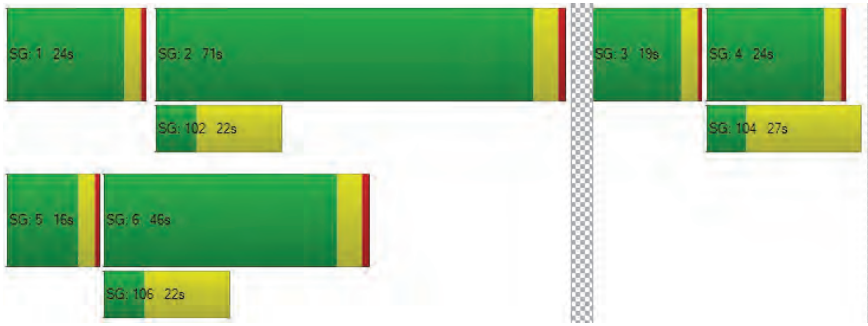
Vehicle Miles Traveled [mph]	5.80	423.26	34.82	80.60	271.74	19.97	39.67	4.34	6.25	33.69	78.60	78.29
Stops [stops/h]	23.50	1434.36	81.88	924.91	1077.50	54.86	272.70	27.20	39.99	75.26	250.70	249.92
Fuel consumption [US gal/h]	0.61	35.18	2.44	25.15	23.45	1.44	5.76	0.58	0.85	2.48	7.34	7.31
CO [g/h]	42.51	2459.09	170.46	1758.07	1639.11	100.95	402.84	40.69	59.48	173.35	512.72	511.01
NOx [g/h]	8.27	478.45	33.17	342.06	318.91	19.64	78.38	7.92	11.57	33.73	99.76	99.42
VOC [g/h]	9.85	569.92	39.51	407.45	379.88	23.40	93.36	9.43	13.79	40.18	118.83	118.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.44	0.00	35.44	35.44
l_p,int, Pedestrian LOS Score for Intersectio	3.395	0.000	2.586	2.857
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	885	1431	448	339
d_b, Bicycle Delay [s]	14.24	3.71	27.58	31.59
l_b,int, Bicycle LOS Score for Intersection	2.738	2.701	1.901	2.597
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	51.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	73	1515	362	2	243	1325	392	2	349	336	86	393	164	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	109	0	0	0	118	0	0	0	26	0	0	58
Total Hourly Volume [veh/h]	6	73	1515	253	2	243	1325	274	2	349	336	60	393	164	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	20	407	68	1	65	356	74	1	94	90	16	106	44	37
Total Analysis Volume [veh/h]	6	78	1629	272	2	261	1425	295	2	375	361	65	423	176	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	25	50	0	0	35	50	0	0	25	15	0	15	25	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	40	56	0	0	31	21	0	21	31	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	158	158	158	158	158	158	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	85	85	14	90	90	19	21	21	15	17	17
g / C, Green / Cycle	0.06	0.54	0.54	0.09	0.57	0.57	0.12	0.13	0.13	0.09	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.17	0.08	0.28	0.19	0.11	0.12	0.12	0.12	0.05	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1772	3459	3560	1589
c, Capacity [veh/h]	111	3672	859	309	2893	903	424	249	236	328	376	168
d1, Uniform Delay [s]	72.94	21.93	20.11	70.89	20.47	18.10	68.27	67.21	67.22	71.50	66.47	69.58
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.47	0.48	0.05	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.97	0.39	0.97	2.55	0.60	0.96	2.61	31.29	32.83	132.03	0.34	5.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.44	0.32	0.85	0.49	0.33	0.89	0.88	0.88	1.29	0.47	0.87
d, Delay for Lane Group [s/veh]	76.91	22.32	21.08	73.44	21.07	19.07	70.88	98.50	100.06	203.53	66.81	74.84
Lane Group LOS	E	C	C	E	C	B	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.50	9.35	5.90	5.29	10.31	5.81	7.69	10.87	10.41	12.70	3.38	6.09
50th-Percentile Queue Length [ft/ln]	87.44	233.75	147.42	132.27	257.66	145.35	192.28	271.68	260.34	317.58	84.62	152.31
95th-Percentile Queue Length [veh/ln]	6.30	14.36	9.88	9.06	15.57	9.77	12.24	16.27	15.71	20.28	6.09	10.14
95th-Percentile Queue Length [ft/ln]	157.38	359.12	246.98	226.58	389.29	244.22	305.99	406.84	392.65	506.94	152.31	253.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.91	76.91	22.32	21.08	73.44	73.44	21.07	19.07	70.88	70.88	99.12	100.0	203.53	66.81	74.84
Movement LOS	E	E	C	C	E	E	C	B	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	24.46				27.72				85.94				146.01		
Approach LOS	C				C				F				F		
d_I, Intersection Delay [s/veh]	51.00														
Intersection LOS	D														
Intersection V/C	0.630														

Emissions

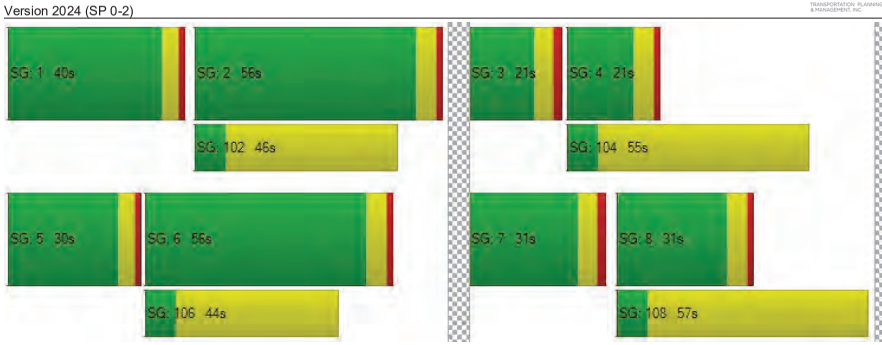
Vehicle Miles Traveled [mph]	33.44	648.48	108.28	58.71	318.11	65.85	94.09	54.55	51.77	44.20	18.39	15.25
Stops [stops/h]	79.69	852.15	134.36	241.10	704.50	132.47	350.49	247.61	237.28	578.88	154.24	138.81
Fuel consumption [US gal/h]	3.13	38.80	6.37	8.94	25.77	5.05	11.25	7.99	7.67	22.53	4.00	3.62
CO [g/h]	218.88	2712.27	445.01	624.92	1801.60	352.93	786.16	558.77	535.80	1575.10	279.72	252.90
NOx [g/h]	42.59	527.71	86.58	121.59	350.53	68.67	152.96	108.72	104.25	306.46	54.42	49.20
VOC [g/h]	50.73	628.60	103.14	144.83	417.54	81.80	182.20	129.50	124.18	365.04	64.83	58.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.38	68.38	68.38	68.38
l_p,int, Pedestrian LOS Score for Intersectio	3.468	3.791	2.760	2.955
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	637	637	194	320
d_b, Bicycle Delay [s]	36.71	36.71	64.44	55.73
l_b,int, Bicycle LOS Score for Intersection	2.421	2.572	1.934	2.222
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	6	1300	21	0	21	1371	285	408	7	15	1	4	9
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	6	0	0	0	86	0	0	5	0	0	3
Total Hourly Volume [veh/h]	1	6	1300	15	0	21	1371	199	408	7	10	1	4	6
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	365	4	0	6	385	56	115	2	3	0	1	2
Total Analysis Volume [veh/h]	1	7	1461	17	0	24	1540	224	458	8	11	1	5	7
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	38	38	1	38	38	12	12	1
g / C, Green / Cycle	0.01	0.54	0.54	0.02	0.54	0.54	0.17	0.17	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.40	0.40	0.01	0.47	0.49	0.13	0.13	0.01
s, saturation flow rate [veh/h]	1781	1870	1862	1781	1870	1789	1781	1774	1702
c, Capacity [veh/h]	19	1006	1002	29	1017	973	306	305	28
d1, Uniform Delay [s]	34.37	12.35	12.36	34.28	13.86	14.26	27.66	27.66	34.07
k, delay calibration	0.04	0.24	0.24	0.04	0.33	0.35	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.69	2.37	2.40	19.51	7.16	9.57	4.30	4.32	4.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.74	0.74	0.83	0.87	0.90	0.78	0.78	0.47
d, Delay for Lane Group [s/veh]	40.06	14.73	14.76	53.79	21.02	23.84	31.96	31.98	38.63
Lane Group LOS	D	B	B	D	C	C	C	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.16	8.10	8.09	0.52	10.18	10.87	4.00	3.98	0.25
50th-Percentile Queue Length [ft/ln]	4.01	202.46	202.15	13.06	254.39	271.64	99.98	99.62	6.17
95th-Percentile Queue Length [veh/ln]	0.29	12.77	12.75	0.94	15.41	16.27	7.20	7.17	0.44
95th-Percentile Queue Length [ft/ln]	7.22	319.14	318.74	23.51	385.17	406.78	179.96	179.31	11.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.06	40.06	14.74	14.76	53.79	53.79	22.21	23.84	31.97	31.98	31.98	38.63	38.63	38.63
Movement LOS	D	D	B	B	D	D	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	14.88				22.84				31.97			38.63		
Approach LOS	B				C				C			D		
d_I, Intersection Delay [s/veh]	20.91													
Intersection LOS	C													
Intersection V/C	0.825													

Emissions

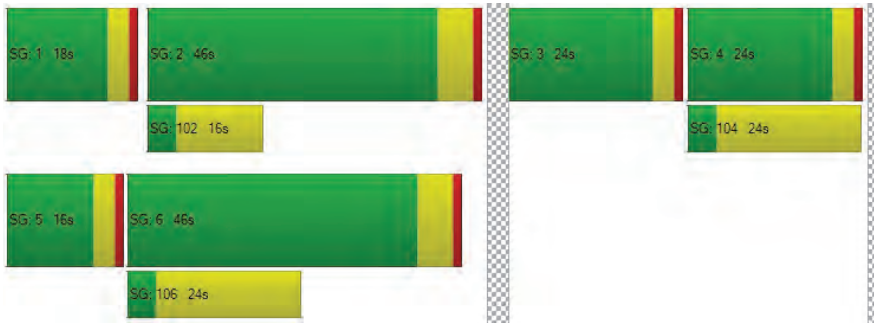
Vehicle Miles Traveled [mph]	2.83	261.89	261.12	9.55	353.46	348.77	57.55	57.32	0.25
Stops [stops/h]	8.28	417.99	417.35	26.97	525.19	560.80	206.40	205.66	12.74
Fuel consumption [US gal/h]	0.23	15.31	15.27	1.08	25.38	26.33	5.06	5.05	0.18
CO [g/h]	15.90	1070.05	1067.49	75.72	1773.87	1840.68	353.97	352.65	12.78
NOx [g/h]	3.09	208.19	207.70	14.73	345.13	358.13	68.87	68.61	2.49
VOC [g/h]	3.69	247.99	247.40	17.55	411.11	426.60	82.04	81.73	2.96

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.33	0.00	27.33	27.33
l_p,int, Pedestrian LOS Score for Intersectio	2.893	0.000	2.199	1.744
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1147	1147	573	573
d_b, Bicycle Delay [s]	6.34	6.34	17.74	17.74
l_b,int, Bicycle LOS Score for Intersection	2.790	3.086	2.355	1.586
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	48	1131	1259	129	197	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	39	0	18
Total Hourly Volume [veh/h]	0	48	1131	1259	90	197	43
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	318	354	25	55	12
Total Analysis Volume [veh/h]	0	54	1271	1415	101	221	48
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	3	36	29	29	9	9
g / C, Green / Cycle	0.05	0.66	0.53	0.53	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.03	0.36	0.41	0.41	0.12	0.03
s, saturation flow rate [veh/h]	1781	3560	1870	1827	1781	1589
c, Capacity [veh/h]	91	2334	994	971	291	260
d1, Uniform Delay [s]	25.62	5.10	10.18	10.35	22.06	19.92
k, delay calibration	0.04	0.15	0.16	0.17	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.25	0.28	1.83	2.17	4.06	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.54	0.76	0.78	0.76	0.18
d, Delay for Lane Group [s/veh]	27.87	5.38	12.01	12.52	26.12	20.26
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.71	2.46	5.97	6.14	2.83	0.52
50th-Percentile Queue Length [ft/ln]	17.63	61.39	149.26	153.49	70.83	12.89
95th-Percentile Queue Length [veh/ln]	1.27	4.42	9.98	10.20	5.10	0.93
95th-Percentile Queue Length [ft/ln]	31.74	110.49	249.43	255.07	127.49	23.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.87	27.87	5.38	12.25	12.52	26.12	20.26
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	6.30			12.26		25.08	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	10.83						
Intersection LOS	B						
Intersection V/C	0.728						

Emissions

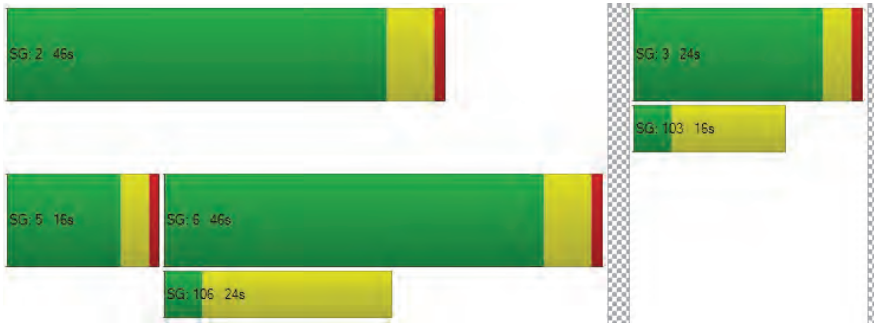
Vehicle Miles Traveled [mph]	37.56	884.05	268.23	268.23	74.56	16.20
Stops [stops/h]	46.07	320.78	389.98	401.03	185.07	33.69
Fuel consumption [US gal/h]	2.11	39.56	15.05	15.19	5.27	1.05
CO [g/h]	147.28	2765.04	1051.97	1061.69	368.16	73.45
NOx [g/h]	28.66	537.98	204.67	206.57	71.63	14.29
VOC [g/h]	34.13	640.82	243.80	246.06	85.32	17.02

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.14	0.00	20.14
l_p,int, Pedestrian LOS Score for Intersectio	2.825	0.000	2.100
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1452	1452	726
d_b, Bicycle Delay [s]	2.07	2.07	11.19
l_b,int, Bicycle LOS Score for Intersection	2.653	2.842	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	98	575	21	249	446	625	494	119	26	13	155	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	188	0	0	8	0	0	33
Total Hourly Volume [veh/h]	98	575	15	249	446	437	494	119	18	13	155	77
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	158	4	68	123	120	136	33	5	4	43	21
Total Analysis Volume [veh/h]	108	632	16	274	490	480	543	131	20	14	170	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	71	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	6	17	17	12	23	23	15	15	9	9
g / C, Green / Cycle	0.08	0.23	0.23	0.17	0.32	0.32	0.21	0.21	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.17	0.15	0.26	0.30	0.19	0.19	0.10	0.05
s, saturation flow rate [veh/h]	1781	1870	1854	1781	1870	1589	1781	1801	1863	1589
c, Capacity [veh/h]	139	439	435	299	606	515	373	378	233	199
d1, Uniform Delay [s]	32.36	25.37	25.37	29.28	22.13	23.40	27.71	27.70	30.37	28.92
k, delay calibration	0.04	0.04	0.04	0.30	0.19	0.28	0.31	0.31	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.48	0.94	0.95	24.42	4.50	17.19	22.18	21.67	2.26	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.74	0.74	0.92	0.81	0.93	0.92	0.92	0.79	0.43
d, Delay for Lane Group [s/veh]	35.84	26.30	26.32	53.70	26.63	40.58	49.89	49.37	32.63	29.46
Lane Group LOS	D	C	C	D	C	D	D	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.91	4.97	4.93	6.07	6.99	8.92	7.78	7.80	3.10	1.33
50th-Percentile Queue Length [ft/ln]	47.65	124.13	123.14	151.74	174.85	222.97	194.51	195.02	77.54	33.24
95th-Percentile Queue Length [veh/ln]	3.43	8.62	8.57	10.11	11.33	13.82	12.35	12.38	5.58	2.39
95th-Percentile Queue Length [ft/ln]	85.77	215.49	214.14	252.75	283.28	345.42	308.87	309.53	139.57	59.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.84	26.31	26.32	53.70	26.63	40.58	49.70	49.37	49.37	32.63	32.63	29.46
Movement LOS	D	C	C	D	C	D	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	27.67			37.98			49.63			31.63		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	37.50											
Intersection LOS	D											
Intersection V/C	0.845											

Emissions

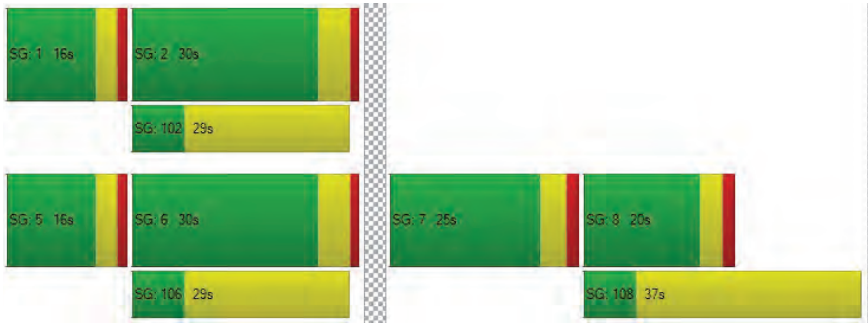
Vehicle Miles Traveled [mph]	62.37	187.89	186.34	190.58	340.82	333.86	25.99	26.22	20.35	9.40
Stops [stops/h]	96.08	250.28	248.30	305.95	352.56	449.58	392.19	393.22	156.34	67.03
Fuel consumption [US gal/h]	3.89	10.86	10.77	15.05	20.61	23.48	6.74	6.75	2.92	1.27
CO [g/h]	271.65	759.06	752.88	1052.15	1440.31	1641.49	471.36	472.12	204.34	88.55
NOx [g/h]	52.85	147.68	146.48	204.71	280.23	319.37	91.71	91.86	39.76	17.23
VOC [g/h]	62.96	175.92	174.49	243.85	333.81	380.43	109.24	109.42	47.36	20.52

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.56	0.00	25.56	25.56
l_p,int, Pedestrian LOS Score for Intersectio	2.548	0.000	2.474	2.211
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	692	692	434	560
d_b, Bicycle Delay [s]	15.28	15.28	21.89	18.51
l_b,int, Bicycle LOS Score for Intersection	2.188	2.741	2.718	2.058
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	115	314	447	38	380	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	24
Total Hourly Volume [veh/h]	115	314	447	27	380	55
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	87	124	9	120	15
Total Analysis Volume [veh/h]	128	349	497	34	481	61
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5	27	18	18	17	17
g / C, Green / Cycle	0.09	0.50	0.33	0.33	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.19	0.27	0.02	0.27	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	168	929	615	523	571	510
d1, Uniform Delay [s]	24.17	8.52	16.77	12.58	17.30	13.13
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.68	0.36	3.63	0.07	3.47	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.38	0.81	0.06	0.84	0.12
d, Delay for Lane Group [s/veh]	26.85	8.88	20.39	12.65	20.77	13.23
Lane Group LOS	C	A	C	B	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.46	1.64	4.78	0.22	5.44	0.49
50th-Percentile Queue Length [ft/ln]	36.60	41.06	119.60	5.61	135.99	12.13
95th-Percentile Queue Length [veh/ln]	2.64	2.96	8.37	0.40	9.26	0.87
95th-Percentile Queue Length [ft/ln]	65.88	73.92	209.27	10.10	231.61	21.84

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.85	8.88	20.39	12.65	20.77	13.23
Movement LOS	C	A	C	B	C	B
d_A, Approach Delay [s/veh]	13.70		19.90		19.92	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	18.00					
Intersection LOS	B					
Intersection V/C	0.779					

Emissions

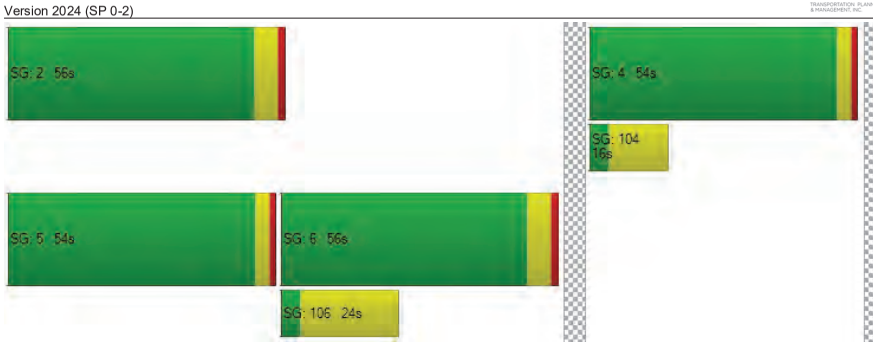
Vehicle Miles Traveled [mph]	15.79	43.06	287.03	19.64	112.97	14.33
Stops [stops/h]	96.59	108.36	315.60	14.81	358.86	32.01
Fuel consumption [US gal/h]	3.02	4.08	17.53	1.02	8.67	0.93
CO [g/h]	211.21	285.47	1225.09	71.26	605.81	65.07
NOx [g/h]	41.09	55.54	238.36	13.86	117.87	12.66
VOC [g/h]	48.95	66.16	283.93	16.51	140.40	15.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.87	0.00	19.87
l_p,int, Pedestrian LOS Score for Intersectio	2.548	0.000	2.192
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1833	1833	1833
d_b, Bicycle Delay [s]	0.19	0.19	0.19
l_b,int, Bicycle LOS Score for Intersection	2.347	2.454	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.077

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	380	0	25	501	0	0	0	0	0	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	380	0	25	501	0	0	0	0	0	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	103	0	6	136	0	0	0	0	0	0	12
Total Analysis Volume [veh/h]	0	413	0	25	545	0	0	0	0	0	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	8.52	0.00	0.00	8.17	0.00	0.00	24.09	20.45	11.69	22.43	20.92	11.10
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.25	0.25	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.06	1.06	1.06	0.00	0.00	0.00	6.21	6.21	6.21
d_A, Approach Delay [s/veh]	0.00			0.36			18.74			11.10		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.72											
Intersection LOS	B											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	28.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.278

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	311	16	94	407	0	0	0	0	54	0	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	311	16	94	407	0	0	0	0	54	0	69
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	84	4	25	109	0	0	0	0	15	0	19
Total Analysis Volume [veh/h]	0	334	17	101	438	0	0	0	0	58	0	74
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.11
d_M, Delay for Movement [s/veh]	8.21	0.00	0.00	8.25	0.00	0.00	25.41	20.96	10.82	28.58	27.13	16.49
Movement LOS	A	A	A	A	A	A	D	C	B	D	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	1.75	1.75	1.75
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.83	0.00	0.00	0.00	0.00	0.00	43.72	43.72	43.72
d_A, Approach Delay [s/veh]	0.00			1.55			19.07			21.80		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	3.63											
Intersection LOS	D											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	2,479.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5.387

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	101	470	168	48	1	692	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	101	470	168	48	1	692	185
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	134	48	14	0	197	53
Total Analysis Volume [veh/h]	0	115	534	191	55	1	786	210
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	5.39	0.65	0.00	0.00	0.00	0.60	0.00
d_M, Delay for Movement [s/veh]	2479.69	2479.69	2315.45	0.00	0.00	19.45	9.30	0.00
Movement LOS	F	F	F	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	71.11	71.11	71.11	0.00	0.00	2.31	2.31	2.31
95th-Percentile Queue Length [ft/ln]	1777.74	1777.74	1777.74	0.00	0.00	57.79	57.79	57.79
d_A, Approach Delay [s/veh]	2344.55			0.00		7.35		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	808.11							
Intersection LOS	F							

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Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	30	195	59	0	25	319	22	16	23	19	211	16	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	195	59	0	25	319	22	16	23	19	211	16	45
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	59	18	0	8	96	7	5	7	6	64	5	14
Total Analysis Volume [veh/h]	36	235	71	0	32	384	27	19	28	23	254	19	57
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	592	603	506	555
Degree of Utilization, x	0.58	0.74	0.14	0.59

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.68	6.33	0.48	3.87
95th-Percentile Queue Length [ft]	91.97	158.21	11.94	96.71
Approach Delay [s/veh]	17.09	23.75	11.25	18.55
Approach LOS	C	C	B	C
Intersection Delay [s/veh]	19.64			
Intersection LOS	C			

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Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	6	80	0	143	48	2	109	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	80	0	143	48	2	109	190
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	24	0	43	14	1	32	57
Total Analysis Volume [veh/h]	7	95	0	170	57	2	130	226
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.00	0.00	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	14.84	9.81	9.37	0.00	0.00	10.24	7.98	0.00
Movement LOS	B	A	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.06	0.38	0.00	0.00	0.00	0.33	0.33	0.00
95th-Percentile Queue Length [ft/ln]	1.43	9.49	0.00	0.00	0.00	8.28	8.28	0.00
d_A, Approach Delay [s/veh]	10.16		0.00			2.96		
Approach LOS	B		A			A		
d_I, Intersection Delay [s/veh]	3.05							
Intersection LOS	B							

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Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	12	43	87	36	37	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	43	87	36	37	174
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	12	24	10	10	47
Total Analysis Volume [veh/h]	13	47	95	39	40	189
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.05	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	11.14	9.06	0.00	0.00	7.55	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.23	0.23	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	5.63	5.63	0.00	0.00	2.13	0.00
d_A, Approach Delay [s/veh]	9.51		0.00		1.32	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.06					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.127

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	174	0	19	125	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	174	0	19	125	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	0	5	34	0	1
Total Analysis Volume [veh/h]	189	0	21	136	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	746	746	695	770	770	771
Degree of Utilization, x	0.13	0.13	0.03	0.09	0.09	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.43	0.43	0.09	0.29	0.29	0.01
95th-Percentile Queue Length [ft]	10.82	10.82	2.33	7.25	7.25	0.29
Approach Delay [s/veh]	8.23		7.86			7.69
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.06					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	69.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	138	0	25	7	1	21	5	408	85	66	397	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	0	25	7	1	21	5	408	85	66	397	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	0	7	2	0	5	1	105	22	18	102	3
Total Analysis Volume [veh/h]	142	0	27	7	1	22	5	421	88	71	409	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.77	0.00	0.05	0.04	0.00	0.03	0.00	0.00	0.00	0.07	0.00	0.00
d_M, Delay for Movement [s/veh]	69.30	22.05	11.31	24.99	23.43	11.41	8.17	0.00	0.00	8.65	0.00	0.00
Movement LOS	F	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.08	0.14	0.14	0.25	0.25	0.25	0.01	0.00	0.00	0.22	0.00	0.00
95th-Percentile Queue Length [ft/ln]	127.10	3.54	3.54	6.20	6.20	6.20	0.33	0.00	0.00	5.40	0.00	0.00
d_A, Approach Delay [s/veh]	60.03			14.98			0.08			1.25		
Approach LOS	F			B			A			A		
d_I, Intersection Delay [s/veh]	9.34											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	Windfield Way									White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	238	5	239	5	5	5	5	520	71	14	144	468	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	72	0	0	0	0	0	21	0	0	0	0
Total Hourly Volume [veh/h]	238	5	167	5	5	5	5	520	50	14	144	468	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	63	1	44	1	1	1	1	138	13	4	38	124	1
Total Analysis Volume [veh/h]	253	5	178	5	5	5	5	553	53	14	153	498	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	19	19	1	1	1	65	65	13	78	78
g / C, Green / Cycle	0.16	0.16	0.01	0.01	0.01	0.54	0.54	0.11	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.11	0.00	0.01	0.00	0.16	0.16	0.09	0.13	0.13
s, saturation flow rate [veh/h]	1781	1596	1781	1718	1781	1870	1813	1781	1870	1863
c, Capacity [veh/h]	279	251	12	13	12	1016	985	195	1208	1203
d1, Uniform Delay [s]	49.73	48.11	59.37	59.46	59.37	14.98	14.99	52.52	8.70	8.70
k, delay calibration	0.14	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.27	1.52	21.73	31.68	21.99	0.77	0.79	4.19	0.39	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.73	0.42	0.79	0.42	0.30	0.30	0.86	0.21	0.21
d, Delay for Lane Group [s/veh]	62.99	49.62	81.09	91.14	81.36	15.75	15.79	56.71	9.09	9.09
Lane Group LOS	E	D	F	F	F	B	B	E	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.47	5.31	0.22	0.42	0.22	4.75	4.63	5.17	2.73	2.72
50th-Percentile Queue Length [ft/ln]	211.69	132.87	5.59	10.39	5.60	118.63	115.78	129.19	68.14	67.94
95th-Percentile Queue Length [veh/ln]	13.24	9.10	0.40	0.75	0.40	8.32	8.16	8.90	4.91	4.89
95th-Percentile Queue Length [ft/ln]	330.99	227.39	10.06	18.70	10.08	207.94	204.02	222.39	122.66	122.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.99	49.62	49.62	81.09	91.14	91.14	81.36	15.76	15.79	56.71	56.71	9.09	9.09
Movement LOS	E	D	D	F	F	F	F	B	B	E	E	A	A
d_A, Approach Delay [s/veh]	57.38			87.79			16.30			20.96			
Approach LOS	E			F			B			C			
d_I, Intersection Delay [s/veh]	29.06												
Intersection LOS	C												
Intersection V/C	0.452												

Emissions

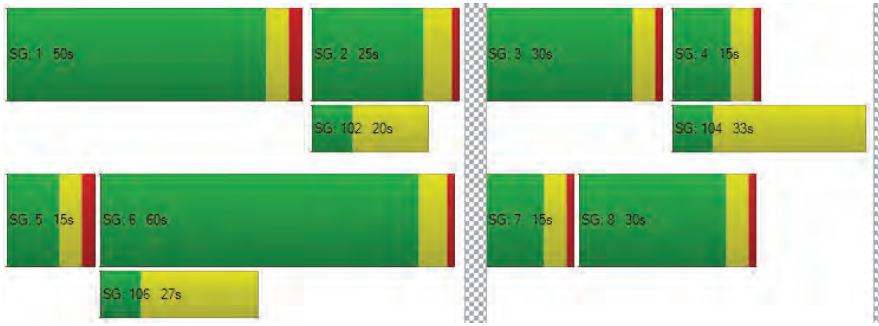
Vehicle Miles Traveled [mph]	97.48	70.51	0.23	0.46	4.21	258.37	251.59	41.68	62.87	62.67
Stops [stops/h]	254.03	159.45	6.71	12.47	6.72	142.36	138.94	155.02	81.77	81.53
Fuel consumption [US gal/h]	8.66	5.63	0.13	0.27	0.29	12.41	12.09	4.50	3.51	3.49
CO [g/h]	605.29	393.64	9.01	19.09	20.49	867.22	844.76	314.50	245.05	244.29
NOx [g/h]	117.77	76.59	1.75	3.71	3.99	168.73	164.36	61.19	47.68	47.53
VOC [g/h]	140.28	91.23	2.09	4.42	4.75	200.99	195.78	72.89	56.79	56.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.297	1.964	2.614	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.398	1.584	2.081	1.986
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	70.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	50	16	29	186	15	177	3	205	712	21	86	521	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	53	0	0	0	6	0	0	53
Total Hourly Volume [veh/h]	50	16	20	186	15	124	3	205	712	15	86	521	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	4	5	51	4	34	1	56	207	4	24	143	34
Total Analysis Volume [veh/h]	55	18	22	204	16	136	3	225	828	16	95	573	137
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	6	13	9	16	20	89	89	9	78	78
g / C, Green / Cycle	0.04	0.10	0.06	0.11	0.14	0.64	0.64	0.07	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.11	0.09	0.13	0.23	0.01	0.05	0.20	0.20
s, saturation flow rate [veh/h]	1781	1705	1781	1615	1781	3560	1589	1781	1870	1747
c, Capacity [veh/h]	71	163	108	180	250	2261	1010	117	1041	972
d1, Uniform Delay [s]	66.57	58.62	65.75	61.02	59.30	12.14	9.41	64.56	17.12	17.13
k, delay calibration	0.04	0.13	0.50	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	0.96	431.73	12.47	5.21	0.46	0.03	5.05	0.94	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.25	1.89	0.84	0.91	0.37	0.02	0.81	0.35	0.35
d, Delay for Lane Group [s/veh]	73.00	59.59	497.48	73.49	64.51	12.60	9.44	69.61	18.05	18.13
Lane Group LOS	E	E	F	E	E	B	A	E	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.08	1.37	16.84	5.94	8.35	6.23	0.19	3.52	6.82	6.40
50th-Percentile Queue Length [ft/ln]	52.07	34.17	421.00	148.48	208.63	155.83	4.76	88.04	170.45	160.07
95th-Percentile Queue Length [veh/ln]	3.75	2.46	27.32	9.94	13.08	10.33	0.34	6.34	11.10	10.55
95th-Percentile Queue Length [ft/ln]	93.73	61.50	682.94	248.40	327.07	258.19	8.57	158.46	277.51	263.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.00	59.59	59.59	497.48	73.49	73.49	64.51	64.51	12.60	9.44	69.61	18.08	18.13
Movement LOS	E	E	E	F	E	E	E	E	B	A	E	B	B
d_A, Approach Delay [s/veh]	67.35			316.45			23.59				24.17		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	70.36												
Intersection LOS	E												
Intersection V/C	0.522												

Emissions

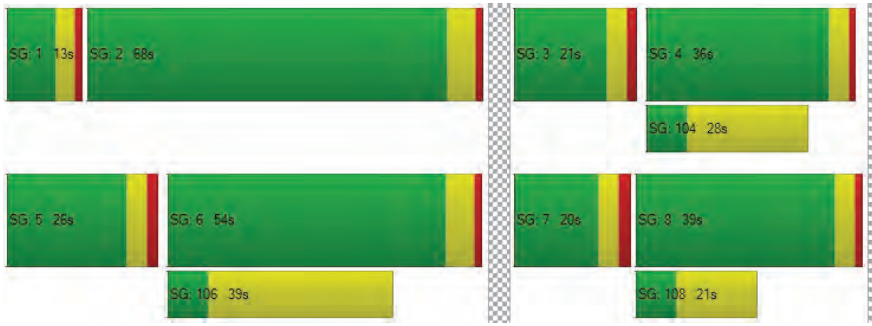
Vehicle Miles Traveled [mph]	2.75	2.00	9.48	7.07	23.82	86.51	1.67	33.26	128.41	120.20
Stops [stops/h]	53.56	35.14	433.03	152.72	214.59	320.57	4.90	90.55	175.32	164.65
Fuel consumption [US gal/h]	1.23	0.76	23.43	3.41	5.16	7.46	0.13	3.22	7.60	7.12
CO [g/h]	85.71	53.23	1637.77	238.19	360.60	521.17	8.85	224.75	531.40	498.00
NOx [g/h]	16.68	10.36	318.65	46.34	70.16	101.40	1.72	43.73	103.39	96.89
VOC [g/h]	19.86	12.34	379.57	55.20	83.57	120.79	2.05	52.09	123.16	115.42

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.051	2.310	2.790	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.731	2.234	2.263	2.267
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	54.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	57	61	268	230	100	36	33	574	121	234	562	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	80	0	0	11	0	0	36	0	0	47
Total Hourly Volume [veh/h]	57	61	188	230	100	25	33	574	85	234	562	111
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	16	48	59	26	6	9	148	22	60	145	29
Total Analysis Volume [veh/h]	59	63	194	237	103	26	34	592	88	241	579	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	121	121	121	121	121	121	121	121
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	22	22	19	19	3	45	18	59
g / C, Green / Cycle	0.18	0.18	0.16	0.16	0.03	0.37	0.15	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.13	0.07	0.02	0.37	0.14	0.38
s, saturation flow rate [veh/h]	1781	1650	1781	1806	1781	1828	1781	1817
c, Capacity [veh/h]	318	294	281	285	51	677	270	887
d1, Uniform Delay [s]	42.44	48.60	49.69	46.39	58.48	38.27	50.55	25.76
k, delay calibration	0.13	0.14	0.13	0.13	0.04	0.45	0.15	0.46
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	10.13	8.24	1.39	5.63	33.92	13.00	6.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.87	0.84	0.45	0.67	1.00	0.89	0.78
d, Delay for Lane Group [s/veh]	42.78	58.72	57.93	47.79	64.11	72.19	63.56	32.05
Lane Group LOS	D	E	E	D	E	F	E	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.55	8.38	7.61	3.65	1.11	26.06	8.14	17.63
50th-Percentile Queue Length [ft/ln]	38.63	209.54	190.36	91.32	27.85	651.58	203.54	440.73
95th-Percentile Queue Length [veh/ln]	2.78	13.13	12.14	6.58	2.01	34.55	12.82	24.52
95th-Percentile Queue Length [ft/ln]	69.53	328.24	303.50	164.38	50.13	863.77	320.53	612.88

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.78	58.72	58.72	57.93	47.79	47.79	64.11	72.19	72.19	63.56	32.05	32.05
Movement LOS	D	E	E	E	D	D	E	E	E	E	C	C
d_A, Approach Delay [s/veh]	55.75			54.35			71.81			40.18		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	54.21											
Intersection LOS	D											
Intersection V/C	0.917											

Emissions

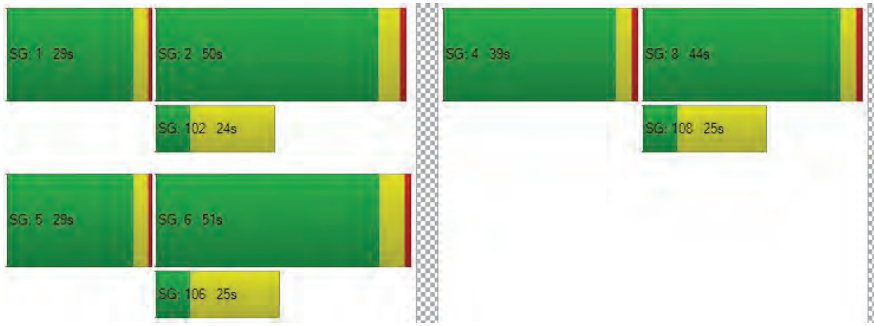
Vehicle Miles Traveled [mph]	101.52	442.21	48.05	26.15	11.91	238.11	108.74	312.70
Stops [stops/h]	45.85	248.74	225.97	108.40	33.06	773.46	241.61	523.17
Fuel consumption [US gal/h]	4.95	22.65	6.02	2.93	1.12	24.06	8.93	20.28
CO [g/h]	345.73	1583.18	420.79	204.80	78.03	1682.07	624.08	1417.74
NOx [g/h]	67.27	308.03	81.87	39.85	15.18	327.27	121.42	275.84
VOC [g/h]	80.13	366.92	97.52	47.46	18.08	389.84	144.64	328.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	50.15	50.15	50.15	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.349	2.177	2.469	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	574	656	737	742
d_b, Bicycle Delay [s]	30.85	27.38	24.19	24.00
l_b,int, Bicycle LOS Score for Intersection	2.213	2.182	2.797	3.178
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	1064	0	0	620	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1064	0	0	620	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	277	0	0	161	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	1108	0	0	646	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	64	64	64	64	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	19	19	1	23	23	0	22	22
g / C, Green / Cycle	0.00	0.00	0.30	0.30	0.01	0.36	0.36	0.00	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.30	0.30	0.00	0.18	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	8	7	528	471	23	669	669	0	1228	548
d1, Uniform Delay [s]	0.00	32.02	16.93	21.82	31.58	18.89	18.89	0.00	16.89	13.85
k, delay calibration	0.11	0.11	0.11	0.31	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	41.33	0.18	16.55	12.38	2.70	2.70	0.00	0.35	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.45	0.19	0.91	0.43	0.83	0.83	0.00	0.53	0.01
d, Delay for Lane Group [s/veh]	0.00	73.35	17.10	38.37	43.96	21.59	21.59	0.00	17.24	13.86
Lane Group LOS	A	E	B	D	D	C	C	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.12	1.09	7.84	0.23	7.27	7.27	0.00	3.54	0.03
50th-Percentile Queue Length [ft/ln]	0.00	3.03	27.13	196.03	5.69	181.71	181.71	0.00	88.54	0.68
95th-Percentile Queue Length [veh/ln]	0.00	0.22	1.95	12.43	0.41	11.69	11.69	0.00	6.38	0.05
95th-Percentile Queue Length [ft/ln]	0.00	5.45	48.84	310.84	10.24	292.24	292.24	0.00	159.38	1.22

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	73.35	17.10	17.10	38.37	43.96	21.59	21.59	0.00	17.24	13.86
Movement LOS	A	A	E	B	B	D	D	C	C	A	B	B
d_A, Approach Delay [s/veh]	73.35			34.24			21.79			17.23		
Approach LOS	E			C			C			B		
d_I, Intersection Delay [s/veh]	23.44											
Intersection LOS	C											
Intersection V/C	0.755											

Emissions

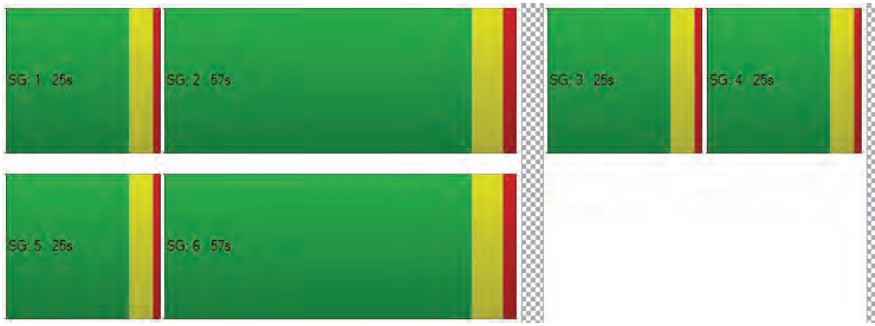
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	249.98	249.98	0.00	112.69	0.52
Stops [stops/h]	0.00	6.78	60.75	438.89	12.73	406.83	406.83	0.00	396.48	1.52
Fuel consumption [US gal/h]	0.00	0.09	2.71	14.12	0.35	14.97	14.97	0.00	9.10	0.04
CO [g/h]	0.00	6.18	189.12	987.31	24.15	1046.56	1046.56	0.00	635.85	2.68
NOx [g/h]	0.00	1.20	36.80	192.09	4.70	203.62	203.62	0.00	123.71	0.52
VOC [g/h]	0.00	1.43	43.83	228.82	5.60	242.55	242.55	0.00	147.36	0.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	622	622	1555	1555
d_b, Bicycle Delay [s]	15.27	15.27	1.59	1.59
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	2.482	2.095
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	623	523	587	200	511	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	623	523	587	200	511	44
Peak Hour Factor	0.8300	0.9100	0.9100	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	188	144	161	60	154	13
Total Analysis Volume [veh/h]	751	575	645	241	616	53
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	21	61	36	36	16	16	16
g / C, Green / Cycle	0.24	0.68	0.40	0.40	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.22	0.16	0.18	0.15	0.17	0.17	0.03
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	817	2421	1414	631	321	321	286
d1, Uniform Delay [s]	33.54	5.50	19.97	19.27	36.59	36.59	31.30
k, delay calibration	0.04	0.50	0.50	0.50	0.30	0.30	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.92	0.23	1.06	1.75	30.10	30.10	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.24	0.46	0.38	0.96	0.96	0.19
d, Delay for Lane Group [s/veh]	35.46	5.73	21.03	21.02	66.69	66.69	31.42
Lane Group LOS	D	A	C	C	E	E	C
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.99	1.83	5.01	3.77	9.24	9.24	0.97
50th-Percentile Queue Length [ft/ln]	199.87	45.80	125.19	94.20	231.02	231.02	24.37
95th-Percentile Queue Length [veh/ln]	12.63	3.30	8.68	6.78	14.23	14.23	1.75
95th-Percentile Queue Length [ft/ln]	315.80	82.43	216.94	169.56	355.66	355.66	43.87

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.46	5.73	21.03	21.02	66.69	31.42
Movement LOS	D	A	C	C	E	C
d_A, Approach Delay [s/veh]	22.57		21.03		63.90	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	31.69					
Intersection LOS	C					
Intersection V/C	0.659					

Emissions

Vehicle Miles Traveled [mph]	131.01	100.30	114.30	42.71	18.65	18.65	3.21
Stops [stops/h]	639.59	146.55	400.61	150.72	369.64	369.64	39.00
Fuel consumption [US gal/h]	14.35	5.61	9.68	3.62	6.99	6.99	0.69
CO [g/h]	1002.80	392.08	676.57	253.17	488.57	488.57	47.98
NOx [g/h]	195.11	76.28	131.64	49.26	95.06	95.06	9.34
VOC [g/h]	232.41	90.87	156.80	58.67	113.23	113.23	11.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.654	2.291	2.683
Bicycle LOS	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	1	152	881	0	0	381	207	405	1	198	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	1	152	881	0	0	381	160	405	1	168	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	279	0	0	121	51	128	0	53	0	0	0
Total Analysis Volume [veh/h]	1	192	1115	0	0	482	203	513	1	213	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	12	62	47	47	15	15	15	
g / C, Green / Cycle	0.13	0.69	0.52	0.52	0.17	0.17	0.17	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.31	0.14	0.13	0.14	0.14	0.13	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	231	2470	1842	822	296	296	264	
d1, Uniform Delay [s]	38.24	6.15	12.12	12.01	36.55	36.55	36.12	
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.07	0.60	0.35	0.72	3.03	3.03	2.20	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.45	0.26	0.25	0.87	0.87	0.81	
d, Delay for Lane Group [s/veh]	41.30	6.75	12.47	12.73	39.59	39.58	38.32	
Lane Group LOS	D	A	B	B	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.28	4.07	2.64	2.30	5.64	5.65	4.58	
50th-Percentile Queue Length [ft/ln]	107.12	101.85	66.06	57.40	141.12	141.14	114.52	
95th-Percentile Queue Length [veh/ln]	7.68	7.33	4.76	4.13	9.54	9.54	8.09	
95th-Percentile Queue Length [ft/ln]	191.99	183.33	118.91	103.31	238.53	238.55	202.27	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.30	41.30	6.75	0.00	0.00	12.47	12.73	39.58	39.58	38.32	0.00	0.00	0.00
Movement LOS	D	D	A			B	B	D	D	D			
d_A, Approach Delay [s/veh]	11.84				12.54			39.21			0.00		
Approach LOS	B				B			D			A		
d_I, Intersection Delay [s/veh]	19.34												
Intersection LOS	B												
Intersection V/C	0.528												

Emissions

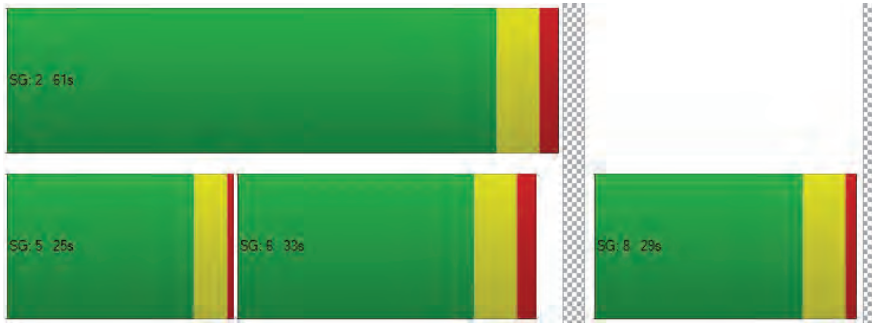
Vehicle Miles Traveled [mph]	34.20	197.59	65.91	27.76	8.90	8.90	7.38	
Stops [stops/h]	171.39	325.93	211.39	91.83	225.79	225.82	183.22	
Fuel consumption [US gal/h]	3.98	11.47	5.10	2.18	3.68	3.68	2.98	
CO [g/h]	277.99	801.43	356.76	152.10	257.51	257.54	208.09	
NOx [g/h]	54.09	155.93	69.41	29.59	50.10	50.11	40.49	
VOC [g/h]	64.43	185.74	82.68	35.25	59.68	59.69	48.23	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.638	2.164	2.809	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	380	501	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	380	501	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	95	125	0	0	0
Total Analysis Volume [veh/h]	0	380	501	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.32
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		11.32	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.071

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	300	441	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	300	441	20	27	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	75	110	5	7	0
Total Analysis Volume [veh/h]	0	300	441	20	27	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	8.27	0.00	0.00	0.00	15.24	11.65
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.73	5.73
d_A, Approach Delay [s/veh]	0.00		0.00		15.24	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.52					
Intersection LOS	C					

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Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.133

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	66	43	288	31	10	32	2	44	13	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	185	66	43	288	31	10	32	2	44	13	79
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	17	11	74	8	3	8	1	11	3	20
Total Analysis Volume [veh/h]	0	191	68	44	297	32	10	33	2	45	13	81
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.09	0.00	0.13	0.03	0.10
d_M, Delay for Movement [s/veh]	7.93	0.00	0.00	7.81	0.00	0.00	18.12	16.23	11.38	18.19	17.08	11.93
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.08	0.08	0.08	0.42	0.42	0.42	1.07	1.07	1.07
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.92	1.92	1.92	10.61	10.61	10.61	26.78	26.78	26.78
d_A, Approach Delay [s/veh]	0.00			0.92			16.43			14.44		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	3.79											
Intersection LOS	C											

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Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	380	526	49	0
2	369	510	48	0
3	361	500	47	0
4	338	468	44	0
5	300	416	39	0
6	296	410	38	0
7	293	405	38	0
8	266	368	34	0
9	262	363	34	0
10	258	358	33	0
11	224	310	29	0
12	209	289	27	0
13	205	284	26	0
14	152	210	20	0
15	152	210	20	0
16	106	147	14	0
17	61	84	8	0
18	61	84	8	0
19	34	47	4	0
20	19	26	2	0
21	11	16	1	0
22	4	5	0	0
23	4	5	0	0
24	4	5	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	906	1	49	No	No	No	No	No	No	No	Yes	No	No
2	1	879	1	48	No	No	No	No	No	No	No	Yes	No	No
3	1	861	1	47	No	No	No	No	No	No	No	Yes	No	No
4	1	806	1	44	No	No	No	No	No	No	No	Yes	No	No
5	1	716	1	39	No	No	No	No	No	No	No	No	No	No
6	1	706	1	38	No	No	No	No	No	No	No	No	No	No
7	1	698	1	38	No	No	No	No	No	No	No	No	No	No
8	1	634	1	34	No	No	No	No	No	No	No	No	No	No
9	1	625	1	34	No	No	No	No	No	No	No	No	No	No
10	1	616	1	33	No	No	No	No	No	No	No	No	No	No
11	1	534	1	29	No	No	No	No	No	No	No	No	No	No
12	1	498	1	27	No	No	No	No	No	No	No	No	No	No
13	1	489	1	26	No	No	No	No	No	No	No	No	No	No
14	1	362	1	20	No	No	No	No	No	No	No	No	No	No
15	1	362	1	20	No	No	No	No	No	No	No	No	No	No
16	1	253	1	14	No	No	No	No	No	No	No	No	No	No
17	1	145	1	8	No	No	No	No	No	No	No	No	No	No
18	1	145	1	8	No	No	No	No	No	No	No	No	No	No
19	1	81	1	4	No	No	No	No	No	No	No	No	No	No
20	1	45	1	2	No	No	No	No	No	No	No	No	No	No
21	1	27	1	1	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.1	18.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	49	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	955	955
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	56%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	327	501	123	0
2	317	486	119	0
3	311	476	117	0
4	291	446	109	0
5	258	396	97	0
6	255	391	96	0
7	252	386	95	0
8	229	351	86	0
9	226	346	85	0
10	222	341	84	0
11	193	296	73	0
12	180	276	68	0
13	177	271	66	0
14	131	200	49	0
15	131	200	49	0
16	92	140	34	0
17	52	80	20	0
18	52	80	20	0
19	29	45	11	0
20	16	25	6	0
21	10	15	4	0
22	3	5	1	0
23	3	5	1	0
24	3	5	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	828	1	123	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	2	803	1	119	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	2	787	1	117	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	2	737	1	109	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	2	654	1	97	No	No	No	Yes	No	No	Yes	Yes	No	No
6	2	646	1	96	No	No	No	Yes	No	No	Yes	Yes	No	No
7	2	638	1	95	No	No	No	Yes	No	No	Yes	Yes	No	No
8	2	580	1	86	No	No	No	Yes	No	No	No	Yes	No	No
9	2	572	1	85	No	No	No	Yes	No	No	No	Yes	No	No
10	2	563	1	84	No	No	No	Yes	No	No	No	Yes	No	No
11	2	489	1	73	No	No	No	No	No	No	No	No	No	No
12	2	456	1	68	No	No	No	No	No	No	No	No	No	No
13	2	448	1	66	No	No	No	No	No	No	No	No	No	No
14	2	331	1	49	No	No	No	No	No	No	No	No	No	No
15	2	331	1	49	No	No	No	No	No	No	No	No	No	No
16	2	232	1	34	No	No	No	No	No	No	No	No	No	No
17	2	132	1	20	No	No	No	No	No	No	No	No	No	No
18	2	132	1	20	No	No	No	No	No	No	No	No	No	No
19	2	74	1	11	No	No	No	No	No	No	No	No	No	No
20	2	41	1	6	No	No	No	No	No	No	No	No	No	No
21	2	25	1	4	No	No	No	No	No	No	No	No	No	No
22	2	8	1	1	No	No	No	No	No	No	No	No	No	No
23	2	8	1	1	No	No	No	No	No	No	No	No	No	No
24	2	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	1	4	10	0	4	7	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	21.8	19.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:44	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	123	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	951	951
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	878	216	571
2	852	210	554
3	834	205	542
4	781	192	508
5	694	171	451
6	685	168	445
7	676	166	440
8	615	151	400
9	606	149	394
10	597	147	388
11	518	127	337
12	483	119	314
13	474	117	308
14	351	86	228
15	351	86	228
16	246	60	160
17	140	35	91
18	140	35	91
19	79	19	51
20	44	11	29
21	26	6	17
22	9	2	6
23	9	2	6
24	9	2	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1094	1	571	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1062	1	554	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1039	1	542	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	973	1	508	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	865	1	451	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	853	1	445	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	842	1	440	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	766	1	400	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	755	1	394	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	744	1	388	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
11	1	645	1	337	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	602	1	314	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	591	1	308	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
14	1	437	1	228	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	437	1	228	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	306	1	160	No	No	No	Yes	No	No	No	No	No	No
17	1	175	1	91	No	No	No	No	No	No	No	No	No	No
18	1	175	1	91	No	No	No	No	No	No	No	No	No	No
19	1	98	1	51	No	No	No	No	No	No	No	No	No	No
20	1	55	1	29	No	No	No	No	No	No	No	No	No	No
21	1	32	1	17	No	No	No	No	No	No	No	No	No	No
22	1	11	1	6	No	No	No	No	No	No	No	No	No	No
23	1	11	1	6	No	No	No	No	No	No	No	No	No	No
24	1	11	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	9	12	13	15	13	9

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	2344.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	371:52
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	571
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1665
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

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Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	284	366	272	58
2	275	355	264	56
3	270	348	258	55
4	253	326	242	52
5	224	289	215	46
6	222	285	212	45
7	219	282	209	45
8	199	256	190	41
9	196	253	188	40
10	193	249	185	39
11	168	216	160	34
12	156	201	150	32
13	153	198	147	31
14	114	146	109	23
15	114	146	109	23
16	80	102	76	16
17	45	59	44	9
18	45	59	44	9
19	26	33	24	5
20	14	18	14	3
21	9	11	8	2
22	3	4	3	1
23	3	4	3	1
24	3	4	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	650	1	272	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	630	1	264	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	618	1	258	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	579	1	242	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	513	1	215	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	507	1	212	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	501	1	209	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	455	1	190	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	449	1	188	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	442	1	185	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	384	1	160	No	No	Yes	Yes	No	No	No	No	No	No
12	1	357	1	150	No	No	Yes	Yes	No	No	No	No	No	No
13	1	351	1	147	No	No	Yes	Yes	No	No	No	No	No	No
14	1	260	1	109	No	No	No	No	No	No	No	No	No	No
15	1	260	1	109	No	No	No	No	No	No	No	No	No	No
16	1	182	1	76	No	No	No	No	No	No	No	No	No	No
17	1	104	1	44	No	No	No	No	No	No	No	No	No	No
18	1	104	1	44	No	No	No	No	No	No	No	No	No	No
19	1	59	1	24	No	No	No	No	No	No	No	No	No	No
20	1	32	1	14	No	No	No	No	No	No	No	No	No	No
21	1	20	1	8	No	No	No	No	No	No	No	No	No	No
22	1	7	1	3	No	No	No	No	No	No	No	No	No	No
23	1	7	1	3	No	No	No	No	No	No	No	No	No	No
24	1	7	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					7	10	13	13	0	3	4	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.6	11.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:24	0:10
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	272	58
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	980	980
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	301	191	86
2	292	185	83
3	286	181	82
4	268	170	77
5	238	151	68
6	235	149	67
7	232	147	66
8	211	134	60
9	208	132	59
10	205	130	58
11	178	113	51
12	166	105	47
13	163	103	46
14	120	76	34
15	120	76	34
16	84	53	24
17	48	31	14
18	48	31	14
19	27	17	8
20	15	10	4
21	9	6	3
22	3	2	1
23	3	2	1
24	3	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	492	2	86	No	No	No	No	No	No	No	No	No	No
2	2	477	2	83	No	No	No	No	No	No	No	No	No	No
3	2	467	2	82	No	No	No	No	No	No	No	No	No	No
4	2	438	2	77	No	No	No	No	No	No	No	No	No	No
5	2	389	2	68	No	No	No	No	No	No	No	No	No	No
6	2	384	2	67	No	No	No	No	No	No	No	No	No	No
7	2	379	2	66	No	No	No	No	No	No	No	No	No	No
8	2	345	2	60	No	No	No	No	No	No	No	No	No	No
9	2	340	2	59	No	No	No	No	No	No	No	No	No	No
10	2	335	2	58	No	No	No	No	No	No	No	No	No	No
11	2	291	2	51	No	No	No	No	No	No	No	No	No	No
12	2	271	2	47	No	No	No	No	No	No	No	No	No	No
13	2	266	2	46	No	No	No	No	No	No	No	No	No	No
14	2	196	2	34	No	No	No	No	No	No	No	No	No	No
15	2	196	2	34	No	No	No	No	No	No	No	No	No	No
16	2	137	2	24	No	No	No	No	No	No	No	No	No	No
17	2	79	2	14	No	No	No	No	No	No	No	No	No	No
18	2	79	2	14	No	No	No	No	No	No	No	No	No	No
19	2	44	2	8	No	No	No	No	No	No	No	No	No	No
20	2	25	2	4	No	No	No	No	No	No	No	No	No	No
21	2	15	2	3	No	No	No	No	No	No	No	No	No	No
22	2	5	2	1	No	No	No	No	No	No	No	No	No	No
23	2	5	2	1	No	No	No	No	No	No	No	No	No	No
24	2	5	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.2
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	86
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	578
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	211	123	55
2	205	119	53
3	200	117	52
4	188	109	49
5	167	97	43
6	165	96	43
7	162	95	42
8	148	86	39
9	146	85	38
10	143	84	37
11	124	73	32
12	116	68	30
13	114	66	30
14	84	49	22
15	84	49	22
16	59	34	15
17	34	20	9
18	34	20	9
19	19	11	5
20	11	6	3
21	6	4	2
22	2	1	1
23	2	1	1
24	2	1	1

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	334	1	55	No	No	No	No	No	No	No	No	No	No
2	2	324	1	53	No	No	No	No	No	No	No	No	No	No
3	2	317	1	52	No	No	No	No	No	No	No	No	No	No
4	2	297	1	49	No	No	No	No	No	No	No	No	No	No
5	2	264	1	43	No	No	No	No	No	No	No	No	No	No
6	2	261	1	43	No	No	No	No	No	No	No	No	No	No
7	2	257	1	42	No	No	No	No	No	No	No	No	No	No
8	2	234	1	39	No	No	No	No	No	No	No	No	No	No
9	2	231	1	38	No	No	No	No	No	No	No	No	No	No
10	2	227	1	37	No	No	No	No	No	No	No	No	No	No
11	2	197	1	32	No	No	No	No	No	No	No	No	No	No
12	2	184	1	30	No	No	No	No	No	No	No	No	No	No
13	2	180	1	30	No	No	No	No	No	No	No	No	No	No
14	2	133	1	22	No	No	No	No	No	No	No	No	No	No
15	2	133	1	22	No	No	No	No	No	No	No	No	No	No
16	2	93	1	15	No	No	No	No	No	No	No	No	No	No
17	2	54	1	9	No	No	No	No	No	No	No	No	No	No
18	2	54	1	9	No	No	No	No	No	No	No	No	No	No
19	2	30	1	5	No	No	No	No	No	No	No	No	No	No
20	2	17	1	3	No	No	No	No	No	No	No	No	No	No
21	2	10	1	2	No	No	No	No	No	No	No	No	No	No
22	2	3	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	55
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	389
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	174	144	3
2	169	140	3
3	165	137	3
4	155	128	3
5	137	114	2
6	136	112	2
7	134	111	2
8	122	101	2
9	120	99	2
10	118	98	2
11	103	85	2
12	96	79	2
13	94	78	2
14	70	58	1
15	70	58	1
16	49	40	1
17	28	23	0
18	28	23	0
19	16	13	0
20	9	7	0
21	5	4	0
22	2	1	0
23	2	1	0
24	2	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	318	1	3	No	No	No	No	No	No	No	No	No	No
2	3	309	1	3	No	No	No	No	No	No	No	No	No	No
3	3	302	1	3	No	No	No	No	No	No	No	No	No	No
4	3	283	1	3	No	No	No	No	No	No	No	No	No	No
5	3	251	1	2	No	No	No	No	No	No	No	No	No	No
6	3	248	1	2	No	No	No	No	No	No	No	No	No	No
7	3	245	1	2	No	No	No	No	No	No	No	No	No	No
8	3	223	1	2	No	No	No	No	No	No	No	No	No	No
9	3	219	1	2	No	No	No	No	No	No	No	No	No	No
10	3	216	1	2	No	No	No	No	No	No	No	No	No	No
11	3	188	1	2	No	No	No	No	No	No	No	No	No	No
12	3	175	1	2	No	No	No	No	No	No	No	No	No	No
13	3	172	1	2	No	No	No	No	No	No	No	No	No	No
14	3	128	1	1	No	No	No	No	No	No	No	No	No	No
15	3	128	1	1	No	No	No	No	No	No	No	No	No	No
16	3	89	1	1	No	No	No	No	No	No	No	No	No	No
17	3	51	1	0	No	No	No	No	No	No	No	No	No	No
18	3	51	1	0	No	No	No	No	No	No	No	No	No	No
19	3	29	1	0	No	No	No	No	No	No	No	No	No	No
20	3	16	1	0	No	No	No	No	No	No	No	No	No	No
21	3	9	1	0	No	No	No	No	No	No	No	No	No	No
22	3	3	1	0	No	No	No	No	No	No	No	No	No	No
23	3	3	1	0	No	No	No	No	No	No	No	No	No	No
24	3	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	321
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	474	498	163	29
2	460	483	158	28
3	450	473	155	28
4	422	443	145	26
5	374	393	129	23
6	370	388	127	23
7	365	383	126	22
8	332	349	114	20
9	327	344	112	20
10	322	339	111	20
11	280	294	96	17
12	261	274	90	16
13	256	269	88	16
14	190	199	65	12
15	190	199	65	12
16	133	139	46	8
17	76	80	26	5
18	76	80	26	5
19	43	45	15	3
20	24	25	8	1
21	14	15	5	1
22	5	5	2	0
23	5	5	2	0
24	5	5	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	972	2	163	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2	2	943	2	158	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
3	2	923	2	155	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
4	2	865	2	145	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
5	2	767	2	129	No	No	No	Yes	No	Yes	Yes	Yes	No	No
6	2	758	2	127	No	No	No	Yes	No	Yes	Yes	Yes	No	No
7	2	748	2	126	No	No	No	Yes	No	Yes	Yes	Yes	No	No
8	2	681	2	114	No	No	No	Yes	No	No	Yes	Yes	No	No
9	2	671	2	112	No	No	No	Yes	No	No	Yes	Yes	No	No
10	2	661	2	111	No	No	No	No	No	No	Yes	Yes	No	No
11	2	574	2	96	No	No	No	No	No	No	No	Yes	No	No
12	2	535	2	90	No	No	No	No	No	No	No	Yes	No	No
13	2	525	2	88	No	No	No	No	No	No	No	Yes	No	No
14	2	389	2	65	No	No	No	No	No	No	No	No	No	No
15	2	389	2	65	No	No	No	No	No	No	No	No	No	No
16	2	272	2	46	No	No	No	No	No	No	No	No	No	No
17	2	156	2	26	No	No	No	No	No	No	No	No	No	No
18	2	156	2	26	No	No	No	No	No	No	No	No	No	No
19	2	88	2	15	No	No	No	No	No	No	No	No	No	No
20	2	49	2	8	No	No	No	No	No	No	No	No	No	No
21	2	29	2	5	No	No	No	No	No	No	No	No	No	No
22	2	10	2	2	No	No	No	No	No	No	No	No	No	No
23	2	10	2	2	No	No	No	No	No	No	No	No	No	No
24	2	10	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	1	4	9	3	7	10	13	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	60	15
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:43	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	163	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1164	1164
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	380	501	0
2	369	486	0
3	361	476	0
4	338	446	0
5	300	396	0
6	296	391	0
7	293	386	0
8	266	351	0
9	262	346	0
10	258	341	0
11	224	296	0
12	209	276	0
13	205	271	0
14	152	200	0
15	152	200	0
16	106	140	0
17	61	80	0
18	61	80	0
19	34	45	0
20	19	25	0
21	11	15	0
22	4	5	0
23	4	5	0
24	4	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	881	1	0	No	No	No	No	No	No	No	No	No	No
2	1	855	1	0	No	No	No	No	No	No	No	No	No	No
3	1	837	1	0	No	No	No	No	No	No	No	No	No	No
4	1	784	1	0	No	No	No	No	No	No	No	No	No	No
5	1	696	1	0	No	No	No	No	No	No	No	No	No	No
6	1	687	1	0	No	No	No	No	No	No	No	No	No	No
7	1	679	1	0	No	No	No	No	No	No	No	No	No	No
8	1	617	1	0	No	No	No	No	No	No	No	No	No	No
9	1	608	1	0	No	No	No	No	No	No	No	No	No	No
10	1	599	1	0	No	No	No	No	No	No	No	No	No	No
11	1	520	1	0	No	No	No	No	No	No	No	No	No	No
12	1	485	1	0	No	No	No	No	No	No	No	No	No	No
13	1	476	1	0	No	No	No	No	No	No	No	No	No	No
14	1	352	1	0	No	No	No	No	No	No	No	No	No	No
15	1	352	1	0	No	No	No	No	No	No	No	No	No	No
16	1	246	1	0	No	No	No	No	No	No	No	No	No	No
17	1	141	1	0	No	No	No	No	No	No	No	No	No	No
18	1	141	1	0	No	No	No	No	No	No	No	No	No	No
19	1	79	1	0	No	No	No	No	No	No	No	No	No	No
20	1	44	1	0	No	No	No	No	No	No	No	No	No	No
21	1	26	1	0	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	881
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	300	461	27
2	291	447	26
3	285	438	26
4	267	410	24
5	237	364	21
6	234	360	21
7	231	355	21
8	210	323	19
9	207	318	19
10	204	313	18
11	177	272	16
12	165	254	15
13	162	249	15
14	120	184	11
15	120	184	11
16	84	129	8
17	48	74	4
18	48	74	4
19	27	41	2
20	15	23	1
21	9	14	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	761	1	27	No	No	No	No	No	No	No	No	No	No
2	1	738	1	26	No	No	No	No	No	No	No	No	No	No
3	1	723	1	26	No	No	No	No	No	No	No	No	No	No
4	1	677	1	24	No	No	No	No	No	No	No	No	No	No
5	1	601	1	21	No	No	No	No	No	No	No	No	No	No
6	1	594	1	21	No	No	No	No	No	No	No	No	No	No
7	1	586	1	21	No	No	No	No	No	No	No	No	No	No
8	1	533	1	19	No	No	No	No	No	No	No	No	No	No
9	1	525	1	19	No	No	No	No	No	No	No	No	No	No
10	1	517	1	18	No	No	No	No	No	No	No	No	No	No
11	1	449	1	16	No	No	No	No	No	No	No	No	No	No
12	1	419	1	15	No	No	No	No	No	No	No	No	No	No
13	1	411	1	15	No	No	No	No	No	No	No	No	No	No
14	1	304	1	11	No	No	No	No	No	No	No	No	No	No
15	1	304	1	11	No	No	No	No	No	No	No	No	No	No
16	1	213	1	8	No	No	No	No	No	No	No	No	No	No
17	1	122	1	4	No	No	No	No	No	No	No	No	No	No
18	1	122	1	4	No	No	No	No	No	No	No	No	No	No
19	1	68	1	2	No	No	No	No	No	No	No	No	No	No
20	1	38	1	1	No	No	No	No	No	No	No	No	No	No
21	1	23	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	27
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	788
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	56%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	251	362	136	44
2	243	351	132	43
3	238	344	129	42
4	223	322	121	39
5	198	286	107	35
6	196	282	106	34
7	193	279	105	34
8	176	253	95	31
9	173	250	94	30
10	171	246	92	30
11	148	214	80	26
12	138	199	75	24
13	136	195	73	24
14	100	145	54	18
15	100	145	54	18
16	70	101	38	12
17	40	58	22	7
18	40	58	22	7
19	23	33	12	4
20	13	18	7	2
21	8	11	4	1
22	3	4	1	0
23	3	4	1	0
24	3	4	1	0

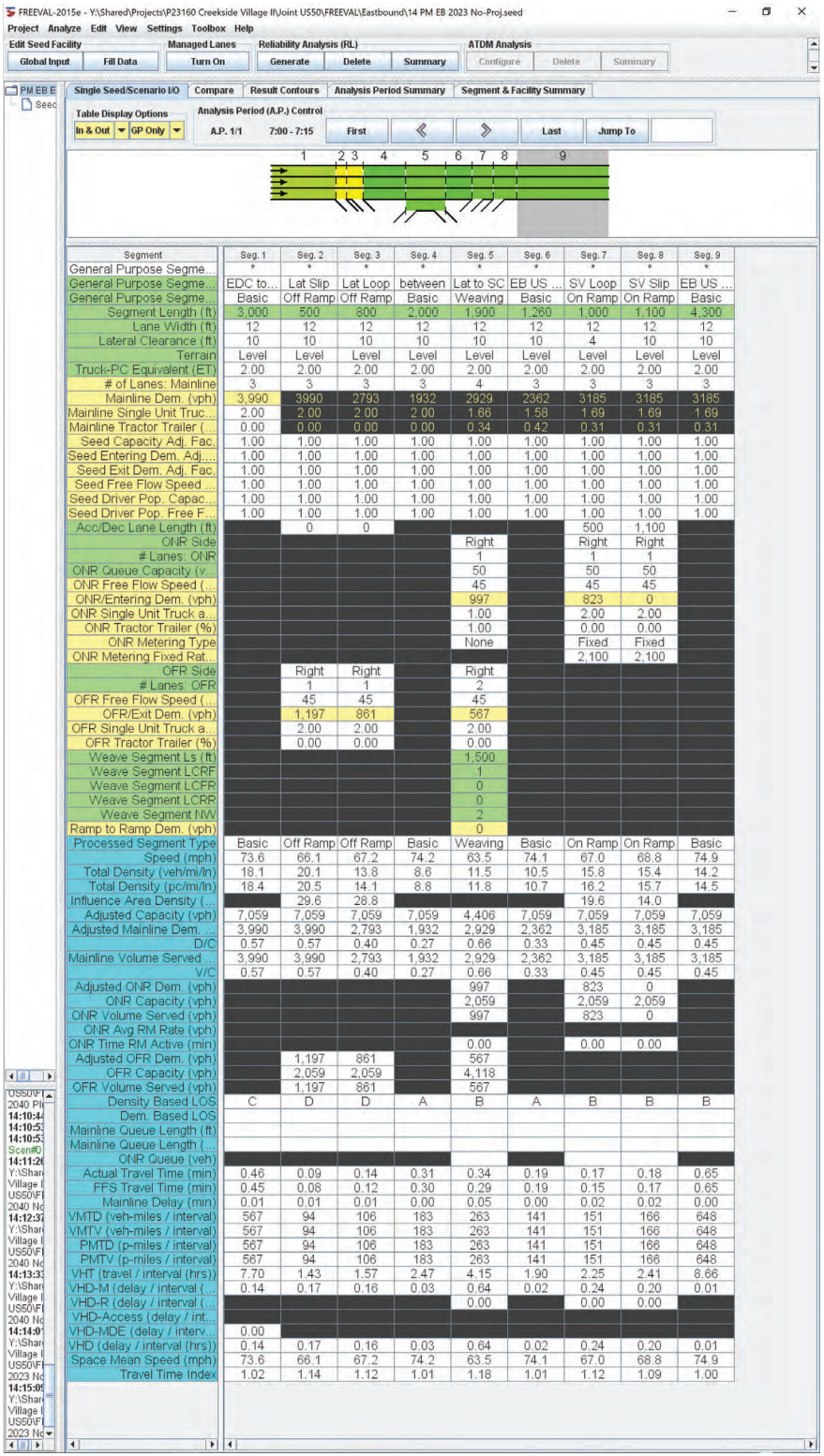
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	613	1	136	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	594	1	132	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	1	582	1	129	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	545	1	121	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	484	1	107	No	No	Yes	Yes	No	No	No	Yes	No	No
6	1	478	1	106	No	No	Yes	Yes	No	No	No	Yes	No	No
7	1	472	1	105	No	No	Yes	Yes	No	No	No	Yes	No	No
8	1	429	1	95	No	No	No	Yes	No	No	No	Yes	No	No
9	1	423	1	94	No	No	No	Yes	No	No	No	Yes	No	No
10	1	417	1	92	No	No	No	Yes	No	No	No	No	No	No
11	1	362	1	80	No	No	No	No	No	No	No	No	No	No
12	1	337	1	75	No	No	No	No	No	No	No	No	No	No
13	1	331	1	73	No	No	No	No	No	No	No	No	No	No
14	1	245	1	54	No	No	No	No	No	No	No	No	No	No
15	1	245	1	54	No	No	No	No	No	No	No	No	No	No
16	1	171	1	38	No	No	No	No	No	No	No	No	No	No
17	1	98	1	22	No	No	No	No	No	No	No	No	No	No
18	1	98	1	22	No	No	No	No	No	No	No	No	No	No
19	1	56	1	12	No	No	No	No	No	No	No	No	No	No
20	1	31	1	7	No	No	No	No	No	No	No	No	No	No
21	1	19	1	4	No	No	No	No	No	No	No	No	No	No
22	1	7	1	1	No	No	No	No	No	No	No	No	No	No
23	1	7	1	1	No	No	No	No	No	No	No	No	No	No
24	1	7	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	1	4	9	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.4	16.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:32	0:12
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	136	44
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	793	793
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 3740 of 4853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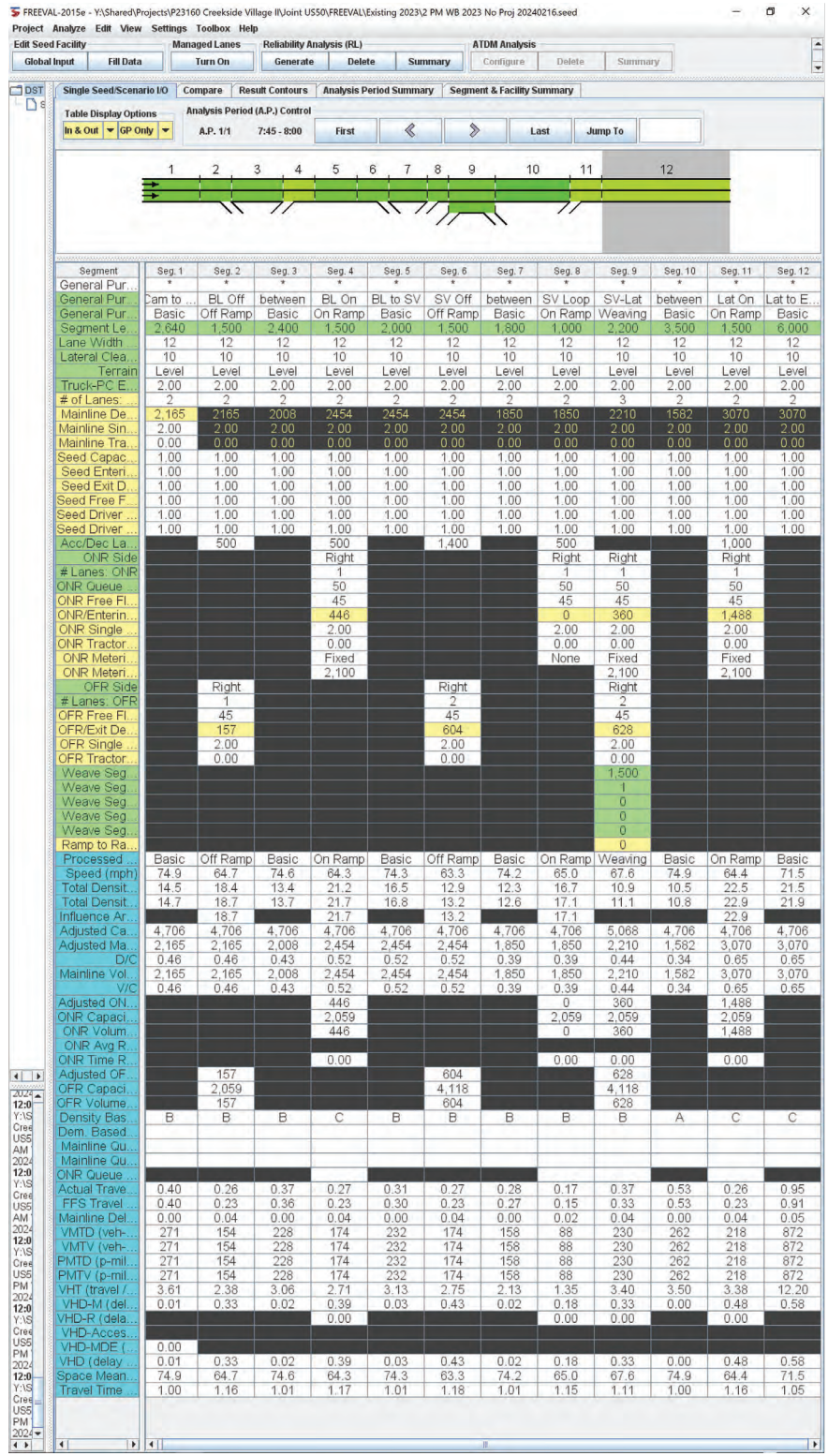
Project Analyze Edit View Settings Toolbox Help
Edit Seed Facility
Global Input
Fill Data
Managed Lanes
Turn On
Reliability Analysis (RL)
Generate
Delete
Summary
ATDM Analysis
Configure
Delete
Summary
Single Seed/Scenario I/O
Compare
Result Contours
Analysis Period Summary
Segment & Facility Summary
Table Display Options
In & Out
GP Only
Analysis Period (A.P.) Control
A.P. 1/1
7:00 - 7:15
First
Last
Jump To
1 2 3 4 5 6 7 8 9
Segment
Seg. 1 Seg. 2 Seg. 3 Seg. 4 Seg. 5 Seg. 6 Seg. 7 Seg. 8 Seg. 9
EDC to... Lat Slip Lat Loop between Lat to SC EB US ... SV Loop SV Slip EB US ...
Basic Off Ramp Off Ramp Basic Weaving Basic On Ramp On Ramp Basic
Segment Length (ft) 3,000 500 800 2,000 1,900 1,260 1,000 1,100 4,300
Lane Width (ft) 12 12 12 12 12 12 12 12 12
Lateral Clearance (ft) 10 10 10 10 10 10 4 10 10
Terrain Level Level Level Level Level Level Level Level Level
Truck-PC Equivalent (ET) 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00
# of Lanes: Mainline 3 3 3 3 4 3 3 3 3
Mainline Dem. (vph) 3,990 3990 2793 1932 2929 2362 3185 3185 3185
Mainline Single Unit Truc... 2.00 2.00 2.00 2.00 1.66 1.58 1.69 1.69 1.69
Mainline Tractor Trailer (... 0.00 0.00 0.00 0.00 0.34 0.42 0.31 0.31 0.31
Seed Capacity Adj. Fac. 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Entering Dem. Adj.... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Exit Dem. Adj. Fac. 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Free Flow Speed ... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Driver Pop. Capac... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Driver Pop. Free F... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Acc/Dec Lane Length (ft) 0 0 500 1,100
ONR Side Right Right Right
Lanes: ONR 1 1 1
ONR Queue Capacity (v... 50 50 50
ONR Free Flow Speed (... 45 45 45
ONR/Entering Dem. (vph) 997 823 0
ONR Single Unit Truck a... 1.00 2.00 2.00
ONR Tractor Trailer (%) 1.00 0.00 0.00
ONR Metering Type None Fixed Fixed
ONR Metering Fixed Rat... 2,100 2,100
OFR Side Right Right Right
Lanes: OFR 1 1 2
OFR Free Flow Speed (... 45 45 45
OFR/Exit Dem. (vph) 1,197 861 567
OFR Single Unit Truck a... 2.00 2.00 2.00
OFR Tractor Trailer (%) 0.00 0.00 0.00
Weave Segment Ls (ft) 1,500
Weave Segment LCRF 1
Weave Segment LCFR 0
Weave Segment LCRR 0
Weave Segment NW 2
Ramp to Ramp Dem. (vph) 0
Processed Segment Type Basic Off Ramp Off Ramp Basic Weaving Basic On Ramp On Ramp Basic
Speed (mph) 73.6 66.1 67.2 74.2 63.5 74.1 67.0 68.8 74.9
Total Density (veh/mi/ln) 18.1 20.1 13.8 8.6 11.5 10.5 15.8 15.4 14.2
Total Density (pc/mi/ln) 18.4 20.5 14.1 8.8 11.8 10.7 16.2 15.7 14.5
Influence Area Density (... 29.6 28.8 19.6 14.0
Adjusted Capacity (vph) 7,059 7,059 7,059 7,059 4,406 7,059 7,059 7,059 7,059
Adjusted Mainline Dem. ... 3,990 3,990 2,793 1,932 2,929 2,362 3,185 3,185 3,185
D/C 0.57 0.57 0.40 0.27 0.66 0.33 0.45 0.45 0.45
Mainline Volume Served... 3,990 3,990 2,793 1,932 2,929 2,362 3,185 3,185 3,185
V/C 0.57 0.57 0.40 0.27 0.66 0.33 0.45 0.45 0.45
Adjusted ONR Dem. (vph) 997 823 0
ONR Capacity (vph) 2,059 2,059 2,059
ONR Volume Served (vph) 997 823 0
ONR Avg RM Rate (vph)
ONR Time RM Active (min) 0.00 0.00 0.00
Adjusted OFR Dem. (vph) 1,197 861 567
OFR Capacity (vph) 2,059 2,059 4,118
OFR Volume Served (vph) 1,197 861 567
Density Based LOS C D D A B A B B B
Dem. Based LOS
Mainline Queue Length (ft)
Mainline Queue Length (...
ONR Queue (veh)
Actual Travel Time (min) 0.46 0.09 0.14 0.31 0.34 0.19 0.17 0.18 0.65
FFS Travel Time (min) 0.45 0.08 0.12 0.30 0.29 0.19 0.15 0.17 0.65
Mainline Delay (min) 0.01 0.01 0.01 0.00 0.05 0.00 0.02 0.02 0.00
VMTD (veh-miles / interval) 567 94 106 183 263 141 151 166 648
VMTV (veh-miles / interval) 567 94 106 183 263 141 151 166 648
PMTD (p-miles / interval) 567 94 106 183 263 141 151 166 648
PMTV (p-miles / interval) 567 94 106 183 263 141 151 166 648
VHT (travel / interval (hrs)) 7.70 1.43 1.57 2.47 4.15 1.90 2.25 2.41 8.66
VHD-M (delay / interval (... 0.14 0.17 0.16 0.03 0.64 0.02 0.24 0.20 0.01
VHD-R (delay / interval (... 0.00 0.00 0.00
VHD-Access (delay / int...
VHD-MDE (delay / interv... 0.00
VHD (delay / interval (hrs)) 0.14 0.17 0.16 0.03 0.64 0.02 0.24 0.20 0.01
Space Mean Speed (mph) 73.6 66.1 67.2 74.2 63.5 74.1 67.0 68.8 74.9
Travel Time Index 1.02 1.14 1.12 1.01 1.18 1.01 1.12 1.09 1.00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Project Analyze Edit View Settings Toolbox Help
Edit Seed Facility
Global Input
Fill Data
Managed Lanes
Turn On
Reliability Analysis (RL)
Generate
Delete
Summary
ATDM Analysis
Configure
Delete
Summary
Single Seed/Scenario I/O
Compare
Result Contours
Analysis Period Summary
Segment & Facility Summary
Table Display Options
In & Out
GP Only
Analysis Period (A.P.) Control
A.P. 1/1
7:45 - 8:00
First
Last
Jump To
1 2 3 4 5 6 7 8 9 10 11 12
Segment
Seg. 1 Seg. 2 Seg. 3 Seg. 4 Seg. 5 Seg. 6 Seg. 7 Seg. 8 Seg. 9 Seg. 10 Seg. 11 Seg. 12
Cam to ... BL Off between BL On BL to SV SV Off between SV Loop SV-Lat between Lat On Lat to E...
Basic Off Ramp Basic On Ramp Basic Off Ramp Basic On Ramp Weaving Basic On Ramp Basic
Segment Le... 2,640 1,500 2,400 1,500 2,000 1,500 1,800 1,000 2,200 3,500 1,500 6,000
Lane Width 12 12 12 12 12 12 12 12 12 12 12 12
Lateral Clea... 10 10 10 10 10 10 10 10 10 10 10 10
Terrain Level Level Level Level Level Level Level Level Level Level Level Level
Truck-PC E... 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00
# of Lanes: 2 2 2 2 2 2 2 2 3 2 2 2
Mainline De... 2,165 2165 2008 2454 2454 2454 1850 1850 2210 1582 3070 3070
Mainline Sin... 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00
Mainline Tra... 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
Seed Capac... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Enteri... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Exit D... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Free F... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Driver ... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Driver ... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Acc/Dec La... 500 500 1,400 500 1,000
ONR Side Right Right Right Right
Lanes: ONR 1 1 1 1
ONR Queue ... 50 50 50 50
ONR Free Fl... 45 45 45 45
ONR/Enterin... 446 0 360 1,488
ONR Single ... 2.00 2.00 2.00 2.00
ONR Tractor... 0.00 0.00 0.00 0.00
ONR Meteri... Fixed None Fixed Fixed
ONR Meteri... 2,100 2,100 2,100
OFR Side Right Right Right
Lanes: OFR 1 2 2
OFR Free Fl... 45 45 45
OFR/Exit De... 157 604 628
OFR Single ... 2.00 2.00 2.00
OFR Tractor... 0.00 0.00 0.00
Weave Seg... 1,500
Weave Seg... 1
Weave Seg... 0
Weave Seg... 0
Weave Seg... 0
Ramp to Ra... 0
Processed ... Basic Off Ramp Basic On Ramp Basic Off Ramp Basic On Ramp Weaving Basic On Ramp Basic
Speed (mph) 74.9 64.7 74.6 64.3 74.3 63.3 74.2 65.0 67.6 74.9 64.4 71.5
Total Densit... 14.5 18.4 13.4 21.2 16.5 12.9 12.3 16.7 10.9 10.5 22.5 21.5
Total Densit... 14.7 18.7 13.7 21.7 16.8 13.2 12.6 17.1 11.1 10.8 22.9 21.9
Influence Ar... 18.7 13.2 17.1 22.9
Adjusted Ca... 4,706 4,706 4,706 4,706 4,706 4,706 4,706 4,706 5,068 4,706 4,706 4,706
Adjusted Ma... 2,165 2,165 2,008 2,454 2,454 2,454 1,850 1,850 2,210 1,582 3,070 3,070
D/C 0.46 0.46 0.43 0.52 0.52 0.52 0.39 0.39 0.44 0.34 0.65 0.65
Mainline Vol... 2,165 2,165 2,008 2,454 2,454 2,454 1,850 1,850 2,210 1,582 3,070 3,070
V/C 0.46 0.46 0.43 0.52 0.52 0.52 0.39 0.39 0.44 0.34 0.65 0.65
Adjusted ON... 446 0 360 1,488
ONR Capaci... 2,059 2,059 2,059
ONR Volum... 446 0 360 1,488
ONR Avg R...
ONR Time R... 0.00 0.00 0.00
Adjusted OF... 157 604 628
OFR Capaci... 2,059 4,118 4,118
OFR Volume... 157 604 628
Density Bas... B B B C B B B B A C C
Dem. Based...
Mainline Qu...
Mainline Qu...
ONR Queue ...
Actual Trave... 0.40 0.26 0.37 0.27 0.31 0.27 0.28 0.17 0.37 0.53 0.26 0.95
FFS Travel ... 0.40 0.23 0.36 0.23 0.30 0.23 0.27 0.15 0.33 0.53 0.23 0.91
Mainline Del... 0.00 0.04 0.00 0.04 0.00 0.04 0.00 0.02 0.04 0.00 0.04 0.05
VMTD (veh-... 271 154 228 174 232 174 158 88 230 262 218 872
VMTV (veh-... 271 154 228 174 232 174 158 88 230 262 218 872
PMTD (p-mil... 271 154 228 174 232 174 158 88 230 262 218 872
PMTV (p-mil... 271 154 228 174 232 174 158 88 230 262 218 872
VHT (travel /... 3.61 2.38 3.06 2.71 3.13 2.75 2.13 1.35 3.40 3.50 3.38 12.20
VHD-M (del... 0.01 0.33 0.02 0.39 0.03 0.43 0.02 0.18 0.33 0.00 0.48 0.58
VHD-R (dela... 0.00 0.00 0.00
VHD-Acces...
VHD-MDE (... 0.00
VHD (delay ... 0.01 0.33 0.02 0.39 0.03 0.43 0.02 0.18 0.33 0.00 0.48 0.58
Space Mean... 74.9 64.7 74.6 64.3 74.3 63.3 74.2 65.0 67.6 74.9 64.4 71.5
Travel Time ... 1.00 1.16 1.01 1.17 1.01 1.18 1.01 1.15 1.11 1.00 1.16 1.05

Existing AM plus Project

Vistro File: C:\...\AM 918 DU 20241003.vistro Scenario 3 2023 AM, + Project
Report File: C:\...\3 2023 AM plus Proj.pdf 9/30/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.052	114.8	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.352	151.2	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.173	101.4	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	NB Thru	1.078	26.7	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	WB Right	0.814	21.9	C
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.643	33.0	C
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.878	24.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	EB Left	0.754	9.9	A
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	0.817	30.9	C
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.748	11.2	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.122	35.7	E
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	1.033	144.0	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	0.241	75.1	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.877	25.7	D
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.054	11.2	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.079	11.5	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.097	8.0	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.372	25.7	D
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.398	25.8	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.458	38.6	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	0.999	81.2	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	NB Right	0.738	23.7	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.467	17.3	B
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.853	35.1	D
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.007	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.027	14.0	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.156	21.2	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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TKEAR TRANSPORTATION, PLANNING & MANAGEMENT, INC.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	114.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.052

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	194	705	301	68	1419	40	18	11	260	467	57	108
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	0	0	12	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	12	0	0	78	0	0	32
Total Hourly Volume [veh/h]	5	194	725	301	68	1431	28	18	11	182	467	57	76
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	56	208	86	20	411	8	5	3	52	134	16	22
Total Analysis Volume [veh/h]	5	223	833	346	78	1645	32	21	13	209	537	66	87
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Calculated Cycle Length [s]	122	122	122	122	122	122	122	122	122	122
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	51	51	7	40	40	19	19	28	28
g / C, Green / Cycle	0.14	0.42	0.42	0.06	0.33	0.33	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.23	0.22	0.04	0.45	0.45	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1857	1781	1604	1781	1744
c, Capacity [veh/h]	257	1481	661	100	613	609	277	250	404	396
d1, Uniform Delay [s]	51.21	27.16	26.59	56.79	40.98	40.98	43.99	50.45	45.30	45.34
k, delay calibration	0.11	0.04	0.14	0.04	0.50	0.50	0.04	0.04	0.25	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.29	0.13	0.83	4.79	176.22	178.86	0.04	4.28	11.80	12.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.56	0.52	0.78	1.37	1.37	0.08	0.89	0.86	0.86
d, Delay for Lane Group [s/veh]	61.50	27.28	27.42	61.58	217.20	219.84	44.03	54.73	57.10	57.65
Lane Group LOS	E	C	C	E	F	F	D	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.37	8.82	7.31	2.45	47.50	47.63	0.55	6.91	11.39	11.25
50th-Percentile Queue Length [ft/ln]	184.31	220.54	182.67	61.18	1187.45	1190.65	13.73	172.86	284.81	281.33
95th-Percentile Queue Length [veh/ln]	11.83	13.69	11.74	4.40	70.40	70.70	0.99	11.23	16.93	16.75
95th-Percentile Queue Length [ft/ln]	295.64	342.31	293.50	110.12	1759.91	1767.43	24.71	280.67	423.20	418.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.50	61.50	27.28	27.42	61.58	218.50	219.84	44.03	54.73	54.73	57.29	57.65	57.65
Movement LOS	E	E	C	C	E	F	F	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	32.86				211.55			53.81			57.37		
Approach LOS	C				F			D			E		
d_I, Intersection Delay [s/veh]	114.81												
Intersection LOS	F												
Intersection V/C	1.052												

Emissions

Vehicle Miles Traveled [mph]	54.44	198.89	82.61	11.47	123.50	123.20	0.90	9.51	18.17	17.85
Stops [stops/h]	217.96	521.59	216.02	72.34	1404.21	1408.00	16.23	204.42	336.80	332.68
Fuel consumption [US gal/h]	7.43	17.93	7.45	2.27	58.79	59.19	0.31	3.99	6.65	6.58
CO [g/h]	519.28	1253.14	520.64	158.68	4109.53	4137.36	22.01	279.12	464.98	460.21
NOx [g/h]	101.03	243.81	101.30	30.87	799.56	804.98	4.28	54.31	90.47	89.54
VOC [g/h]	120.35	290.43	120.66	36.78	952.42	958.87	5.10	64.69	107.76	106.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	50.38	50.38	50.38
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.133	2.278	2.377
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	662	662	575	575
d_b, Bicycle Delay [s]	27.25	27.25	30.92	30.92
l_b,int, Bicycle LOS Score for Intersection	2.716	3.017	2.089	2.751
Bicycle LOS	B	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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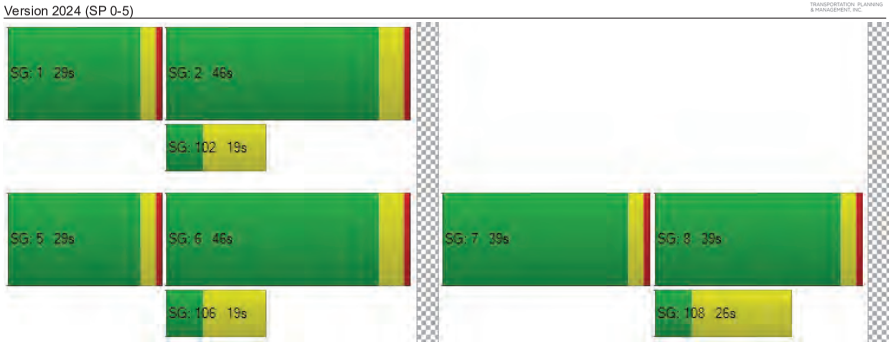

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	151.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.352

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	348	988	150	1	148	1611	391	132	61	682	11	13	84
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	20	0	0	0	12	0	0	0	6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	117	0	0	206	0	0	25
Total Hourly Volume [veh/h]	1	358	1008	105	1	148	1623	274	132	61	482	11	13	59
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	96	271	28	0	40	436	74	35	16	130	3	3	16
Total Analysis Volume [veh/h]	1	385	1084	113	1	159	1745	295	142	66	518	12	14	63
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Calculated Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	58	58	12	50	50	20	20	20	7	7
g / C, Green / Cycle	0.17	0.50	0.50	0.11	0.44	0.44	0.17	0.17	0.17	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.22	0.09	0.55	0.57	0.06	0.06	0.33	0.01	0.05
s, saturation flow rate [veh/h]	1781	3560	1781	1781	1870	1779	1781	1836	1589	1781	1634
c, Capacity [veh/h]	310	1792	896	190	815	775	310	320	277	110	101
d1, Uniform Delay [s]	47.39	18.25	18.25	50.33	32.39	32.39	41.53	41.51	47.39	50.87	53.03
k, delay calibration	0.50	0.13	0.13	0.04	0.50	0.50	0.04	0.04	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	133.96	0.21	0.42	3.87	123.53	151.30	0.23	0.22	405.10	0.16	4.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.24	0.45	0.45	0.84	1.25	1.32	0.33	0.33	1.87	0.11	0.76
d, Delay for Lane Group [s/veh]	181.35	18.46	18.67	54.19	155.92	183.69	41.76	41.73	452.49	51.03	57.49
Lane Group LOS	F	B	B	D	F	F	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	20.10	6.35	6.40	4.58	48.76	52.37	2.58	2.63	39.03	0.33	2.31
50th-Percentile Queue Length [ft/ln]	502.41	158.68	160.12	114.60	1218.93	1309.20	64.39	65.85	975.63	8.29	57.73
95th-Percentile Queue Length [veh/ln]	30.39	10.48	10.56	8.10	70.13	76.84	4.64	4.74	61.49	0.60	4.16
95th-Percentile Queue Length [ft/ln]	759.81	261.97	263.89	202.38	1753.18	1920.96	115.90	118.54	1537.17	14.92	103.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	181.3	181.3	18.51	18.67	54.19	54.19	167.4	183.6	41.76	41.73	452.49	51.03	57.49	57.49
Movement LOS	F	F	B	B	D	D	F	F	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	58.23				161.39				334.81			56.62		
Approach LOS	E				F				F			E		
d_I, Intersection Delay [s/veh]	151.23													
Intersection LOS	F													
Intersection V/C	1.352													

Emissions

Vehicle Miles Traveled [mph]	72.64	150.14	75.13	38.20	243.54	243.54	6.41	6.56	32.30	0.59	3.75
Stops [stops/h]	630.62	398.35	200.99	143.84	1530.01	1643.32	80.82	82.66	1224.63	10.40	72.47
Fuel consumption [US gal/h]	24.57	13.10	6.59	4.86	59.73	66.90	1.58	1.62	55.78	0.21	1.46
CO [g/h]	1717.66	915.41	460.71	339.88	4175.07	4676.36	110.71	113.25	3899.24	14.41	101.75
NOx [g/h]	334.19	178.11	89.64	66.13	812.32	909.85	21.54	22.03	758.65	2.80	19.80
VOC [g/h]	398.08	212.15	106.77	78.77	967.61	1083.79	25.66	26.25	903.69	3.34	23.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	46.89	46.89	46.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.516	2.861	2.149
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	877	877	349	349
d_b, Bicycle Delay [s]	18.09	18.09	39.10	39.10
l_b,int, Bicycle LOS Score for Intersection	2.454	3.340	3.097	1.748
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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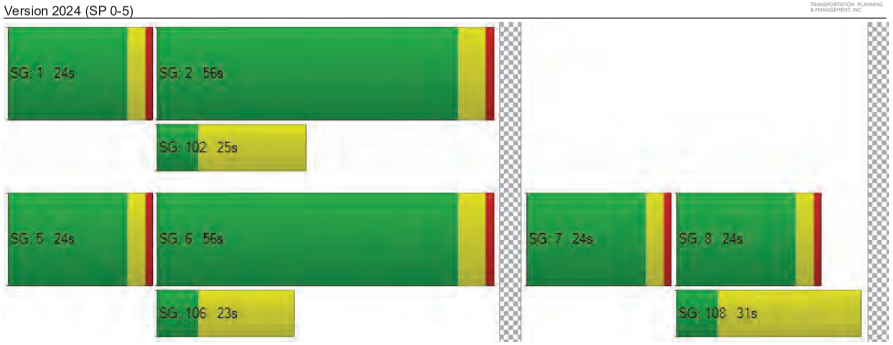

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	101.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.173

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1181	1173	138	3	49	1285	968	256	92	816	146	92	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	30	6	0	0	18	0	0	0	7	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	43	0	0	0	290	0	0	247	0	0	17
Total Hourly Volume [veh/h]	1	1221	1203	101	3	49	1303	678	256	92	576	150	92	38
Peak Hour Factor	1.000	0.840	0.840	0.840	1.000	0.840	0.840	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	363	358	30	1	15	388	202	76	27	171	45	27	11
Total Analysis Volume [veh/h]	1	1454	1432	120	3	58	1551	807	305	110	686	179	110	45
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	69	69	7	39	73	29	29	11	11	11
g / C, Green / Cycle	0.28	0.51	0.51	0.05	0.29	0.54	0.21	0.21	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.42	0.29	0.30	0.03	0.30	0.51	0.12	0.12	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1799	1781	5094	1589	1781	1826	1781	1815	1744
c, Capacity [veh/h]	951	1819	919	95	1473	852	373	382	140	143	137
d1, Uniform Delay [s]	36.83	5.75	5.82	63.12	48.34	29.74	48.03	48.03	61.57	61.53	61.60
k, delay calibration	0.24	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	240.98	1.25	2.68	2.72	38.87	20.40	0.94	0.91	3.83	3.62	4.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.53	0.56	0.58	0.64	1.05	0.95	0.55	0.55	0.79	0.79	0.80
d, Delay for Lane Group [s/veh]	277.82	7.00	8.50	65.84	87.21	50.14	48.97	48.94	65.40	65.16	65.67
Lane Group LOS	F	A	A	E	F	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	45.58	2.96	3.48	2.11	21.39	27.71	6.34	6.50	3.94	3.98	3.90
50th-Percentile Queue Length [ft/ln]	1139.46	74.04	86.88	52.65	534.80	692.86	158.55	162.45	98.53	99.41	97.59
95th-Percentile Queue Length [veh/ln]	69.79	5.33	6.26	3.79	29.95	36.35	10.47	10.68	7.09	7.16	7.03
95th-Percentile Queue Length [ft/ln]	1744.79	133.26	156.38	94.76	748.66	908.70	261.80	266.96	177.36	178.94	175.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	277.8	277.8	7.44	8.50	65.84	65.84	87.21	50.14	48.96	48.94	0.00	65.31	65.46	65.67
Movement LOS	F	F	A	A	E	E	F	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	138.31				74.30				20.50			65.41		
Approach LOS	F				E				C			E		
d_I, Intersection Delay [s/veh]	101.37													
Intersection LOS	F													
Intersection V/C	1.173													

Emissions

Vehicle Miles Traveled [mph]	249.20	174.28	91.53	11.48	291.89	151.87	9.48	9.72	3.54	3.58	3.50
Stops [stops/h]	2412.97	156.78	91.99	55.74	1698.79	733.61	167.88	172.00	104.33	105.26	103.33
Fuel consumption [US gal/h]	105.83	9.49	5.20	1.90	58.65	22.56	3.36	3.44	2.20	2.22	2.18
CO [g/h]	7397.54	663.39	363.54	133.08	4099.62	1576.95	234.84	240.61	154.06	155.31	152.72
NOx [g/h]	1439.29	129.07	70.73	25.89	797.64	306.82	45.69	46.81	29.97	30.22	29.71
VOC [g/h]	1714.45	153.75	84.25	30.84	950.13	365.47	54.43	55.76	35.71	36.00	35.40

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.341	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
I_b,int, Bicycle LOS Score for Intersection	3.237		3.018		2.244		1.849	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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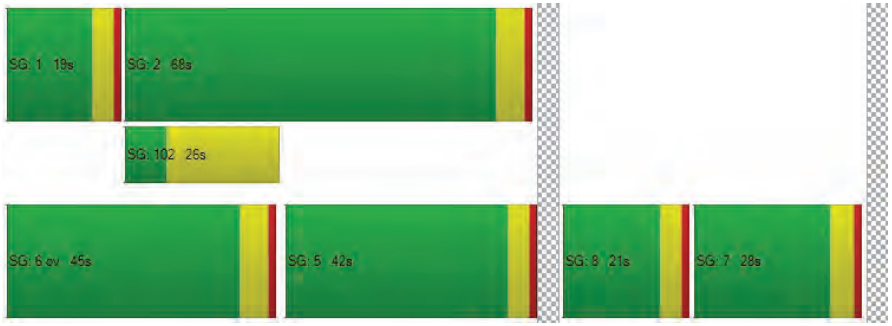

Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.078

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

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Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	1965	463	0	520	1728	0	0	0	1058	0	0	528
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	76	12	0	0	29	0	0	0	24	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	143	0	0	0	0	0	0	325	0	0	158
Total Hourly Volume [veh/h]	0	2041	332	0	520	1757	0	0	0	757	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	607	99	0	155	523	0	0	0	225	0	0	110
Total Analysis Volume [veh/h]	0	2430	395	0	619	2092	0	0	0	901	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Calculated Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	25	35	22	
g / C, Green / Cycle	0.47	0.47	0.37	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.48	0.25	0.35	0.31	0.32	
s, saturation flow rate [veh/h]	5094	1589	1781	6792	2813	
c, Capacity [veh/h]	2395	747	661	3476	927	
d1, Uniform Delay [s]	18.02	12.70	20.61	11.71	22.49	
k, delay calibration	0.50	0.50	0.14	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	22.16	2.67	8.51	0.78	4.09	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	1.01	0.53	0.94	0.60	0.97	
d, Delay for Lane Group [s/veh]	40.18	15.37	29.13	12.49	26.59	
Lane Group LOS	F	B	C	B	C	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	14.59	3.93	9.47	4.46	7.01	
50th-Percentile Queue Length [ft/ln]	364.77	98.27	236.75	111.60	175.26	
95th-Percentile Queue Length [veh/ln]	21.08	7.08	14.52	7.93	11.35	
95th-Percentile Queue Length [ft/ln]	526.99	176.89	362.92	198.22	283.81	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	40.18	15.37	29.13	29.13	12.49	0.00	0.00	0.00	26.59	0.00	0.00	0.00
Movement LOS		F	B	C	C	B				C			
d_A, Approach Delay [s/veh]	36.71			16.29				26.59			0.00		
Approach LOS	D			B				C			A		
d_I, Intersection Delay [s/veh]	26.69												
Intersection LOS	C												
Intersection V/C	1.078												

Emissions

Vehicle Miles Traveled [mph]	351.61	57.16	106.02	358.29	64.48	
Stops [stops/h]	2317.33	208.11	501.35	945.28	742.27	
Fuel consumption [US gal/h]	60.73	5.78	13.54	29.35	11.63	
CO [g/h]	4245.17	404.20	946.20	2051.80	812.96	
NOx [g/h]	825.96	78.64	184.10	399.20	158.17	
VOC [g/h]	983.86	93.68	219.29	475.52	188.41	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.263
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
I_b,int, Bicycle LOS Score for Intersection	3.192	2.423	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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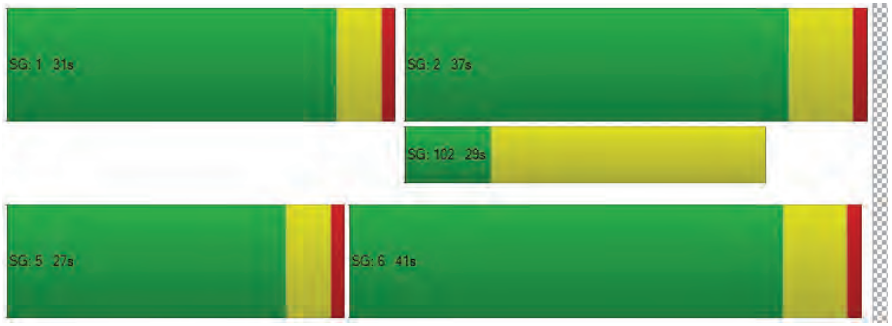

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

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Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	61	1808	235	4	440	1970	372	140	8	20	1	70	30	476
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	88	7	0	0	53	0	0	0	1	0	5	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	73	0	0	0	112	0	0	6	0	0	0	143
Total Hourly Volume [veh/h]	1	63	1896	169	4	440	2023	260	140	8	15	1	75	30	333
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	16	484	43	1	112	516	66	36	2	4	0	19	8	85
Total Analysis Volume [veh/h]	1	64	1935	172	4	449	2064	265	143	8	15	1	77	31	340
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	89	89	89	89	89	89	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	3	41	41	14	51	51	6	6	6	12	12	12
g / C, Green / Cycle	0.04	0.46	0.46	0.15	0.58	0.58	0.07	0.07	0.07	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.38	0.11	0.13	0.41	0.17	0.04	0.00	0.01	0.04	0.12	0.12
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1630	1589
c, Capacity [veh/h]	125	2352	734	529	2947	920	230	124	106	248	227	221
d1, Uniform Delay [s]	42.14	20.79	14.46	36.74	13.29	9.49	40.46	38.95	39.15	34.47	37.26	37.26
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.08	0.08	0.08	0.18	0.18
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.25	0.28	0.06	1.59	0.11	0.06	2.05	0.16	0.45	0.53	11.99	12.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.82	0.23	0.86	0.70	0.29	0.62	0.06	0.14	0.31	0.83	0.83
d, Delay for Lane Group [s/veh]	43.39	21.08	14.52	38.33	13.40	9.55	42.51	39.11	39.60	35.00	49.25	49.53
Lane Group LOS	D	C	B	D	B	A	D	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.71	10.89	2.02	4.82	8.74	2.41	1.57	0.17	0.32	1.53	4.65	4.56
50th-Percentile Queue Length [ft/ln]	17.86	272.16	50.49	120.42	218.40	60.24	39.23	4.19	7.96	38.37	116.37	113.94
95th-Percentile Queue Length [veh/ln]	1.29	16.30	3.64	8.42	13.58	4.34	2.82	0.30	0.57	2.76	8.19	8.06
95th-Percentile Queue Length [ft/ln]	32.15	407.44	90.88	210.40	339.58	108.43	70.61	7.54	14.34	69.07	204.83	201.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.39	43.39	21.08	14.52	38.33	38.33	13.40	9.55	42.51	39.11	39.60	35.00	35.00	49.25	49.40
Movement LOS	D	D	C	B	D	D	B	A	D	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	21.23				17.10				42.08			46.89			
Approach LOS	C				B				D			D			
d_I, Intersection Delay [s/veh]	21.85														
Intersection LOS	C														
Intersection V/C	0.814														

Emissions

Vehicle Miles Traveled [mph]	14.51	431.85	38.39	65.55	298.65	38.34	18.24	1.02	1.91	27.38	65.92	64.29
Stops [stops/h]	57.88	1322.97	81.81	390.22	1061.62	97.60	127.13	6.79	12.91	62.18	188.56	184.61
Fuel consumption [US gal/h]	1.49	33.39	2.54	8.39	23.79	2.63	2.69	0.14	0.27	2.03	5.64	5.51
CO [g/h]	104.21	2333.75	177.58	586.32	1662.96	184.03	188.04	10.01	18.94	141.62	394.06	385.35
NOx [g/h]	20.28	454.06	34.55	114.08	323.55	35.81	36.59	1.95	3.68	27.55	76.67	74.97
VOC [g/h]	24.15	540.87	41.16	135.89	385.41	42.65	43.58	2.32	4.39	32.82	91.33	89.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.12	0.00	34.12	34.12
I_p,int, Pedestrian LOS Score for Intersectio	3.429	0.000	2.565	2.754
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	461	349
d_b, Bicycle Delay [s]	8.28	8.28	26.30	30.29
I_b,int, Bicycle LOS Score for Intersection	2.794	2.904	1.702	2.409
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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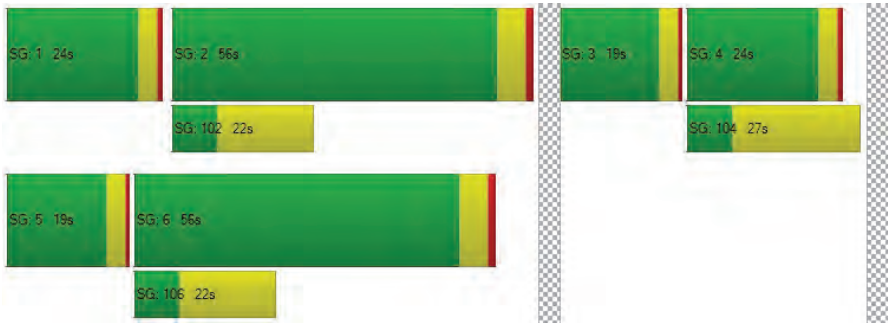

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	84	1607	388	1	92	1561	407	2	310	108	60	298	227	187
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	97	23	0	0	59	0	0	0	0	0	14	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	123	0	0	0	122	0	0	0	18	0	0	56
Total Hourly Volume [veh/h]	2	84	1704	288	1	92	1620	285	2	310	108	42	312	227	131
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	22	453	77	0	24	431	76	1	82	29	11	83	60	35
Total Analysis Volume [veh/h]	2	89	1813	306	1	98	1723	303	2	330	115	45	332	241	139
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	91	91	10	91	91	17	16	16	17	16	16
g / C, Green / Cycle	0.06	0.58	0.58	0.06	0.58	0.58	0.11	0.10	0.10	0.11	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.19	0.03	0.34	0.19	0.10	0.04	0.05	0.10	0.07	0.09
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1682	3431	3532	1577
c, Capacity [veh/h]	111	3915	916	217	2939	917	379	193	175	374	362	162
d1, Uniform Delay [s]	72.72	18.85	17.09	70.94	20.85	17.01	68.78	65.99	66.06	68.98	67.85	69.33
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.40	0.98	0.56	0.86	0.97	2.58	0.57	0.65	2.85	0.79	5.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.46	0.33	0.46	0.59	0.33	0.88	0.43	0.44	0.89	0.67	0.86
d, Delay for Lane Group [s/veh]	78.35	19.24	18.07	71.50	21.71	17.97	71.35	66.55	66.71	71.83	68.63	74.37
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.82	9.64	6.09	1.92	13.02	5.75	6.74	3.18	2.95	6.76	4.73	5.75
50th-Percentile Queue Length [ft/ln]	95.46	240.95	152.13	47.95	325.47	143.69	168.40	79.40	73.82	168.97	118.21	143.84
95th-Percentile Queue Length [veh/ln]	6.87	14.73	10.13	3.45	18.94	9.68	10.99	5.72	5.32	11.02	8.29	9.69
95th-Percentile Queue Length [ft/ln]	171.83	368.23	253.27	86.30	473.41	241.99	274.81	142.91	132.88	275.57	207.37	242.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.35	78.35	19.24	18.07	71.50	71.50	21.71	17.97	71.35	71.35	66.60	66.71	71.83	68.63	74.37
Movement LOS	E	E	B	B	E	E	C	B	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	21.51				23.50				69.82				71.25		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	32.96														
Intersection LOS	C														
Intersection V/C	0.643														

Emissions

Vehicle Miles Traveled [mph]	36.23	721.81	121.83	22.09	384.54	67.62	82.74	20.68	19.19	34.81	25.27	14.57
Stops [stops/h]	87.56	883.99	139.53	87.95	895.57	131.80	308.91	72.82	67.71	309.97	216.85	131.93
Fuel consumption [US gal/h]	3.43	41.70	6.91	3.29	31.93	5.06	9.93	2.38	2.21	8.00	5.60	3.43
CO [g/h]	239.46	2914.65	483.12	230.05	2231.74	354.02	694.30	166.21	154.42	559.05	391.70	239.92
NOx [g/h]	46.59	567.08	94.00	44.76	434.22	68.88	135.09	32.34	30.04	108.77	76.21	46.68
VOC [g/h]	55.50	675.50	111.97	53.32	517.23	82.05	160.91	38.52	35.79	129.57	90.78	55.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	67.89		67.89		67.89		67.89	
l_p,int, Pedestrian LOS Score for Intersectio	3.533		3.837		2.710		2.896	
Crosswalk LOS	D		D		B		C	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	577		577		322		450	
d_b, Bicycle Delay [s]	39.74		39.74		55.24		47.17	
l_b,int, Bicycle LOS Score for Intersection	2.521		2.742		1.708		2.193	
Bicycle LOS	B		B		A		B	

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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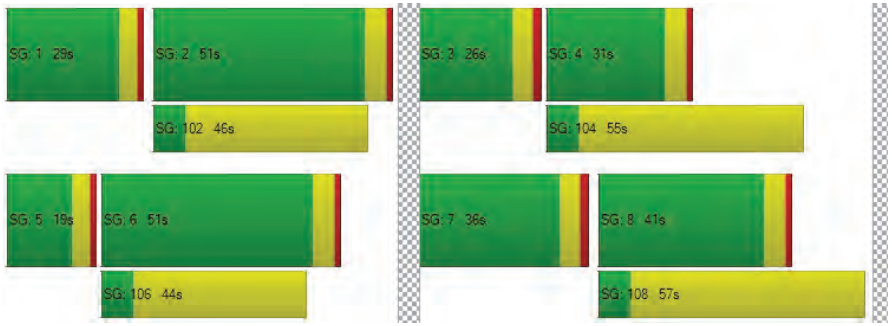

Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.878

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	38	1287	2	2	8	1439	388	167	4	10	3	7	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	119	0	0	0	73	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	116	0	0	3	0	0	4
Total Hourly Volume [veh/h]	1	38	1406	1	2	8	1512	272	167	4	7	3	7	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	404	0	1	2	434	78	48	1	2	1	2	3
Total Analysis Volume [veh/h]	1	44	1616	1	2	9	1738	313	192	5	8	3	8	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	69	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	42	42	1	40	40	6	6	2
g / C, Green / Cycle	0.04	0.61	0.61	0.01	0.58	0.58	0.09	0.09	0.03
(v / s)_i Volume / Saturation Flow Rate	0.03	0.43	0.43	0.01	0.55	0.58	0.06	0.06	0.01
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1870	1774	1781	1768	1708
c, Capacity [veh/h]	76	1146	1146	16	1083	1028	162	161	45
d1, Uniform Delay [s]	32.46	9.12	9.12	34.12	13.54	14.49	30.29	30.30	33.17
k, delay calibration	0.04	0.28	0.28	0.04	0.40	0.44	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.67	2.06	2.06	15.97	14.77	25.70	4.07	4.12	3.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.71	0.71	0.67	0.95	1.00	0.63	0.64	0.49
d, Delay for Lane Group [s/veh]	35.12	11.18	11.18	50.08	28.32	40.19	34.36	34.42	36.19
Lane Group LOS	D	B	B	D	C	D	C	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.77	7.07	7.07	0.24	13.56	17.09	1.77	1.76	0.39
50th-Percentile Queue Length [ft/ln]	19.24	176.76	176.77	5.96	338.92	427.14	44.20	44.04	9.73
95th-Percentile Queue Length [veh/ln]	1.39	11.43	11.43	0.43	19.60	23.86	3.18	3.17	0.70
95th-Percentile Queue Length [ft/ln]	34.64	285.78	285.79	10.74	489.88	596.61	79.55	79.27	17.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.12	35.12	11.18	11.18	50.08	50.08	33.18	40.19	34.39	34.42	34.42	36.19	36.19	36.19
Movement LOS	D	D	B	B	D	D	C	D	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	11.83				34.34				34.39			36.19		
Approach LOS	B				C				C			D		
d_I, Intersection Delay [s/veh]	24.88													
Intersection LOS	C													
Intersection V/C	0.878													

Emissions

Vehicle Miles Traveled [mph]	15.92	286.11	286.08	4.38	408.28	408.28	24.74	24.63	0.42
Stops [stops/h]	40.21	369.29	369.30	12.46	708.07	892.38	92.33	92.01	20.33
Fuel consumption [US gal/h]	1.20	15.66	15.66	0.49	32.72	38.62	2.25	2.24	0.29
CO [g/h]	83.83	1094.48	1094.40	34.25	2287.07	2699.50	157.08	156.46	20.38
NOx [g/h]	16.31	212.95	212.93	6.66	444.98	525.23	30.56	30.44	3.97
VOC [g/h]	19.43	253.66	253.64	7.94	530.05	625.64	36.41	36.26	4.72

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.93	0.00	26.93	26.93
l_p,int, Pedestrian LOS Score for Intersectio	2.957	0.000	2.158	1.730
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1161	1161	580	580
d_b, Bicycle Delay [s]	6.07	6.07	17.36	17.36
l_b,int, Bicycle LOS Score for Intersection	2.931	3.349	1.903	1.603
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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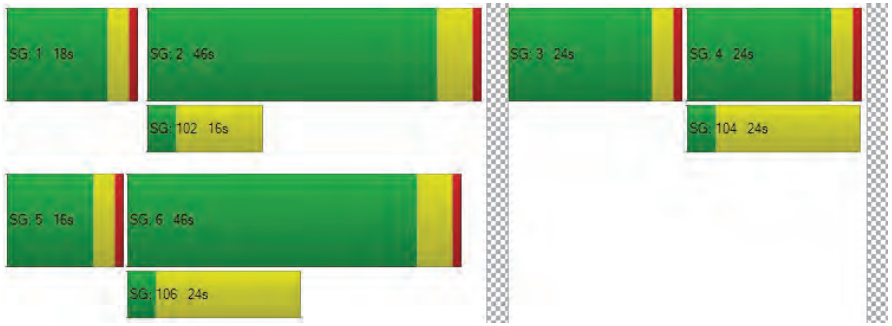

Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	60	1194	1152	301	134	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	119	73	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	90	0	2
Total Hourly Volume [veh/h]	1	64	1313	1225	211	134	5
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	377	352	61	39	1
Total Analysis Volume [veh/h]	1	74	1509	1408	243	154	6
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Calculated Cycle Length [s]	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	3	40	32	32	6	6
g / C, Green / Cycle	0.06	0.71	0.57	0.57	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.04	0.42	0.44	0.46	0.09	0.00
s, saturation flow rate [veh/h]	1781	3560	1870	1778	1781	1589
c, Capacity [veh/h]	110	2516	1073	1020	206	184
d1, Uniform Delay [s]	25.88	4.20	9.15	9.55	24.11	22.11
k, delay calibration	0.04	0.15	0.20	0.22	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.75	0.33	2.18	3.16	5.33	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.60	0.77	0.81	0.75	0.03
d, Delay for Lane Group [s/veh]	28.64	4.53	11.33	12.71	29.44	22.18
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.01	2.33	6.22	6.71	2.15	0.07
50th-Percentile Queue Length [ft/ln]	25.13	58.35	155.49	167.63	53.67	1.74
95th-Percentile Queue Length [veh/ln]	1.81	4.20	10.31	10.95	3.86	0.12
95th-Percentile Queue Length [ft/ln]	45.23	105.03	257.74	273.80	96.60	3.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.64	28.64	4.53	11.90	12.71	29.44	22.18
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	5.67			12.02		29.16	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	9.87						
Intersection LOS	A						
Intersection V/C	0.754						

Emissions

Vehicle Miles Traveled [mph]	52.33	1052.84	292.11	292.11	51.96	2.02
Stops [stops/h]	64.39	299.05	398.44	429.56	137.52	4.45
Fuel consumption [US gal/h]	2.95	46.39	16.13	16.53	3.82	0.13
CO [g/h]	205.99	3242.40	1127.53	1155.72	267.11	9.44
NOx [g/h]	40.08	630.85	219.38	224.86	51.97	1.84
VOC [g/h]	47.74	751.46	261.32	267.85	61.90	2.19

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0		8.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	20.67		0.00		20.67	
l_p,int, Pedestrian LOS Score for Intersectio	2.864		0.000		2.107	
Crosswalk LOS	C		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1424		1424		712	
d_b, Bicycle Delay [s]	2.33		2.33		11.66	
l_b,int, Bicycle LOS Score for Intersection	2.866		2.996		1.560	
Bicycle LOS	C		C		A	

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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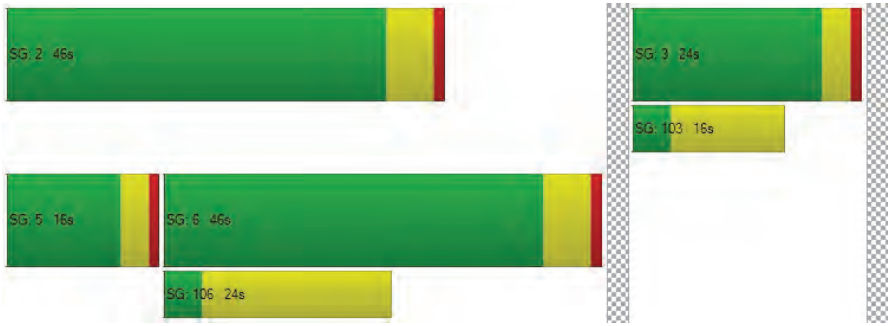

Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

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Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	41	605	21	209	386	563	314	41	5	136	94	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	123	14	0	75	0	0	0	21	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	11	0	0	169	0	0	8	0	0	101
Total Hourly Volume [veh/h]	75	728	24	209	461	394	314	41	18	145	94	234
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	204	7	59	129	111	88	12	5	41	26	66
Total Analysis Volume [veh/h]	84	818	27	235	518	443	353	46	20	163	106	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	71	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	4	18	18	11	25	25	10	10	13	13
g / C, Green / Cycle	0.06	0.25	0.25	0.16	0.35	0.35	0.14	0.14	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.23	0.23	0.13	0.28	0.28	0.12	0.12	0.16	0.16
s, saturation flow rate [veh/h]	1781	1870	1849	1781	1870	1590	1781	1779	1803	1589
c, Capacity [veh/h]	109	472	467	278	650	553	257	257	331	292
d1, Uniform Delay [s]	33.05	25.82	25.82	29.31	21.03	21.09	29.64	29.64	28.23	28.24
k, delay calibration	0.04	0.11	0.11	0.20	0.22	0.23	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.29	6.43	6.50	12.05	4.59	5.67	2.39	2.40	2.44	2.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.90	0.90	0.85	0.80	0.80	0.81	0.81	0.85	0.85
d, Delay for Lane Group [s/veh]	37.34	32.25	32.32	41.36	25.62	26.77	32.04	32.04	30.67	31.00
Lane Group LOS	D	C	C	D	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.51	7.39	7.32	4.37	7.20	6.34	3.51	3.51	4.67	4.15
50th-Percentile Queue Length [ft/ln]	37.86	184.87	183.02	109.14	179.95	158.62	87.75	87.67	116.84	103.81
95th-Percentile Queue Length [veh/ln]	2.73	11.85	11.76	7.79	11.60	10.48	6.32	6.31	8.22	7.47
95th-Percentile Queue Length [ft/ln]	68.14	296.37	293.95	194.80	289.95	261.89	157.95	157.80	205.48	186.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.34	32.29	32.32	41.36	25.62	26.77	32.04	32.04	32.04	30.67	30.67	31.00
Movement LOS	D	C	C	D	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	32.74			29.14			32.04			30.82		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	30.91											
Intersection LOS	C											
Intersection V/C	0.817											

Emissions

Vehicle Miles Traveled [mph]	48.51	245.38	242.63	163.96	361.09	309.41	15.77	15.75	31.25	27.58
Stops [stops/h]	76.49	373.56	369.81	220.52	363.61	320.51	177.31	177.14	236.10	209.77
Fuel consumption [US gal/h]	3.06	14.95	14.79	11.56	21.53	18.72	3.00	2.99	4.35	3.87
CO [g/h]	213.76	1045.28	1034.15	807.97	1505.03	1308.47	209.37	209.16	304.38	270.38
NOx [g/h]	41.59	203.37	201.21	157.20	292.82	254.58	40.73	40.70	59.22	52.61
VOC [g/h]	49.54	242.25	239.67	187.25	348.81	303.25	48.52	48.48	70.54	62.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.48	0.00	25.48	25.48
l_p,int, Pedestrian LOS Score for Intersectio	2.624	0.000	2.338	2.380
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	693	693	435	561
d_b, Bicycle Delay [s]	15.21	15.21	21.82	18.44
l_b,int, Bicycle LOS Score for Intersection	2.335	2.686	2.264	2.604
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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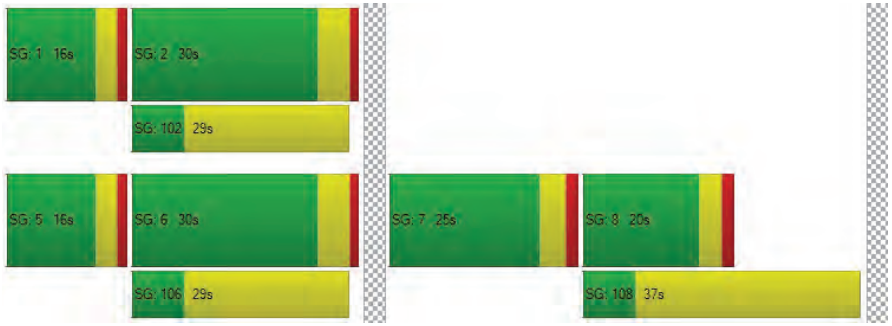

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	11.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	465	254	273	202	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	171	104	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	636	358	273	202	57
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	177	99	76	56	16
Total Analysis Volume [veh/h]	140	707	398	303	224	63
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Calculated Cycle Length [s]	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	20	12	12	7	7
g / C, Green / Cycle	0.10	0.55	0.33	0.33	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.38	0.21	0.19	0.13	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	186	1022	624	531	325	290
d1, Uniform Delay [s]	16.06	6.09	10.40	10.11	14.11	12.85
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.31	1.20	1.55	1.38	2.62	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.69	0.64	0.57	0.69	0.22
d, Delay for Lane Group [s/veh]	18.37	7.30	11.95	11.49	16.74	13.22
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.90	1.04	1.68	1.25	1.64	0.39
50th-Percentile Queue Length [ft/ln]	22.47	25.95	41.94	31.18	40.98	9.73
95th-Percentile Queue Length [veh/ln]	1.62	1.87	3.02	2.24	2.95	0.70
95th-Percentile Queue Length [ft/ln]	40.44	46.71	75.50	56.12	73.76	17.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.37	7.30	11.95	11.49	16.74	13.22
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	9.13		11.75		15.96	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	11.20					
Intersection LOS	B					
Intersection V/C	0.748					

Emissions

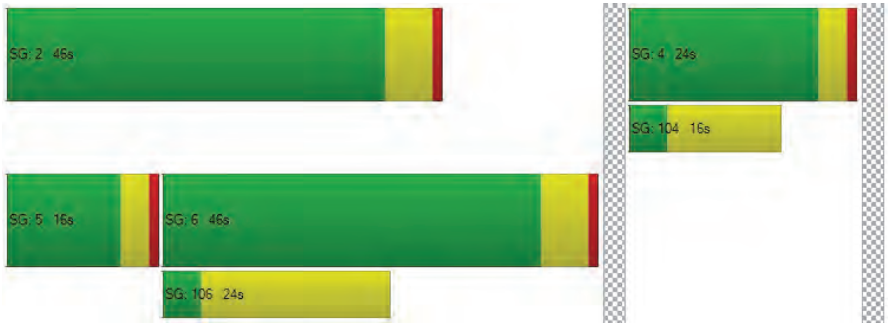
Vehicle Miles Traveled [mph]	17.27	87.23	229.85	174.99	52.61	14.80
Stops [stops/h]	87.99	101.62	164.25	122.09	160.48	38.10
Fuel consumption [US gal/h]	2.74	5.86	11.71	8.83	3.82	0.99
CO [g/h]	191.21	409.30	818.35	617.24	266.69	69.14
NOx [g/h]	37.20	79.64	159.22	120.09	51.89	13.45
VOC [g/h]	44.32	94.86	189.66	143.05	61.81	16.02

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.26	0.00	11.26
l_p,int, Pedestrian LOS Score for Intersectio	2.674	0.000	2.132
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2176	2176	1088
d_b, Bicycle Delay [s]	0.14	0.14	3.83
l_b,int, Bicycle LOS Score for Intersection	2.957	2.716	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.122

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	548	0	14	295	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	160	0	0	99	7	15	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	708	0	14	394	7	15	0	2	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	192	0	4	107	2	4	0	1	0	0	10
Total Analysis Volume [veh/h]	1	770	0	14	428	8	16	0	2	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.10
d_M, Delay for Movement [s/veh]	8.20	0.00	0.00	9.28	0.00	0.00	35.71	29.16	14.12	30.03	26.90	14.95
Movement LOS	A	A	A	A	A	A	E	D	B	D	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.41	0.41	0.41	0.32	0.32	0.32
95th-Percentile Queue Length [ft/ln]	0.04	0.04	0.04	0.59	0.59	0.59	10.14	10.14	10.14	8.03	8.03	8.03
d_A, Approach Delay [s/veh]	0.01			0.29			33.31			14.95		
Approach LOS	A			A			D			B		
d_I, Intersection Delay [s/veh]	1.03											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	144.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.033

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	387	32	41	254	0	0	0	0	10	0	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	8	0	0	6	64	152	2	17	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	31	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	395	32	41	260	95	152	2	17	10	1	161
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	106	9	11	70	26	41	1	5	3	0	43
Total Analysis Volume [veh/h]	12	425	34	44	280	102	163	2	18	11	1	173
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.04	0.00	0.00	1.03	0.01	0.03	0.05	0.00	0.28
d_M, Delay for Movement [s/veh]	8.09	0.00	0.00	8.40	0.00	0.00	144.04	134.88	126.29	23.12	22.44	14.00
Movement LOS	A	A	A	A	A	A	F	F	F	C	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.12	0.00	0.00	9.02	9.02	9.02	1.44	1.44	1.44
95th-Percentile Queue Length [ft/ln]	0.77	0.00	0.00	3.12	0.00	0.00	225.55	225.55	225.55	35.97	35.97	35.97
d_A, Approach Delay [s/veh]	0.21			0.87			142.20			14.59		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	23.07											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	75.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.241

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	232	128	45	0	546	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	21	0	0	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	232	149	45	0	546	186
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	64	41	12	0	151	51
Total Analysis Volume [veh/h]	0	14	256	164	50	0	603	205
Pedestrian Volume [ped/h]	0			0		0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.24	0.30	0.00	0.00	0.00	0.44	0.00
d_M, Delay for Movement [s/veh]	75.11	75.11	17.40	0.00	0.00	12.14	8.66	0.00
Movement LOS	F	F	C	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.18	3.18	3.18	0.00	0.00	1.50	1.50	1.50
95th-Percentile Queue Length [ft/ln]	79.56	79.56	79.56	0.00	0.00	37.41	37.41	37.41
d_A, Approach Delay [s/veh]	20.39			0.00		6.46		
Approach LOS	C			A		A		
d_I, Intersection Delay [s/veh]	8.30							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	25.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	2	39	63	2	30	443	13	2	9	0	225	26	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	2	0	0	0	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	39	63	2	32	443	13	2	9	0	225	26	50
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	12	19	1	10	133	4	1	3	0	68	8	15
Total Analysis Volume [veh/h]	2	47	76	2	39	534	16	2	11	0	271	31	60
Pedestrian Volume [ped/h]	0			0				0			0		

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	628	674	529	603
Degree of Utilization, x	0.20	0.88	0.02	0.60

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.74	10.58	0.08	3.98
95th-Percentile Queue Length [ft]	18.42	264.56	1.89	99.61
Approach Delay [s/veh]	10.15	34.28	9.97	17.55
Approach LOS	B	D	A	C
Intersection Delay [s/veh]	25.67			
Intersection LOS	D			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.054

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	31	108	1	65	13	0	49	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	21	0	0	0	0	34	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	129	1	65	13	0	83	91
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	34	0	17	3	0	22	24
Total Analysis Volume [veh/h]	33	136	1	68	14	0	87	96
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.14	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	11.20	9.23	8.60	0.00	0.00	9.23	7.52	0.00
Movement LOS	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.17	0.48	0.00	0.00	0.00	0.18	0.18	0.00
95th-Percentile Queue Length [ft/ln]	4.25	11.94	0.04	0.04	0.04	4.56	4.56	0.00
d_A, Approach Delay [s/veh]	9.62		0.10			3.58		
Approach LOS	A		A			A		
d_I, Intersection Delay [s/veh]	5.26							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.079

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	45	43	78	31	65	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	21	0	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	43	99	31	65	85
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	12	27	8	18	23
Total Analysis Volume [veh/h]	49	47	108	34	71	92
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.05	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	11.50	9.52	0.00	0.00	7.63	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.44	0.44	0.00	0.00	0.16	0.00
95th-Percentile Queue Length [ft/ln]	11.00	11.00	0.00	0.00	3.88	0.00
d_A, Approach Delay [s/veh]	10.53		0.00		3.32	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.87					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.097

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	10	114	18	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	21	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	10	10	135	18	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	3	3	37	5	5
Total Analysis Volume [veh/h]	110	11	11	147	20	20
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	727	747	688	760	760	730
Degree of Utilization, x	0.08	0.08	0.02	0.10	0.10	0.05

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.27	0.26	0.05	0.32	0.32	0.17
95th-Percentile Queue Length [ft]	6.78	6.59	1.22	8.00	8.00	4.34
Approach Delay [s/veh]	8.02		7.95			8.22
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.01					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	25.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.372

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	227	71	37	439	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	0	0	0	0	0	21	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	0	18	66	1	8	4	227	92	37	439	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	0	5	17	0	2	1	59	24	10	113	4
Total Analysis Volume [veh/h]	102	0	19	68	1	8	4	234	95	38	453	15
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Stop			Stop			Free			Free		
Flared Lane	No			No								
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance	No			No								
Number of Storage Spaces in Median	0			2			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.00	0.03	0.25	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	25.67	17.38	9.88	22.55	22.34	15.40	8.30	0.00	0.00	8.02	0.00	0.00
Movement LOS	D	C	A	C	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.65	0.08	0.08	1.04	1.04	1.04	0.01	0.00	0.00	0.10	0.00	0.00
95th-Percentile Queue Length [ft/ln]	41.21	1.93	1.93	26.03	26.03	26.03	0.28	0.00	0.00	2.39	0.00	0.00
d_A, Approach Delay [s/veh]	23.19			21.80			0.10			0.60		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	4.65											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

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Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	53	5	117	5	5	5	5	359	115	0	300	415	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	35	0	0	2	0	0	35	0	0	0	2
Total Hourly Volume [veh/h]	53	5	82	5	5	3	5	359	80	0	300	415	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	1	21	1	1	1	1	93	21	0	77	107	1
Total Analysis Volume [veh/h]	55	5	85	5	5	3	5	370	82	0	309	428	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	5	8	1	4	1	66	66	23	88	88
g / C, Green / Cycle	0.04	0.07	0.01	0.04	0.01	0.55	0.55	0.19	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.00	0.00	0.00	0.12	0.13	0.17	0.12	0.12
s, saturation flow rate [veh/h]	1781	1603	1781	1754	1781	1870	1755	1781	1870	1865
c, Capacity [veh/h]	72	111	12	62	12	1034	970	335	1373	1370
d1, Uniform Delay [s]	57.02	55.09	59.37	56.07	59.37	13.69	13.73	47.86	4.79	4.79
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.19	5.30	21.73	0.34	21.99	0.50	0.55	4.53	0.24	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.81	0.42	0.13	0.42	0.22	0.23	0.92	0.16	0.16
d, Delay for Lane Group [s/veh]	63.21	60.38	81.09	56.41	81.36	14.19	14.27	52.39	5.04	5.04
Lane Group LOS	E	E	F	E	F	B	B	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.78	2.85	0.22	0.24	0.22	3.31	3.18	9.46	1.55	1.54
50th-Percentile Queue Length [ft/ln]	44.40	71.18	5.59	6.03	5.60	82.81	79.51	236.57	38.67	38.59
95th-Percentile Queue Length [veh/ln]	3.20	5.13	0.40	0.43	0.40	5.96	5.72	14.51	2.78	2.78
95th-Percentile Queue Length [ft/ln]	79.91	128.13	10.06	10.85	10.08	149.05	143.12	362.69	69.61	69.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.21	60.38	60.38	81.09	56.41	56.41	81.36	14.22	14.27	52.39	52.39	5.04	5.04
Movement LOS	E	E	E	F	E	E	F	B	B	D	D	A	A
d_A, Approach Delay [s/veh]	61.45			65.91			14.97			24.81			
Approach LOS	E			E			B			C			
d_I, Intersection Delay [s/veh]	25.81												
Intersection LOS	C												
Intersection V/C	0.398												

Emissions

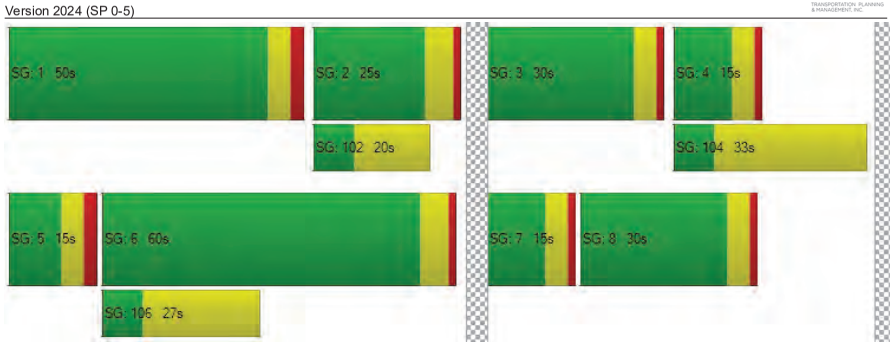
Vehicle Miles Traveled [mph]	21.19	34.68	0.17	0.28	4.21	194.56	185.81	77.01	53.77	53.64
Stops [stops/h]	53.28	85.42	6.71	7.23	6.72	99.37	95.42	283.88	46.41	46.31
Fuel consumption [US gal/h]	1.87	3.01	0.13	0.14	0.29	9.23	8.82	8.03	2.69	2.68
CO [g/h]	131.00	210.07	8.86	10.02	20.49	644.92	616.35	561.47	188.10	187.67
NOx [g/h]	25.49	40.87	1.72	1.95	3.99	125.48	119.92	109.24	36.60	36.51
VOC [g/h]	30.36	48.68	2.05	2.32	4.75	149.47	142.85	130.13	43.59	43.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00			0.00		
d_p, Pedestrian Delay [s]	49.50		49.50		49.50			0.00		
l_p,int, Pedestrian LOS Score for Intersectio	2.202		1.967		2.555			0.000		
Crosswalk LOS	B		A		B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417		167		317			900		
d_b, Bicycle Delay [s]	37.60		50.42		42.50			18.15		
l_b,int, Bicycle LOS Score for Intersection	1.857		1.584		1.966			1.917		
Bicycle LOS	A		A		A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.458

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

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Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	57	7	20	114	11	147	0	145	431	12	53	508	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	23	0	0	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	44	0	0	0	4	0	0	61
Total Hourly Volume [veh/h]	57	7	14	114	11	103	0	145	454	8	53	522	143
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	4	31	3	28	0	40	125	2	15	143	39
Total Analysis Volume [veh/h]	63	8	15	125	12	113	0	159	499	9	58	574	157
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	6	12	9	13	14	94	94	6	85	85
g / C, Green / Cycle	0.05	0.08	0.06	0.09	0.10	0.67	0.67	0.04	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.08	0.09	0.14	0.01	0.03	0.20	0.20
s, saturation flow rate [veh/h]	1781	1677	1781	1613	1781	3560	1589	1781	1870	1734
c, Capacity [veh/h]	81	140	108	152	182	2388	1066	75	1135	1052
d1, Uniform Delay [s]	66.12	59.59	65.75	62.29	61.92	8.83	7.63	66.41	13.58	13.59
k, delay calibration	0.04	0.13	0.40	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.91	0.68	125.62	12.93	4.94	0.20	0.01	6.26	0.79	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.16	1.16	0.82	0.87	0.21	0.01	0.78	0.33	0.33
d, Delay for Lane Group [s/veh]	72.03	60.26	191.37	75.22	66.86	9.03	7.65	72.66	14.37	14.45
Lane Group LOS	E	E	F	E	E	A	A	E	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.37	0.79	7.65	4.93	5.84	2.94	0.09	2.19	6.14	5.73
50th-Percentile Queue Length [ft/ln]	59.23	19.76	191.15	123.24	146.02	73.47	2.35	54.77	153.46	143.20
95th-Percentile Queue Length [veh/ln]	4.26	1.42	12.73	8.57	9.80	5.29	0.17	3.94	10.20	9.65
95th-Percentile Queue Length [ft/ln]	106.62	35.57	318.26	214.27	245.10	132.25	4.22	98.59	255.04	241.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.03	60.26	60.26	191.37	75.22	75.22	66.86	66.86	9.03	7.65	72.66	14.40	14.45
Movement LOS	E	E	E	F	E	E	E	E	A	A	E	B	B
d_A, Approach Delay [s/veh]	68.88			133.30			22.79				18.69		
Approach LOS	E			F			C				B		
d_I, Intersection Delay [s/veh]	38.61												
Intersection LOS	D												
Intersection V/C	0.458												

Emissions

Vehicle Miles Traveled [mph]	3.15	1.15	5.81	5.81	16.67	52.31	0.94	20.31	132.66	123.31
Stops [stops/h]	60.92	20.33	196.61	126.76	150.19	151.14	2.41	56.34	157.85	147.29
Fuel consumption [US gal/h]	1.39	0.44	6.19	2.85	3.68	3.91	0.07	2.00	7.44	6.93
CO [g/h]	97.14	30.88	432.86	199.41	257.16	272.98	4.63	140.14	520.14	484.06
NOx [g/h]	18.90	6.01	84.22	38.80	50.03	53.11	0.90	27.27	101.20	94.18
VOC [g/h]	22.51	7.16	100.32	46.21	59.60	63.27	1.07	32.48	120.55	112.19

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.027	2.245	2.718	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.711	2.045	1.982	2.261
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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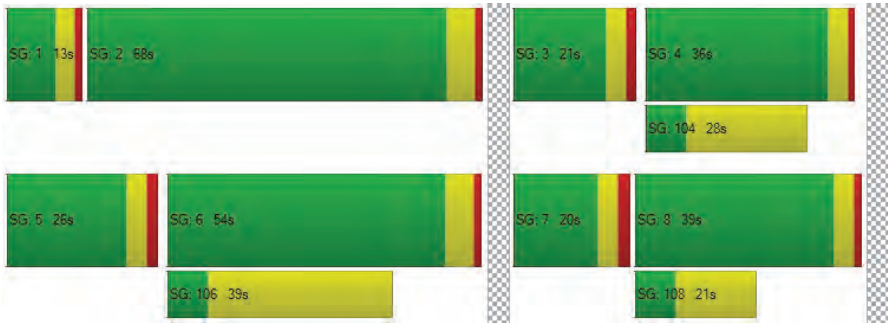

Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	81.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.999

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	95	50	256	155	36	46	68	194	30	162	653	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	12	0	0	5	7	16	0	7	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	80	0	0	15	0	0	9	0	0	71
Total Hourly Volume [veh/h]	95	50	188	155	36	36	75	210	21	169	662	167
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	14	54	45	10	10	22	60	6	49	190	48
Total Analysis Volume [veh/h]	109	57	216	178	41	41	86	241	24	194	761	192
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	20	20	13	13	6	39	13	45
g / C, Green / Cycle	0.20	0.20	0.13	0.13	0.06	0.38	0.13	0.44
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.10	0.05	0.05	0.14	0.11	0.53
s, saturation flow rate [veh/h]	1781	1641	1781	1718	1781	1841	1781	1806
c, Capacity [veh/h]	348	321	226	219	112	701	229	794
d1, Uniform Delay [s]	35.28	39.73	43.32	40.94	47.24	22.94	43.61	28.68
k, delay calibration	0.13	0.13	0.13	0.13	0.04	0.11	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	7.74	7.31	1.33	4.14	0.34	3.33	102.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.85	0.79	0.38	0.77	0.38	0.85	1.20
d, Delay for Lane Group [s/veh]	35.91	47.47	50.63	42.27	51.37	23.27	46.94	130.87
Lane Group LOS	D	D	D	D	D	C	D	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.38	7.23	4.79	1.97	2.27	4.61	4.97	40.95
50th-Percentile Queue Length [ft/ln]	59.47	180.65	119.77	49.15	56.80	115.15	124.26	1023.63
95th-Percentile Queue Length [veh/ln]	4.28	11.63	8.38	3.54	4.09	8.13	8.63	58.41
95th-Percentile Queue Length [ft/ln]	107.04	290.86	209.51	88.48	102.25	203.15	215.66	1460.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.91	47.47	47.47	50.63	42.27	42.27	51.37	23.27	23.27	46.94	130.87	130.87
Movement LOS	D	D	D	D	D	D	D	C	C	D	F	F
d_A, Approach Delay [s/veh]	44.17			48.00			30.16			116.67		
Approach LOS	D			D			C			F		
d_I, Intersection Delay [s/veh]	81.20											
Intersection LOS	F											
Intersection V/C	0.999											

Emissions

Vehicle Miles Traveled [mph]	187.55	469.74	36.09	16.62	30.11	92.79	87.54	430.02
Stops [stops/h]	83.82	254.62	168.80	69.28	80.06	162.30	175.13	1442.75
Fuel consumption [US gal/h]	8.98	23.38	4.25	1.77	2.58	5.97	6.42	51.05
CO [g/h]	627.73	1634.33	297.22	123.90	180.41	417.42	449.04	3568.31
NOx [g/h]	122.13	317.98	57.83	24.11	35.10	81.21	87.37	694.26
VOC [g/h]	145.48	378.77	68.88	28.71	41.81	96.74	104.07	826.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	40.68		40.68		40.68		0.00	
l_p,int, Pedestrian LOS Score for Intersectio	2.297		2.189		2.377		0.000	
Crosswalk LOS	B		B		B		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	681		779		875		881	
d_b, Bicycle Delay [s]	22.21		19.04		16.16		15.99	
l_b,int, Bicycle LOS Score for Intersection	2.322		2.013		2.154		3.569	
Bicycle LOS	B		B		B		D	

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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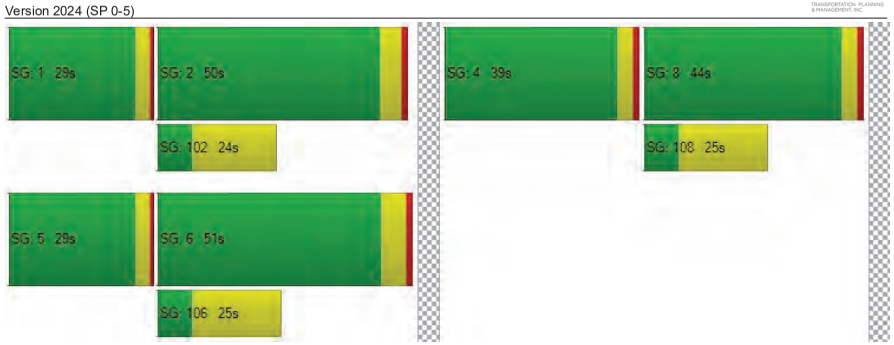

Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	4	4	0	354	3	602	0	0	699	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	27	0	0	17	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	4	4	0	354	3	629	0	0	716	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	1	0	113	1	202	0	0	229	10
Total Analysis Volume [veh/h]	0	0	5	5	0	454	4	806	0	0	918	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	63	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	19	19	0	21	21	0	20	20
g / C, Green / Cycle	0.01	0.01	0.31	0.31	0.01	0.33	0.33	0.00	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.22	0.22	0.00	0.26	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	13	11	555	495	10	618	618	0	1157	516
d1, Uniform Delay [s]	0.00	31.02	14.89	20.79	31.07	17.92	17.92	0.00	19.25	14.66
k, delay calibration	0.11	0.11	0.11	0.33	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	26.80	0.01	17.67	24.01	1.17	1.17	0.00	1.27	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.46	0.01	0.92	0.40	0.65	0.65	0.00	0.79	0.08
d, Delay for Lane Group [s/veh]	0.00	57.82	14.90	38.46	55.08	19.09	19.09	0.00	20.53	14.72
Lane Group LOS	A	E	B	D	E	B	B	A	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.15	0.05	8.20	0.12	4.70	4.70	0.00	5.68	0.37
50th-Percentile Queue Length [ft/ln]	0.00	3.84	1.16	205.04	3.10	117.48	117.48	0.00	141.95	9.31
95th-Percentile Queue Length [veh/ln]	0.00	0.28	0.08	12.90	0.22	8.25	8.25	0.00	9.59	0.67
95th-Percentile Queue Length [ft/ln]	0.00	6.92	2.09	322.45	5.59	206.35	206.35	0.00	239.65	16.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	57.82	14.90	14.90	38.46	55.08	19.09	19.09	0.00	20.53	14.72
Movement LOS	A	A	E	B	B	D	E	B	B	A	C	B
d_A, Approach Delay [s/veh]	57.82			38.21			19.27			20.28		
Approach LOS	E			D			B			C		
d_I, Intersection Delay [s/veh]	23.69											
Intersection LOS	C											
Intersection V/C	0.738											

Emissions

Vehicle Miles Traveled [mph]	0.00	0.25	2.37	215.36	1.80	181.84	181.84	0.00	160.14	6.98
Stops [stops/h]	0.00	8.85	2.68	472.12	7.15	270.50	270.50	0.00	653.71	21.43
Fuel consumption [US gal/h]	0.00	0.12	0.13	15.03	0.16	10.55	10.55	0.00	14.04	0.53
CO [g/h]	0.00	8.25	8.92	1050.44	11.09	737.19	737.19	0.00	981.31	36.73
NOx [g/h]	0.00	1.60	1.74	204.38	2.16	143.43	143.43	0.00	190.93	7.15
VOC [g/h]	0.00	1.91	2.07	243.45	2.57	170.85	170.85	0.00	227.43	8.51

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	640	1599	1599
d_b, Bicycle Delay [s]	14.47	14.47	1.26	1.26
l_b,int, Bicycle LOS Score for Intersection	1.568	2.317	2.228	2.350
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.467

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	295	315	697	220	156	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	4	17	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	318	319	714	220	156	21
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	96	215	66	47	6
Total Analysis Volume [veh/h]	383	384	860	265	188	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	12	69	53	53	8	8	8
g / C, Green / Cycle	0.14	0.77	0.59	0.59	0.09	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.24	0.17	0.05	0.05	0.02
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	470	2744	2094	935	159	159	142
d1, Uniform Delay [s]	37.78	2.65	10.06	9.16	39.41	39.41	37.93
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.33	0.11	0.60	0.76	1.31	1.31	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.14	0.41	0.28	0.59	0.59	0.18
d, Delay for Lane Group [s/veh]	39.10	2.76	10.66	9.92	40.72	40.72	38.15
Lane Group LOS	D	A	B	A	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.12	0.65	4.37	2.55	2.03	2.03	0.51
50th-Percentile Queue Length [ft/ln]	102.95	16.28	109.20	63.75	50.80	50.80	12.85
95th-Percentile Queue Length [veh/ln]	7.41	1.17	7.80	4.59	3.66	3.66	0.93
95th-Percentile Queue Length [ft/ln]	185.31	29.30	194.89	114.75	91.45	91.45	23.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.10	2.76	10.66	9.92	40.72	38.15
Movement LOS	D	A	B	A	D	D
d_A, Approach Delay [s/veh]	20.90		10.49		40.42	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	17.31					
Intersection LOS	B					
Intersection V/C	0.467					

Emissions

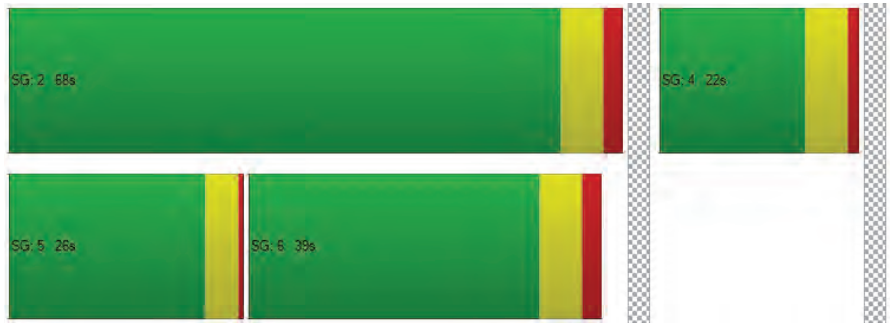
Vehicle Miles Traveled [mph]	66.81	66.99	152.40	46.96	5.69	5.69	1.51
Stops [stops/h]	329.44	52.08	349.45	102.00	81.29	81.29	20.56
Fuel consumption [US gal/h]	7.62	3.26	10.07	3.03	1.46	1.46	0.37
CO [g/h]	532.49	227.92	703.92	211.92	102.22	102.22	25.86
NOx [g/h]	103.60	44.35	136.96	41.23	19.89	19.89	5.03
VOC [g/h]	123.41	52.82	163.14	49.11	23.69	23.69	5.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.192	2.488	1.931
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	35.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

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Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	78	393	0	0	223	590	694	0	169	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	0	0	2	0	15	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	78	397	0	0	225	543	709	0	139	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	126	0	0	71	172	224	0	44	0	0	0
Total Analysis Volume [veh/h]	0	99	503	0	0	285	687	897	0	176	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	7	53	42	42	24	24	24	
g / C, Green / Cycle	0.08	0.59	0.46	0.46	0.27	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.08	0.43	0.25	0.25	0.11	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	147	2100	1640	732	481	481	429	
d1, Uniform Delay [s]	40.10	8.82	14.23	23.06	32.04	32.04	26.95	
k, delay calibration	0.04	0.50	0.50	0.50	0.28	0.28	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.00	0.27	0.23	21.22	17.83	17.83	0.23	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.24	0.17	0.94	0.93	0.93	0.41	
d, Delay for Lane Group [s/veh]	42.10	9.09	14.46	44.28	49.87	49.87	27.19	
Lane Group LOS	D	A	B	D	D	D	C	
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	2.18	2.24	1.69	17.13	11.59	11.59	3.07	
50th-Percentile Queue Length [ft/ln]	54.62	55.93	42.31	428.14	289.81	289.81	76.70	
95th-Percentile Queue Length [veh/ln]	3.93	4.03	3.05	23.91	17.18	17.18	5.52	
95th-Percentile Queue Length [ft/ln]	98.32	100.68	76.16	597.81	429.40	429.40	138.06	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	42.10	9.09	0.00	0.00	14.46	44.28	49.87	49.87	27.19	0.00	0.00	0.00
Movement LOS	D	D	A			B	D	D	D	C			
d_A, Approach Delay [s/veh]	14.52				35.54			46.15			0.00		
Approach LOS	B				D			D			A		
d_I, Intersection Delay [s/veh]	35.06												
Intersection LOS	D												
Intersection V/C	0.853												

Emissions

Vehicle Miles Traveled [mph]	17.54	89.14	38.97	93.94	15.54	15.54	6.10	
Stops [stops/h]	87.40	178.99	135.40	685.02	463.69	463.69	122.72	
Fuel consumption [US gal/h]	2.05	5.59	3.19	13.84	7.75	7.75	1.90	
CO [g/h]	143.52	390.64	223.07	967.60	541.92	541.92	132.99	
NOx [g/h]	27.92	76.00	43.40	188.26	105.44	105.44	25.88	
VOC [g/h]	33.26	90.53	51.70	224.25	125.59	125.59	30.82	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.056	2.400	3.380	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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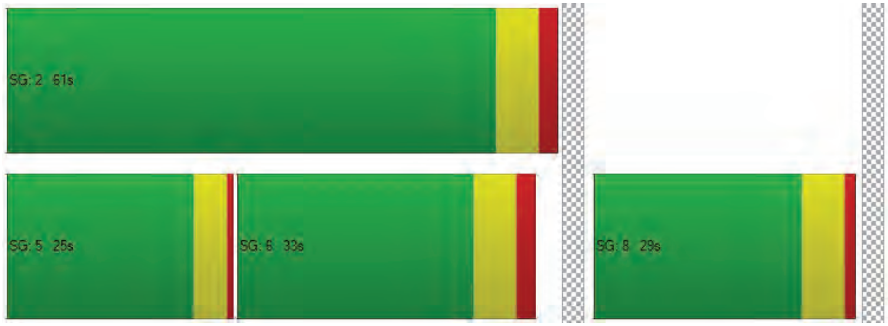

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	548	295	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	161	70	31	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	31	-31	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	709	396	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	177	99	0	0	0
Total Analysis Volume [veh/h]	0	709	396	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.51
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.51	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.027

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	415	226	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	19	4	7	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	427	245	42	11	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	107	61	11	3	0
Total Analysis Volume [veh/h]	0	427	245	42	11	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	7.82	0.00	0.00	0.00	14.02	9.88
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	2.07	2.07
d_A, Approach Delay [s/veh]	0.00		0.00		13.67	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.23					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	21.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.156

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	238	41	52	127	9	44	72	0	37	72	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	8	4	8	5	0	0	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	240	41	60	131	17	49	72	0	37	72	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	60	10	15	33	4	12	18	0	9	18	11
Total Analysis Volume [veh/h]	6	240	41	60	131	17	49	72	0	37	72	43
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.16	0.17	0.00	0.11	0.17	0.06
d_M, Delay for Movement [s/veh]	7.52	0.00	0.00	7.88	0.00	0.00	21.21	18.37	13.69	19.43	17.41	13.53
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.11	0.11	0.11	1.41	1.41	1.41	1.45	1.45	1.45
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.65	2.65	2.65	35.18	35.18	35.18	36.16	36.16	36.16
d_A, Approach Delay [s/veh]	0.16			2.27			19.52			16.80		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.08											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	709	415	39	17
2	688	403	38	16
3	674	394	37	16
4	631	369	35	15
5	560	328	31	13
6	553	324	30	13
7	546	320	30	13
8	496	291	27	12
9	489	286	27	12
10	482	282	27	12
11	418	245	23	10
12	390	228	21	9
13	383	224	21	9
14	284	166	16	7
15	284	166	16	7
16	199	116	11	5
17	113	66	6	3
18	113	66	6	3
19	64	37	4	2
20	35	21	2	1
21	21	12	1	1
22	7	4	0	0
23	7	4	0	0
24	7	4	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1124	1	39	No	No	No	No	No	No	No	No	No	No
2	1	1091	1	38	No	No	No	No	No	No	No	No	No	No
3	1	1068	1	37	No	No	No	No	No	No	No	No	No	No
4	1	1000	1	35	No	No	No	No	No	No	No	No	No	No
5	1	888	1	31	No	No	No	No	No	No	No	No	No	No
6	1	877	1	30	No	No	No	No	No	No	No	No	No	No
7	1	866	1	30	No	No	No	No	No	No	No	No	No	No
8	1	787	1	27	No	No	No	No	No	No	No	No	No	No
9	1	775	1	27	No	No	No	No	No	No	No	No	No	No
10	1	764	1	27	No	No	No	No	No	No	No	No	No	No
11	1	663	1	23	No	No	No	No	No	No	No	No	No	No
12	1	618	1	21	No	No	No	No	No	No	No	No	No	No
13	1	607	1	21	No	No	No	No	No	No	No	No	No	No
14	1	450	1	16	No	No	No	No	No	No	No	No	No	No
15	1	450	1	16	No	No	No	No	No	No	No	No	No	No
16	1	315	1	11	No	No	No	No	No	No	No	No	No	No
17	1	179	1	6	No	No	No	No	No	No	No	No	No	No
18	1	179	1	6	No	No	No	No	No	No	No	No	No	No
19	1	101	1	4	No	No	No	No	No	No	No	No	No	No
20	1	56	1	2	No	No	No	No	No	No	No	No	No	No
21	1	33	1	1	No	No	No	No	No	No	No	No	No	No
22	1	11	1	0	No	No	No	No	No	No	No	No	No	No
23	1	11	1	0	No	No	No	No	No	No	No	No	No	No
24	1	11	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15	33.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09	0:09
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	17
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1180	1180
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	438	396	172	171
2	425	384	167	166
3	416	376	163	162
4	390	352	153	152
5	346	313	136	135
6	342	309	134	133
7	337	305	132	132
8	307	277	120	120
9	302	273	119	118
10	298	269	117	116
11	258	234	101	101
12	241	218	95	94
13	237	214	93	92
14	175	158	69	68
15	175	158	69	68
16	123	111	48	48
17	70	63	28	27
18	70	63	28	27
19	39	36	15	15
20	22	20	9	9
21	13	12	5	5
22	4	4	2	2
23	4	4	2	2
24	4	4	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	834	1	172	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	809	1	167	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	792	1	163	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	2	742	1	153	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	2	659	1	136	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
6	2	651	1	134	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
7	2	642	1	132	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
8	2	584	1	120	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	2	575	1	119	No	No	Yes	Yes	No	No	No	Yes	No	No
10	2	567	1	117	No	No	Yes	Yes	No	No	No	Yes	No	No
11	2	492	1	101	No	No	No	Yes	No	No	No	No	No	No
12	2	459	1	95	No	No	No	Yes	No	No	No	No	No	No
13	2	451	1	93	No	No	No	Yes	No	No	No	No	No	No
14	2	333	1	69	No	No	No	No	No	No	No	No	No	No
15	2	333	1	69	No	No	No	No	No	No	No	No	No	No
16	2	234	1	48	No	No	No	No	No	No	No	No	No	No
17	2	133	1	28	No	No	No	No	No	No	No	No	No	No
18	2	133	1	28	No	No	No	No	No	No	No	No	No	No
19	2	75	1	15	No	No	No	No	No	No	No	No	No	No
20	2	42	1	9	No	No	No	No	No	No	No	No	No	No
21	2	25	1	5	No	No	No	No	No	No	No	No	No	No
22	2	8	1	2	No	No	No	No	No	No	No	No	No	No
23	2	8	1	2	No	No	No	No	No	No	No	No	No	No
24	2	8	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	8	10	13	0	4	7	10	7	2

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.6	142.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:41	6:45
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	172	171
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1177	1177
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	732	194	245
2	710	188	238
3	695	184	233
4	651	173	218
5	578	153	194
6	571	151	191
7	564	149	189
8	512	136	172
9	505	134	169
10	498	132	167
11	432	114	145
12	403	107	135
13	395	105	132
14	293	78	98
15	293	78	98
16	205	54	69
17	117	31	39
18	117	31	39
19	66	17	22
20	37	10	12
21	22	6	7
22	7	2	2
23	7	2	2
24	7	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	926	1	245	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	898	1	238	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	879	1	233	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	824	1	218	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	731	1	194	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	1	722	1	191	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	1	713	1	189	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
8	1	648	1	172	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
9	1	639	1	169	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
10	1	630	1	167	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
11	1	546	1	145	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
12	1	510	1	135	No	Yes	Yes	Yes	No	No	No	Yes	No	No
13	1	500	1	132	No	Yes	Yes	Yes	No	No	No	Yes	No	No
14	1	371	1	98	No	No	No	Yes	No	No	No	No	No	No
15	1	371	1	98	No	No	No	Yes	No	No	No	No	No	No
16	1	259	1	69	No	No	No	No	No	No	No	No	No	No
17	1	148	1	39	No	No	No	No	No	No	No	No	No	No
18	1	148	1	39	No	No	No	No	No	No	No	No	No	No
19	1	83	1	22	No	No	No	No	No	No	No	No	No	No
20	1	47	1	12	No	No	No	No	No	No	No	No	No	No
21	1	28	1	7	No	No	No	No	No	No	No	No	No	No
22	1	9	1	2	No	No	No	No	No	No	No	No	No	No
23	1	9	1	2	No	No	No	No	No	No	No	No	No	No
24	1	9	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	4	10	11	13	7	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	20.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:23
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	245
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1171
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	104	490	301	11
2	101	475	292	11
3	99	466	286	10
4	93	436	268	10
5	82	387	238	9
6	81	382	235	9
7	80	377	232	8
8	73	343	211	8
9	72	338	208	8
10	71	333	205	7
11	61	289	178	6
12	57	270	166	6
13	56	265	163	6
14	42	196	120	4
15	42	196	120	4
16	29	137	84	3
17	17	78	48	2
18	17	78	48	2
19	9	44	27	1
20	5	25	15	1
21	3	15	9	0
22	1	5	3	0
23	1	5	3	0
24	1	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	594	1	301	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	1	576	1	292	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	1	565	1	286	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	529	1	268	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	469	1	238	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	463	1	235	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	457	1	232	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	416	1	211	No	Yes	Yes	Yes	No	No	No	No	No	No
9	1	410	1	208	No	Yes	Yes	Yes	No	No	No	No	No	No
10	1	404	1	205	No	Yes	Yes	Yes	No	No	No	No	No	No
11	1	350	1	178	No	No	Yes	Yes	No	No	No	No	No	No
12	1	327	1	166	No	No	No	Yes	No	No	No	No	No	No
13	1	321	1	163	No	No	No	Yes	No	No	No	No	No	No
14	1	238	1	120	No	No	No	No	No	No	No	No	No	No
15	1	238	1	120	No	No	No	No	No	No	No	No	No	No
16	1	166	1	84	No	No	No	No	No	No	No	No	No	No
17	1	95	1	48	No	No	No	No	No	No	No	No	No	No
18	1	95	1	48	No	No	No	No	No	No	No	No	No	No
19	1	53	1	27	No	No	No	No	No	No	No	No	No	No
20	1	30	1	15	No	No	No	No	No	No	No	No	No	No
21	1	18	1	9	No	No	No	No	No	No	No	No	No	No
22	1	6	1	3	No	No	No	No	No	No	No	No	No	No
23	1	6	1	3	No	No	No	No	No	No	No	No	No	No
24	1	6	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	0	0	4	7	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.5	10
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:28	0:01
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	301	11
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	906	906
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	174	79	160
2	169	77	155
3	165	75	152
4	155	70	142
5	137	62	126
6	136	62	125
7	134	61	123
8	122	55	112
9	120	55	110
10	118	54	109
11	103	47	94
12	96	43	88
13	94	43	86
14	70	32	64
15	70	32	64
16	49	22	45
17	28	13	26
18	28	13	26
19	16	7	14
20	9	4	8
21	5	2	5
22	2	1	2
23	2	1	2
24	2	1	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	253	2	160	No	No	No	No	No	No	No	No	No	No
2	2	246	2	155	No	No	No	No	No	No	No	No	No	No
3	2	240	2	152	No	No	No	No	No	No	No	No	No	No
4	2	225	2	142	No	No	No	No	No	No	No	No	No	No
5	2	199	2	126	No	No	No	No	No	No	No	No	No	No
6	2	198	2	125	No	No	No	No	No	No	No	No	No	No
7	2	195	2	123	No	No	No	No	No	No	No	No	No	No
8	2	177	2	112	No	No	No	No	No	No	No	No	No	No
9	2	175	2	110	No	No	No	No	No	No	No	No	No	No
10	2	172	2	109	No	No	No	No	No	No	No	No	No	No
11	2	150	2	94	No	No	No	No	No	No	No	No	No	No
12	2	139	2	88	No	No	No	No	No	No	No	No	No	No
13	2	137	2	86	No	No	No	No	No	No	No	No	No	No
14	2	102	2	64	No	No	No	No	No	No	No	No	No	No
15	2	102	2	64	No	No	No	No	No	No	No	No	No	No
16	2	71	2	45	No	No	No	No	No	No	No	No	No	No
17	2	41	2	26	No	No	No	No	No	No	No	No	No	No
18	2	41	2	26	No	No	No	No	No	No	No	No	No	No
19	2	23	2	14	No	No	No	No	No	No	No	No	No	No
20	2	13	2	8	No	No	No	No	No	No	No	No	No	No
21	2	7	2	5	No	No	No	No	No	No	No	No	No	No
22	2	3	2	2	No	No	No	No	No	No	No	No	No	No
23	2	3	2	2	No	No	No	No	No	No	No	No	No	No
24	2	3	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.6
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:25
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	160
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	413
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	150	130	88
2	146	126	85
3	143	124	84
4	134	116	78
5	119	103	70
6	117	101	69
7	116	100	68
8	105	91	62
9	103	90	61
10	102	88	60
11	89	77	52
12	83	72	48
13	81	70	48
14	60	52	35
15	60	52	35
16	42	36	25
17	24	21	14
18	24	21	14
19	14	12	8
20	8	7	4
21	5	4	3
22	2	1	1
23	2	1	1
24	2	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	280	1	88	No	No	No	No	No	No	No	No	No	No
2	2	272	1	85	No	No	No	No	No	No	No	No	No	No
3	2	267	1	84	No	No	No	No	No	No	No	No	No	No
4	2	250	1	78	No	No	No	No	No	No	No	No	No	No
5	2	222	1	70	No	No	No	No	No	No	No	No	No	No
6	2	218	1	69	No	No	No	No	No	No	No	No	No	No
7	2	216	1	68	No	No	No	No	No	No	No	No	No	No
8	2	196	1	62	No	No	No	No	No	No	No	No	No	No
9	2	193	1	61	No	No	No	No	No	No	No	No	No	No
10	2	190	1	60	No	No	No	No	No	No	No	No	No	No
11	2	166	1	52	No	No	No	No	No	No	No	No	No	No
12	2	155	1	48	No	No	No	No	No	No	No	No	No	No
13	2	151	1	48	No	No	No	No	No	No	No	No	No	No
14	2	112	1	35	No	No	No	No	No	No	No	No	No	No
15	2	112	1	35	No	No	No	No	No	No	No	No	No	No
16	2	78	1	25	No	No	No	No	No	No	No	No	No	No
17	2	45	1	14	No	No	No	No	No	No	No	No	No	No
18	2	45	1	14	No	No	No	No	No	No	No	No	No	No
19	2	26	1	8	No	No	No	No	No	No	No	No	No	No
20	2	15	1	4	No	No	No	No	No	No	No	No	No	No
21	2	9	1	3	No	No	No	No	No	No	No	No	No	No
22	2	3	1	1	No	No	No	No	No	No	No	No	No	No
23	2	3	1	1	No	No	No	No	No	No	No	No	No	No
24	2	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	88
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	368
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	111	145	36
2	108	141	35
3	105	138	34
4	99	129	32
5	88	115	28
6	87	113	28
7	85	112	28
8	78	102	25
9	77	100	25
10	75	99	24
11	65	86	21
12	61	80	20
13	60	78	19
14	44	58	14
15	44	58	14
16	31	41	10
17	18	23	6
18	18	23	6
19	10	13	3
20	6	7	2
21	3	4	1
22	1	1	0
23	1	1	0
24	1	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	256	1	36	No	No	No	No	No	No	No	No	No	No
2	3	249	1	35	No	No	No	No	No	No	No	No	No	No
3	3	243	1	34	No	No	No	No	No	No	No	No	No	No
4	3	228	1	32	No	No	No	No	No	No	No	No	No	No
5	3	203	1	28	No	No	No	No	No	No	No	No	No	No
6	3	200	1	28	No	No	No	No	No	No	No	No	No	No
7	3	197	1	28	No	No	No	No	No	No	No	No	No	No
8	3	180	1	25	No	No	No	No	No	No	No	No	No	No
9	3	177	1	25	No	No	No	No	No	No	No	No	No	No
10	3	174	1	24	No	No	No	No	No	No	No	No	No	No
11	3	151	1	21	No	No	No	No	No	No	No	No	No	No
12	3	141	1	20	No	No	No	No	No	No	No	No	No	No
13	3	138	1	19	No	No	No	No	No	No	No	No	No	No
14	3	102	1	14	No	No	No	No	No	No	No	No	No	No
15	3	102	1	14	No	No	No	No	No	No	No	No	No	No
16	3	72	1	10	No	No	No	No	No	No	No	No	No	No
17	3	41	1	6	No	No	No	No	No	No	No	No	No	No
18	3	41	1	6	No	No	No	No	No	No	No	No	No	No
19	3	23	1	3	No	No	No	No	No	No	No	No	No	No
20	3	13	1	2	No	No	No	No	No	No	No	No	No	No
21	3	7	1	1	No	No	No	No	No	No	No	No	No	No
22	3	2	1	0	No	No	No	No	No	No	No	No	No	No
23	3	2	1	0	No	No	No	No	No	No	No	No	No	No
24	3	2	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	36
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	292
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	491	323	117	75
2	476	313	113	73
3	466	307	111	71
4	437	287	104	67
5	388	255	92	59
6	383	252	91	59
7	378	249	90	58
8	344	226	82	53
9	339	223	81	52
10	334	220	80	51
11	290	191	69	44
12	270	178	64	41
13	265	174	63	41
14	196	129	47	30
15	196	129	47	30
16	137	90	33	21
17	79	52	19	12
18	79	52	19	12
19	44	29	11	7
20	25	16	6	4
21	15	10	4	2
22	5	3	1	1
23	5	3	1	1
24	5	3	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	814	1	117	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	789	1	113	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
3	2	773	1	111	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
4	2	724	1	104	No	No	No	Yes	No	Yes	Yes	Yes	No	No
5	2	643	1	92	No	No	No	Yes	No	No	Yes	Yes	No	No
6	2	635	1	91	No	No	No	Yes	No	No	Yes	Yes	No	No
7	2	627	1	90	No	No	No	Yes	No	No	No	Yes	No	No
8	2	570	1	82	No	No	No	No	No	No	No	Yes	No	No
9	2	562	1	81	No	No	No	No	No	No	No	Yes	No	No
10	2	554	1	80	No	No	No	No	No	No	No	Yes	No	No
11	2	481	1	69	No	No	No	No	No	No	No	No	No	No
12	2	448	1	64	No	No	No	No	No	No	No	No	No	No
13	2	439	1	63	No	No	No	No	No	No	No	No	No	No
14	2	325	1	47	No	No	No	No	No	No	No	No	No	No
15	2	325	1	47	No	No	No	No	No	No	No	No	No	No
16	2	227	1	33	No	No	No	No	No	No	No	No	No	No
17	2	131	1	19	No	No	No	No	No	No	No	No	No	No
18	2	131	1	19	No	No	No	No	No	No	No	No	No	No
19	2	73	1	11	No	No	No	No	No	No	No	No	No	No
20	2	41	1	6	No	No	No	No	No	No	No	No	No	No
21	2	25	1	4	No	No	No	No	No	No	No	No	No	No
22	2	8	1	1	No	No	No	No	No	No	No	No	No	No
23	2	8	1	1	No	No	No	No	No	No	No	No	No	No
24	2	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	7	0	4	6	10	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	23.2	21.8
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:45	0:27
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	117	75
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1006	1006
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	709	396	0
2	688	384	0
3	674	376	0
4	631	352	0
5	560	313	0
6	553	309	0
7	546	305	0
8	496	277	0
9	489	273	0
10	482	269	0
11	418	234	0
12	390	218	0
13	383	214	0
14	284	158	0
15	284	158	0
16	199	111	0
17	113	63	0
18	113	63	0
19	64	36	0
20	35	20	0
21	21	12	0
22	7	4	0
23	7	4	0
24	7	4	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1105	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1072	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1050	1	0	No	No	No	No	No	No	No	No	No	No
4	1	983	1	0	No	No	No	No	No	No	No	No	No	No
5	1	873	1	0	No	No	No	No	No	No	No	No	No	No
6	1	862	1	0	No	No	No	No	No	No	No	No	No	No
7	1	851	1	0	No	No	No	No	No	No	No	No	No	No
8	1	773	1	0	No	No	No	No	No	No	No	No	No	No
9	1	762	1	0	No	No	No	No	No	No	No	No	No	No
10	1	751	1	0	No	No	No	No	No	No	No	No	No	No
11	1	652	1	0	No	No	No	No	No	No	No	No	No	No
12	1	608	1	0	No	No	No	No	No	No	No	No	No	No
13	1	597	1	0	No	No	No	No	No	No	No	No	No	No
14	1	442	1	0	No	No	No	No	No	No	No	No	No	No
15	1	442	1	0	No	No	No	No	No	No	No	No	No	No
16	1	310	1	0	No	No	No	No	No	No	No	No	No	No
17	1	176	1	0	No	No	No	No	No	No	No	No	No	No
18	1	176	1	0	No	No	No	No	No	No	No	No	No	No
19	1	100	1	0	No	No	No	No	No	No	No	No	No	No
20	1	55	1	0	No	No	No	No	No	No	No	No	No	No
21	1	33	1	0	No	No	No	No	No	No	No	No	No	No
22	1	11	1	0	No	No	No	No	No	No	No	No	No	No
23	1	11	1	0	No	No	No	No	No	No	No	No	No	No
24	1	11	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1105
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	427	287	12
2	414	278	12
3	406	273	11
4	380	255	11
5	337	227	9
6	333	224	9
7	329	221	9
8	299	201	8
9	295	198	8
10	290	195	8
11	252	169	7
12	235	158	7
13	231	155	6
14	171	115	5
15	171	115	5
16	120	80	3
17	68	46	2
18	68	46	2
19	38	26	1
20	21	14	1
21	13	9	0
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	714	1	12	No	No	No	No	No	No	No	No	No	No
2	1	692	1	12	No	No	No	No	No	No	No	No	No	No
3	1	679	1	11	No	No	No	No	No	No	No	No	No	No
4	1	635	1	11	No	No	No	No	No	No	No	No	No	No
5	1	564	1	9	No	No	No	No	No	No	No	No	No	No
6	1	557	1	9	No	No	No	No	No	No	No	No	No	No
7	1	550	1	9	No	No	No	No	No	No	No	No	No	No
8	1	500	1	8	No	No	No	No	No	No	No	No	No	No
9	1	493	1	8	No	No	No	No	No	No	No	No	No	No
10	1	485	1	8	No	No	No	No	No	No	No	No	No	No
11	1	421	1	7	No	No	No	No	No	No	No	No	No	No
12	1	393	1	7	No	No	No	No	No	No	No	No	No	No
13	1	386	1	6	No	No	No	No	No	No	No	No	No	No
14	1	286	1	5	No	No	No	No	No	No	No	No	No	No
15	1	286	1	5	No	No	No	No	No	No	No	No	No	No
16	1	200	1	3	No	No	No	No	No	No	No	No	No	No
17	1	114	1	2	No	No	No	No	No	No	No	No	No	No
18	1	114	1	2	No	No	No	No	No	No	No	No	No	No
19	1	64	1	1	No	No	No	No	No	No	No	No	No	No
20	1	35	1	1	No	No	No	No	No	No	No	No	No	No
21	1	22	1	0	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	12
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	726
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

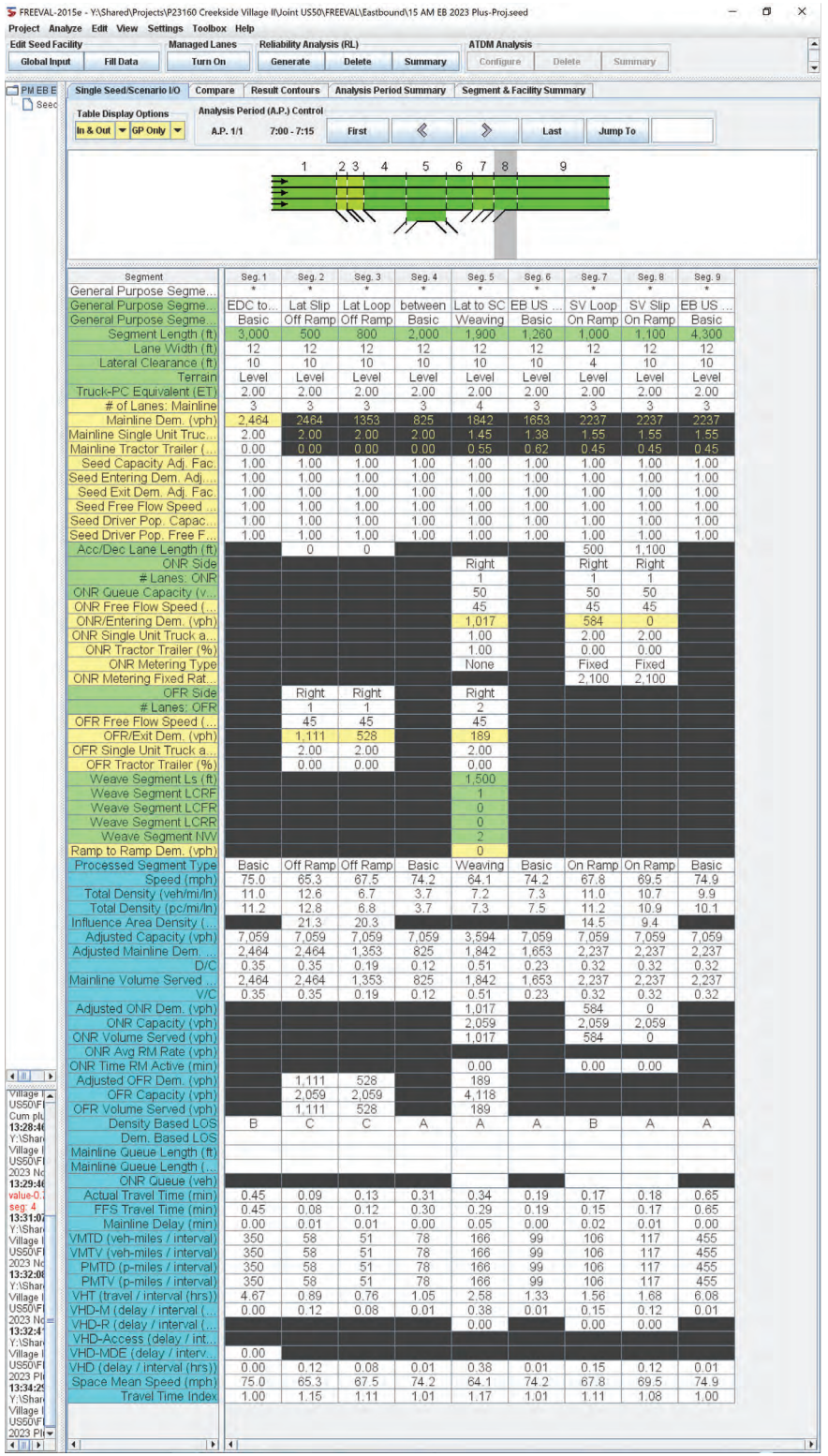
Hour	Major Streets		Minor Streets	
	S	N	E	W
1	287	208	152	121
2	278	202	147	117
3	273	198	144	115
4	255	185	135	108
5	227	164	120	96
6	224	162	119	94
7	221	160	117	93
8	201	146	106	85
9	198	144	105	83
10	195	141	103	82
11	169	123	90	71
12	158	114	84	67
13	155	112	82	65
14	115	83	61	48
15	115	83	61	48
16	80	58	43	34
17	46	33	24	19
18	46	33	24	19
19	26	19	14	11
20	14	10	8	6
21	9	6	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1

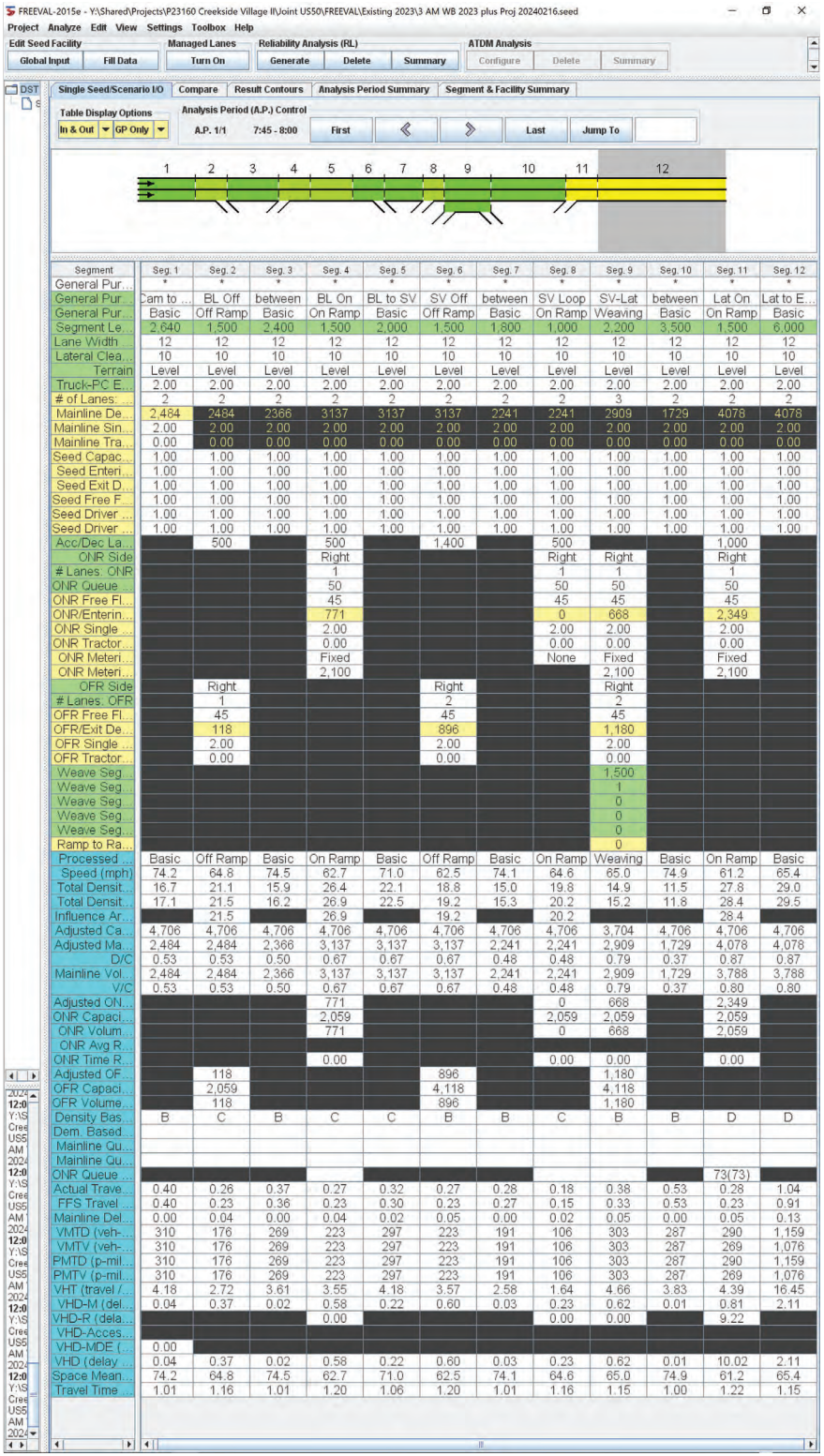
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	495	1	152	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	480	1	147	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	471	1	144	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	440	1	135	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	1	391	1	120	No	No	Yes	Yes	No	No	No	No	No	No
6	1	386	1	119	No	No	Yes	Yes	No	No	No	No	No	No
7	1	381	1	117	No	No	Yes	Yes	No	No	No	No	No	No
8	1	347	1	106	No	No	No	Yes	No	No	No	No	No	No
9	1	342	1	105	No	No	No	Yes	No	No	No	No	No	No
10	1	336	1	103	No	No	No	Yes	No	No	No	No	No	No
11	1	292	1	90	No	No	No	Yes	No	No	No	No	No	No
12	1	272	1	84	No	No	No	No	No	No	No	No	No	No
13	1	267	1	82	No	No	No	No	No	No	No	No	No	No
14	1	198	1	61	No	No	No	No	No	No	No	No	No	No
15	1	198	1	61	No	No	No	No	No	No	No	No	No	No
16	1	138	1	43	No	No	No	No	No	No	No	No	No	No
17	1	79	1	24	No	No	No	No	No	No	No	No	No	No
18	1	79	1	24	No	No	No	No	No	No	No	No	No	No
19	1	45	1	14	No	No	No	No	No	No	No	No	No	No
20	1	24	1	8	No	No	No	No	No	No	No	No	No	No
21	1	15	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	0	0	4	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.8	19.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:42	0:39
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	152	121
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	768	768
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	





Creekside Village
Traffic Impact Analysis

El Dorado Hills, California

Existing PM Plus Project

T.KEAR www.tkearinc.com

Vistro File: C:\...\PM 918 DU 20241003.vistro
Report File: C:\...\4 2023 PM plus Proj.pdf

Scenario 3 2023 PM, Plus Project
9/30/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.963	49.0	D
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	NB Left	1.241	112.4	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	WB Right	1.007	51.2	D
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.927	26.3	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.938	39.2	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	WB Left	0.664	54.1	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.873	25.8	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.765	12.1	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Left	0.906	54.1	D
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.853	24.6	C
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.133	44.1	E
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	0.979	140.2	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	6.837	3,202.7	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.750	20.2	C
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.021	16.0	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.023	11.8	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.148	8.2	A
18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.950	107.4	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.452	29.1	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.531	69.3	E
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	0.936	59.8	E
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	NB Right	0.760	23.7	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.678	31.8	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	NB Left	0.540	19.7	B
25	New Intersection	Two-way stop	HCM 6th Edition	SB Thru	0.007	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.093	16.1	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.070	19.7	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 3815 of 4853

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	49.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	91	1766	401	35	1038	55	36	17	54	339	52	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	16	0	0	23	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	17	0	0	16	0	0	7
Total Hourly Volume [veh/h]	3	91	1782	401	35	1061	38	36	17	38	339	52	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	26	512	115	10	305	11	10	5	11	97	15	4
Total Analysis Volume [veh/h]	3	105	2048	461	40	1220	44	41	20	44	390	60	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Calculated Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	40	40	2	36	36	5	5	14	14
g / C, Green / Cycle	0.08	0.51	0.51	0.03	0.46	0.46	0.06	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.58	0.29	0.02	0.34	0.34	0.02	0.04	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1847	1781	1668	1781	1787
c, Capacity [veh/h]	141	1810	808	51	856	846	105	99	318	320
d1, Uniform Delay [s]	35.52	19.36	13.40	37.98	17.53	17.54	35.67	36.24	30.55	30.55
k, delay calibration	0.04	0.06	0.06	0.04	0.14	0.14	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.22	60.14	0.36	9.08	1.71	1.75	0.87	2.65	4.58	4.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	1.13	0.57	0.78	0.74	0.74	0.39	0.65	0.73	0.73
d, Delay for Lane Group [s/veh]	38.74	79.50	13.76	47.06	19.24	19.29	36.54	38.89	35.12	35.11
Lane Group LOS	D	F	B	D	B	B	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	28.27	4.72	0.85	8.34	8.26	0.77	1.25	4.44	4.46
50th-Percentile Queue Length [ft/ln]	50.70	706.74	118.00	21.28	208.51	206.62	19.16	31.20	111.04	111.39
95th-Percentile Queue Length [veh/ln]	3.65	40.53	8.28	1.53	13.08	12.98	1.38	2.25	7.90	7.92
95th-Percentile Queue Length [ft/ln]	91.26	1013.13	207.08	38.30	326.92	324.49	34.49	56.16	197.45	197.94

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.74	38.74	79.50	13.76	47.06	19.26	19.29	36.54	38.89	38.89	35.12	35.11	35.11
Movement LOS	D	D	F	B	D	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	66.23				20.12			37.97			35.12		
Approach LOS	E				C			D			D		
d_I, Intersection Delay [s/veh]	48.95												
Intersection LOS	D												
Intersection V/C	0.963												

Emissions

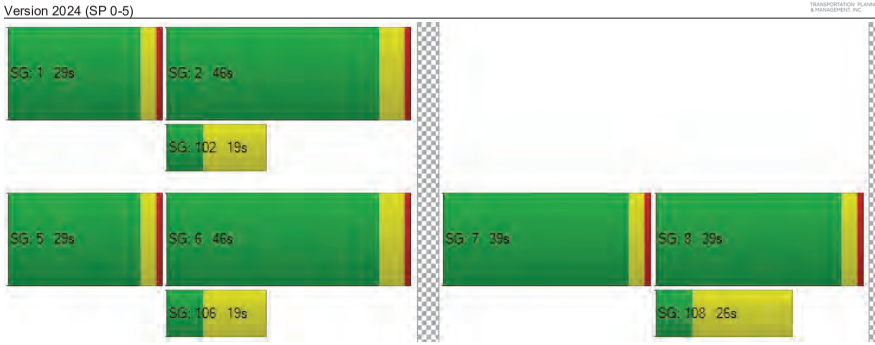
Vehicle Miles Traveled [mph]	25.79	489.13	110.10	5.88	93.42	92.41	1.75	2.73	12.20	12.24
Stops [stops/h]	92.92	2590.60	216.27	39.00	382.16	378.70	35.12	57.18	203.51	204.16
Fuel consumption [US gal/h]	2.89	82.10	7.75	1.07	10.44	10.34	0.57	0.93	3.29	3.30
CO [g/h]	202.08	5739.05	542.03	74.76	729.87	723.03	39.91	65.35	230.15	230.87
NOx [g/h]	39.32	1116.61	105.46	14.55	142.01	140.68	7.77	12.72	44.78	44.92
VOC [g/h]	46.83	1330.08	125.62	17.33	169.16	167.57	9.25	15.15	53.34	53.51

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	29.05	29.05	29.05
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.321	2.068	2.266
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1026	1026	891	891
d_b, Bicycle Delay [s]	9.32	9.32	12.08	12.08
l_b,int, Bicycle LOS Score for Intersection	3.716	2.649	1.759	2.342
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	112.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.241

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	75	4	164	1068	198	365	41	525	59	107	276
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	16	0	0	0	23	0	0	0	11	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	23	0	0	0	59	0	0	161	0	0	83
Total Hourly Volume [veh/h]	5	451	1632	52	4	164	1091	139	365	41	375	59	107	193
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	121	439	14	1	44	293	37	98	11	101	16	29	52
Total Analysis Volume [veh/h]	5	485	1755	56	4	176	1173	149	392	44	403	63	115	208
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Calculated Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	54	54	15	48	48	20	20	20	20	20
g / C, Green / Cycle	0.16	0.43	0.43	0.12	0.38	0.38	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.28	0.33	0.34	0.10	0.36	0.36	0.12	0.12	0.25	0.04	0.19
s, saturation flow rate [veh/h]	1781	3560	1841	1781	1870	1797	1781	1798	1589	1781	1679
c, Capacity [veh/h]	283	1515	783	208	717	689	283	285	252	283	266
d1, Uniform Delay [s]	53.01	31.27	31.35	54.69	37.33	37.58	50.80	50.77	53.01	46.23	53.01
k, delay calibration	0.50	0.13	0.34	0.11	0.38	0.39	0.22	0.22	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	344.59	1.13	5.65	10.70	17.31	19.64	8.77	8.42	286.82	0.15	124.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.73	0.79	0.79	0.87	0.93	0.95	0.77	0.77	1.60	0.22	1.21
d, Delay for Lane Group [s/veh]	397.60	32.40	37.00	65.39	54.65	57.21	59.57	59.19	339.83	46.38	177.95
Lane Group LOS	F	C	D	E	D	E	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	35.75	15.04	16.66	6.10	22.27	22.18	7.27	7.27	28.06	1.75	17.66
50th-Percentile Queue Length [ft/ln]	893.67	376.10	416.47	152.44	556.80	554.56	181.71	181.84	701.51	43.65	441.51
95th-Percentile Queue Length [veh/ln]	55.68	21.40	23.35	10.15	30.01	29.91	11.69	11.70	43.95	3.14	26.80
95th-Percentile Queue Length [ft/ln]	1391.92	535.12	583.81	253.68	750.29	747.67	292.25	292.42	1098.77	78.58	669.99

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	397.6	397.6	33.88	37.00	65.39	65.39	55.75	57.21	59.40	59.19	339.83	46.38	177.95	177.95
Movement LOS	F	F	C	D	E	E	E	E	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	111.41				57.05				194.09			156.47		
Approach LOS	F				E				F			F		
d_I, Intersection Delay [s/veh]	112.43													
Intersection LOS	F													
Intersection V/C	1.241													

Emissions

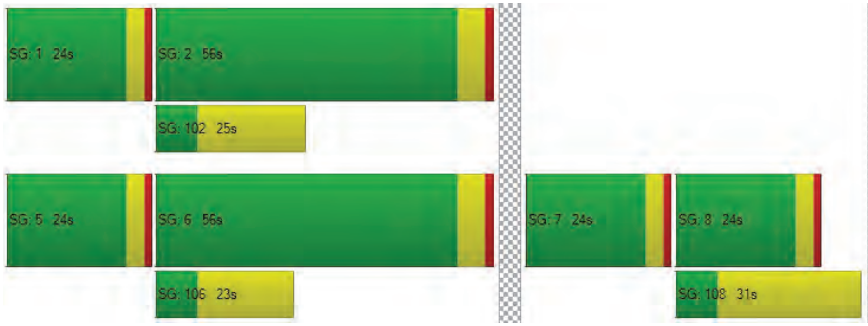
Vehicle Miles Traveled [mph]	92.22	224.27	116.55	42.99	160.08	155.66	13.56	13.63	25.13	3.07	15.75
Stops [stops/h]	1021.36	859.67	475.97	174.22	636.35	633.80	207.68	207.82	801.74	49.89	504.60
Fuel consumption [US gal/h]	55.50	26.23	14.58	6.03	20.85	20.80	4.34	4.34	33.33	1.00	15.13
CO [g/h]	3879.27	1833.70	1018.87	421.82	1457.56	1454.15	303.51	303.42	2329.60	69.67	1057.62
NOx [g/h]	754.76	356.77	198.24	82.07	283.59	282.92	59.05	59.03	453.26	13.55	205.77
VOC [g/h]	899.06	424.98	236.13	97.76	337.80	337.01	70.34	70.32	539.91	16.15	245.11

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	52.48	52.48	52.48
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.528	2.817	2.324
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	798	798	317	317
d_b, Bicycle Delay [s]	22.74	22.74	44.59	44.59
l_b,int, Bicycle LOS Score for Intersection	2.835	2.702	3.210	2.333
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	51.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.007

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	980	1679	319	0	37	1192	428	208	130	290	236	80	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	25	4	0	0	34	0	0	0	13	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	97	0	0	0	128	0	0	91	0	0	75
Total Hourly Volume [veh/h]	1	1008	1704	226	0	37	1226	300	208	130	212	243	80	176
Peak Hour Factor	1.000	0.840	0.990	0.840	1.000	0.840	0.990	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	300	430	67	0	11	310	89	62	39	63	72	24	52
Total Analysis Volume [veh/h]	1	1200	1721	269	0	44	1238	357	248	155	252	289	95	210
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	73	73	7	34	57	18	18	18	18	18
g / C, Green / Cycle	0.33	0.54	0.54	0.05	0.25	0.42	0.13	0.13	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.35	0.37	0.40	0.02	0.25	0.22	0.11	0.11	0.11	0.11	0.13
s, saturation flow rate [veh/h]	3459	3532	1735	1781	5053	1589	1781	1847	1781	1823	1589
c, Capacity [veh/h]	1155	1901	934	86	1275	668	232	241	241	247	216
d1, Uniform Delay [s]	45.29	22.99	23.97	63.17	50.34	29.48	57.87	57.86	56.88	56.86	58.54
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.15	0.15	0.22	0.21	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.76	2.04	5.10	1.76	19.09	3.05	11.47	11.02	10.68	10.21	46.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.69	0.73	0.51	0.97	0.53	0.85	0.85	0.79	0.78	0.97
d, Delay for Lane Group [s/veh]	66.05	25.04	29.07	64.94	69.43	32.54	69.34	68.88	67.55	67.07	104.89
Lane Group LOS	F	C	C	E	E	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	22.65	15.59	17.80	1.50	15.74	9.01	7.41	7.65	7.05	7.16	9.98
50th-Percentile Queue Length [ft/ln]	566.18	389.65	444.92	37.60	393.43	225.17	185.34	191.29	176.29	179.07	249.49
95th-Percentile Queue Length [veh/ln]	31.27	22.06	24.72	2.71	22.24	13.93	11.88	12.19	11.41	11.55	15.16
95th-Percentile Queue Length [ft/ln]	781.71	551.52	617.88	67.67	556.07	348.21	296.97	304.71	285.17	288.81	379.01

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.05	66.05	26.01	29.07	64.94	64.94	69.43	32.54	69.25	68.88	0.00	67.39	67.07	104.89
Movement LOS	E	F	C	C	E	E	E	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	41.34				61.27				45.28			80.59		
Approach LOS	D				E				D			F		
d_I, Intersection Delay [s/veh]	51.22													
Intersection LOS	D													
Intersection V/C	1.007													

Emissions

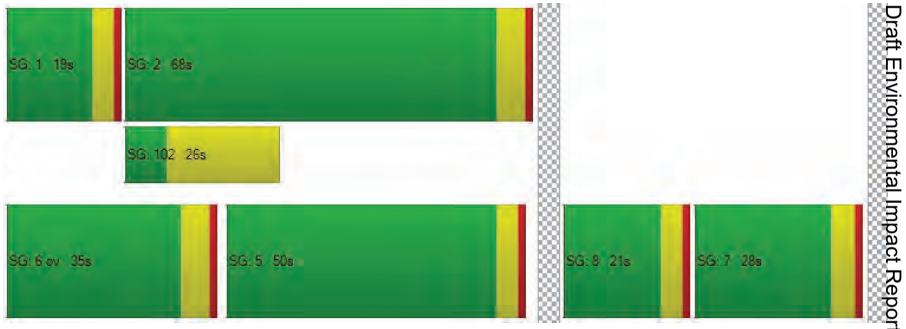
Vehicle Miles Traveled [mph]	205.69	223.46	117.36	8.28	232.99	67.19	9.15	9.49	6.04	6.17	6.68
Stops [stops/h]	1198.97	825.15	471.09	39.81	1249.71	238.41	196.24	202.55	186.66	189.61	264.17
Fuel consumption [US gal/h]	31.23	20.41	11.49	1.36	41.01	7.63	4.25	4.38	3.89	3.95	6.22
CO [g/h]	2183.21	1426.33	802.96	95.08	2866.79	533.39	297.32	306.43	272.09	275.95	434.50
NOx [g/h]	424.77	277.51	156.23	18.50	557.77	103.78	57.85	59.62	52.94	53.69	84.54
VOC [g/h]	505.98	330.57	186.09	22.03	664.41	123.62	68.91	71.02	63.06	63.95	100.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.558
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.367	2.507	2.225	2.112
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.927

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2117	609	1	388	1330	0	0	0	1197	0	0	861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	57	9	0	0	54	0	0	0	44	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	185	0	0	0	0	0	0	372	0	0	258
Total Hourly Volume [veh/h]	0	2174	433	1	388	1384	0	0	0	869	0	0	603
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	572	129	0	115	364	0	0	0	259	0	0	179
Total Analysis Volume [veh/h]	0	2288	515	1	462	1457	0	0	0	1035	0	0	718
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Calculated Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.45	0.32	0.26	0.21	0.37	
s, saturation flow rate [veh/h]	5094	1589	1781	6792	2813	
c, Capacity [veh/h]	2809	876	516	3476	927	
d1, Uniform Delay [s]	12.42	10.12	23.17	10.32	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.73	2.88	8.80	0.37	54.01	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.81	0.59	0.90	0.42	1.12	
d, Delay for Lane Group [s/veh]	15.15	13.00	31.97	10.69	76.81	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	7.48	4.43	7.43	2.71	13.71	
50th-Percentile Queue Length [ft/ln]	187.12	110.75	185.84	67.84	342.80	
95th-Percentile Queue Length [veh/ln]	11.97	7.88	11.90	4.88	21.12	
95th-Percentile Queue Length [ft/ln]	299.30	197.04	297.62	122.11	528.07	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.15	13.00	31.97	31.97	10.69	0.00	0.00	0.00	76.81	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]		14.76			15.82			76.81			0.00		
Approach LOS		B			B			E			A		
d_I, Intersection Delay [s/veh]	26.27												
Intersection LOS	C												
Intersection V/C	0.927												

Emissions

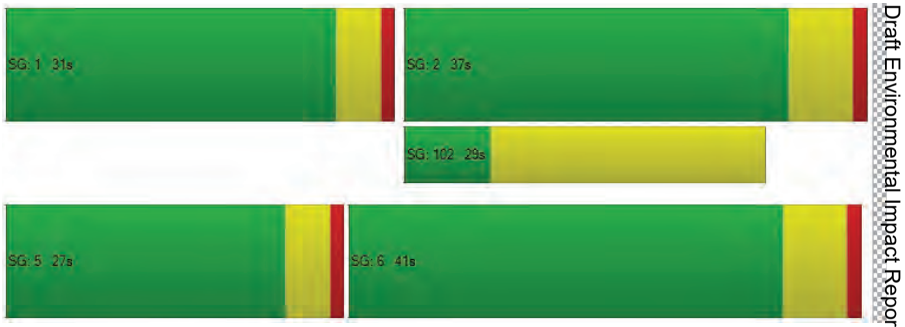
Vehicle Miles Traveled [mph]	331.07	74.52	79.30	249.54	74.07	
Stops [stops/h]	1188.79	234.52	393.53	574.62	1451.87	
Fuel consumption [US gal/h]	33.18	6.83	10.62	18.87	27.25	
CO [g/h]	2319.55	477.65	742.59	1318.91	1904.59	
NOx [g/h]	451.30	92.93	144.48	256.61	370.56	
VOC [g/h]	537.58	110.70	172.10	305.67	441.41	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89	
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.266	
Crosswalk LOS	F	F	F	B	
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000	
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0	
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00	
l_b,int, Bicycle LOS Score for Intersection	3.203	2.161	1.560	1.560	
Bicycle LOS	C	B	A	A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.938

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1820	215	3	532	1803	189	299	33	67	1	91	6	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	66	5	0	0	98	0	0	0	2	0	8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	66	0	0	0	57	0	0	21	0	0	0	181
Total Hourly Volume [veh/h]	1	25	1886	154	3	532	1901	132	299	33	48	1	99	6	423
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	7	491	40	1	139	495	34	78	9	13	0	26	2	110
Total Analysis Volume [veh/h]	1	26	1965	160	3	554	1980	138	311	34	50	1	103	6	441
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	93	93	93	93	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	39	39	12	49	49	11	11	11	15	15	15
g / C, Green / Cycle	0.02	0.42	0.42	0.13	0.53	0.53	0.12	0.12	0.12	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.39	0.10	0.16	0.39	0.09	0.09	0.02	0.03	0.06	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	78	2150	671	444	2689	839	408	221	188	285	255	254
d1, Uniform Delay [s]	44.95	25.39	17.34	40.69	17.02	11.39	39.90	36.99	37.49	34.98	38.32	38.32
k, delay calibration	0.04	0.04	0.04	0.09	0.04	0.04	0.08	0.08	0.08	0.08	0.33	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.97	0.70	0.07	117.53	0.15	0.03	2.21	0.24	0.56	0.58	23.15	23.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.91	0.24	1.25	0.74	0.16	0.76	0.15	0.27	0.36	0.88	0.88
d, Delay for Lane Group [s/veh]	45.92	26.09	17.41	158.22	17.17	11.43	42.12	37.23	38.05	35.56	61.46	61.55
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.32	13.01	2.16	12.26	10.09	1.41	3.53	0.70	1.06	2.13	6.55	6.53
50th-Percentile Queue Length [ft/ln]	7.88	325.22	53.99	306.59	252.18	35.36	88.30	17.62	26.46	53.16	163.73	163.23
95th-Percentile Queue Length [veh/ln]	0.57	18.92	3.89	19.68	15.30	2.55	6.36	1.27	1.90	3.83	10.75	10.72
95th-Percentile Queue Length [ft/ln]	14.19	473.10	97.18	492.04	382.40	63.66	158.93	31.72	47.62	95.69	268.66	267.99

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.92	45.92	26.09	17.41	158.2	158.2	17.17	11.43	42.12	37.23	38.05	35.56	35.56	61.46	61.51
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	E	E
d_A, Approach Delay [s/veh]	25.70				46.25				41.18			56.61			
Approach LOS	C				D				D			E			
d_I, Intersection Delay [s/veh]	39.23														
Intersection LOS	D														
Intersection V/C	0.938														

Emissions

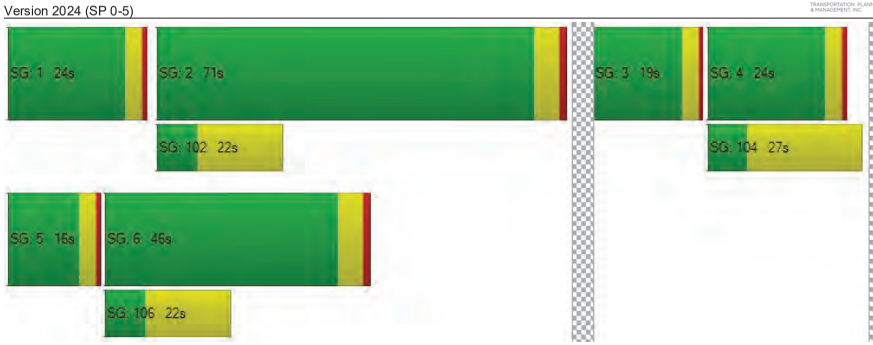
Vehicle Miles Traveled [mph]	6.03	438.66	35.72	80.60	286.50	19.97	39.67	4.34	6.38	36.50	78.60	78.29
Stops [stops/h]	24.39	1509.25	83.52	948.55	1170.30	54.70	273.17	27.26	40.92	82.24	253.28	252.50
Fuel consumption [US gal/h]	0.64	36.83	2.50	26.49	25.18	1.45	5.81	0.59	0.88	2.71	7.44	7.41
CO [g/h]	44.40	2574.45	174.66	1851.61	1760.05	101.02	405.94	41.01	61.22	189.40	519.76	518.04
NOx [g/h]	8.64	500.90	33.98	360.26	342.44	19.66	78.98	7.98	11.91	36.85	101.13	100.79
VOC [g/h]	10.29	596.65	40.48	429.13	407.91	23.41	94.08	9.50	14.19	43.90	120.46	120.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.19	0.00	36.19	36.19
l_p,int, Pedestrian LOS Score for Intersectio	3.418	0.000	2.588	2.860
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	870	1407	440	333
d_b, Bicycle Delay [s]	14.85	4.09	28.30	32.33
l_b,int, Bicycle LOS Score for Intersection	2.779	2.758	1.903	2.597
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	54.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	73	1515	362	2	243	1325	392	2	349	336	86	393	164	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	73	19	0	0	108	0	0	0	0	0	26	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	114	0	0	0	118	0	0	0	26	0	0	58
Total Hourly Volume [veh/h]	6	73	1588	267	2	243	1433	274	2	349	336	60	419	164	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	20	427	72	1	65	385	74	1	94	90	16	113	44	37
Total Analysis Volume [veh/h]	6	78	1708	287	2	261	1541	295	2	375	361	65	451	176	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	25	50	0	0	35	50	0	0	25	15	0	15	25	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	40	56	0	0	31	21	0	21	31	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	158	158	158	158	158	158	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	85	85	14	90	90	19	21	21	15	17	17
g / C, Green / Cycle	0.06	0.54	0.54	0.09	0.57	0.57	0.12	0.13	0.13	0.09	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.18	0.08	0.30	0.19	0.11	0.12	0.12	0.13	0.05	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1772	3459	3560	1589
c, Capacity [veh/h]	111	3672	859	309	2893	903	424	249	236	328	376	168
d1, Uniform Delay [s]	72.94	22.27	20.34	70.89	21.14	18.10	68.27	67.21	67.22	71.50	66.47	69.58
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.47	0.48	0.08	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.97	0.43	1.05	2.55	0.71	0.96	2.61	31.29	32.83	171.22	0.34	5.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.47	0.33	0.85	0.53	0.33	0.89	0.88	0.88	1.37	0.47	0.87
d, Delay for Lane Group [s/veh]	76.91	22.69	21.39	73.44	21.84	19.07	70.88	98.50	100.06	242.72	66.81	74.84
Lane Group LOS	E	C	C	E	C	B	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.50	9.96	6.30	5.29	11.52	5.81	7.69	10.87	10.41	14.49	3.38	6.09
50th-Percentile Queue Length [ft/ln]	87.44	248.96	157.43	132.27	287.96	145.35	192.28	271.68	260.34	362.26	84.62	152.31
95th-Percentile Queue Length [veh/ln]	6.30	15.13	10.41	9.06	17.08	9.77	12.24	16.27	15.71	23.10	6.09	10.14
95th-Percentile Queue Length [ft/ln]	157.38	378.34	260.32	226.58	427.11	244.22	305.99	406.84	392.65	577.55	152.31	253.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.91	76.91	22.69	21.39	73.44	73.44	21.84	19.07	70.88	70.88	99.12	100.0	242.72	66.81	74.84
Movement LOS	E	E	C	C	E	E	C	B	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	24.70				27.92				85.94				170.96		
Approach LOS	C				C				F				F		
d_I, Intersection Delay [s/veh]	54.07														
Intersection LOS	D														
Intersection V/C	0.664														

Emissions

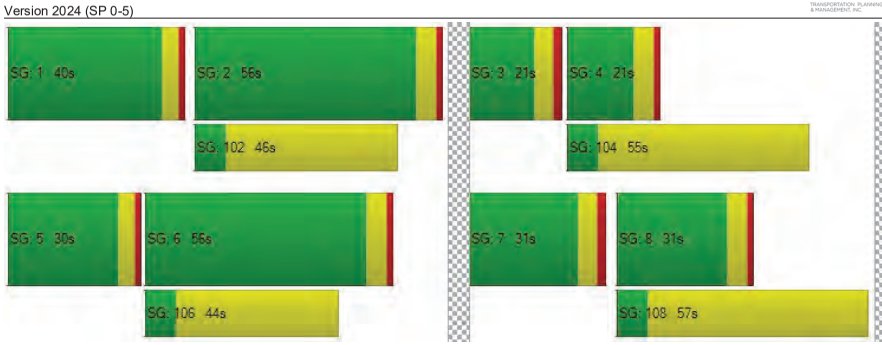
Vehicle Miles Traveled [mph]	33.44	679.93	114.25	58.71	344.01	65.85	94.09	54.55	51.77	47.12	18.39	15.25
Stops [stops/h]	79.69	907.59	143.48	241.10	787.34	132.47	350.49	247.61	237.28	660.32	154.24	138.81
Fuel consumption [US gal/h]	3.13	40.89	6.75	8.94	28.43	5.05	11.25	7.99	7.67	27.86	4.00	3.62
CO [g/h]	218.88	2858.39	471.49	624.92	1987.35	352.93	786.16	558.77	535.80	1947.37	279.72	252.90
NOx [g/h]	42.59	556.14	91.73	121.59	386.67	68.67	152.96	108.72	104.25	378.89	54.42	49.20
VOC [g/h]	50.73	662.46	109.27	144.83	460.59	81.80	182.20	129.50	124.18	451.32	64.83	58.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.38	68.38	68.38	68.38
l_p,int, Pedestrian LOS Score for Intersectio	3.501	3.820	2.760	2.961
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	637	637	194	320
d_b, Bicycle Delay [s]	36.71	36.71	64.44	55.73
l_b,int, Bicycle LOS Score for Intersection	2.462	2.635	1.934	2.245
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	6	1300	21	0	21	1371	285	408	7	15	1	4	9
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	92	0	0	0	135	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	6	0	0	0	86	0	0	5	0	0	3
Total Hourly Volume [veh/h]	1	6	1392	15	0	21	1506	199	408	7	10	1	4	6
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	391	4	0	6	423	56	115	2	3	0	1	2
Total Analysis Volume [veh/h]	1	7	1564	17	0	24	1692	224	458	8	11	1	5	7
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	72	72	72	72	72	72	72	72	72
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	40	40	1	40	40	12	12	1
g / C, Green / Cycle	0.01	0.55	0.55	0.02	0.55	0.55	0.17	0.17	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.42	0.42	0.01	0.51	0.53	0.13	0.13	0.01
s, saturation flow rate [veh/h]	1781	1870	1863	1781	1870	1796	1781	1774	1702
c, Capacity [veh/h]	20	1021	1017	30	1032	991	306	305	29
d1, Uniform Delay [s]	35.60	12.96	12.98	35.51	14.94	15.61	28.72	28.72	35.28
k, delay calibration	0.04	0.29	0.29	0.04	0.39	0.42	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.90	3.42	3.46	15.93	12.78	19.24	4.35	4.37	3.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.78	0.78	0.80	0.93	0.97	0.78	0.78	0.44
d, Delay for Lane Group [s/veh]	40.50	16.39	16.44	51.43	27.73	34.85	33.07	33.08	39.15
Lane Group LOS	D	B	B	D	C	C	C	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.16	9.49	9.49	0.52	13.41	15.47	4.17	4.15	0.25
50th-Percentile Queue Length [ft/ln]	4.08	237.33	237.29	12.90	335.26	386.83	104.17	103.79	6.31
95th-Percentile Queue Length [veh/ln]	0.29	14.55	14.54	0.93	19.42	21.92	7.50	7.47	0.45
95th-Percentile Queue Length [ft/ln]	7.35	363.65	363.61	23.22	485.41	548.11	187.51	186.83	11.36

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.50	40.50	16.41	16.44	51.43	51.43	30.82	34.85	33.07	33.08	33.08	39.15	39.15	39.15
Movement LOS	D	D	B	B	D	D	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	16.54				31.54				33.08			39.15		
Approach LOS	B				C				C			D		
d_I, Intersection Delay [s/veh]	25.81													
Intersection LOS	C													
Intersection V/C	0.873													

Emissions

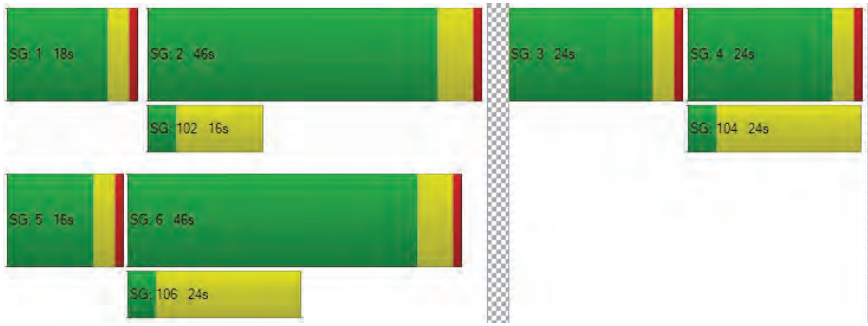
Vehicle Miles Traveled [mph]	2.83	280.05	279.41	9.55	381.46	381.27	57.55	57.32	0.25
Stops [stops/h]	8.13	472.89	472.82	25.70	668.04	770.79	207.57	206.82	12.57
Fuel consumption [US gal/h]	0.23	16.78	16.76	1.05	30.58	33.86	5.12	5.10	0.18
CO [g/h]	15.90	1172.93	1171.31	73.27	2137.23	2367.07	358.17	356.84	12.81
NOx [g/h]	3.09	228.21	227.89	14.26	415.83	460.55	69.69	69.43	2.49
VOC [g/h]	3.68	271.84	271.46	16.98	495.32	548.59	83.01	82.70	2.97

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.58	0.00	28.58	28.58
l_p,int, Pedestrian LOS Score for Intersectio	2.944	0.000	2.200	1.745
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1107	1107	553	553
d_b, Bicycle Delay [s]	7.20	7.20	18.90	18.90
l_b,int, Bicycle LOS Score for Intersection	2.875	3.211	2.355	1.586
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.765

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	48	1131	1259	129	197	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	92	135	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	39	0	20
Total Hourly Volume [veh/h]	0	52	1223	1394	90	197	46
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	15	344	392	25	55	13
Total Analysis Volume [veh/h]	0	58	1374	1566	101	221	52
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	3	40	33	33	10	10
g / C, Green / Cycle	0.05	0.67	0.55	0.55	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.03	0.39	0.45	0.46	0.12	0.03
s, saturation flow rate [veh/h]	1781	3560	1870	1831	1781	1589
c, Capacity [veh/h]	93	2396	1037	1015	287	256
d1, Uniform Delay [s]	27.96	5.24	10.78	10.96	24.19	21.91
k, delay calibration	0.04	0.15	0.23	0.24	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.58	0.31	3.16	3.72	4.38	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.57	0.80	0.82	0.77	0.20
d, Delay for Lane Group [s/veh]	30.54	5.55	13.93	14.68	28.58	22.29
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.84	2.98	7.75	8.01	3.16	0.63
50th-Percentile Queue Length [ft/ln]	21.05	74.58	193.84	200.28	78.88	15.64
95th-Percentile Queue Length [veh/ln]	1.52	5.37	12.32	12.65	5.68	1.13
95th-Percentile Queue Length [ft/ln]	37.89	134.25	308.00	316.33	141.98	28.14

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.54	30.54	5.55	14.28	14.68	28.58	22.29
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	6.57			14.31		27.38	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	12.08						
Intersection LOS	B						
Intersection V/C	0.765						

Emissions

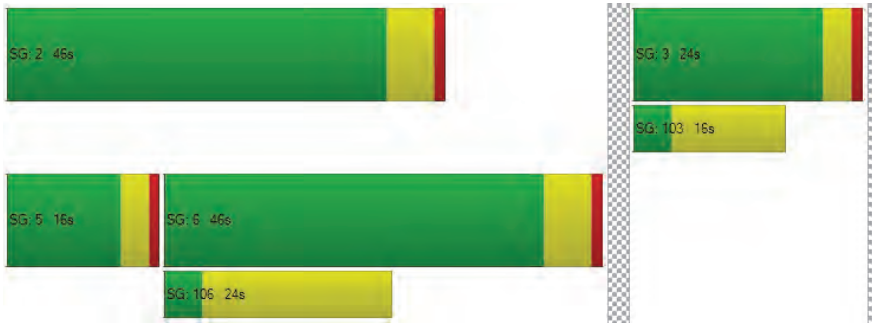
Vehicle Miles Traveled [mph]	40.47	958.65	294.94	294.94	74.56	17.54
Stops [stops/h]	50.45	357.57	464.64	480.10	189.08	37.48
Fuel consumption [US gal/h]	2.31	42.99	17.07	17.28	5.40	1.17
CO [g/h]	161.13	3005.20	1193.38	1208.19	377.42	81.45
NOx [g/h]	31.35	584.70	232.19	235.07	73.43	15.85
VOC [g/h]	37.34	696.48	276.58	280.01	87.47	18.88

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.57	0.00	22.57
l_p,int, Pedestrian LOS Score for Intersectio	2.881	0.000	2.111
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1332	1332	666
d_b, Bicycle Delay [s]	3.35	3.35	13.37
l_b,int, Bicycle LOS Score for Intersection	2.741	2.967	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	54.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.906

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	98	575	21	249	446	625	494	119	26	13	155	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	27	96	13	0	140	0	0	0	39	16	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	188	0	0	20	0	0	33
Total Hourly Volume [veh/h]	125	671	24	249	586	437	494	119	45	29	155	77
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	184	7	68	161	120	136	33	12	8	43	21
Total Analysis Volume [veh/h]	137	737	26	274	644	480	543	131	49	32	170	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	76	76	76	76	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	7	20	20	12	25	25	15	15	10	10
g / C, Green / Cycle	0.10	0.27	0.27	0.16	0.33	0.33	0.20	0.20	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.21	0.15	0.32	0.33	0.20	0.20	0.11	0.05
s, saturation flow rate [veh/h]	1781	1870	1848	1781	1870	1611	1781	1783	1855	1589
c, Capacity [veh/h]	173	500	494	279	611	526	349	349	249	213
d1, Uniform Delay [s]	33.77	25.85	25.85	32.14	25.46	25.76	30.76	30.76	32.18	30.30
k, delay calibration	0.04	0.09	0.09	0.35	0.37	0.39	0.40	0.40	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.04	2.12	2.14	40.79	26.13	35.43	52.22	52.13	2.41	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.77	0.77	0.98	0.98	1.00	1.04	1.03	0.81	0.40
d, Delay for Lane Group [s/veh]	36.82	27.97	28.00	72.93	51.59	61.19	82.98	82.89	34.59	30.74
Lane Group LOS	D	C	C	E	D	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.56	6.41	6.34	7.66	13.42	13.20	11.22	11.22	3.68	1.42
50th-Percentile Queue Length [ft/ln]	64.09	160.36	158.55	191.40	335.40	330.11	280.49	280.53	92.03	35.47
95th-Percentile Queue Length [veh/ln]	4.61	10.57	10.47	12.19	19.42	19.19	17.01	17.01	6.63	2.55
95th-Percentile Queue Length [ft/ln]	115.36	264.20	261.80	304.85	485.57	479.83	425.32	425.33	165.66	63.84

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.82	27.98	28.00	72.93	52.30	61.19	82.95	82.89	82.89	34.59	34.59	30.74
Movement LOS	D	C	C	E	D	E	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	29.33			59.40			82.93			33.45		
Approach LOS	C			E			F			C		
d_I, Intersection Delay [s/veh]	54.11											
Intersection LOS	D											
Intersection V/C	0.906											

Emissions

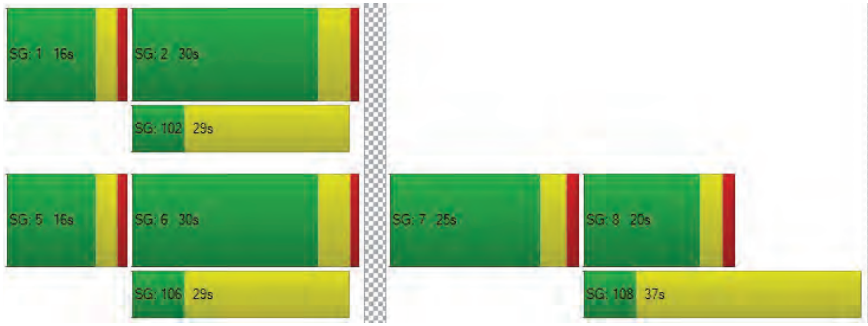
Vehicle Miles Traveled [mph]	79.12	221.64	219.01	191.17	416.02	368.20	27.19	27.20	22.34	9.40
Stops [stops/h]	120.78	302.21	298.79	360.71	632.08	622.12	528.60	528.67	173.44	66.84
Fuel consumption [US gal/h]	4.95	12.98	12.83	17.16	31.92	30.44	10.14	10.14	3.30	1.29
CO [g/h]	346.06	907.18	896.61	1199.57	2230.98	2127.99	708.86	708.78	230.66	90.03
NOx [g/h]	67.33	176.50	174.45	233.39	434.07	414.03	137.92	137.90	44.88	17.52
VOC [g/h]	80.20	210.25	207.80	278.01	517.05	493.18	164.29	164.27	53.46	20.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.00	0.00	28.00	28.00
l_p,int, Pedestrian LOS Score for Intersectio	2.628	0.000	2.518	2.225
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	647	647	406	523
d_b, Bicycle Delay [s]	17.50	17.50	24.28	20.82
l_b,int, Bicycle LOS Score for Intersection	2.310	2.868	2.786	2.088
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	115	314	447	38	380	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	136	195	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	25
Total Hourly Volume [veh/h]	119	450	642	27	380	59
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	125	178	9	120	16
Total Analysis Volume [veh/h]	132	500	713	34	481	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Calculated Cycle Length [s]	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	46	34	34	24	24
g / C, Green / Cycle	0.09	0.57	0.43	0.43	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.38	0.02	0.27	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	168	1068	798	678	542	484
d1, Uniform Delay [s]	35.57	10.09	21.32	13.48	26.62	20.27
k, delay calibration	0.04	0.15	0.20	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.04	0.46	6.65	0.04	5.12	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.47	0.89	0.05	0.89	0.14
d, Delay for Lane Group [s/veh]	38.61	10.54	27.97	13.52	31.74	20.40
Lane Group LOS	D	B	C	B	C	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.44	3.91	11.55	0.31	9.08	0.89
50th-Percentile Queue Length [ft/ln]	61.10	97.80	288.79	7.80	227.00	22.13
95th-Percentile Queue Length [veh/ln]	4.40	7.04	17.13	0.56	14.02	1.59
95th-Percentile Queue Length [ft/ln]	109.99	176.03	428.14	14.04	350.55	39.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.61	10.54	27.97	13.52	31.74	20.40
Movement LOS	D	B	C	B	C	C
d_A, Approach Delay [s/veh]	16.40		27.31		30.37	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	24.60					
Intersection LOS	C					
Intersection V/C	0.853					

Emissions

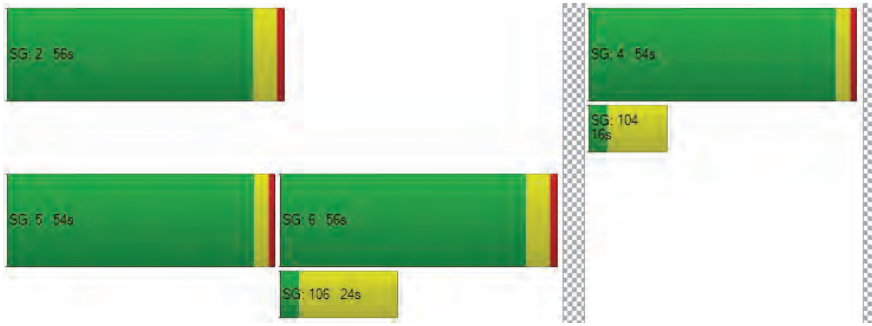
Vehicle Miles Traveled [mph]	16.29	61.69	411.77	19.64	112.97	15.50
Stops [stops/h]	109.76	175.66	518.73	14.01	407.74	39.75
Fuel consumption [US gal/h]	3.62	6.40	27.47	1.01	10.01	1.13
CO [g/h]	253.08	447.31	1919.99	70.64	699.71	79.11
NOx [g/h]	49.24	87.03	373.56	13.74	136.14	15.39
VOC [g/h]	58.65	103.67	444.98	16.37	162.16	18.33

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	32.48	0.00	32.48
l_p,int, Pedestrian LOS Score for Intersectio	2.793	0.000	2.216
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1247	1247	1247
d_b, Bicycle Delay [s]	5.68	5.68	5.68
l_b,int, Bicycle LOS Score for Intersection	2.602	2.810	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	44.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.133

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	380	0	25	501	0	0	0	0	0	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	127	0	0	181	19	13	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	507	0	25	682	19	13	0	1	0	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	138	0	6	185	5	4	0	0	0	0	12
Total Analysis Volume [veh/h]	2	551	0	25	741	21	14	0	1	0	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.01	0.00	0.13	0.00	0.00	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	9.24	0.00	0.00	8.56	0.00	0.00	44.05	35.16	18.61	35.66	31.37	12.42
Movement LOS	A	A	A	A	A	A	E	E	C	E	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.44	0.44	0.44	0.30	0.30	0.30
95th-Percentile Queue Length [ft/ln]	0.08	0.08	0.08	1.06	1.06	1.06	11.11	11.11	11.11	7.54	7.54	7.54
d_A, Approach Delay [s/veh]	0.03			0.27			42.35			12.42		
Approach LOS	A			A			E			B		
d_I, Intersection Delay [s/veh]	1.05											
Intersection LOS	E											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	140.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.979

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	311	16	94	407	0	0	0	0	54	0	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	8	0	0	11	161	121	0	14	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	10	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	319	16	94	418	171	121	0	14	54	2	69
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	86	4	25	112	46	33	0	4	15	1	19
Total Analysis Volume [veh/h]	22	343	17	101	449	184	130	0	15	58	2	74
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.08	0.00	0.00	0.98	0.00	0.03	0.38	0.01	0.11
d_M, Delay for Movement [s/veh]	8.88	0.00	0.00	8.28	0.00	0.00	140.17	133.27	119.70	41.02	40.23	22.75
Movement LOS	A	A	A	A	A	A	F	F	F	E	E	C
95th-Percentile Queue Length [veh/ln]	0.07	0.00	0.00	0.28	0.00	0.00	7.44	7.44	7.44	2.58	2.58	2.58
95th-Percentile Queue Length [ft/ln]	1.78	0.00	0.00	6.89	0.00	0.00	185.94	185.94	185.94	64.47	64.47	64.47
d_A, Approach Delay [s/veh]	0.51			1.14			138.05			30.92		
Approach LOS	A			A			F			D		
d_I, Intersection Delay [s/veh]	18.06											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	3,202.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	6.837

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	101	470	168	48	1	692	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	39	0	0	0	27
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	101	470	207	48	1	692	212
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	134	59	14	0	197	60
Total Analysis Volume [veh/h]	0	115	534	235	55	1	786	241
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	6.84	0.69	0.00	0.00	0.00	0.62	0.00
d_M, Delay for Movement [s/veh]	3202.74	3202.74	2993.35	0.00	0.00	22.24	9.63	0.00
Movement LOS	F	F	F	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	73.65	73.65	73.65	0.00	0.00	2.52	2.52	2.52
95th-Percentile Queue Length [ft/ln]	1841.23	1841.23	1841.23	0.00	0.00	63.07	63.07	63.07
d_A, Approach Delay [s/veh]	3030.45			0.00		7.39		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	1003.74							
Intersection LOS	F							

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Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	30	195	59	0	25	319	22	16	23	19	211	16	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	5	0	0	0	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	195	59	0	30	319	22	16	23	19	211	16	49
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	59	18	0	9	96	7	5	7	6	64	5	16
Total Analysis Volume [veh/h]	36	235	71	0	38	384	27	19	28	23	254	19	62
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	588	599	502	553
Degree of Utilization, x	0.58	0.75	0.14	0.61

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.73	6.63	0.48	4.02
95th-Percentile Queue Length [ft]	93.25	165.84	12.05	100.41
Approach Delay [s/veh]	17.32	24.79	11.33	19.00
Approach LOS	C	C	B	C
Intersection Delay [s/veh]	20.25			
Intersection LOS	C			

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Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	6	80	0	143	48	2	109	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	39	0	0	0	0	27	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	119	0	143	48	2	136	190
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	35	0	43	14	1	40	57
Total Analysis Volume [veh/h]	7	142	0	170	57	2	162	226
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.17	0.00	0.00	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	16.05	10.14	9.37	0.00	0.00	10.65	8.07	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.06	0.60	0.00	0.00	0.00	0.42	0.42	0.00
95th-Percentile Queue Length [ft/ln]	1.61	15.10	0.00	0.00	0.00	10.56	10.56	0.00
d_A, Approach Delay [s/veh]	10.41			0.00			3.41	
Approach LOS	B			A			A	
d_I, Intersection Delay [s/veh]	3.76							
Intersection LOS	C							

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Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	12	43	87	36	37	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	39	0	0	27
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	43	126	36	37	201
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	12	34	10	10	55
Total Analysis Volume [veh/h]	13	47	137	39	40	218
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.05	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	11.77	9.31	0.00	0.00	7.65	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.24	0.24	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	6.04	6.04	0.00	0.00	2.20	0.00
d_A, Approach Delay [s/veh]	9.84		0.00		1.19	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.81					
Intersection LOS	B					

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Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.148

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	174	0	19	125	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	27	0	0	39	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	201	0	19	164	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	0	5	45	0	1
Total Analysis Volume [veh/h]	218	0	21	178	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	735	735	692	765	765	748
Degree of Utilization, x	0.15	0.15	0.03	0.12	0.12	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.52	0.52	0.09	0.39	0.39	0.01
95th-Percentile Queue Length [ft]	12.98	12.98	2.35	9.82	9.82	0.30
Approach Delay [s/veh]	8.45		8.03			7.83
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.25					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	107.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.950

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	138	0	25	7	1	21	5	408	85	66	397	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	27	0	0	0	0	0	0	0	39	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	165	0	25	7	1	21	5	408	124	66	397	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	0	7	2	0	5	1	105	32	18	102	3
Total Analysis Volume [veh/h]	170	0	27	7	1	22	5	421	128	71	409	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop		Stop		Free		Free	
Flared Lane	No		No					
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance	No		No					
Number of Storage Spaces in Median	0		2		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.95	0.00	0.05	0.04	0.01	0.03	0.00	0.00	0.00	0.07	0.00	0.00
d_M, Delay for Movement [s/veh]	107.37	22.57	11.49	25.71	24.50	11.44	8.17	0.00	0.00	8.79	0.00	0.00
Movement LOS	F	C	B	D	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	7.45	0.15	0.15	0.25	0.25	0.25	0.01	0.00	0.00	0.22	0.00	0.00
95th-Percentile Queue Length [ft/ln]	186.19	3.64	3.64	6.34	6.34	6.34	0.33	0.00	0.00	5.60	0.00	0.00
d_A, Approach Delay [s/veh]	94.23			15.21			0.07			1.27		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	15.47											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	Windfield Way									White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	238	5	239	5	5	5	5	520	71	14	144	468	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	72	0	0	0	0	0	21	0	0	0	0
Total Hourly Volume [veh/h]	238	5	167	5	5	5	5	520	50	14	144	468	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	63	1	44	1	1	1	1	138	13	4	38	124	1
Total Analysis Volume [veh/h]	253	5	178	5	5	5	5	553	53	14	153	498	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	19	19	1	1	1	65	65	13	78	78
g / C, Green / Cycle	0.16	0.16	0.01	0.01	0.01	0.54	0.54	0.11	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.11	0.00	0.01	0.00	0.16	0.16	0.09	0.13	0.13
s, saturation flow rate [veh/h]	1781	1596	1781	1718	1781	1870	1813	1781	1870	1863
c, Capacity [veh/h]	279	251	12	13	12	1016	985	195	1208	1203
d1, Uniform Delay [s]	49.73	48.11	59.37	59.46	59.37	14.98	14.99	52.52	8.70	8.70
k, delay calibration	0.14	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.27	1.52	21.73	31.68	21.99	0.77	0.79	4.19	0.39	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.73	0.42	0.79	0.42	0.30	0.30	0.86	0.21	0.21
d, Delay for Lane Group [s/veh]	62.99	49.62	81.09	91.14	81.36	15.75	15.79	56.71	9.09	9.09
Lane Group LOS	E	D	F	F	F	B	B	E	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.47	5.31	0.22	0.42	0.22	4.75	4.63	5.17	2.73	2.72
50th-Percentile Queue Length [ft/ln]	211.69	132.87	5.59	10.39	5.60	118.63	115.78	129.19	68.14	67.94
95th-Percentile Queue Length [veh/ln]	13.24	9.10	0.40	0.75	0.40	8.32	8.16	8.90	4.91	4.89
95th-Percentile Queue Length [ft/ln]	330.99	227.39	10.06	18.70	10.08	207.94	204.02	222.39	122.66	122.30

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.99	49.62	49.62	81.09	91.14	91.14	81.36	15.76	15.79	56.71	56.71	9.09	9.09
Movement LOS	E	D	D	F	F	F	F	B	B	E	E	A	A
d_A, Approach Delay [s/veh]	57.38			87.79			16.30			20.96			
Approach LOS	E			F			B			C			
d_I, Intersection Delay [s/veh]	29.06												
Intersection LOS	C												
Intersection V/C	0.452												

Emissions

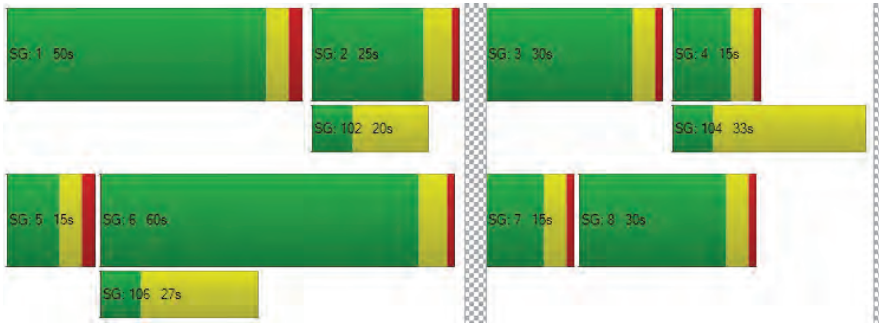
Vehicle Miles Traveled [mph]	97.48	70.51	0.23	0.46	4.21	258.37	251.59	41.68	62.87	62.67
Stops [stops/h]	254.03	159.45	6.71	12.47	6.72	142.36	138.94	155.02	81.77	81.53
Fuel consumption [US gal/h]	8.66	5.63	0.13	0.27	0.29	12.41	12.09	4.50	3.51	3.49
CO [g/h]	605.29	393.64	9.01	19.09	20.49	867.22	844.76	314.50	245.05	244.29
NOx [g/h]	117.77	76.59	1.75	3.71	3.99	168.73	164.36	61.19	47.68	47.53
VOC [g/h]	140.28	91.23	2.09	4.42	4.75	200.99	195.78	72.89	56.79	56.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.297	1.964	2.614	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.398	1.584	2.081	1.986
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	69.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	50	16	29	186	15	177	3	205	712	21	86	521	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	19	0	0	26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	53	0	0	0	6	0	0	53
Total Hourly Volume [veh/h]	50	16	20	186	15	124	3	205	731	15	86	547	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	4	5	51	4	34	1	56	213	4	24	150	34
Total Analysis Volume [veh/h]	55	18	22	204	16	136	3	225	850	16	95	601	137
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	6	13	9	16	20	89	89	9	78	78
g / C, Green / Cycle	0.04	0.10	0.06	0.11	0.14	0.64	0.64	0.07	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.11	0.09	0.13	0.24	0.01	0.05	0.20	0.20
s, saturation flow rate [veh/h]	1781	1705	1781	1615	1781	3560	1589	1781	1870	1751
c, Capacity [veh/h]	71	163	108	180	250	2261	1010	117	1041	975
d1, Uniform Delay [s]	66.57	58.62	65.75	61.02	59.30	12.24	9.41	64.56	17.28	17.28
k, delay calibration	0.04	0.13	0.50	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	0.96	431.73	12.47	5.21	0.48	0.03	5.05	0.99	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.25	1.89	0.84	0.91	0.38	0.02	0.81	0.37	0.37
d, Delay for Lane Group [s/veh]	73.00	59.59	497.48	73.49	64.51	12.72	9.44	69.61	18.27	18.35
Lane Group LOS	E	E	F	E	E	B	A	E	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.08	1.37	16.84	5.94	8.35	6.45	0.19	3.52	7.15	6.73
50th-Percentile Queue Length [ft/ln]	52.07	34.17	421.00	148.48	208.63	161.30	4.76	88.04	178.77	168.17
95th-Percentile Queue Length [veh/ln]	3.75	2.46	27.32	9.94	13.08	10.62	0.34	6.34	11.54	10.98
95th-Percentile Queue Length [ft/ln]	93.73	61.50	682.94	248.40	327.07	265.44	8.57	158.46	288.41	274.51

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.00	59.59	59.59	497.48	73.49	73.49	64.51	64.51	12.72	9.44	69.61	18.30	18.35
Movement LOS	E	E	E	F	E	E	E	E	B	A	E	B	B
d_A, Approach Delay [s/veh]	67.35			316.45			23.46				24.16		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	69.32												
Intersection LOS	E												
Intersection V/C	0.531												

Emissions

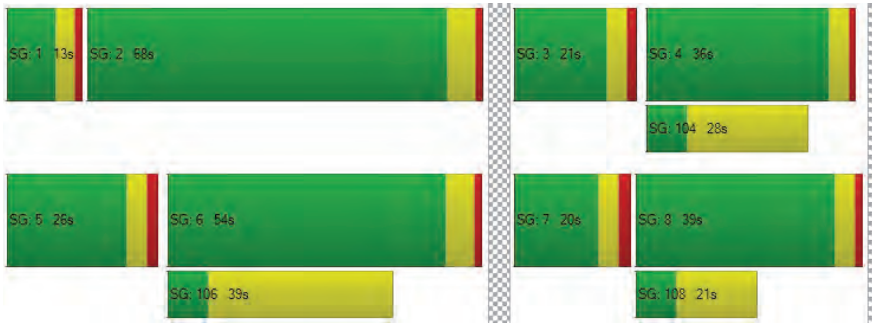
Vehicle Miles Traveled [mph]	2.75	2.00	9.48	7.07	23.82	88.81	1.67	33.26	133.35	125.06
Stops [stops/h]	53.56	35.14	433.03	152.72	214.59	331.81	4.90	90.55	183.88	172.97
Fuel consumption [US gal/h]	1.23	0.76	23.43	3.41	5.16	7.69	0.13	3.22	7.92	7.44
CO [g/h]	85.71	53.23	1637.77	238.19	360.60	537.49	8.85	224.75	553.73	519.89
NOx [g/h]	16.68	10.36	318.65	46.34	70.16	104.58	1.72	43.73	107.74	101.15
VOC [g/h]	19.86	12.34	379.57	55.20	83.57	124.57	2.05	52.09	128.33	120.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.051	2.310	2.799	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.731	2.234	2.281	2.291
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	59.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	57	61	268	230	100	36	33	574	121	234	562	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	0	0	8	6	13	0	13	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	83	0	0	13	0	0	36	0	0	47
Total Hourly Volume [veh/h]	57	61	194	230	100	31	39	587	85	247	580	111
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	16	50	59	26	8	10	151	22	64	149	29
Total Analysis Volume [veh/h]	59	63	200	237	103	32	40	605	88	255	598	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	124	124	124	124	124	124	124	124
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	22	22	19	19	4	45	20	60
g / C, Green / Cycle	0.18	0.18	0.16	0.16	0.03	0.36	0.16	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.13	0.08	0.02	0.38	0.14	0.39
s, saturation flow rate [veh/h]	1781	1649	1781	1795	1781	1829	1781	1819
c, Capacity [veh/h]	323	299	281	283	54	664	284	884
d1, Uniform Delay [s]	42.96	49.42	50.75	47.57	59.63	39.51	51.16	26.92
k, delay calibration	0.13	0.16	0.13	0.13	0.04	0.48	0.20	0.49
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	11.40	8.35	1.55	7.05	46.25	16.37	7.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.88	0.84	0.48	0.74	1.04	0.90	0.81
d, Delay for Lane Group [s/veh]	43.30	60.82	59.10	49.12	66.68	85.76	67.53	34.58
Lane Group LOS	D	E	E	D	E	F	E	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.57	8.85	7.78	3.93	1.35	28.32	9.04	19.17
50th-Percentile Queue Length [ft/ln]	39.30	221.36	194.59	98.26	33.81	707.98	225.95	479.21
95th-Percentile Queue Length [veh/ln]	2.83	13.73	12.36	7.07	2.43	38.21	13.97	26.35
95th-Percentile Queue Length [ft/ln]	70.74	343.37	308.97	176.87	60.86	955.13	349.21	658.71

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.30	60.82	60.82	59.10	49.12	49.12	66.68	85.76	85.76	67.53	34.58	34.58
Movement LOS	D	E	E	E	D	D	E	F	F	E	C	C
d_A, Approach Delay [s/veh]	57.61			55.48			84.72			43.27		
Approach LOS	E			E			F			D		
d_I, Intersection Delay [s/veh]	59.79											
Intersection LOS	E											
Intersection V/C	0.936											

Emissions

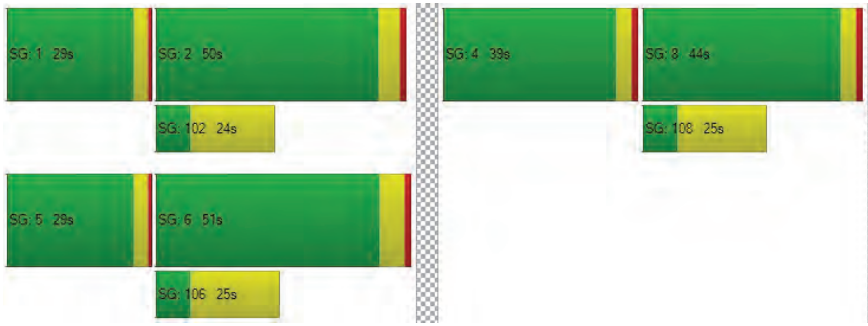
Vehicle Miles Traveled [mph]	101.52	452.53	48.05	27.37	14.01	242.66	115.06	321.27
Stops [stops/h]	45.72	257.52	226.37	114.31	39.33	823.61	262.85	557.47
Fuel consumption [US gal/h]	4.95	23.31	6.08	3.11	1.34	26.63	9.69	21.32
CO [g/h]	346.11	1629.11	424.89	217.23	93.43	1861.59	677.52	1490.00
NOx [g/h]	67.34	316.97	82.67	42.26	18.18	362.20	131.82	289.90
VOC [g/h]	80.21	377.56	98.47	50.34	21.65	431.44	157.02	345.32

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.38	51.38	51.38	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.362	2.185	2.485	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	562	643	722	727
d_b, Bicycle Delay [s]	31.98	28.49	25.26	25.07
l_b,int, Bicycle LOS Score for Intersection	2.228	2.195	2.828	3.233
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	1064	0	0	620	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	23	0	0	32	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1087	0	0	652	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	283	0	0	170	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	1132	0	0	679	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	19	19	1	24	24	0	23	23
g / C, Green / Cycle	0.00	0.00	0.30	0.30	0.01	0.36	0.36	0.00	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.30	0.30	0.00	0.19	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	8	7	526	470	23	680	680	0	1250	558
d1, Uniform Delay [s]	0.00	32.49	17.22	22.21	32.04	18.98	18.98	0.00	17.02	13.80
k, delay calibration	0.11	0.11	0.11	0.32	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	41.47	0.18	17.35	12.44	2.73	2.73	0.00	0.37	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.45	0.20	0.91	0.44	0.83	0.83	0.00	0.54	0.01
d, Delay for Lane Group [s/veh]	0.00	73.95	17.40	39.56	44.48	21.71	21.71	0.00	17.39	13.80
Lane Group LOS	A	E	B	D	D	C	C	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.12	1.11	8.06	0.23	7.54	7.54	0.00	3.79	0.03
50th-Percentile Queue Length [ft/ln]	0.00	3.05	27.69	201.44	5.76	188.51	188.51	0.00	94.79	0.68
95th-Percentile Queue Length [veh/ln]	0.00	0.22	1.99	12.71	0.41	12.04	12.04	0.00	6.83	0.05
95th-Percentile Queue Length [ft/ln]	0.00	5.49	49.84	317.82	10.37	301.09	301.09	0.00	170.63	1.23

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	73.95	17.40	17.40	39.56	44.48	21.71	21.71	0.00	17.39	13.80
Movement LOS	A	A	E	B	B	D	D	C	C	A	B	B
d_A, Approach Delay [s/veh]	73.95			35.26			21.91			17.37		
Approach LOS	E			D			C			B		
d_I, Intersection Delay [s/veh]	23.67											
Intersection LOS	C											
Intersection V/C	0.760											

Emissions

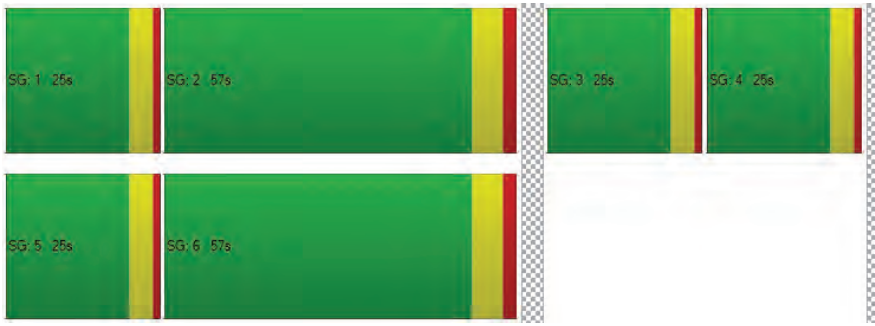
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	255.39	255.39	0.00	118.45	0.52
Stops [stops/h]	0.00	6.73	61.10	444.50	12.71	415.95	415.95	0.00	418.34	1.51
Fuel consumption [US gal/h]	0.00	0.09	2.71	14.26	0.35	15.31	15.31	0.00	9.59	0.04
CO [g/h]	0.00	6.18	189.70	996.74	24.22	1070.31	1070.31	0.00	670.33	2.68
NOx [g/h]	0.00	1.20	36.91	193.93	4.71	208.24	208.24	0.00	130.42	0.52
VOC [g/h]	0.00	1.43	43.96	231.00	5.61	248.05	248.05	0.00	155.36	0.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	613	613	1532	1532
d_b, Bicycle Delay [s]	15.69	15.69	1.78	1.78
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	2.502	2.122
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.678

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	623	523	587	200	511	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	19	4	32	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	642	527	619	200	511	44
Peak Hour Factor	0.8300	0.9100	0.9100	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	193	145	170	60	154	13
Total Analysis Volume [veh/h]	773	579	680	241	616	53
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	22	61	35	35	16	16	16
g / C, Green / Cycle	0.24	0.68	0.39	0.39	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.22	0.16	0.19	0.15	0.17	0.17	0.03
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	834	2421	1397	623	321	321	286
d1, Uniform Delay [s]	33.38	5.50	20.55	19.59	36.59	36.59	31.30
k, delay calibration	0.04	0.50	0.50	0.50	0.30	0.30	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.07	0.23	1.22	1.81	30.10	30.10	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.24	0.49	0.39	0.96	0.96	0.19
d, Delay for Lane Group [s/veh]	35.45	5.74	21.76	21.40	66.69	66.69	31.42
Lane Group LOS	D	A	C	C	E	E	C
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.25	1.85	5.41	3.81	9.24	9.24	0.97
50th-Percentile Queue Length [ft/ln]	206.19	46.18	135.23	95.25	231.02	231.02	24.37
95th-Percentile Queue Length [veh/ln]	12.96	3.32	9.22	6.86	14.23	14.23	1.75
95th-Percentile Queue Length [ft/ln]	323.94	83.12	230.59	171.44	355.66	355.66	43.87

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.45	5.74	21.76	21.40	66.69	31.42
Movement LOS	D	A	C	C	E	C
d_A, Approach Delay [s/veh]	22.72		21.67		63.90	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	31.75					
Intersection LOS	C					
Intersection V/C	0.678					

Emissions

Vehicle Miles Traveled [mph]	134.84	101.00	120.50	42.71	18.65	18.65	3.21
Stops [stops/h]	659.82	147.77	432.75	152.39	369.64	369.64	39.00
Fuel consumption [US gal/h]	14.77	5.65	10.36	3.65	6.99	6.99	0.69
CO [g/h]	1032.56	394.96	724.38	255.11	488.57	488.57	47.98
NOx [g/h]	200.90	76.84	140.94	49.64	95.06	95.06	9.34
VOC [g/h]	239.31	91.54	167.88	59.12	113.23	113.23	11.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.675	2.319	2.683
Bicycle LOS	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	1	152	881	0	0	381	207	405	1	198	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	0	0	5	0	27	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	1	152	885	0	0	386	160	432	1	168	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	280	0	0	122	51	137	0	53	0	0	0
Total Analysis Volume [veh/h]	1	192	1120	0	0	489	203	547	1	213	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	12	62	46	46	16	16	16	
g / C, Green / Cycle	0.13	0.68	0.51	0.51	0.18	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.31	0.14	0.13	0.15	0.15	0.13	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	231	2437	1809	808	313	313	279	
d1, Uniform Delay [s]	38.24	6.54	12.62	12.48	36.14	36.14	35.32	
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.07	0.63	0.37	0.75	3.08	3.08	1.64	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.46	0.27	0.25	0.88	0.88	0.76	
d, Delay for Lane Group [s/veh]	41.30	7.17	12.99	13.23	39.23	39.22	36.95	
Lane Group LOS	D	A	B	B	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.28	4.30	2.76	2.35	6.01	6.01	4.49	
50th-Percentile Queue Length [ft/ln]	107.12	107.43	68.89	58.86	150.23	150.24	112.20	
95th-Percentile Queue Length [veh/ln]	7.68	7.70	4.96	4.24	10.03	10.03	7.96	
95th-Percentile Queue Length [ft/ln]	191.99	192.43	124.01	105.94	250.74	250.75	199.06	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.30	41.30	7.17	0.00	0.00	12.99	13.23	39.23	39.22	36.95	0.00	0.00	0.00
Movement LOS	D	D	A			B	B	D	D	D			
d_A, Approach Delay [s/veh]	12.18				13.06			38.59			0.00		
Approach LOS	B				B			D			A		
d_I, Intersection Delay [s/veh]	19.67												
Intersection LOS	B												
Intersection V/C	0.540												

Emissions

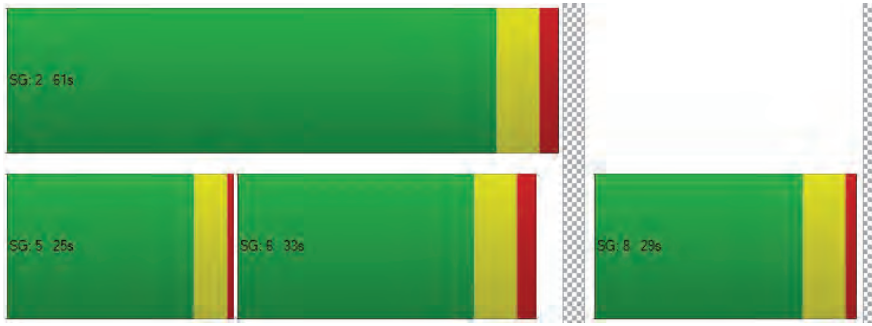
Vehicle Miles Traveled [mph]	34.20	198.47	66.87	27.76	9.49	9.49	7.38	
Stops [stops/h]	171.39	343.79	220.46	94.17	240.37	240.39	179.52	
Fuel consumption [US gal/h]	3.98	11.70	5.26	2.21	3.91	3.91	2.90	
CO [g/h]	277.99	818.07	367.90	154.44	273.01	273.03	202.51	
NOx [g/h]	54.09	159.17	71.58	30.05	53.12	53.12	39.40	
VOC [g/h]	64.43	189.60	85.26	35.79	63.27	63.28	46.93	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.642	2.169	2.865	4.132
Bicycle LOS	B	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	380	501	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	129	172	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	10	-10	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	509	683	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	127	171	0	0	0
Total Analysis Volume [veh/h]	0	509	683	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	13.01
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		13.01	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.093

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	300	441	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	22	15	9	6	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	322	456	29	33	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	81	114	7	8	0
Total Analysis Volume [veh/h]	1	322	456	29	33	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	8.34	0.00	0.00	0.00	16.10	12.07
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.30	0.30
95th-Percentile Queue Length [ft/ln]	0.04	0.04	0.00	0.00	7.60	7.60
d_A, Approach Delay [s/veh]	0.03		0.00		15.98	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.66					
Intersection LOS	C					

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Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	19.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	66	43	288	31	10	32	2	44	13	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	6	4	6	9	0	0	0	0	9
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	190	66	49	292	37	19	32	2	44	13	88
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	49	17	13	75	10	5	8	1	11	3	23
Total Analysis Volume [veh/h]	0	196	68	51	301	38	20	33	2	45	13	91
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.07	0.09	0.00	0.14	0.04	0.11
d_M, Delay for Movement [s/veh]	7.95	0.00	0.00	7.83	0.00	0.00	19.71	17.38	12.15	19.05	17.84	12.26
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.09	0.09	0.09	0.59	0.59	0.59	1.19	1.19	1.19
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.24	2.24	2.24	14.70	14.70	14.70	29.73	29.73	29.73
d_A, Approach Delay [s/veh]	0.00			1.02			18.04			14.80		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	4.19											
Intersection LOS	C											

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Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	509	726	49	14
2	494	704	48	14
3	484	690	47	13
4	453	646	44	12
5	402	574	39	11
6	397	566	38	11
7	392	559	38	11
8	356	508	34	10
9	351	501	34	10
10	346	494	33	10
11	300	428	29	8
12	280	399	27	8
13	275	392	26	8
14	204	290	20	6
15	204	290	20	6
16	143	203	14	4
17	81	116	8	2
18	81	116	8	2
19	46	65	4	1
20	25	36	2	1
21	15	22	1	0
22	5	7	0	0
23	5	7	0	0
24	5	7	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1235	1	49	No	No	No	No	No	No	No	Yes	No	No
2	1	1198	1	48	No	No	No	No	No	No	No	Yes	No	No
3	1	1174	1	47	No	No	No	No	No	No	No	Yes	No	No
4	1	1099	1	44	No	No	No	No	No	No	No	Yes	No	No
5	1	976	1	39	No	No	No	No	No	No	No	No	No	No
6	1	963	1	38	No	No	No	No	No	No	No	No	No	No
7	1	951	1	38	No	No	No	No	No	No	No	No	No	No
8	1	864	1	34	No	No	No	No	No	No	No	No	No	No
9	1	852	1	34	No	No	No	No	No	No	No	No	No	No
10	1	840	1	33	No	No	No	No	No	No	No	No	No	No
11	1	728	1	29	No	No	No	No	No	No	No	No	No	No
12	1	679	1	27	No	No	No	No	No	No	No	No	No	No
13	1	667	1	26	No	No	No	No	No	No	No	No	No	No
14	1	494	1	20	No	No	No	No	No	No	No	No	No	No
15	1	494	1	20	No	No	No	No	No	No	No	No	No	No
16	1	346	1	14	No	No	No	No	No	No	No	No	No	No
17	1	197	1	8	No	No	No	No	No	No	No	No	No	No
18	1	197	1	8	No	No	No	No	No	No	No	No	No	No
19	1	111	1	4	No	No	No	No	No	No	No	No	No	No
20	1	61	1	2	No	No	No	No	No	No	No	No	No	No
21	1	37	1	1	No	No	No	No	No	No	No	No	No	No
22	1	12	1	0	No	No	No	No	No	No	No	No	No	No
23	1	12	1	0	No	No	No	No	No	No	No	No	No	No
24	1	12	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.4	42.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10	0:09
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	49	14
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1298	1298
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	355	683	125	135
2	344	663	121	131
3	337	649	119	128
4	316	608	111	120
5	280	540	99	107
6	277	533	98	105
7	273	526	96	104
8	248	478	88	95
9	245	471	86	93
10	241	464	85	92
11	209	403	74	80
12	195	376	69	74
13	192	369	68	73
14	142	273	50	54
15	142	273	50	54
16	99	191	35	38
17	57	109	20	22
18	57	109	20	22
19	32	61	11	12
20	18	34	6	7
21	11	20	4	4
22	4	7	1	1
23	4	7	1	1
24	4	7	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1038	1	135	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	1007	1	131	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	986	1	128	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	924	1	120	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	2	820	1	107	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	2	810	1	105	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	2	799	1	104	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
8	2	726	1	95	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
9	2	716	1	93	No	No	No	Yes	No	No	Yes	Yes	No	No
10	2	705	1	92	No	No	No	Yes	No	No	Yes	Yes	No	No
11	2	612	1	80	No	No	No	No	No	No	No	Yes	No	No
12	2	571	1	74	No	No	No	No	No	No	No	Yes	No	No
13	2	561	1	73	No	No	No	No	No	No	No	Yes	No	No
14	2	415	1	54	No	No	No	No	No	No	No	No	No	No
15	2	415	1	54	No	No	No	No	No	No	No	No	No	No
16	2	290	1	38	No	No	No	No	No	No	No	No	No	No
17	2	166	1	22	No	No	No	No	No	No	No	No	No	No
18	2	166	1	22	No	No	No	No	No	No	No	No	No	No
19	2	93	1	12	No	No	No	No	No	No	No	No	No	No
20	2	52	1	7	No	No	No	No	No	No	No	No	No	No
21	2	31	1	4	No	No	No	No	No	No	No	No	No	No
22	2	11	1	1	No	No	No	No	No	No	No	No	No	No
23	2	11	1	1	No	No	No	No	No	No	No	No	No	No
24	2	11	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	6	10	4	8	10	13	8	3

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	30.9	138.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:04	5:10
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	125	135
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1298	1298
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

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Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	905	255	571
2	878	247	554
3	860	242	542
4	805	227	508
5	715	201	451
6	706	199	445
7	697	196	440
8	634	179	400
9	624	176	394
10	615	173	388
11	534	150	337
12	498	140	314
13	489	138	308
14	362	102	228
15	362	102	228
16	253	71	160
17	145	41	91
18	145	41	91
19	81	23	51
20	45	13	29
21	27	8	17
22	9	3	6
23	9	3	6
24	9	3	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1160	1	571	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1125	1	554	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1102	1	542	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1032	1	508	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	916	1	451	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	905	1	445	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	893	1	440	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	813	1	400	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	800	1	394	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	788	1	388	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	684	1	337	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	638	1	314	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	627	1	308	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	464	1	228	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	464	1	228	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	324	1	160	No	No	No	Yes	No	No	No	No	No	No
17	1	186	1	91	No	No	No	No	No	No	No	No	No	No
18	1	186	1	91	No	No	No	No	No	No	No	No	No	No
19	1	104	1	51	No	No	No	No	No	No	No	No	No	No
20	1	58	1	29	No	No	No	No	No	No	No	No	No	No
21	1	35	1	17	No	No	No	No	No	No	No	No	No	No
22	1	12	1	6	No	No	No	No	No	No	No	No	No	No
23	1	12	1	6	No	No	No	No	No	No	No	No	No	No
24	1	12	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	13	10

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	3030.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	480:39
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	571
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1731
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

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Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	284	371	276	58
2	275	360	268	56
3	270	352	262	55
4	253	330	246	52
5	224	293	218	46
6	222	289	215	45
7	219	286	213	45
8	199	260	193	41
9	196	256	190	40
10	193	252	188	39
11	168	219	163	34
12	156	204	152	32
13	153	200	149	31
14	114	148	110	23
15	114	148	110	23
16	80	104	77	16
17	45	59	44	9
18	45	59	44	9
19	26	33	25	5
20	14	19	14	3
21	9	11	8	2
22	3	4	3	1
23	3	4	3	1
24	3	4	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	655	1	276	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	635	1	268	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	622	1	262	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	583	1	246	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	517	1	218	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	511	1	215	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	505	1	213	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	459	1	193	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	452	1	190	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	445	1	188	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	387	1	163	No	No	Yes	Yes	No	No	No	No	No	No
12	1	360	1	152	No	No	Yes	Yes	No	No	No	No	No	No
13	1	353	1	149	No	No	Yes	Yes	No	No	No	No	No	No
14	1	262	1	110	No	No	No	No	No	No	No	No	No	No
15	1	262	1	110	No	No	No	No	No	No	No	No	No	No
16	1	184	1	77	No	No	No	No	No	No	No	No	No	No
17	1	104	1	44	No	No	No	No	No	No	No	No	No	No
18	1	104	1	44	No	No	No	No	No	No	No	No	No	No
19	1	59	1	25	No	No	No	No	No	No	No	No	No	No
20	1	33	1	14	No	No	No	No	No	No	No	No	No	No
21	1	20	1	8	No	No	No	No	No	No	No	No	No	No
22	1	7	1	3	No	No	No	No	No	No	No	No	No	No
23	1	7	1	3	No	No	No	No	No	No	No	No	No	No
24	1	7	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					7	10	13	13	0	3	4	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	19	11.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:27	0:10
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	276	58
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	989	989
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	328	191	125
2	318	185	121
3	312	181	119
4	292	170	111
5	259	151	99
6	256	149	98
7	253	147	96
8	230	134	88
9	226	132	86
10	223	130	85
11	194	113	74
12	180	105	69
13	177	103	68
14	131	76	50
15	131	76	50
16	92	53	35
17	52	31	20
18	52	31	20
19	30	17	11
20	16	10	6
21	10	6	4
22	3	2	1
23	3	2	1
24	3	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	519	2	125	No	No	No	Yes	No	No	No	Yes	No	No
2	2	503	2	121	No	No	No	Yes	No	No	No	No	No	No
3	2	493	2	119	No	No	No	Yes	No	No	No	No	No	No
4	2	462	2	111	No	No	No	No	No	No	No	No	No	No
5	2	410	2	99	No	No	No	No	No	No	No	No	No	No
6	2	405	2	98	No	No	No	No	No	No	No	No	No	No
7	2	400	2	96	No	No	No	No	No	No	No	No	No	No
8	2	364	2	88	No	No	No	No	No	No	No	No	No	No
9	2	358	2	86	No	No	No	No	No	No	No	No	No	No
10	2	353	2	85	No	No	No	No	No	No	No	No	No	No
11	2	307	2	74	No	No	No	No	No	No	No	No	No	No
12	2	285	2	69	No	No	No	No	No	No	No	No	No	No
13	2	280	2	68	No	No	No	No	No	No	No	No	No	No
14	2	207	2	50	No	No	No	No	No	No	No	No	No	No
15	2	207	2	50	No	No	No	No	No	No	No	No	No	No
16	2	145	2	35	No	No	No	No	No	No	No	No	No	No
17	2	83	2	20	No	No	No	No	No	No	No	No	No	No
18	2	83	2	20	No	No	No	No	No	No	No	No	No	No
19	2	47	2	11	No	No	No	No	No	No	No	No	No	No
20	2	26	2	6	No	No	No	No	No	No	No	No	No	No
21	2	16	2	4	No	No	No	No	No	No	No	No	No	No
22	2	5	2	1	No	No	No	No	No	No	No	No	No	No
23	2	5	2	1	No	No	No	No	No	No	No	No	No	No
24	2	5	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	1	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.4
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:21
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	125
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	644
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	238	162	55
2	231	157	53
3	226	154	52
4	212	144	49
5	188	128	43
6	186	126	43
7	183	125	42
8	167	113	39
9	164	112	38
10	162	110	37
11	140	96	32
12	131	89	30
13	129	87	30
14	95	65	22
15	95	65	22
16	67	45	15
17	38	26	9
18	38	26	9
19	21	15	5
20	12	8	3
21	7	5	2
22	2	2	1
23	2	2	1
24	2	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	400	1	55	No	No	No	No	No	No	No	No	No	No
2	2	388	1	53	No	No	No	No	No	No	No	No	No	No
3	2	380	1	52	No	No	No	No	No	No	No	No	No	No
4	2	356	1	49	No	No	No	No	No	No	No	No	No	No
5	2	316	1	43	No	No	No	No	No	No	No	No	No	No
6	2	312	1	43	No	No	No	No	No	No	No	No	No	No
7	2	308	1	42	No	No	No	No	No	No	No	No	No	No
8	2	280	1	39	No	No	No	No	No	No	No	No	No	No
9	2	276	1	38	No	No	No	No	No	No	No	No	No	No
10	2	272	1	37	No	No	No	No	No	No	No	No	No	No
11	2	236	1	32	No	No	No	No	No	No	No	No	No	No
12	2	220	1	30	No	No	No	No	No	No	No	No	No	No
13	2	216	1	30	No	No	No	No	No	No	No	No	No	No
14	2	160	1	22	No	No	No	No	No	No	No	No	No	No
15	2	160	1	22	No	No	No	No	No	No	No	No	No	No
16	2	112	1	15	No	No	No	No	No	No	No	No	No	No
17	2	64	1	9	No	No	No	No	No	No	No	No	No	No
18	2	64	1	9	No	No	No	No	No	No	No	No	No	No
19	2	36	1	5	No	No	No	No	No	No	No	No	No	No
20	2	20	1	3	No	No	No	No	No	No	No	No	No	No
21	2	12	1	2	No	No	No	No	No	No	No	No	No	No
22	2	4	1	1	No	No	No	No	No	No	No	No	No	No
23	2	4	1	1	No	No	No	No	No	No	No	No	No	No
24	2	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	55
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	455
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	201	183	3
2	195	178	3
3	191	174	3
4	179	163	3
5	159	145	2
6	157	143	2
7	155	141	2
8	141	128	2
9	139	126	2
10	137	124	2
11	119	108	2
12	111	101	2
13	109	99	2
14	80	73	1
15	80	73	1
16	56	51	1
17	32	29	0
18	32	29	0
19	18	16	0
20	10	9	0
21	6	5	0
22	2	2	0
23	2	2	0
24	2	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	384	1	3	No	No	No	No	No	No	No	No	No	No
2	3	373	1	3	No	No	No	No	No	No	No	No	No	No
3	3	365	1	3	No	No	No	No	No	No	No	No	No	No
4	3	342	1	3	No	No	No	No	No	No	No	No	No	No
5	3	304	1	2	No	No	No	No	No	No	No	No	No	No
6	3	300	1	2	No	No	No	No	No	No	No	No	No	No
7	3	296	1	2	No	No	No	No	No	No	No	No	No	No
8	3	269	1	2	No	No	No	No	No	No	No	No	No	No
9	3	265	1	2	No	No	No	No	No	No	No	No	No	No
10	3	261	1	2	No	No	No	No	No	No	No	No	No	No
11	3	227	1	2	No	No	No	No	No	No	No	No	No	No
12	3	212	1	2	No	No	No	No	No	No	No	No	No	No
13	3	208	1	2	No	No	No	No	No	No	No	No	No	No
14	3	153	1	1	No	No	No	No	No	No	No	No	No	No
15	3	153	1	1	No	No	No	No	No	No	No	No	No	No
16	3	107	1	1	No	No	No	No	No	No	No	No	No	No
17	3	61	1	0	No	No	No	No	No	No	No	No	No	No
18	3	61	1	0	No	No	No	No	No	No	No	No	No	No
19	3	34	1	0	No	No	No	No	No	No	No	No	No	No
20	3	19	1	0	No	No	No	No	No	No	No	No	No	No
21	3	11	1	0	No	No	No	No	No	No	No	No	No	No
22	3	4	1	0	No	No	No	No	No	No	No	No	No	No
23	3	4	1	0	No	No	No	No	No	No	No	No	No	No
24	3	4	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	387
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	474	537	190	29
2	460	521	184	28
3	450	510	181	28
4	422	478	169	26
5	374	424	150	23
6	370	419	148	23
7	365	413	146	22
8	332	376	133	20
9	327	371	131	20
10	322	365	129	20
11	280	317	112	17
12	261	295	105	16
13	256	290	103	16
14	190	215	76	12
15	190	215	76	12
16	133	150	53	8
17	76	86	30	5
18	76	86	30	5
19	43	48	17	3
20	24	27	10	1
21	14	16	6	1
22	5	5	2	0
23	5	5	2	0
24	5	5	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1011	2	190	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2	2	981	2	184	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
3	2	960	2	181	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
4	2	900	2	169	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
5	2	798	2	150	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
6	2	789	2	148	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
7	2	778	2	146	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
8	2	708	2	133	No	No	No	Yes	No	No	Yes	Yes	No	No
9	2	698	2	131	No	No	No	Yes	No	No	Yes	Yes	No	No
10	2	687	2	129	No	No	No	Yes	No	No	Yes	Yes	No	No
11	2	597	2	112	No	No	No	Yes	No	No	No	Yes	No	No
12	2	556	2	105	No	No	No	No	No	No	No	Yes	No	No
13	2	546	2	103	No	No	No	No	No	No	No	Yes	No	No
14	2	405	2	76	No	No	No	No	No	No	No	No	No	No
15	2	405	2	76	No	No	No	No	No	No	No	No	No	No
16	2	283	2	53	No	No	No	No	No	No	No	No	No	No
17	2	162	2	30	No	No	No	No	No	No	No	No	No	No
18	2	162	2	30	No	No	No	No	No	No	No	No	No	No
19	2	91	2	17	No	No	No	No	No	No	No	No	No	No
20	2	51	2	10	No	No	No	No	No	No	No	No	No	No
21	2	30	2	6	No	No	No	No	No	No	No	No	No	No
22	2	10	2	2	No	No	No	No	No	No	No	No	No	No
23	2	10	2	2	No	No	No	No	No	No	No	No	No	No
24	2	10	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	4	7	10	13	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	94.2	15.2
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	4:58	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	190	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1230	1230
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	509	683	0
2	494	663	0
3	484	649	0
4	453	608	0
5	402	540	0
6	397	533	0
7	392	526	0
8	356	478	0
9	351	471	0
10	346	464	0
11	300	403	0
12	280	376	0
13	275	369	0
14	204	273	0
15	204	273	0
16	143	191	0
17	81	109	0
18	81	109	0
19	46	61	0
20	25	34	0
21	15	20	0
22	5	7	0
23	5	7	0
24	5	7	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1192	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1157	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1133	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1061	1	0	No	No	No	No	No	No	No	No	No	No
5	1	942	1	0	No	No	No	No	No	No	No	No	No	No
6	1	930	1	0	No	No	No	No	No	No	No	No	No	No
7	1	918	1	0	No	No	No	No	No	No	No	No	No	No
8	1	834	1	0	No	No	No	No	No	No	No	No	No	No
9	1	822	1	0	No	No	No	No	No	No	No	No	No	No
10	1	810	1	0	No	No	No	No	No	No	No	No	No	No
11	1	703	1	0	No	No	No	No	No	No	No	No	No	No
12	1	656	1	0	No	No	No	No	No	No	No	No	No	No
13	1	644	1	0	No	No	No	No	No	No	No	No	No	No
14	1	477	1	0	No	No	No	No	No	No	No	No	No	No
15	1	477	1	0	No	No	No	No	No	No	No	No	No	No
16	1	334	1	0	No	No	No	No	No	No	No	No	No	No
17	1	190	1	0	No	No	No	No	No	No	No	No	No	No
18	1	190	1	0	No	No	No	No	No	No	No	No	No	No
19	1	107	1	0	No	No	No	No	No	No	No	No	No	No
20	1	59	1	0	No	No	No	No	No	No	No	No	No	No
21	1	35	1	0	No	No	No	No	No	No	No	No	No	No
22	1	12	1	0	No	No	No	No	No	No	No	No	No	No
23	1	12	1	0	No	No	No	No	No	No	No	No	No	No
24	1	12	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1192
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	323	485	34
2	313	470	33
3	307	461	32
4	287	432	30
5	255	383	27
6	252	378	27
7	249	373	26
8	226	340	24
9	223	335	23
10	220	330	23
11	191	286	20
12	178	267	19
13	174	262	18
14	129	194	14
15	129	194	14
16	90	136	10
17	52	78	5
18	52	78	5
19	29	44	3
20	16	24	2
21	10	15	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	808	1	34	No	No	No	No	No	No	No	No	No	No
2	1	783	1	33	No	No	No	No	No	No	No	No	No	No
3	1	768	1	32	No	No	No	No	No	No	No	No	No	No
4	1	719	1	30	No	No	No	No	No	No	No	No	No	No
5	1	638	1	27	No	No	No	No	No	No	No	No	No	No
6	1	630	1	27	No	No	No	No	No	No	No	No	No	No
7	1	622	1	26	No	No	No	No	No	No	No	No	No	No
8	1	566	1	24	No	No	No	No	No	No	No	No	No	No
9	1	558	1	23	No	No	No	No	No	No	No	No	No	No
10	1	550	1	23	No	No	No	No	No	No	No	No	No	No
11	1	477	1	20	No	No	No	No	No	No	No	No	No	No
12	1	445	1	19	No	No	No	No	No	No	No	No	No	No
13	1	436	1	18	No	No	No	No	No	No	No	No	No	No
14	1	323	1	14	No	No	No	No	No	No	No	No	No	No
15	1	323	1	14	No	No	No	No	No	No	No	No	No	No
16	1	226	1	10	No	No	No	No	No	No	No	No	No	No
17	1	130	1	5	No	No	No	No	No	No	No	No	No	No
18	1	130	1	5	No	No	No	No	No	No	No	No	No	No
19	1	73	1	3	No	No	No	No	No	No	No	No	No	No
20	1	40	1	2	No	No	No	No	No	No	No	No	No	No
21	1	25	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	34
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	842
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	56%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	256	378	145	53
2	248	367	141	51
3	243	359	138	50
4	228	336	129	47
5	202	299	115	42
6	200	295	113	41
7	197	291	112	41
8	179	265	102	37
9	177	261	100	37
10	174	257	99	36
11	151	223	86	31
12	141	208	80	29
13	138	204	78	29
14	102	151	58	21
15	102	151	58	21
16	72	106	41	15
17	41	60	23	8
18	41	60	23	8
19	23	34	13	5
20	13	19	7	3
21	8	11	4	2
22	3	4	1	1
23	3	4	1	1
24	3	4	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	634	1	145	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	615	1	141	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	602	1	138	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	564	1	129	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	501	1	115	No	No	Yes	Yes	No	No	No	Yes	No	No
6	1	495	1	113	No	No	Yes	Yes	No	No	No	Yes	No	No
7	1	488	1	112	No	No	Yes	Yes	No	No	No	Yes	No	No
8	1	444	1	102	No	No	No	Yes	No	No	No	Yes	No	No
9	1	438	1	100	No	No	No	Yes	No	No	No	Yes	No	No
10	1	431	1	99	No	No	No	Yes	No	No	No	Yes	No	No
11	1	374	1	86	No	No	No	Yes	No	No	No	No	No	No
12	1	349	1	80	No	No	No	No	No	No	No	No	No	No
13	1	342	1	78	No	No	No	No	No	No	No	No	No	No
14	1	253	1	58	No	No	No	No	No	No	No	No	No	No
15	1	253	1	58	No	No	No	No	No	No	No	No	No	No
16	1	178	1	41	No	No	No	No	No	No	No	No	No	No
17	1	101	1	23	No	No	No	No	No	No	No	No	No	No
18	1	101	1	23	No	No	No	No	No	No	No	No	No	No
19	1	57	1	13	No	No	No	No	No	No	No	No	No	No
20	1	32	1	7	No	No	No	No	No	No	No	No	No	No
21	1	19	1	4	No	No	No	No	No	No	No	No	No	No
22	1	7	1	1	No	No	No	No	No	No	No	No	No	No
23	1	7	1	1	No	No	No	No	No	No	No	No	No	No
24	1	7	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	3	4	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.8	18
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:35	0:15
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	145	53
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	832	832
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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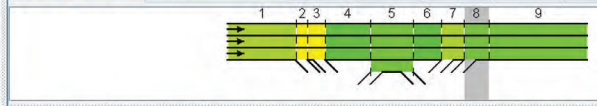
FREEVAL-2015e - Y:\Shared\Projects\P23160 Creekside Village II\Joint US50\FREEVAL\Eastbound\16 PM EB 2023 Plus-Proj.seed

Project Analyze Edit View Settings Toolbox Help

Edit Seed Facility: Global Input | Fill Data
Managed Lanes: Turn On
Reliability Analysis (RL): Generate | Delete | Summary
ATDM Analysis: Configure | Delete | Summary

Single Seed/Scenario I/O | Compare | Result Contours | Analysis Period Summary | Segment & Facility Summary

Table Display Options: In & Out | GP Only
Analysis Period (A.P.) Control: A.P. 1/1 7:00 - 7:15 | First | Last | Jump To



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9
General Purpose Segme...	*	*	*	*	*	*	*	*	*
General Purpose Segme...	EDC to...	Lat Slip	Lat Loop	between	Lat to SC	EB US ...	SV Loop	SV Slip	EB US ...
General Purpose Segme...	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Segment Length (ft)	3,000	500	800	2,000	1,900	1,260	1,000	1,100	4,300
Lane Width (ft)	12	12	12	12	12	12	12	12	12
Lateral Clearance (ft)	10	10	10	10	10	10	4	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: Mainline	3	3	3	3	4	3	3	3	3
Mainline Dem. (vph)	4,108	4108	2793	1932	2950	2383	3247	3247	3247
Mainline Single Unit Truc...	2.00	2.00	2.00	2.00	1.65	1.57	1.69	1.69	1.69
Mainline Tractor Trailer (...	0.00	0.00	0.00	0.00	0.35	0.43	0.31	0.31	0.31
Seed Capacity Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Entering Dem. Adj....	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit Dem. Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free Flow Speed ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec Lane Length (ft)		0	0				500	1,100	
ONR Side					Right		Right	Right	
# Lanes: ONR					1		1	1	
ONR Queue Capacity (v...					50		50	50	
ONR Free Flow Speed (...					45		45	45	
ONR/Entering Dem. (vph)					1,018		864	0	
ONR Single Unit Truck a...					1.00		2.00	2.00	
ONR Tractor Trailer (%)					1.00		0.00	0.00	
ONR Metering Type					None		Fixed	Fixed	
ONR Metering Fixed Rat...							2,100	2,100	
OFR Side		Right	Right		Right				
# Lanes: OFR		1	1		2				
OFR Free Flow Speed (...		45	45		45				
OFR/Exit Dem. (vph)		1,315	861		567				
OFR Single Unit Truck a...		2.00	2.00		2.00				
OFR Tractor Trailer (%)		0.00	0.00		0.00				
Weave Segment Ls (ft)					1,500				
Weave Segment LCRF					1				
Weave Segment LCFR					0				
Weave Segment LCRR					0				
Weave Segment NW					2				
Ramp to Ramp Dem. (vph)					0				
Processed Segment Type	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Speed (mph)	73.3	65.6	67.3	74.2	63.3	74.1	67.0	68.7	74.9
Total Density (veh/mi/ln)	18.7	20.9	13.8	8.6	11.6	10.6	16.2	15.7	14.5
Total Density (pc/mi/ln)	19.1	21.3	14.1	8.8	11.9	10.8	16.5	16.1	14.7
Influence Area Density (...		30.6	29.3				20.0	14.3	
Adjusted Capacity (vph)	7,059	7,059	7,059	7,059	4,379	7,059	7,059	7,059	7,059
Adjusted Mainline Dem. ...	4,108	4,108	2,793	1,932	2,950	2,383	3,247	3,247	3,247
D/C	0.58	0.58	0.40	0.27	0.67	0.34	0.46	0.46	0.46
Mainline Volume Served...	4,108	4,108	2,793	1,932	2,950	2,383	3,247	3,247	3,247
V/C	0.58	0.58	0.40	0.27	0.67	0.34	0.46	0.46	0.46
Adjusted ONR Dem. (vph)					1,018		864	0	
ONR Capacity (vph)					2,059		2,059	2,059	
ONR Volume Served (vph)					1,018		864	0	
ONR Avg RM Rate (vph)									
ONR Time RM Active (min)					0.00		0.00	0.00	
Adjusted OFR Dem. (vph)		1,315	861		567				
OFR Capacity (vph)		2,059	2,059		4,118				
OFR Volume Served (vph)		1,315	861		567				
Density Based LOS	C	D	D	A	B	A	C	B	B
Dem. Based LOS									
Mainline Queue Length (ft)									
Mainline Queue Length (...									
ONR Queue (veh)									
Actual Travel Time (min)	0.47	0.09	0.14	0.31	0.34	0.19	0.17	0.18	0.65
FFS Travel Time (min)	0.45	0.08	0.12	0.30	0.29	0.19	0.15	0.17	0.65
Mainline Delay (min)	0.01	0.01	0.01	0.00	0.05	0.00	0.02	0.02	0.00
VMTD (veh-miles / interval)	584	97	106	183	265	142	154	169	661
VMTV (veh-miles / interval)	584	97	106	183	265	142	154	169	661
PMTD (p-miles / interval)	584	97	106	183	265	142	154	169	661
PMTV (p-miles / interval)	584	97	106	183	265	142	154	169	661
VHT (travel / interval (hrs))	7.97	1.48	1.57	2.47	4.19	1.92	2.30	2.46	8.83
VHD-M (delay / interval (...	0.18	0.19	0.16	0.03	0.65	0.02	0.25	0.21	0.01
VHD-R (delay / interval (...					0.00		0.00	0.00	
VHD-Access (delay / int...									
VHD-MDE (delay / interv...	0.00								
VHD (delay / interval (hrs))	0.18	0.19	0.16	0.03	0.65	0.02	0.25	0.21	0.01
Space Mean Speed (mph)	73.3	65.6	67.3	74.2	63.3	74.1	67.0	68.7	74.9
Travel Time Index	1.02	1.14	1.12	1.01	1.18	1.01	1.12	1.09	1.00

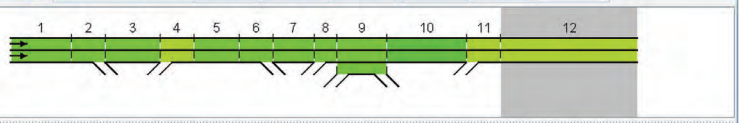
FREEVAL-2015e - Y:\Shared\Projects\P23160 Creekside Village II\Joint US50\FREEVAL\Existing 2023\4 PM WB 2023 plus Proj 20240216.seed

Project Analyze Edit View Settings Toolbox Help

Edit Seed Facility: Global Input | Fill Data
Managed Lanes: Turn On
Reliability Analysis (RL): Generate | Delete | Summary
ATDM Analysis: Configure | Delete | Summary

Single Seed/Scenario I/O | Compare | Result Contours | Analysis Period Summary | Segment & Facility Summary

Table Display Options: In & Out | GP Only
Analysis Period (A.P.) Control: A.P. 1/1 7:45 - 8:00 | First | Last | Jump To



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9	Seg. 10	Seg. 11	Seg. 12
General Pur...	*	*	*	*	*	*	*	*	*	*	*	*
General Pur...	Cam to ...	BL Off	between	BL On	BL to SV	SV Off	between	SV Loop	SV-Lat	between	Lat On	Lat to E...
General Pur...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Segment Le...	2,640	1,500	2,400	1,500	2,000	1,500	1,800	1,000	2,200	3,500	1,500	6,000
Lane Width ...	12	12	12	12	12	12	12	12	12	12	12	12
Lateral Clea...	10	10	10	10	10	10	10	10	10	10	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC E...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: ...	2	2	2	2	2	2	2	2	3	2	2	2
Mainline De...	2,273	2273	2116	2562	2562	2562	1886	1886	2246	1582	3136	3136
Mainline Sin...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Mainline Tra...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seed Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Enteri...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit D...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec La...		500		500		1,400		500			1,000	
ONR Side				Right				Right	Right		Right	
# Lanes: ONR				1				1	1		1	
ONR Queue ...				50				50	50		50	
ONR Free Fl...				45				45	45		45	
ONR/Enterin...				446				0	360		1,554	
ONR Single ...				2.00				2.00	2.00		2.00	
ONR Tractor...				0.00				0.00	0.00		0.00	
ONR Meteri...				Fixed				None	Fixed		Fixed	
ONR Meteri...				2,100					2,100		2,100	
OFR Side		Right				Right			Right			
# Lanes: OFR		1				2			2			
OFR Free Fl...		45				45			45			
OFR/Exit De...		157				676			664			
OFR Single ...		2.00				2.00			2.00			
OFR Tractor...		0.00				0.00			0.00			
Weave Seg...									1,500			
Weave Seg...									1			
Weave Seg...									0			
Weave Seg...									0			
Weave Seg...									0			
Ramp to Ra...									0			
Processed ...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Speed (mph)	74.7	64.7	74.6	64.1	74.0	63.1	74.2	65.0	67.6	74.9	64.2	71.0
Total Densit...	15.2	19.3	14.1	22.1	17.3	13.8	12.6	17.0	11.1	10.5	23.0	22.1
Total Densit...	15.5	19.7	14.4	22.5	17.7	14.1	12.8	17.3	11.3	10.8	23.4	22.5
Influence Ar...		19.7		22.5		14.1		17.3			23.4	
Adjusted Ca...	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	5,046	4,706	4,706	4,706
Adjusted Ma...	2,273	2,273	2,116	2,562	2,562	2,562	1,886	1,886	2,246	1,582	3,136	3,136
D/C	0.48	0.48	0.45	0.54	0.54	0.54	0.40	0.40	0.45	0.34	0.67	0.67
Mainline Vol...	2,273	2,273	2,116	2,562	2,562	2,562	1,886	1,886	2,246	1,582	3,136	3,136
V/C	0.48	0.48	0.45	0.54	0.54	0.54	0.40	0.40	0.45	0.34	0.67	0.67
Adjusted ON...				446				0	360		1,554	
ONR Capaci...				2,059				2,059	2,059		2,059	
ONR Volum...				446				0	360		1,554	
ONR Avg R...												
ONR Time R...				0.00				0.00	0.00		0.00	
Adjusted OF...		157				676			664			
OFR Capaci...		2,059				4,118			4,118			
OFR Volume...		157				676			664			
Density Bas...	B	B	B	C	B	B	B	B	B	A	C	C
Dem. Based...												
Mainline Qu...												
Mainline Qu...												
ONR Queue ...												
Actual Trave...	0.40	0.26	0.37	0.27	0.31	0.27	0.28	0.17	0.37	0.53	0.27	0.96
FFS Travel ...	0.40	0.23	0.36	0.23	0.30	0.23	0.27	0.15	0.33	0.53	0.23	0.91
Mainline Del...	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.02	0.04	0.00	0.04	0.05
VMTD (veh-...	284	161	240	182	243	182	161	89	234	262	223	891
VMTV (veh-...	284	161	240	182	243	182	161	89	234	262	223	891
PMTD (p-mil...	284	161	240	182	243	182	161	89	234	262	223	891
PMTV (p-mil...	284	161	240	182	243	182	161	89	234	262	223	891
VHT (travel /...	3.80	2.50	3.22	2.84	3.28	2.88	2.17	1.37	3.46	3.50	3.47	12.54
VHD-M (del...	0.01	0.34	0.02	0.41	0.05	0.46	0.02	0.18	0.34	0.00	0.50	0.66
VHD-R (dela...				0.00				0.00	0.00		0.00	
VHD-Acces...												
VHD-MDE (...	0.00											
VHD (delay ...	0.01	0.34	0.02	0.41	0.05	0.46	0.02	0.18	0.34	0.00	0.50	0.66
Space Mean...	74.7	64.7	74.6	64.1	74.0	63.1	74.2	65.0	67.6	74.9	64.2	71.0
Travel Time ...	1.00	1.16	1.01	1.17	1.01	1.19	1.01	1.15	1.11	1.00	1.17	1.06

Existing AM plus abated Project

Generated with PTV VISTRO Report File: Y:\...\2023 AM Abated 1,2,3,6,9,10,12,13,18,21.pdf
Version 2024 (SP 0-5)

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	108.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.055

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	194	705	301	68	1419	40	18	11	260	467	57	108
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	0	0	12	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	12	0	0	78	0	0	32
Total Hourly Volume [veh/h]	5	194	725	301	68	1431	28	18	11	182	467	57	76
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	56	208	86	20	411	8	5	3	52	134	16	22
Total Analysis Volume [veh/h]	5	223	833	346	78	1645	32	21	13	209	537	66	87
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Calculated Cycle Length [s]	119	119	119	119	119	119	119	119	119	119
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	51	51	7	40	40	19	19	26	26
g / C, Green / Cycle	0.14	0.42	0.42	0.06	0.34	0.34	0.16	0.16	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.13	0.23	0.22	0.04	0.45	0.45	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1857	1781	1604	1781	1744
c, Capacity [veh/h]	258	1506	672	101	626	622	278	250	385	377
d1, Uniform Delay [s]	50.13	25.98	25.44	55.63	39.76	39.76	43.06	49.38	45.62	45.66
k, delay calibration	0.10	0.04	0.13	0.04	0.50	0.50	0.04	0.04	0.16	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.20	0.12	0.72	4.72	164.19	166.76	0.04	4.16	11.21	11.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.55	0.51	0.78	1.34	1.35	0.08	0.89	0.90	0.91
d, Delay for Lane Group [s/veh]	59.33	26.10	26.16	60.35	203.95	206.52	43.10	53.54	56.84	57.48
Lane Group LOS	E	C	C	E	F	F	D	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.14	8.47	7.01	2.39	45.91	46.05	0.54	6.75	11.19	11.06
50th-Percentile Queue Length [ft/ln]	178.48	211.82	175.18	59.80	1147.71	1151.14	13.41	168.83	279.78	276.58
95th-Percentile Queue Length [veh/ln]	11.52	13.25	11.35	4.31	67.72	68.03	0.97	11.01	16.68	16.52
95th-Percentile Queue Length [ft/ln]	288.03	331.16	283.71	107.64	1693.02	1700.85	24.14	275.37	416.94	412.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.33	59.33	26.10	26.16	60.35	205.21	206.52	43.10	53.54	53.54	57.07	57.48	57.48
Movement LOS	E	E	C	C	E	F	F	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	31.50				198.79			52.64			57.16		
Approach LOS	C				F			D			E		
d_I, Intersection Delay [s/veh]	108.77												
Intersection LOS	F												
Intersection V/C	1.055												

Emissions

Vehicle Miles Traveled [mph]	54.44	198.89	82.61	11.47	123.50	123.20	0.90	9.51	18.17	17.85
Stops [stops/h]	215.46	511.40	211.47	72.19	1385.47	1389.62	16.19	203.80	337.75	333.88
Fuel consumption [US gal/h]	7.30	17.60	7.30	2.25	56.29	56.69	0.31	3.94	6.64	6.58
CO [g/h]	510.08	1230.20	510.47	157.19	3934.98	3962.75	21.71	275.13	464.07	459.87
NOx [g/h]	99.24	239.35	99.32	30.58	765.60	771.01	4.22	53.53	90.29	89.47
VOC [g/h]	118.22	285.11	118.31	36.43	911.97	918.41	5.03	63.76	107.55	106.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.15	49.15	49.15
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.132	2.277	2.376
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	676	676	587	587
d_b, Bicycle Delay [s]	26.15	26.15	29.78	29.78
l_b,int, Bicycle LOS Score for Intersection	2.716	3.017	2.089	2.751
Bicycle LOS	B	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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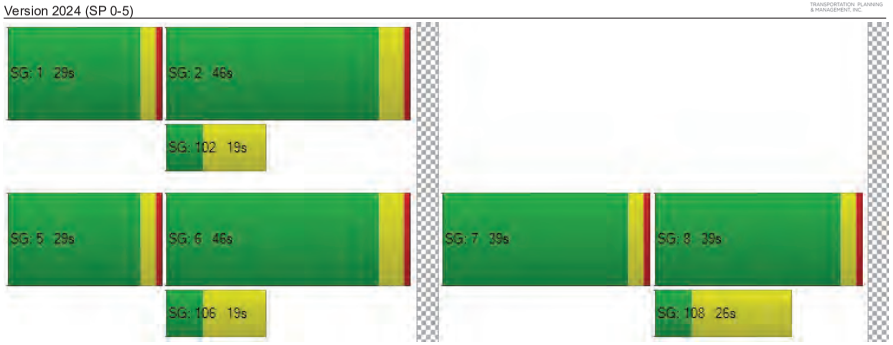

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Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	130.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.255

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	348	988	150	1	148	1611	391	132	61	682	11	13	84
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	20	0	0	0	12	0	0	0	6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	117	0	0	206	0	0	25
Total Hourly Volume [veh/h]	1	358	1008	105	1	148	1623	274	132	61	482	11	13	59
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	96	271	28	0	40	436	74	35	16	130	3	3	16
Total Analysis Volume [veh/h]	1	385	1084	113	1	159	1745	295	142	66	518	12	14	63
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	128
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	26	50	0	0	20	44	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	0.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	24	50	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Calculated Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	58	58	12	44	44	20	20	20	7	7
g / C, Green / Cycle	0.23	0.50	0.50	0.11	0.38	0.38	0.17	0.17	0.17	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.22	0.09	0.49	0.19	0.06	0.06	0.33	0.01	0.05
s, saturation flow rate [veh/h]	1781	3560	1781	1781	3560	1589	1781	1836	1589	1781	1634
c, Capacity [veh/h]	403	1792	897	190	1365	609	310	320	277	110	101
d1, Uniform Delay [s]	43.83	18.24	18.24	50.34	35.39	26.79	41.53	41.51	47.39	50.87	53.03
k, delay calibration	0.40	0.13	0.13	0.04	0.20	0.13	0.04	0.04	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	30.54	0.21	0.42	3.90	127.65	0.72	0.23	0.22	405.10	0.16	4.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.45	0.45	0.84	1.28	0.48	0.33	0.33	1.87	0.11	0.76
d, Delay for Lane Group [s/veh]	74.38	18.45	18.66	54.25	163.04	27.52	41.76	41.73	452.49	51.03	57.49
Lane Group LOS	E	B	B	D	F	C	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	13.81	6.34	6.40	4.59	41.99	5.95	2.58	2.63	39.03	0.33	2.31
50th-Percentile Queue Length [ft/ln]	345.28	158.62	160.06	114.66	1049.86	148.66	64.39	65.85	975.63	8.29	57.73
95th-Percentile Queue Length [veh/ln]	19.91	10.48	10.55	8.10	61.45	9.95	4.64	4.74	61.49	0.60	4.16
95th-Percentile Queue Length [ft/ln]	497.65	261.89	263.80	202.46	1536.34	248.64	115.90	118.54	1537.17	14.92	103.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.38	74.38	18.50	18.66	54.25	54.25	163.0	27.52	41.76	41.73	452.49	51.03	57.49	57.49
Movement LOS	E	E	B	B	D	D	F	C	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	32.14				136.95				334.81			56.62		
Approach LOS	C				F				F			E		
d_I, Intersection Delay [s/veh]	130.55													
Intersection LOS	F													
Intersection V/C	1.255													

Emissions

Vehicle Miles Traveled [mph]	72.64	150.14	75.13	38.20	416.64	70.43	6.41	6.56	32.30	0.59	3.75
Stops [stops/h]	433.40	398.19	200.91	143.92	2635.60	186.60	80.82	82.66	1224.63	10.40	72.47
Fuel consumption [US gal/h]	13.72	13.09	6.59	4.87	104.94	6.39	1.58	1.62	55.78	0.21	1.46
CO [g/h]	959.06	915.15	460.57	340.06	7335.00	446.40	110.71	113.25	3899.24	14.41	101.75
NOx [g/h]	186.60	178.05	89.61	66.16	1427.12	86.85	21.54	22.03	758.65	2.80	19.80
VOC [g/h]	222.27	212.09	106.74	78.81	1699.96	103.46	25.66	26.25	903.69	3.34	23.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	46.89	46.89	46.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.531	2.861	2.149
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	877	772	349	349
d_b, Bicycle Delay [s]	18.09	21.61	39.10	39.10
l_b,int, Bicycle LOS Score for Intersection	2.454	3.340	3.097	1.748
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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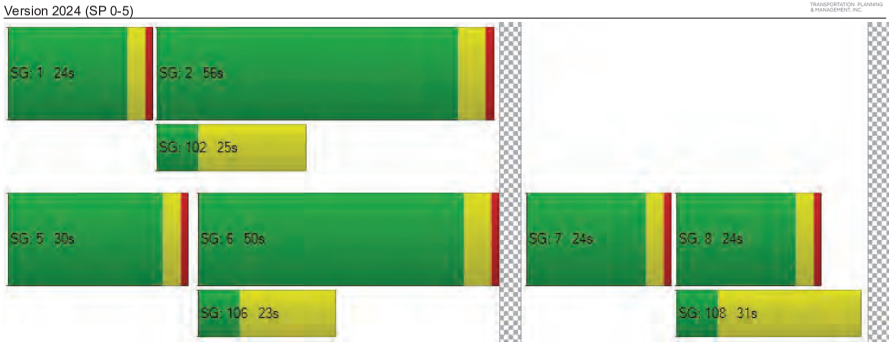

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	79.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1181	1173	138	3	49	1285	968	256	92	816	146	92	55
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	30	6	0	0	18	0	0	0	7	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	43	0	0	0	290	0	0	247	0	0	17
Total Hourly Volume [veh/h]	1	1221	1203	101	3	49	1303	678	256	92	576	150	92	38
Peak Hour Factor	1.000	0.840	0.840	0.840	1.000	0.840	0.840	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	363	358	30	1	15	388	202	76	27	171	45	27	11
Total Analysis Volume [veh/h]	1	1454	1432	120	3	58	1551	807	305	110	686	179	110	45
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	45	76	0	0	19	50	20	0	20	0	0	20	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	135	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	40	77	77	7	44	69	20	20	11	11	11
g / C, Green / Cycle	0.30	0.57	0.57	0.05	0.33	0.51	0.15	0.15	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.42	0.29	0.30	0.03	0.30	0.51	0.12	0.12	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1799	1781	5094	1589	1781	1826	1781	1815	1744
c, Capacity [veh/h]	1035	2045	1033	96	1674	812	257	264	140	143	137
d1, Uniform Delay [s]	33.83	1.30	1.31	62.59	43.74	32.80	55.83	55.82	61.11	61.08	61.15
k, delay calibration	0.19	0.50	0.50	0.04	0.50	0.50	0.18	0.18	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	184.84	0.87	1.85	2.62	10.33	30.11	8.98	8.74	3.82	3.62	4.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.41	0.50	0.52	0.64	0.93	0.99	0.80	0.80	0.79	0.79	0.80
d, Delay for Lane Group [s/veh]	218.67	2.17	3.16	65.22	54.07	62.91	64.80	64.56	64.93	64.70	65.21
Lane Group LOS	F	A	A	E	D	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	41.01	0.95	1.27	2.09	17.68	31.01	7.40	7.57	3.91	3.95	3.87
50th-Percentile Queue Length [ft/ln]	1025.35	23.68	31.71	52.16	442.00	775.19	184.94	189.13	97.77	98.64	96.83
95th-Percentile Queue Length [veh/ln]	61.86	1.71	2.28	3.76	24.58	40.14	11.86	12.08	7.04	7.10	6.97
95th-Percentile Queue Length [ft/ln]	1546.52	42.63	57.08	93.89	614.39	1003.49	296.45	301.90	175.99	177.55	174.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	218.6	218.6	2.46	3.16	65.22	65.22	54.07	62.91	64.73	64.56	0.00	64.84	65.00	65.21
Movement LOS	F	F	A	A	E	E	D	E	E	E		E	E	E
d_A, Approach Delay [s/veh]	107.10				57.30				27.09			64.94		
Approach LOS	F				E				C			E		
d_I, Intersection Delay [s/veh]	79.93													
Intersection LOS	E													
Intersection V/C	0.918													

Emissions

Vehicle Miles Traveled [mph]	249.20	174.28	91.53	11.48	291.89	151.87	9.48	9.72	3.54	3.58	3.50
Stops [stops/h]	2187.41	50.53	33.82	55.64	1414.40	826.87	197.27	201.74	104.29	105.22	103.29
Fuel consumption [US gal/h]	87.08	7.90	4.30	1.89	44.65	25.82	4.18	4.27	2.19	2.21	2.17
CO [g/h]	6086.63	552.41	300.46	132.45	3121.36	1804.57	292.35	298.76	153.32	154.56	151.99
NOx [g/h]	1184.24	107.48	58.46	25.77	607.30	351.10	56.88	58.13	29.83	30.07	29.57
VOC [g/h]	1410.63	128.03	69.64	30.70	723.40	418.23	67.75	69.24	35.53	35.82	35.22

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		56.95	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.341	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1040		655		221		228	
d_b, Bicycle Delay [s]	15.55		30.54		53.42		52.98	
I_b,int, Bicycle LOS Score for Intersection	3.237		3.018		2.244		1.849	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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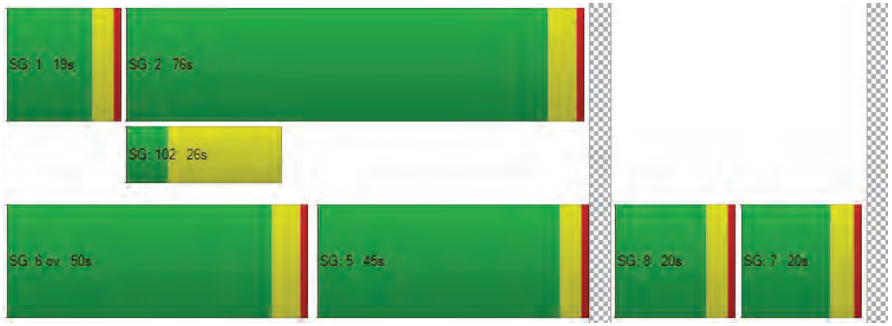

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	84	1607	388	1	92	1561	407	2	310	108	60	298	227	187
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	97	23	0	0	59	0	0	0	0	0	14	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	123	0	0	0	122	0	0	0	18	0	0	56
Total Hourly Volume [veh/h]	2	84	1704	288	1	92	1620	285	2	310	108	42	312	227	131
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	22	453	77	0	24	431	76	1	82	29	11	83	60	35
Total Analysis Volume [veh/h]	2	89	1813	306	1	98	1723	303	2	330	115	45	332	241	139
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	91	91	10	91	91	17	16	16	17	16	16
g / C, Green / Cycle	0.06	0.58	0.58	0.06	0.58	0.58	0.11	0.10	0.10	0.11	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.19	0.03	0.34	0.19	0.10	0.04	0.05	0.10	0.07	0.09
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1682	3431	3532	1577
c, Capacity [veh/h]	111	3915	916	217	2939	917	379	193	175	374	362	162
d1, Uniform Delay [s]	72.72	18.85	17.09	70.94	20.85	17.01	68.78	65.99	66.06	68.98	67.85	69.33
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.63	0.40	0.98	0.56	0.86	0.97	2.58	0.57	0.65	2.85	0.79	5.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.46	0.33	0.46	0.59	0.33	0.88	0.43	0.44	0.89	0.67	0.86
d, Delay for Lane Group [s/veh]	78.35	19.24	18.07	71.50	21.71	17.97	71.35	66.55	66.71	71.83	68.63	74.37
Lane Group LOS	E	B	B	E	C	B	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.82	9.64	6.09	1.92	13.02	5.75	6.74	3.18	2.95	6.76	4.73	5.75
50th-Percentile Queue Length [ft/ln]	95.46	240.95	152.13	47.95	325.47	143.69	168.40	79.40	73.82	168.97	118.21	143.84
95th-Percentile Queue Length [veh/ln]	6.87	14.73	10.13	3.45	18.94	9.68	10.99	5.72	5.32	11.02	8.29	9.69
95th-Percentile Queue Length [ft/ln]	171.83	368.23	253.27	86.30	473.41	241.99	274.81	142.91	132.88	275.57	207.37	242.19

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.35	78.35	19.24	18.07	71.50	71.50	21.71	17.97	71.35	71.35	66.60	66.71	71.83	68.63	74.37
Movement LOS	E	E	B	B	E	E	C	B	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	21.51				23.50				69.82				71.25		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	32.96														
Intersection LOS	C														
Intersection V/C	0.643														

Emissions

Vehicle Miles Traveled [mph]	36.23	721.81	121.83	22.09	384.54	67.62	82.74	20.68	19.19	34.81	25.27	14.57
Stops [stops/h]	87.56	883.99	139.53	87.95	895.57	131.80	308.91	72.82	67.71	309.97	216.85	131.93
Fuel consumption [US gal/h]	3.43	41.70	6.91	3.29	31.93	5.06	9.93	2.38	2.21	8.00	5.60	3.43
CO [g/h]	239.46	2914.65	483.12	230.05	2231.74	354.02	694.30	166.21	154.42	559.05	391.70	239.92
NOx [g/h]	46.59	567.08	94.00	44.76	434.22	68.88	135.09	32.34	30.04	108.77	76.21	46.68
VOC [g/h]	55.50	675.50	111.97	53.32	517.23	82.05	160.91	38.52	35.79	129.57	90.78	55.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.533	3.837	2.710	2.896
Crosswalk LOS	D	D	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.521	2.742	1.708	2.193
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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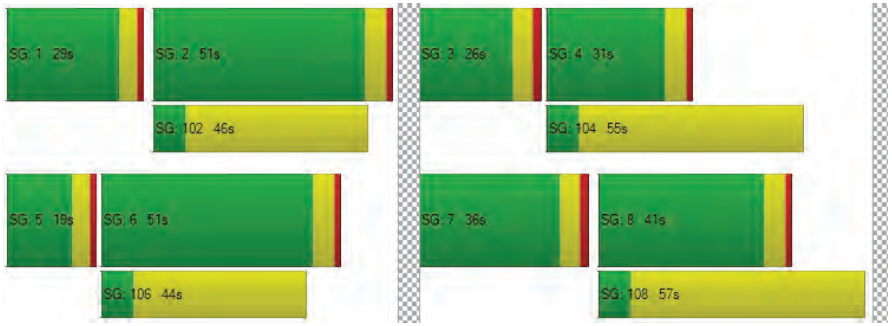

Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	29.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	41	605	21	209	386	563	314	41	5	136	94	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	123	14	0	75	0	0	0	21	9	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	11	0	0	169	0	0	8	0	0	101
Total Hourly Volume [veh/h]	75	728	24	209	461	394	314	41	18	145	94	234
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	204	7	59	129	111	88	12	5	41	26	66
Total Analysis Volume [veh/h]	84	818	27	235	518	443	353	46	20	163	106	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	26	25	0	26	25	0	0	30	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	30	30	0	0	35	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	71	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	4.00	5.00	5.00	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	3.00	2.00	3.00	3.00	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	4	18	18	11	25	25	10	10	13	13
g / C, Green / Cycle	0.06	0.25	0.25	0.16	0.35	0.35	0.15	0.15	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.23	0.23	0.13	0.28	0.28	0.12	0.12	0.16	0.16
s, saturation flow rate [veh/h]	1781	1870	1849	1781	1870	1590	1781	1779	1803	1589
c, Capacity [veh/h]	109	473	468	279	652	554	259	258	332	292
d1, Uniform Delay [s]	32.77	25.59	25.59	29.02	20.80	20.86	29.35	29.35	27.98	27.99
k, delay calibration	0.04	0.11	0.11	0.04	0.22	0.23	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.25	6.44	6.50	2.63	4.56	5.63	2.32	2.32	2.41	2.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.90	0.90	0.84	0.79	0.80	0.81	0.81	0.85	0.85
d, Delay for Lane Group [s/veh]	37.02	32.03	32.10	31.66	25.36	26.49	31.67	31.67	30.39	30.72
Lane Group LOS	D	C	C	C	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.50	7.33	7.25	3.60	7.10	6.26	3.47	3.47	4.62	4.11
50th-Percentile Queue Length [ft/ln]	37.48	183.16	181.33	89.95	177.61	156.59	86.72	86.63	115.62	102.73
95th-Percentile Queue Length [veh/ln]	2.70	11.77	11.67	6.48	11.48	10.37	6.24	6.24	8.15	7.40
95th-Percentile Queue Length [ft/ln]	67.47	294.14	291.75	161.91	286.89	259.19	156.09	155.94	203.80	184.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.02	32.06	32.10	31.66	25.36	26.49	31.67	31.67	31.67	30.39	30.39	30.72
Movement LOS	D	C	C	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	32.51			27.01			31.67			30.55		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	29.92											
Intersection LOS	C											
Intersection V/C	0.819											

Emissions

Vehicle Miles Traveled [mph]	48.51	245.38	242.63	163.96	361.09	309.41	15.77	15.75	31.25	27.58
Stops [stops/h]	76.37	373.20	369.46	183.27	361.89	319.05	176.69	176.52	235.59	209.32
Fuel consumption [US gal/h]	3.05	14.93	14.77	10.40	21.47	18.67	2.98	2.97	4.34	3.85
CO [g/h]	213.32	1043.80	1032.69	727.16	1500.85	1304.83	208.02	207.82	303.07	269.21
NOx [g/h]	41.51	203.09	200.92	141.48	292.01	253.87	40.47	40.43	58.97	52.38
VOC [g/h]	49.44	241.91	239.34	168.53	347.84	302.41	48.21	48.17	70.24	62.39

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.19	0.00	25.19	25.19
l_p,int, Pedestrian LOS Score for Intersectio	2.624	0.000	2.338	2.380
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	707	707	863	566
d_b, Bicycle Delay [s]	14.76	14.76	11.42	18.17
l_b,int, Bicycle LOS Score for Intersection	2.335	2.686	2.264	2.604
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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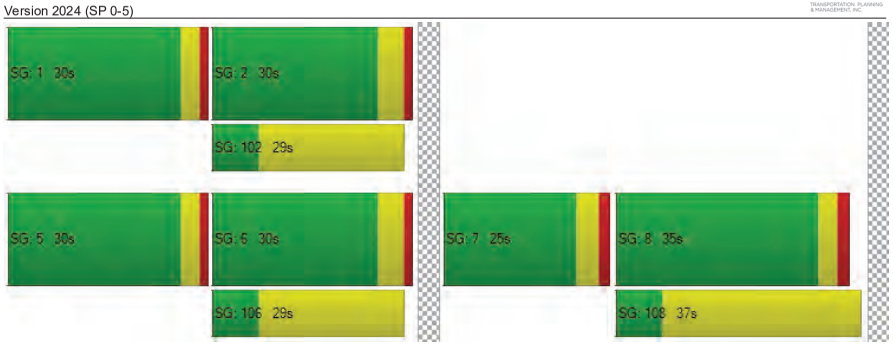

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	10.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.706

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	160.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	465	254	273	202	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	171	104	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	636	358	273	202	57
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	177	99	76	56	16
Total Analysis Volume [veh/h]	140	707	398	303	224	63
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	56	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	62	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Calculated Cycle Length [s]	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	20	12	12	5	5
g / C, Green / Cycle	0.11	0.56	0.34	0.34	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.08	0.38	0.21	0.19	0.08	0.08
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1690
c, Capacity [veh/h]	193	1057	639	543	262	249
d1, Uniform Delay [s]	15.00	5.28	9.56	9.30	13.77	13.78
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.96	1.05	1.42	1.28	1.87	2.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.67	0.62	0.56	0.56	0.56
d, Delay for Lane Group [s/veh]	16.96	6.34	10.98	10.58	15.64	15.79
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.80	0.50	1.42	1.06	0.99	0.95
50th-Percentile Queue Length [ft/ln]	19.94	12.44	35.55	26.48	24.67	23.83
95th-Percentile Queue Length [veh/ln]	1.44	0.90	2.56	1.91	1.78	1.72
95th-Percentile Queue Length [ft/ln]	35.88	22.39	63.99	47.66	44.41	42.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.96	6.34	10.98	10.58	15.70	15.79
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	8.09		10.81		15.72	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	10.32					
Intersection LOS	B					
Intersection V/C	0.706					

Emissions

Vehicle Miles Traveled [mph]	17.27	87.23	229.85	174.99	34.45	32.96
Stops [stops/h]	82.93	51.75	147.88	110.15	102.63	99.12
Fuel consumption [US gal/h]	2.60	4.79	11.33	8.55	2.45	2.36
CO [g/h]	181.84	334.88	791.64	597.78	171.42	164.64
NOx [g/h]	35.38	65.15	154.02	116.31	33.35	32.03
VOC [g/h]	42.14	77.61	183.47	138.54	39.73	38.16

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	10.23	0.00	10.23
l_p,int, Pedestrian LOS Score for Intersectio	2.670	0.000	2.128
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3235	2311	1156
d_b, Bicycle Delay [s]	6.60	0.42	3.09
l_b,int, Bicycle LOS Score for Intersection	2.957	2.716	2.033
Bicycle LOS	C	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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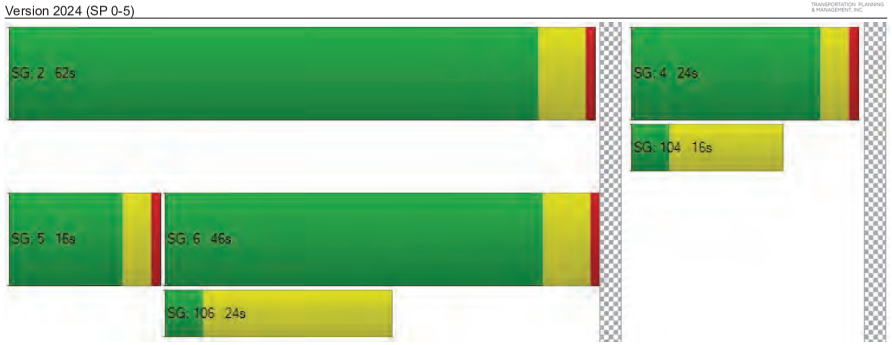

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	387	32	41	254	0	0	0	0	10	0	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	8	0	0	6	64	152	2	17	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	31	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	14	0	0	0	0	0	0	0	14
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	395	32	55	260	95	152	2	17	10	1	175
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	106	9	15	70	26	41	1	5	3	0	47
Total Analysis Volume [veh/h]	12	425	34	59	280	102	163	2	18	11	1	188
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Calculated Cycle Length [s]	51	51	51	51	51	51
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	16	3	18	7	9
g / C, Green / Cycle	0.02	0.31	0.06	0.35	0.14	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.28	0.04	0.24	0.12	0.14
s, saturation flow rate [veh/h]	1603	1661	1603	1607	1585	1440
c, Capacity [veh/h]	25	520	90	569	230	245
d1, Uniform Delay [s]	24.75	16.52	23.45	13.88	20.95	20.28
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	2.00	3.00	0.52	2.39	2.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.88	0.66	0.67	0.80	0.82
d, Delay for Lane Group [s/veh]	30.05	18.52	26.45	14.40	23.34	22.83
Lane Group LOS	C	B	C	B	C	C
Critical Lane Group	No	Yes	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.16	3.86	0.64	2.61	2.04	2.21
50th-Percentile Queue Length [ft/ln]	3.88	96.40	16.01	65.36	50.98	55.27
95th-Percentile Queue Length [veh/ln]	0.28	6.94	1.15	4.71	3.67	3.98
95th-Percentile Queue Length [ft/ln]	6.98	173.52	28.81	117.65	91.77	99.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.05	18.52	18.52	26.45	14.40	14.40	23.34	23.34	23.34	22.83	22.83	22.83
Movement LOS	C	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.81			16.01			23.34			22.83		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.12											
Intersection LOS	B											
Intersection V/C	0.744											

Emissions

Vehicle Miles Traveled [mph]	4.07	155.69	5.98	38.72	9.95	168.84
Stops [stops/h]	11.04	274.72	45.62	186.26	145.30	157.50
Fuel consumption [US gal/h]	0.41	12.04	1.37	5.87	2.08	8.75
CO [g/h]	28.99	841.68	95.42	410.65	145.51	611.63
NOx [g/h]	5.64	163.76	18.56	79.90	28.31	119.00
VOC [g/h]	6.72	195.07	22.11	95.17	33.72	141.75

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1187	1187	1187	1187
d_b, Bicycle Delay [s]	4.17	4.17	4.17	4.17
I_b,int, Bicycle LOS Score for Intersection	2.337	2.287	1.862	1.890
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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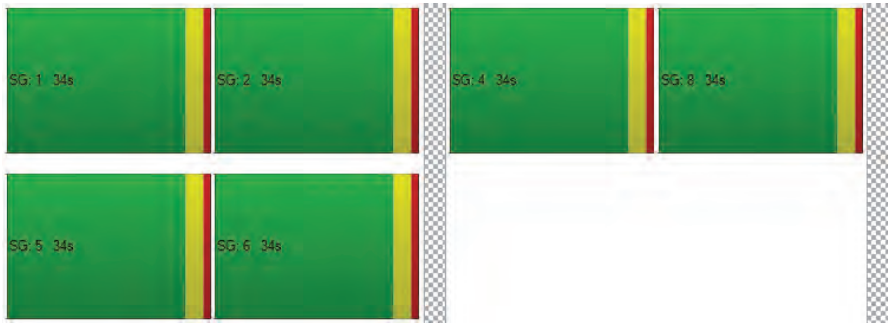

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Roundabout	Delay (sec / veh):	8.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	232	128	45	0	546	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	21	0	0	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	232	149	45	0	546	186
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	64	41	12	0	151	51
Total Analysis Volume [veh/h]	0	14	256	164	50	0	603	205
Pedestrian Volume [ped/h]	0			0		0		

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Intersection Settings

Number of Conflicting Circulating Lanes	1			1		1		
Circulating Flow Rate [veh/h]	167			615		14		
Exiting Flow Rate [veh/h]	666			223		428		
Demand Flow Rate [veh/h]	0	13	232	149	45	0	546	186
Adjusted Demand Flow Rate [veh/h]	0	14	256	164	50	0	603	205

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98
Entry Flow Rate [veh/h]	276	219	825
Capacity of Entry and Bypass Lanes [veh/h]	1164	737	1361
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1141	723	1334
X, volume / capacity	0.24	0.30	0.61

Movement, Approach, & Intersection Results

Lane LOS	A	A	A
95th-Percentile Queue Length [veh]	0.92	1.24	4.33
95th-Percentile Queue Length [ft]	23.06	30.96	108.21
Approach Delay [s/veh]	5.32	8.55	9.79
Approach LOS	A	A	A
Intersection Delay [s/veh]	8.65		
Intersection LOS	A		

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Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	All-way stop	Delay (sec / veh):	17.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	227	71	37	439	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	0	0	0	0	0	21	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	0	18	66	1	8	4	227	92	37	439	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	0	5	17	0	2	1	59	24	10	113	4
Total Analysis Volume [veh/h]	102	0	19	68	1	8	4	234	95	38	453	15
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	485	580	500	563	633	583	637
Degree of Utilization, x	0.21	0.03	0.15	0.01	0.52	0.07	0.73

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.79	0.10	0.54	0.02	3.00	0.21	6.38
95th-Percentile Queue Length [ft]	19.67	2.54	13.51	0.54	75.11	5.22	159.56
Approach Delay [s/veh]	11.63		11.51	14.30		21.39	
Approach LOS	B		B	B		C	
Intersection Delay [s/veh]	17.24						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	350.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	95	50	256	155	36	46	68	194	30	162	653	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	12	0	0	5	7	16	0	7	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	80	0	0	15	0	0	9	0	0	71
Total Hourly Volume [veh/h]	95	50	188	155	36	36	75	210	21	169	662	167
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	14	54	45	10	10	22	60	6	49	190	48
Total Analysis Volume [veh/h]	109	57	216	178	41	41	86	241	24	194	761	192
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	98	98	98	98	98	98	98	98	98
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	19	19	13	13	6	37	13	42	42
g / C, Green / Cycle	0.20	0.20	0.13	0.13	0.06	0.37	0.13	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.10	0.05	0.05	0.14	0.11	0.41	0.12
s, saturation flow rate [veh/h]	1781	1641	1781	1718	1781	1841	1781	1870	1589
c, Capacity [veh/h]	350	322	227	219	111	686	229	807	686
d1, Uniform Delay [s]	33.80	38.06	41.52	39.25	45.36	22.59	41.87	26.79	18.07
k, delay calibration	0.13	0.13	0.13	0.13	0.04	0.11	0.04	0.37	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	7.56	7.16	1.31	4.23	0.36	3.36	16.57	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.85	0.78	0.37	0.77	0.39	0.85	0.94	0.28
d, Delay for Lane Group [s/veh]	34.43	45.62	48.68	40.56	49.59	22.95	45.23	43.36	18.35
Lane Group LOS	C	D	D	D	D	C	D	D	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.27	6.90	4.58	1.88	2.18	4.47	4.75	19.89	2.81
50th-Percentile Queue Length [ft/ln]	56.71	172.56	114.53	46.95	54.45	111.66	118.87	497.29	70.19
95th-Percentile Queue Length [veh/ln]	4.08	11.21	8.09	3.38	3.92	7.93	8.33	27.21	5.05
95th-Percentile Queue Length [ft/ln]	102.08	280.27	202.29	84.50	98.01	198.31	208.27	680.15	126.33

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.43	45.62	45.62	48.68	40.56	40.56	49.59	22.95	22.95	45.23	43.36	18.35
Movement LOS	C	D	D	D	D	D	D	C	C	D	D	B
d_A, Approach Delay [s/veh]	42.43			46.12			29.48			39.49		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	39.18											
Intersection LOS	D											
Intersection V/C	0.862											

Emissions

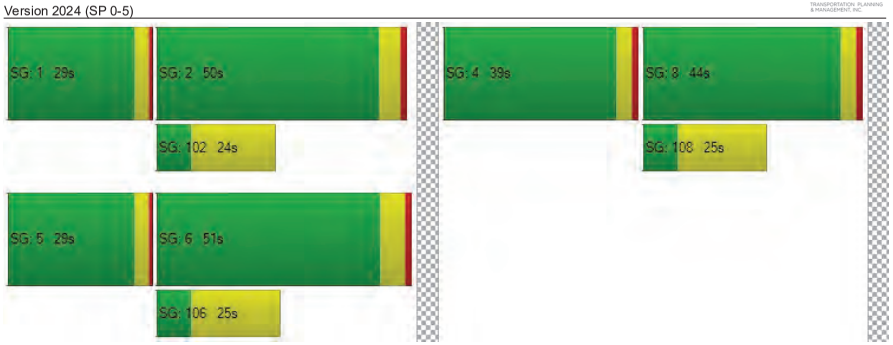
Vehicle Miles Traveled [mph]	187.55	469.74	36.09	16.62	30.11	92.79	87.54	343.38	86.63
Stops [stops/h]	83.28	253.40	168.19	68.94	79.96	163.98	174.56	730.26	103.07
Fuel consumption [US gal/h]	8.94	23.27	4.18	1.74	2.55	5.96	6.35	24.88	4.85
CO [g/h]	625.22	1626.69	292.05	121.77	178.19	416.85	444.12	1739.44	339.22
NOx [g/h]	121.64	316.49	56.82	23.69	34.67	81.10	86.41	338.43	66.00
VOC [g/h]	144.90	377.00	67.68	28.22	41.30	96.61	102.93	403.13	78.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	38.65	38.65	38.65	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.295	2.187	2.375	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	710	812	912	918
d_b, Bicycle Delay [s]	20.40	17.31	14.52	14.36
l_b,int, Bicycle LOS Score for Intersection	2.322	2.013	2.154	3.569
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	491	323	117	75
2	476	313	113	73
3	466	307	111	71
4	437	287	104	67
5	388	255	92	59
6	383	252	91	59
7	378	249	90	58
8	344	226	82	53
9	339	223	81	52
10	334	220	80	51
11	290	191	69	44
12	270	178	64	41
13	265	174	63	41
14	196	129	47	30
15	196	129	47	30
16	137	90	33	21
17	79	52	19	12
18	79	52	19	12
19	44	29	11	7
20	25	16	6	4
21	15	10	4	2
22	5	3	1	1
23	5	3	1	1
24	5	3	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	814	1	117	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	789	1	113	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
3	2	773	1	111	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
4	2	724	1	104	No	No	No	Yes	No	Yes	Yes	Yes	No	No
5	2	643	1	92	No	No	No	Yes	No	No	Yes	Yes	No	No
6	2	635	1	91	No	No	No	Yes	No	No	Yes	Yes	No	No
7	2	627	1	90	No	No	No	Yes	No	No	No	Yes	No	No
8	2	570	1	82	No	No	No	No	No	No	No	Yes	No	No
9	2	562	1	81	No	No	No	No	No	No	No	Yes	No	No
10	2	554	1	80	No	No	No	No	No	No	No	Yes	No	No
11	2	481	1	69	No	No	No	No	No	No	No	No	No	No
12	2	448	1	64	No	No	No	No	No	No	No	No	No	No
13	2	439	1	63	No	No	No	No	No	No	No	No	No	No
14	2	325	1	47	No	No	No	No	No	No	No	No	No	No
15	2	325	1	47	No	No	No	No	No	No	No	No	No	No
16	2	227	1	33	No	No	No	No	No	No	No	No	No	No
17	2	131	1	19	No	No	No	No	No	No	No	No	No	No
18	2	131	1	19	No	No	No	No	No	No	No	No	No	No
19	2	73	1	11	No	No	No	No	No	No	No	No	No	No
20	2	41	1	6	No	No	No	No	No	No	No	No	No	No
21	2	25	1	4	No	No	No	No	No	No	No	No	No	No
22	2	8	1	1	No	No	No	No	No	No	No	No	No	No
23	2	8	1	1	No	No	No	No	No	No	No	No	No	No
24	2	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	7	0	4	6	10	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.6	11.5
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:22	0:14
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	117	75
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1006	1006
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Existing PM plus abated Project

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.969

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	91	1766	401	35	1038	55	36	17	54	339	52	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	16	0	0	23	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	17	0	0	16	0	0	7
Total Hourly Volume [veh/h]	3	91	1782	401	35	1061	38	36	17	38	339	52	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	26	512	115	10	305	11	10	5	11	97	15	4
Total Analysis Volume [veh/h]	3	105	2048	461	40	1220	44	41	20	44	390	60	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Calculated Cycle Length [s]	77	77	77	77	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	40	40	2	36	36	5	5	12	12
g / C, Green / Cycle	0.08	0.52	0.52	0.03	0.47	0.47	0.06	0.06	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.06	0.58	0.29	0.02	0.34	0.34	0.02	0.04	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1847	1781	1668	1781	1787
c, Capacity [veh/h]	142	1851	827	51	878	867	106	99	288	289
d1, Uniform Delay [s]	34.72	18.47	12.49	37.14	16.42	16.43	34.85	35.41	31.11	31.11
k, delay calibration	0.04	0.05	0.05	0.04	0.13	0.13	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	48.71	0.27	9.12	1.39	1.42	0.86	2.61	2.07	2.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	1.11	0.56	0.78	0.72	0.73	0.39	0.65	0.81	0.81
d, Delay for Lane Group [s/veh]	37.90	67.18	12.77	46.26	17.81	17.85	35.71	38.02	33.18	33.17
Lane Group LOS	D	F	B	D	B	B	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.97	25.36	4.38	0.83	7.78	7.71	0.75	1.22	4.19	4.21
50th-Percentile Queue Length [ft/ln]	49.37	633.94	109.60	20.81	194.52	192.74	18.67	30.40	104.80	105.15
95th-Percentile Queue Length [veh/ln]	3.55	36.26	7.82	1.50	12.36	12.26	1.34	2.19	7.55	7.57
95th-Percentile Queue Length [ft/ln]	88.86	906.49	195.44	37.45	308.89	306.58	33.60	54.73	188.64	189.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.90	37.90	67.18	12.77	46.26	17.83	17.85	35.71	38.02	38.02	33.18	33.17	33.17
Movement LOS	D	D	F	B	D	B	B	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	56.39				18.70			37.12			33.18		
Approach LOS	E				B			D			C		
d_I, Intersection Delay [s/veh]	42.59												
Intersection LOS	D												
Intersection V/C	0.969												

Emissions

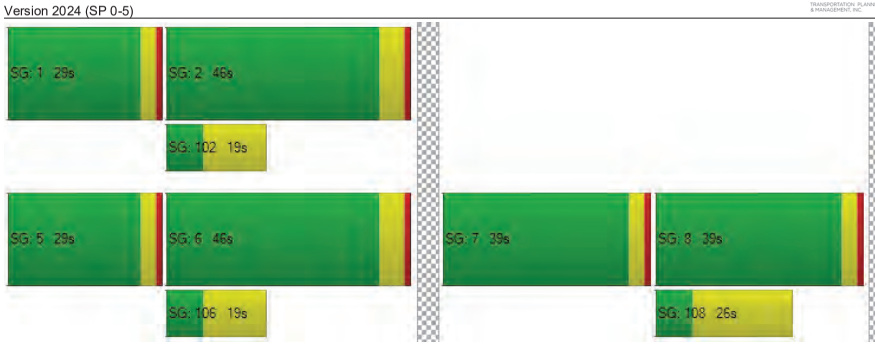
Vehicle Miles Traveled [mph]	25.79	489.13	110.10	5.88	93.42	92.41	1.75	2.73	12.20	12.24
Stops [stops/h]	92.56	2377.20	205.49	39.01	364.72	361.37	35.00	57.00	196.49	197.15
Fuel consumption [US gal/h]	2.87	74.32	7.53	1.06	10.04	9.94	0.56	0.92	3.16	3.17
CO [g/h]	200.47	5194.99	526.11	74.32	701.82	695.15	39.38	64.49	220.99	221.72
NOx [g/h]	39.01	1010.76	102.36	14.46	136.55	135.25	7.66	12.55	43.00	43.14
VOC [g/h]	46.46	1203.99	121.93	17.22	162.65	161.11	9.13	14.95	51.22	51.39

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	28.19	28.19	28.19
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.320	2.067	2.265
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1049	1049	911	911
d_b, Bicycle Delay [s]	8.67	8.67	11.38	11.38
l_b,int, Bicycle LOS Score for Intersection	3.716	2.649	1.759	2.342
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	94.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.201

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	230.0	100.0	100.0	100.0	100.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	75	4	164	1068	198	365	41	525	59	107	276
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	16	0	0	0	23	0	0	0	11	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	23	0	0	0	59	0	0	161	0	0	83
Total Hourly Volume [veh/h]	5	451	1632	52	4	164	1091	139	365	41	375	59	107	193
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	121	439	14	1	44	293	37	98	11	101	16	29	52
Total Analysis Volume [veh/h]	5	485	1755	56	4	176	1173	149	392	44	403	63	115	208
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	128
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	26	50	0	0	20	44	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	16	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	0.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	24	50	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Calculated Cycle Length [s]	127	127	127	127	127	127	127	127	127	127	127
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	55	55	15	44	44	20	20	20	20	20
g / C, Green / Cycle	0.20	0.43	0.43	0.12	0.34	0.34	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.28	0.33	0.34	0.10	0.33	0.09	0.12	0.12	0.25	0.04	0.19
s, saturation flow rate [veh/h]	1781	3560	1841	1781	3560	1589	1781	1798	1589	1781	1679
c, Capacity [veh/h]	363	1534	793	207	1222	545	280	282	249	280	264
d1, Uniform Delay [s]	50.71	31.02	31.10	55.34	41.00	30.33	51.58	51.54	53.71	46.94	53.71
k, delay calibration	0.50	0.13	0.35	0.12	0.13	0.13	0.23	0.23	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	174.02	1.05	5.38	11.46	6.74	0.32	9.51	9.13	294.67	0.15	130.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.35	0.78	0.78	0.87	0.96	0.27	0.78	0.77	1.62	0.23	1.23
d, Delay for Lane Group [s/veh]	224.73	32.07	36.49	66.80	47.74	30.66	61.09	60.67	348.37	47.09	184.06
Lane Group LOS	F	C	D	E	D	C	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	28.80	15.06	16.65	6.21	18.36	3.29	7.42	7.42	28.40	1.77	17.97
50th-Percentile Queue Length [ft/ln]	720.03	376.50	416.15	155.27	459.03	82.14	185.39	185.50	709.95	44.30	449.26
95th-Percentile Queue Length [veh/ln]	43.38	21.42	23.34	10.30	25.39	5.91	11.88	11.89	44.51	3.19	27.31
95th-Percentile Queue Length [ft/ln]	1084.53	535.61	583.43	257.45	634.72	147.84	297.05	297.18	1112.74	79.74	682.87

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	224.7	224.7	33.49	36.49	66.80	66.80	47.74	30.66	60.90	60.67	348.37	47.09	184.06	184.06
Movement LOS	F	F	C	D	E	E	D	C	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	74.29				48.33				198.97			161.71		
Approach LOS	E				D				F			F		
d_I, Intersection Delay [s/veh]	94.05													
Intersection LOS	F													
Intersection V/C	1.201													

Emissions

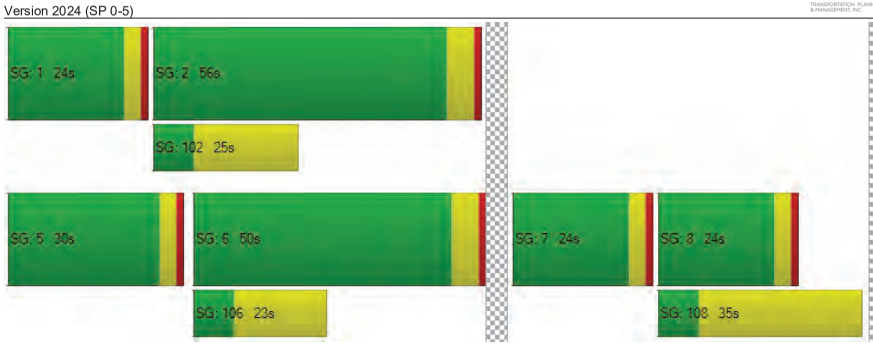
Vehicle Miles Traveled [mph]	92.22	224.27	116.55	42.99	280.15	35.59	13.56	13.63	25.13	3.07	15.75
Stops [stops/h]	813.77	851.04	470.33	175.48	1037.59	92.83	209.53	209.65	802.38	50.07	507.75
Fuel consumption [US gal/h]	35.68	26.05	14.44	6.10	33.90	3.30	4.42	4.42	34.03	1.01	15.55
CO [g/h]	2494.27	1820.67	1009.42	426.53	2369.49	230.92	308.91	308.73	2378.81	70.37	1086.94
NOx [g/h]	485.30	354.24	196.40	82.99	461.02	44.93	60.10	60.07	462.83	13.69	211.48
VOC [g/h]	578.07	421.96	233.94	98.85	549.15	53.52	71.59	71.55	551.31	16.31	251.91

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	53.18	53.18	53.18
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.530	2.817	2.325
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	790	695	314	314
d_b, Bicycle Delay [s]	23.33	27.11	45.28	45.28
l_b,int, Bicycle LOS Score for Intersection	2.835	2.702	3.210	2.333
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	51.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.007

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	980	1679	319	0	37	1192	428	208	130	290	236	80	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	28	25	4	0	0	34	0	0	0	13	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	97	0	0	0	128	0	0	91	0	0	75
Total Hourly Volume [veh/h]	1	1008	1704	226	0	37	1226	300	208	130	212	243	80	176
Peak Hour Factor	1.000	0.840	0.990	0.840	1.000	0.840	0.990	0.840	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	300	430	67	0	11	310	89	62	39	63	72	24	52
Total Analysis Volume [veh/h]	1	1200	1721	269	0	44	1238	357	248	155	252	289	95	210
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	73	73	7	34	57	18	18	18	18	18
g / C, Green / Cycle	0.33	0.54	0.54	0.05	0.25	0.42	0.13	0.13	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.35	0.37	0.40	0.02	0.25	0.22	0.11	0.11	0.11	0.11	0.13
s, saturation flow rate [veh/h]	3459	3532	1735	1781	5053	1589	1781	1847	1781	1823	1589
c, Capacity [veh/h]	1155	1901	934	86	1275	668	232	241	241	247	216
d1, Uniform Delay [s]	45.29	22.99	23.97	63.17	50.34	29.48	57.87	57.86	56.88	56.86	58.54
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.15	0.15	0.22	0.21	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.76	2.04	5.10	1.76	19.09	3.05	11.47	11.02	10.68	10.21	46.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.69	0.73	0.51	0.97	0.53	0.85	0.85	0.79	0.78	0.97
d, Delay for Lane Group [s/veh]	66.05	25.04	29.07	64.94	69.43	32.54	69.34	68.88	67.55	67.07	104.89
Lane Group LOS	F	C	C	E	E	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	22.65	15.59	17.80	1.50	15.74	9.01	7.41	7.65	7.05	7.16	9.98
50th-Percentile Queue Length [ft/ln]	566.18	389.65	444.92	37.60	393.43	225.17	185.34	191.29	176.29	179.07	249.49
95th-Percentile Queue Length [veh/ln]	31.27	22.06	24.72	2.71	22.24	13.93	11.88	12.19	11.41	11.55	15.16
95th-Percentile Queue Length [ft/ln]	781.71	551.52	617.88	67.67	556.07	348.21	296.97	304.71	285.17	288.81	379.01

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.05	66.05	26.01	29.07	64.94	64.94	69.43	32.54	69.25	68.88	0.00	67.39	67.07	104.89
Movement LOS	E	F	C	C	E	E	E	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	41.34				61.27				45.28			80.59		
Approach LOS	D				E				D			F		
d_I, Intersection Delay [s/veh]	51.22													
Intersection LOS	D													
Intersection V/C	1.007													

Emissions

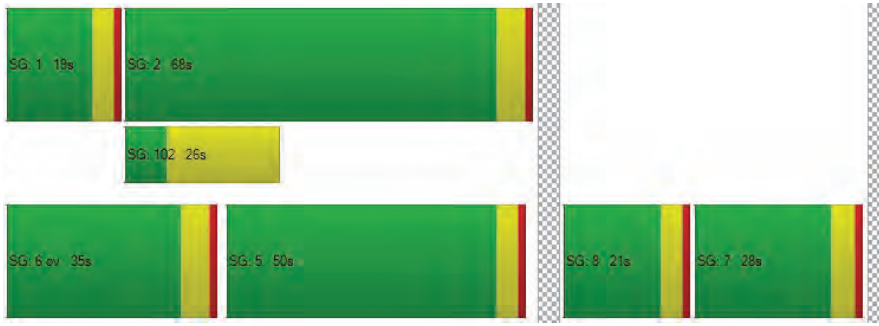
Vehicle Miles Traveled [mph]	205.69	223.46	117.36	8.28	232.99	67.19	9.15	9.49	6.04	6.17	6.68
Stops [stops/h]	1198.97	825.15	471.09	39.81	1249.71	238.41	196.24	202.55	186.66	189.61	264.17
Fuel consumption [US gal/h]	31.23	20.41	11.49	1.36	41.01	7.63	4.25	4.38	3.89	3.95	6.22
CO [g/h]	2183.21	1426.33	802.96	95.08	2866.79	533.39	297.32	306.43	272.09	275.95	434.50
NOx [g/h]	424.77	277.51	156.23	18.50	557.77	103.78	57.85	59.62	52.94	53.69	84.54
VOC [g/h]	505.98	330.57	186.09	22.03	664.41	123.62	68.91	71.02	63.06	63.95	100.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.558
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.367	2.507	2.225	2.112
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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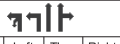
Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	73	1515	362	2	243	1325	392	2	349	336	86	393	164	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	73	19	0	0	108	0	0	0	0	0	26	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	114	0	0	0	118	0	0	0	26	0	0	58
Total Hourly Volume [veh/h]	6	73	1588	267	2	243	1433	274	2	349	336	60	419	164	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	20	427	72	1	65	385	74	1	94	90	16	113	44	37
Total Analysis Volume [veh/h]	6	78	1708	287	2	261	1541	295	2	375	361	65	451	176	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	0	20	50	0	0	23	31	0	36	44	0
Amber [s]	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0	0.0	4.5	5.0	0.0	4.5	5.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	4.0	0.0	0.0	3.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	56	0	0	25	56	0	0	29	37	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	6.00	6.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	4.00	4.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	10	79	79	14	83	83	19	21	21	23	25	25
g / C, Green / Cycle	0.06	0.49	0.49	0.09	0.52	0.52	0.12	0.13	0.13	0.14	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.18	0.08	0.30	0.19	0.11	0.12	0.12	0.13	0.05	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1772	3459	3560	1589
c, Capacity [veh/h]	110	3346	783	307	2647	826	420	245	232	498	547	244
d1, Uniform Delay [s]	73.95	27.52	25.13	71.92	26.46	22.66	69.32	68.40	68.41	67.42	60.28	63.09
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.16	0.56	1.32	2.72	0.94	1.21	2.86	4.45	4.73	2.62	0.13	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.51	0.37	0.86	0.58	0.36	0.90	0.89	0.89	0.91	0.32	0.60
d, Delay for Lane Group [s/veh]	78.11	28.08	26.46	74.64	27.40	23.86	72.18	72.84	73.14	70.04	60.40	63.97
Lane Group LOS	E	C	C	E	C	C	E	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.55	11.34	7.17	5.37	13.31	6.71	7.82	9.15	8.70	9.30	3.23	5.64
50th-Percentile Queue Length [ft/ln]	88.76	283.54	179.28	134.35	332.76	167.74	195.47	228.69	217.55	232.52	80.63	141.10
95th-Percentile Queue Length [veh/ln]	6.39	16.86	11.56	9.18	19.29	10.96	12.40	14.11	13.54	14.30	5.81	9.54
95th-Percentile Queue Length [ft/ln]	159.77	421.61	289.08	229.39	482.34	273.94	310.11	352.70	338.50	357.56	145.14	238.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.11	78.11	28.08	26.46	74.64	74.64	27.40	23.86	72.18	72.18	72.96	73.14	70.04	60.40	63.97
Movement LOS	E	E	C	C	E	E	C	C	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	29.87				32.82				72.61				66.70		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	41.86														
Intersection LOS	D														
Intersection V/C	0.664														

Emissions

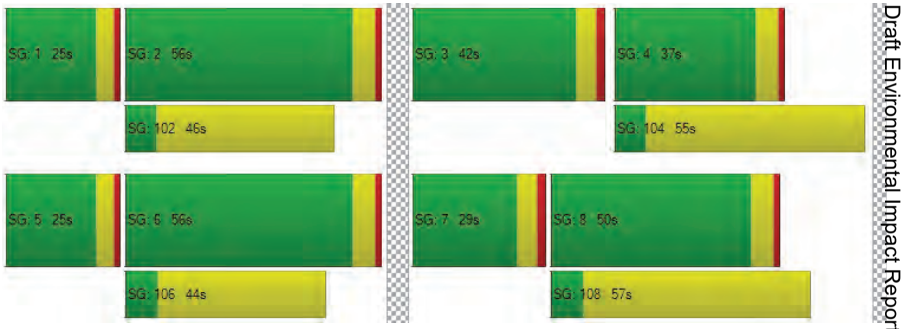
Vehicle Miles Traveled [mph]	33.44	679.93	114.25	58.71	344.01	65.85	94.09	54.55	51.77	47.12	18.39	15.25
Stops [stops/h]	79.88	1020.73	161.35	241.83	898.45	150.97	351.84	205.83	195.80	418.53	145.14	126.99
Fuel consumption [US gal/h]	3.15	43.39	7.14	9.01	31.55	5.57	11.35	6.62	6.30	10.68	3.72	3.23
CO [g/h]	220.39	3032.79	499.08	630.04	2205.66	389.13	793.64	462.88	440.39	746.47	260.16	225.76
NOx [g/h]	42.88	590.07	97.10	122.58	429.14	75.71	154.41	90.06	85.68	145.24	50.62	43.93
VOC [g/h]	51.08	702.88	115.67	146.02	511.18	90.18	183.93	107.28	102.06	173.00	60.30	52.32

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersectio	3.502	3.820	2.760	2.962
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	625	625	388	550
d_b, Bicycle Delay [s]	37.81	37.81	52.00	42.05
l_b,int, Bicycle LOS Score for Intersection	2.462	2.635	1.934	2.245
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	47.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.896

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	98	575	21	249	446	625	494	119	26	13	155	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	27	96	13	0	140	0	0	0	39	16	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	188	0	0	20	0	0	33
Total Hourly Volume [veh/h]	125	671	24	249	586	437	494	119	45	29	155	77
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	184	7	68	161	120	136	33	12	8	43	21
Total Analysis Volume [veh/h]	137	737	26	274	644	480	543	131	49	32	170	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	26	25	0	26	25	0	0	30	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	30	30	0	0	35	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	4.00	5.00	5.00	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.00	3.00	2.00	3.00	3.00	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	8	19	19	14	25	25	18	18	11	11
g / C, Green / Cycle	0.10	0.23	0.23	0.18	0.31	0.31	0.23	0.23	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.21	0.15	0.32	0.33	0.20	0.20	0.11	0.05
s, saturation flow rate [veh/h]	1781	1870	1848	1781	1870	1611	1781	1783	1855	1589
c, Capacity [veh/h]	172	436	430	314	585	504	404	404	246	211
d1, Uniform Delay [s]	35.38	29.64	29.64	32.09	27.52	27.52	30.05	30.04	33.79	31.81
k, delay calibration	0.04	0.12	0.12	0.04	0.42	0.44	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.12	6.53	6.61	2.95	39.12	50.67	2.88	2.87	2.58	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.88	0.88	0.87	1.02	1.05	0.90	0.90	0.82	0.40
d, Delay for Lane Group [s/veh]	38.50	36.17	36.25	35.04	66.64	78.19	32.93	32.92	36.36	32.27
Lane Group LOS	D	D	D	D	F	F	C	C	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.70	7.61	7.53	4.88	15.90	15.32	6.80	6.81	3.89	1.50
50th-Percentile Queue Length [ft/ln]	67.43	190.32	188.29	121.92	397.62	383.02	170.05	170.14	97.17	37.42
95th-Percentile Queue Length [veh/ln]	4.86	12.14	12.03	8.50	22.73	22.38	11.08	11.08	7.00	2.69
95th-Percentile Queue Length [ft/ln]	121.38	303.45	300.81	212.46	568.21	559.44	276.98	277.10	174.91	67.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.50	36.21	36.25	35.04	67.50	78.19	32.92	32.92	32.92	36.36	36.36	32.27
Movement LOS	D	D	D	D	E	E	C	C	C	D	D	C
d_A, Approach Delay [s/veh]	36.56			64.81			32.92			35.15		
Approach LOS	D			E			C			D		
d_I, Intersection Delay [s/veh]	47.58											
Intersection LOS	D											
Intersection V/C	0.896											

Emissions

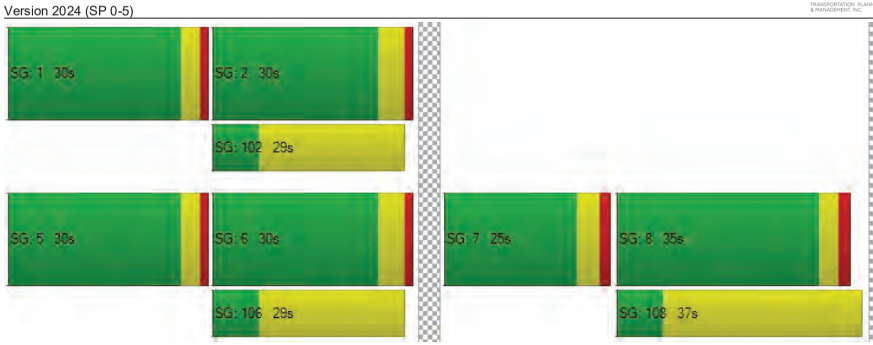
Vehicle Miles Traveled [mph]	79.12	221.64	219.01	191.17	416.02	368.20	27.19	27.20	22.34	9.40
Stops [stops/h]	121.52	342.99	339.33	219.72	716.57	690.25	306.45	306.62	175.12	67.44
Fuel consumption [US gal/h]	5.00	13.84	13.69	12.43	35.31	33.53	5.23	5.24	3.38	1.32
CO [g/h]	349.62	967.70	956.77	868.85	2468.35	2344.02	365.82	366.01	236.40	92.11
NOx [g/h]	68.02	188.28	186.15	169.05	480.25	456.06	71.18	71.21	46.00	17.92
VOC [g/h]	81.03	224.27	221.74	201.36	572.06	543.25	84.78	84.83	54.79	21.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.71	0.00	29.71	29.71
l_p,int, Pedestrian LOS Score for Intersectio	2.630	0.000	2.520	2.228
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	626	626	763	501
d_b, Bicycle Delay [s]	18.86	18.86	15.27	22.46
l_b,int, Bicycle LOS Score for Intersection	2.310	2.868	2.786	2.088
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	160.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	115	314	447	38	380	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	136	195	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	25
Total Hourly Volume [veh/h]	119	450	642	27	380	59
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	125	178	9	120	16
Total Analysis Volume [veh/h]	132	500	713	34	481	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	46	94	44	0	60	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	50	100	50	0	64	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Calculated Cycle Length [s]	57	57	57	57	57	57
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	25	25	12	12
g / C, Green / Cycle	0.10	0.61	0.45	0.45	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.38	0.02	0.16	0.16
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1730
c, Capacity [veh/h]	173	1148	836	710	374	364
d1, Uniform Delay [s]	25.08	5.79	14.08	8.90	21.04	21.04
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	0.37	3.65	0.04	2.90	2.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.44	0.85	0.05	0.74	0.74
d, Delay for Lane Group [s/veh]	27.72	6.16	17.73	8.94	23.93	24.02
Lane Group LOS	C	A	B	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.59	1.53	6.28	0.17	3.45	3.36
50th-Percentile Queue Length [ft/ln]	39.66	38.35	156.97	4.29	86.27	84.06
95th-Percentile Queue Length [veh/ln]	2.86	2.76	10.39	0.31	6.21	6.05
95th-Percentile Queue Length [ft/ln]	71.39	69.03	259.71	7.72	155.29	151.31

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.72	6.16	17.73	8.94	23.97	24.02
Movement LOS	C	A	B	A	C	C
d_A, Approach Delay [s/veh]	10.66		17.33		23.98	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.03					
Intersection LOS	B					
Intersection V/C	0.775					

Emissions

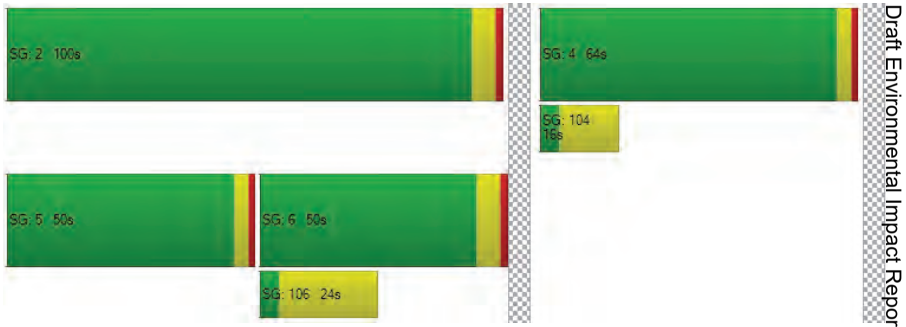
Vehicle Miles Traveled [mph]	16.29	61.69	411.77	19.64	65.16	63.32
Stops [stops/h]	100.50	97.17	397.75	10.86	218.61	213.01
Fuel consumption [US gal/h]	3.16	4.50	23.73	0.92	5.24	5.10
CO [g/h]	220.62	314.22	1659.07	64.34	366.36	356.58
NOx [g/h]	42.93	61.14	322.79	12.52	71.28	69.38
VOC [g/h]	51.13	72.82	384.51	14.91	84.91	82.64

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0		8.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	20.98		0.00		20.98	
l_p,int, Pedestrian LOS Score for Intersectio	2.775		0.000		2.199	
Crosswalk LOS	C		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	3308		1548		2112	
d_b, Bicycle Delay [s]	12.16		1.45		0.09	
l_b,int, Bicycle LOS Score for Intersection	2.602		2.810		2.503	
Bicycle LOS	B		C		B	

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	311	16	94	407	0	0	0	0	54	0	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	8	0	0	11	161	121	0	14	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	10	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	319	16	94	418	171	121	0	14	54	2	69
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	86	4	25	112	46	33	0	4	15	1	19
Total Analysis Volume [veh/h]	22	343	17	101	449	184	130	0	15	58	2	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Calculated Cycle Length [s]	50	50	50	50	50	50
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	19	4	22	6	6
g / C, Green / Cycle	0.03	0.38	0.08	0.43	0.12	0.11
(v / s)_i Volume / Saturation Flow Rate	0.01	0.22	0.06	0.40	0.09	0.09
s, saturation flow rate [veh/h]	1603	1669	1603	1601	1583	1504
c, Capacity [veh/h]	43	629	127	687	184	167
d1, Uniform Delay [s]	24.24	12.50	22.83	13.59	21.71	21.89
k, delay calibration	0.04	0.04	0.04	0.15	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.58	0.31	4.24	7.72	2.88	3.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.57	0.80	0.92	0.79	0.80
d, Delay for Lane Group [s/veh]	27.82	12.81	27.07	21.31	24.59	25.25
Lane Group LOS	C	B	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.26	2.21	1.10	5.62	1.66	1.56
50th-Percentile Queue Length [ft/ln]	6.40	55.22	27.59	140.53	41.48	39.00
95th-Percentile Queue Length [veh/ln]	0.46	3.98	1.99	9.51	2.99	2.81
95th-Percentile Queue Length [ft/ln]	11.53	99.39	49.67	237.74	74.67	70.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.82	12.81	12.81	27.07	21.31	21.31	24.59	24.59	24.59	25.25	25.25	25.25
Movement LOS	C	B	B	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	13.67			22.10			24.59			25.25		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	20.35											
Intersection LOS	C											
Intersection V/C	0.775											

Emissions

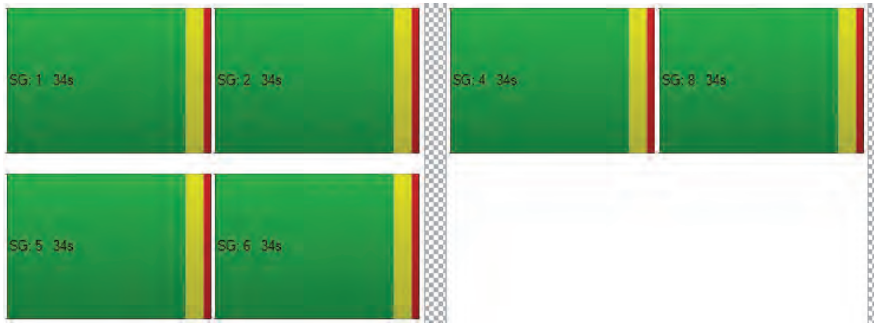
Vehicle Miles Traveled [mph]	7.46	122.08	10.25	64.22	7.89	113.13
Stops [stops/h]	18.32	158.01	78.96	402.13	118.71	111.60
Fuel consumption [US gal/h]	0.71	7.96	2.37	12.36	1.71	5.96
CO [g/h]	49.94	556.20	165.37	864.17	119.25	416.74
NOx [g/h]	9.72	108.22	32.18	168.14	23.20	81.08
VOC [g/h]	11.57	128.90	38.33	200.28	27.64	96.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1192	1192	1192	1192
d_b, Bicycle Delay [s]	4.10	4.10	4.10	4.10
l_b,int, Bicycle LOS Score for Intersection	2.190	2.771	1.799	1.781
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Roundabout	Delay (sec / veh):	17.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	101	470	168	48	1	692	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	39	0	0	0	27
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	101	470	207	48	1	692	212
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	134	59	14	0	197	60
Total Analysis Volume [veh/h]	0	115	534	235	55	1	786	241
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1		1		
Circulating Flow Rate [veh/h]	241			803		117		
Exiting Flow Rate [veh/h]	858			363		785		
Demand Flow Rate [veh/h]	0	101	470	207	48	1	692	212
Adjusted Demand Flow Rate [veh/h]	0	115	534	235	55	1	786	241

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98
Entry Flow Rate [veh/h]	662	296	1049
Capacity of Entry and Bypass Lanes [veh/h]	1080	609	1225
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1059	597	1201
X, volume / capacity	0.61	0.49	0.86

Movement, Approach, & Intersection Results

Lane LOS	B	B	C
95th-Percentile Queue Length [veh]	4.38	2.65	11.62
95th-Percentile Queue Length [ft]	109.52	66.35	290.56
Approach Delay [s/veh]	11.70	14.04	21.87
Approach LOS	B	B	C
Intersection Delay [s/veh]	17.36		
Intersection LOS	C		

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Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	107.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.950

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	138	0	25	7	1	21	5	408	85	66	397	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	27	0	0	0	0	0	0	0	39	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	165	0	25	7	1	21	5	408	124	66	397	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	0	7	2	0	5	1	105	32	18	102	3
Total Analysis Volume [veh/h]	170	0	27	7	1	22	5	421	128	71	409	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.95	0.00	0.05	0.04	0.01	0.03	0.00	0.00	0.00	0.07	0.00	0.00
d_M, Delay for Movement [s/veh]	107.37	22.57	11.49	25.71	24.50	11.44	8.17	0.00	0.00	8.79	0.00	0.00
Movement LOS	F	C	B	D	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	7.45	0.15	0.15	0.25	0.25	0.25	0.01	0.00	0.00	0.22	0.00	0.00
95th-Percentile Queue Length [ft/ln]	186.19	3.64	3.64	6.34	6.34	6.34	0.33	0.00	0.00	5.60	0.00	0.00
d_A, Approach Delay [s/veh]	94.23			15.21			0.07			1.27		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	15.47											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	57.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	350.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	57	61	268	230	100	36	33	574	121	234	562	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	0	0	8	6	13	0	13	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	83	0	0	13	0	0	36	0	0	47
Total Hourly Volume [veh/h]	57	61	194	230	100	31	39	587	85	247	580	111
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	16	50	59	26	8	10	151	22	64	149	29
Total Analysis Volume [veh/h]	59	63	200	237	103	32	40	605	88	255	598	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	124	124	124	124	124	124	124	124	124
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	22	22	19	19	4	45	20	60	60
g / C, Green / Cycle	0.18	0.18	0.16	0.16	0.03	0.36	0.16	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.13	0.08	0.02	0.38	0.14	0.32	0.07
s, saturation flow rate [veh/h]	1781	1649	1781	1795	1781	1829	1781	1870	1589
c, Capacity [veh/h]	323	299	281	283	54	664	283	909	772
d1, Uniform Delay [s]	42.94	49.40	50.72	47.55	59.60	39.48	51.17	24.08	17.65
k, delay calibration	0.13	0.16	0.13	0.13	0.04	0.48	0.20	0.36	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	11.38	8.35	1.55	7.04	46.11	16.51	2.72	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.88	0.84	0.48	0.74	1.04	0.90	0.66	0.15
d, Delay for Lane Group [s/veh]	43.28	60.78	59.07	49.10	66.64	85.59	67.68	26.80	17.76
Lane Group LOS	D	E	E	D	E	F	E	C	B
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.57	8.85	7.78	3.93	1.35	28.29	9.05	13.67	1.84
50th-Percentile Queue Length [ft/ln]	39.28	221.24	194.50	98.22	33.80	707.36	226.16	341.77	45.95
95th-Percentile Queue Length [veh/ln]	2.83	13.73	12.35	7.07	2.43	38.17	13.98	19.73	3.31
95th-Percentile Queue Length [ft/ln]	70.71	343.21	308.86	176.79	60.83	954.13	349.47	493.37	82.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.28	60.78	60.78	59.07	49.10	49.10	66.64	85.59	85.59	67.68	26.80	17.76
Movement LOS	D	E	E	E	D	D	E	F	F	E	C	B
d_A, Approach Delay [s/veh]	57.57			55.45			84.56			36.51		
Approach LOS	E			E			F			D		
d_I, Intersection Delay [s/veh]	57.00											
Intersection LOS	E											
Intersection V/C	0.936											

Emissions

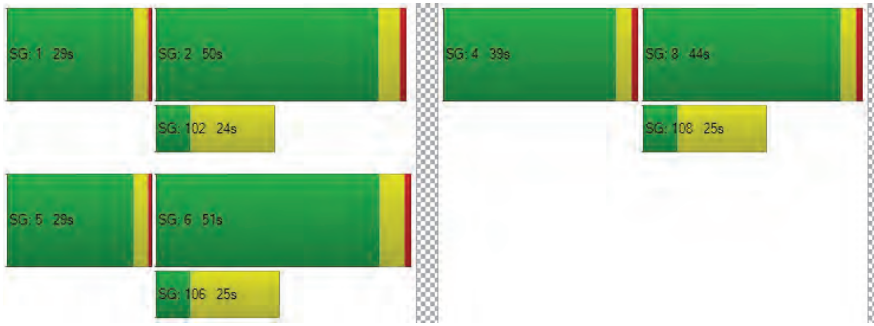
Vehicle Miles Traveled [mph]	101.52	452.53	48.05	27.37	14.01	242.66	115.06	269.83	51.44
Stops [stops/h]	45.72	257.48	226.35	114.30	39.33	823.22	263.20	397.75	53.48
Fuel consumption [US gal/h]	4.95	23.30	6.08	3.11	1.34	26.61	9.70	16.57	2.83
CO [g/h]	346.09	1628.96	424.79	217.18	93.41	1859.82	678.19	1158.02	197.47
NOx [g/h]	67.34	316.94	82.65	42.26	18.17	361.85	131.95	225.31	38.42
VOC [g/h]	80.21	377.53	98.45	50.33	21.65	431.03	157.18	268.38	45.77

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.36	51.36	51.36	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.362	2.185	2.485	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	562	643	723	727
d_b, Bicycle Delay [s]	31.96	28.47	25.24	25.05
l_b,int, Bicycle LOS Score for Intersection	2.228	2.195	2.828	3.233
Bicycle LOS	B	B	C	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	474	537	190	29
2	460	521	184	28
3	450	510	181	28
4	422	478	169	26
5	374	424	150	23
6	370	419	148	23
7	365	413	146	22
8	332	376	133	20
9	327	371	131	20
10	322	365	129	20
11	280	317	112	17
12	261	295	105	16
13	256	290	103	16
14	190	215	76	12
15	190	215	76	12
16	133	150	53	8
17	76	86	30	5
18	76	86	30	5
19	43	48	17	3
20	24	27	10	1
21	14	16	6	1
22	5	5	2	0
23	5	5	2	0
24	5	5	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1011	2	190	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2	2	981	2	184	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
3	2	960	2	181	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
4	2	900	2	169	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
5	2	798	2	150	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
6	2	789	2	148	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
7	2	778	2	146	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
8	2	708	2	133	No	No	No	Yes	No	No	Yes	Yes	No	No
9	2	698	2	131	No	No	No	Yes	No	No	Yes	Yes	No	No
10	2	687	2	129	No	No	No	Yes	No	No	Yes	Yes	No	No
11	2	597	2	112	No	No	No	Yes	No	No	No	Yes	No	No
12	2	556	2	105	No	No	No	No	No	No	No	Yes	No	No
13	2	546	2	103	No	No	No	No	No	No	No	Yes	No	No
14	2	405	2	76	No	No	No	No	No	No	No	No	No	No
15	2	405	2	76	No	No	No	No	No	No	No	No	No	No
16	2	283	2	53	No	No	No	No	No	No	No	No	No	No
17	2	162	2	30	No	No	No	No	No	No	No	No	No	No
18	2	162	2	30	No	No	No	No	No	No	No	No	No	No
19	2	91	2	17	No	No	No	No	No	No	No	No	No	No
20	2	51	2	10	No	No	No	No	No	No	No	No	No	No
21	2	30	2	6	No	No	No	No	No	No	No	No	No	No
22	2	10	2	2	No	No	No	No	No	No	No	No	No	No
23	2	10	2	2	No	No	No	No	No	No	No	No	No	No
24	2	10	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	4	7	10	13	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	94.2	15.2
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	4:58	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	190	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1230	1230
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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EPAP AM no Project

Vistro File: C:\...\AM 918 DU 20240213.vistro Scenario 2 2033 AM with CCSP, No Project
Report File: C:\...\7 2033 AM no Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.156	177.9	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.396	162.8	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.106	92.6	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	1.040	32.3	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.969	39.4	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.773	44.3	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	1.094	84.0	F
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.822	13.7	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Thru	1.040	90.2	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.753	12.2	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Right	0.090	14.1	B
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.049	25.9	D
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	2.315	1,336.5	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	1.712	203.9	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.218	13.7	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.192	15.1	C
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.108	8.0	A
	White Rock Rd/Carson		HCM 7th				

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18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.381	34.5	D
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.585	29.2	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.625	40.1	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	1.314	252.3	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.857	35.7	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.686	21.7	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	1.021	69.7	E
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.007	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.010	13.8	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.142	20.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	177.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.156

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	232	792	301	70	1655	46	23	14	260	467	64	111
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	3	0	0	-6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	14	0	0	78	0	0	33
Total Hourly Volume [veh/h]	5	232	795	301	70	1649	32	23	14	182	467	64	78
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	67	228	86	20	474	9	7	4	52	134	18	22
Total Analysis Volume [veh/h]	5	267	914	346	80	1895	37	26	16	209	537	74	90
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	128	128	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	54	54	7	40	40	20	20	29	29
g / C, Green / Cycle	0.17	0.42	0.42	0.06	0.31	0.31	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.15	0.26	0.22	0.04	0.52	0.52	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1857	1781	1607	1781	1744
c, Capacity [veh/h]	299	1499	669	103	581	577	279	252	405	396
d1, Uniform Delay [s]	52.59	29.01	27.56	59.83	44.34	44.34	46.44	53.21	47.95	47.99
k, delay calibration	0.25	0.04	0.17	0.04	0.50	0.50	0.04	0.04	0.29	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.28	0.15	0.97	4.78	305.40	310.44	0.05	4.43	14.10	14.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.61	0.52	0.78	1.66	1.67	0.09	0.89	0.87	0.88
d, Delay for Lane Group [s/veh]	72.87	29.16	28.53	64.61	349.74	354.77	46.49	57.65	62.05	62.73
Lane Group LOS	E	C	C	E	F	F	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.07	10.53	7.73	2.65	67.03	67.38	0.72	7.43	12.48	12.34
50th-Percentile Queue Length [ft/ln]	251.84	263.13	193.24	66.36	1675.64	1684.57	18.05	185.75	311.90	308.49
95th-Percentile Queue Length [veh/ln]	15.28	15.85	12.29	4.78	103.07	103.76	1.30	11.90	18.27	18.10
95th-Percentile Queue Length [ft/ln]	381.96	396.15	307.23	119.44	2576.64	2594.06	32.50	297.51	456.72	452.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.87	72.87	29.16	28.53	64.61	352.21	354.77	46.49	57.65	57.65	62.28	62.73	62.73
Movement LOS	E	E	C	C	E	F	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	36.78				340.82			56.49			62.39		
Approach LOS	D				F			E			E		
d_I, Intersection Delay [s/veh]	177.93												
Intersection LOS	F												
Intersection V/C	1.156												

Emissions

Vehicle Miles Traveled [mph]	64.96	218.29	82.64	11.76	142.03	142.03	1.11	9.61	18.50	18.18
Stops [stops/h]	282.37	590.07	216.67	74.40	1878.78	1888.79	20.24	208.27	349.71	345.89
Fuel consumption [US gal/h]	9.77	20.24	7.54	2.38	96.97	98.08	0.40	4.19	7.16	7.10
CO [g/h]	682.96	1414.93	526.73	166.36	6777.86	6855.70	28.21	292.56	500.23	495.95
NOx [g/h]	132.88	275.29	102.48	32.37	1318.73	1333.87	5.49	56.92	97.33	96.49
VOC [g/h]	158.28	327.92	122.07	38.56	1570.83	1588.88	6.54	67.80	115.93	114.94

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	53.69	53.69	53.69
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.240	2.303	2.386
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	628	628	545	545
d_b, Bicycle Delay [s]	30.24	30.24	33.98	33.98
l_b,int, Bicycle LOS Score for Intersection	2.819	3.231	2.102	2.771
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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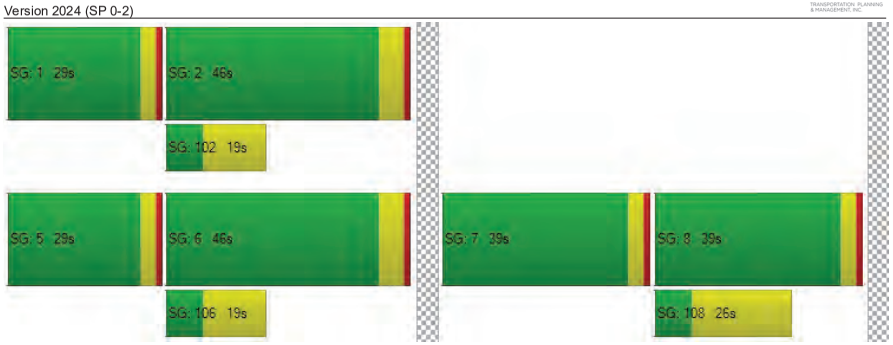

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	162.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.396

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	413	988	150	1	218	1727	441	150	61	708	33	34	191
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	3	0	0	0	-6	0	0	0	-3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	132	0	0	212	0	0	57
Total Hourly Volume [veh/h]	1	415	991	105	1	218	1721	309	150	61	493	33	34	134
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	112	266	28	0	59	463	83	40	16	133	9	9	36
Total Analysis Volume [veh/h]	1	446	1066	113	1	234	1851	332	161	66	530	35	37	144
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	5	3	8	1
Auxiliary Signal Groups														1,8
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	20	0	20	20
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	1.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	2.0	0.0	2.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	24	0	24	24
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	4	0	5	4
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	123	123	123	123	123	123	123	123	123	123	123
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	52	52	18	50	50	20	20	20	16	16
g / C, Green / Cycle	0.16	0.42	0.42	0.15	0.41	0.41	0.16	0.16	0.16	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.25	0.22	0.22	0.13	0.52	0.21	0.06	0.06	0.33	0.02	0.11
s, saturation flow rate [veh/h]	1781	3560	1780	1781	3560	1589	1781	1831	1589	1781	1640
c, Capacity [veh/h]	289	1497	748	262	1443	644	289	297	258	226	208
d1, Uniform Delay [s]	51.67	26.58	26.59	51.67	36.67	27.56	46.20	46.18	51.67	47.97	52.86
k, delay calibration	0.50	0.13	0.14	0.26	0.20	0.13	0.04	0.04	0.50	0.04	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	262.99	0.35	0.72	21.30	129.30	0.77	0.32	0.31	488.51	0.12	14.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.53	0.53	0.90	1.28	0.52	0.39	0.39	2.06	0.16	0.87
d, Delay for Lane Group [s/veh]	314.66	26.93	27.31	72.97	165.97	28.33	46.52	46.48	540.17	48.09	66.92
Lane Group LOS	F	C	C	E	F	C	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	29.76	8.27	8.35	8.49	46.30	7.18	3.12	3.18	42.91	0.97	6.31
50th-Percentile Queue Length [ft/ln]	743.92	206.74	208.79	212.35	1157.41	179.55	78.02	79.48	1072.85	24.31	157.79
95th-Percentile Queue Length [veh/ln]	46.05	12.99	13.09	13.27	67.48	11.58	5.62	5.72	67.64	1.75	10.43
95th-Percentile Queue Length [ft/ln]	1151.15	324.64	327.28	331.84	1686.89	289.42	140.43	143.06	1691.09	43.76	260.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	314.6	314.6	27.03	27.31	72.97	72.97	165.9	28.33	46.52	46.48	540.17	48.09	66.92	66.92
Movement LOS	F	F	C	C	E	E	F	C	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	106.12				138.03				392.14			63.87		
Approach LOS	F				F				F			E		
d_I, Intersection Delay [s/veh]	162.84													
Intersection LOS	F													
Intersection V/C	1.396													

Emissions

Vehicle Miles Traveled [mph]	84.12	147.91	73.98	56.13	442.08	79.29	7.01	7.15	33.05	1.71	8.83
Stops [stops/h]	869.09	483.05	243.92	248.08	2704.33	209.76	91.14	92.85	1253.38	28.40	184.34
Fuel consumption [US gal/h]	42.31	15.38	7.75	8.50	111.28	7.24	1.86	1.89	66.53	0.57	3.85
CO [g/h]	2957.17	1075.22	541.92	593.99	7778.60	506.06	129.74	132.19	4650.55	39.82	268.87
NOx [g/h]	575.36	209.20	105.44	115.57	1513.43	98.46	25.24	25.72	904.83	7.75	52.31
VOC [g/h]	685.35	249.19	125.60	137.66	1802.77	117.28	30.07	30.64	1077.81	9.23	62.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.12	51.12	51.12
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.628	2.915	2.274
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	816	816	325	325
d_b, Bicycle Delay [s]	21.59	21.59	43.25	43.25
l_b,int, Bicycle LOS Score for Intersection	2.478	3.470	3.158	2.010
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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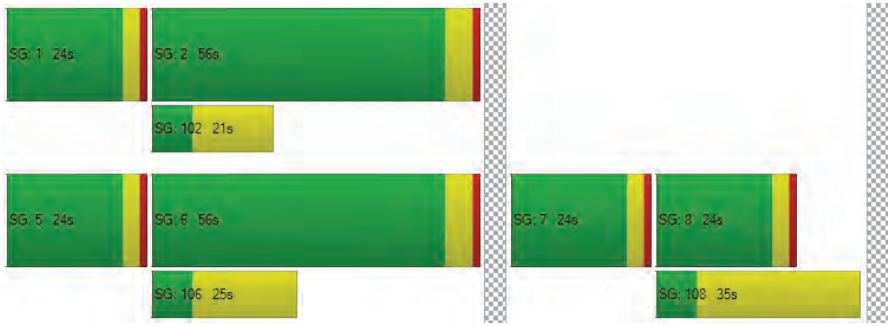

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	92.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.106

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1417	1188	141	3	69	1353	1044	256	92	816	171	99	105
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	5	2	0	0	-9	0	0	0	-4	-2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	43	0	0	0	313	0	0	244	0	0	32
Total Hourly Volume [veh/h]	1	1421	1193	100	3	69	1344	731	256	92	568	169	99	73
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	355	298	25	1	17	336	183	64	23	142	42	25	18
Total Analysis Volume [veh/h]	1	1421	1193	100	3	69	1344	731	256	92	568	169	99	73
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	71	71	8	41	73	27	27	11	11	11
g / C, Green / Cycle	0.28	0.52	0.52	0.06	0.30	0.53	0.20	0.20	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.41	0.24	0.25	0.04	0.26	0.46	0.10	0.10	0.06	0.06	0.07
s, saturation flow rate [veh/h]	3459	3560	1798	1781	5094	1589	1781	1826	1781	1827	1674
c, Capacity [veh/h]	951	1845	932	99	1520	847	351	360	145	149	137
d1, Uniform Delay [s]	36.83	4.98	5.00	63.24	45.46	27.44	48.51	48.50	61.30	61.25	61.40
k, delay calibration	0.22	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	225.32	0.83	1.73	3.85	7.85	11.28	0.79	0.76	3.56	3.32	4.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.50	0.46	0.47	0.73	0.88	0.86	0.49	0.49	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	262.15	5.81	6.73	67.09	53.31	38.72	49.30	49.26	64.86	64.57	65.64
Lane Group LOS	F	A	A	E	D	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	43.51	2.18	2.50	2.52	15.06	21.70	5.30	5.42	4.04	4.09	3.92
50th-Percentile Queue Length [ft/ln]	1087.72	54.59	62.53	62.90	376.51	542.39	132.54	135.57	100.90	102.14	97.96
95th-Percentile Queue Length [veh/ln]	66.39	3.93	4.50	4.53	21.42	29.33	9.08	9.24	7.26	7.35	7.05
95th-Percentile Queue Length [ft/ln]	1659.82	98.26	112.56	113.23	535.62	733.37	226.94	231.05	181.61	183.85	176.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	262.1	262.1	6.07	6.73	67.09	67.09	53.31	38.72	49.29	49.26	0.00	64.77	64.98	65.64
Movement LOS	F	F	A	A	E	E	D	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	140.22				48.81				18.72			65.01		
Approach LOS	F				D				B			E		
d_I, Intersection Delay [s/veh]	92.63													
Intersection LOS	F													
Intersection V/C	1.106													

Emissions

Vehicle Miles Traveled [mph]	243.54	145.71	75.74	13.55	252.93	137.57	7.95	8.14	3.64	3.69	3.51
Stops [stops/h]	2303.42	115.60	66.21	66.60	1195.97	574.30	140.33	143.55	106.83	108.15	103.73
Fuel consumption [US gal/h]	98.60	7.64	4.09	2.28	38.12	17.62	2.83	2.89	2.25	2.28	2.19
CO [g/h]	6891.80	534.22	285.88	159.05	2664.57	1231.36	197.67	202.20	157.32	159.11	153.15
NOx [g/h]	1340.89	103.94	55.62	30.95	518.43	239.58	38.46	39.34	30.61	30.96	29.80
VOC [g/h]	1597.24	123.81	66.26	36.86	617.54	285.38	45.81	46.86	36.46	36.88	35.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.361
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	576	337	241
d_b, Bicycle Delay [s]	20.02	34.45	47.03	52.59
I_b,int, Bicycle LOS Score for Intersection	3.076	2.875	2.134	1.867
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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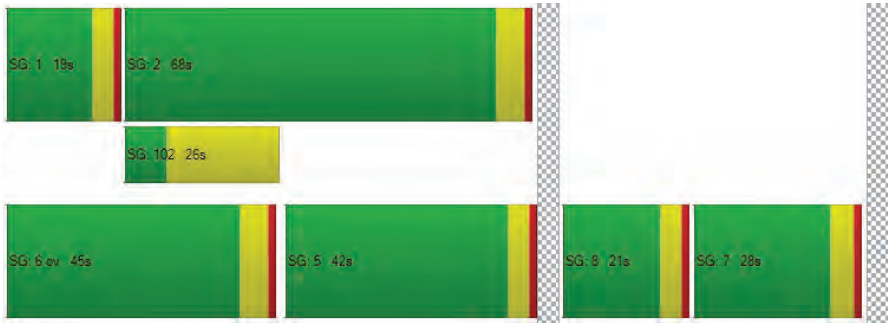

Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.040

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

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Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2219	463	0	520	1821	0	0	0	1266	0	0	528
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	2	0	0	-15	0	0	0	-13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	140	0	0	0	0	0	0	376	0	0	158
Total Hourly Volume [veh/h]	0	2230	325	0	520	1806	0	0	0	877	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	664	97	0	155	538	0	0	0	261	0	0	110
Total Analysis Volume [veh/h]	0	2655	387	0	619	2150	0	0	0	1044	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	25	35	22	
g / C, Green / Cycle	0.47	0.47	0.37	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.45	0.44	0.35	0.32	0.37	
s, saturation flow rate [veh/h]	5094	1716	1781	6792	2813	
c, Capacity [veh/h]	2395	807	661	3476	927	
d1, Uniform Delay [s]	17.29	17.15	20.61	11.86	22.80	
k, delay calibration	0.50	0.50	0.14	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	10.24	20.49	8.51	0.84	58.28	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.95	0.94	0.94	0.62	1.13	
d, Delay for Lane Group [s/veh]	27.53	37.64	29.13	12.69	81.08	
Lane Group LOS	C	D	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	11.12	13.37	9.47	4.65	14.26	
50th-Percentile Queue Length [ft/ln]	278.01	334.16	236.75	116.27	356.53	
95th-Percentile Queue Length [veh/ln]	16.59	19.36	14.52	8.19	21.95	
95th-Percentile Queue Length [ft/ln]	414.73	484.05	362.92	204.69	548.68	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	28.95	37.64	29.13	29.13	12.69	0.00	0.00	0.00	81.08	0.00	0.00	0.00
Movement LOS		C	D	C	C	B				F			
d_A, Approach Delay [s/veh]	30.06			16.37			81.08				0.00		
Approach LOS	C			B			F				A		
d_I, Intersection Delay [s/veh]	32.30												
Intersection LOS	C												
Intersection V/C	1.040												

Emissions

Vehicle Miles Traveled [mph]	330.13	110.04	106.02	368.23	74.71	
Stops [stops/h]	1766.17	707.62	501.35	984.89	1510.00	
Fuel consumption [US gal/h]	46.06	18.39	13.54	30.42	28.64	
CO [g/h]	3219.50	1285.79	946.20	2126.52	2002.06	
NOx [g/h]	626.40	250.17	184.10	413.74	389.53	
VOC [g/h]	746.15	297.99	219.29	492.84	464.00	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.258
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.872	2.446	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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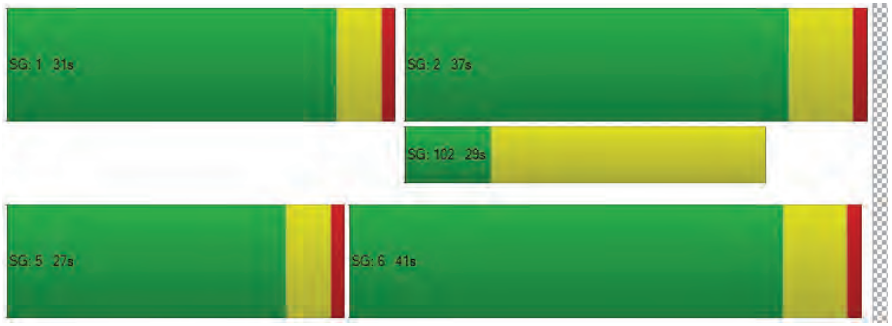

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.969

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

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Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	68	1965	251	4	537	2174	372	156	9	24	1	72	32	557
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	13	1	0	0	-28	0	0	0	0	0	-2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	76	0	0	0	112	0	0	7	0	0	0	167
Total Hourly Volume [veh/h]	1	69	1978	176	4	537	2146	260	156	9	17	1	70	32	390
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	18	505	45	1	137	547	66	40	2	4	0	18	8	99
Total Analysis Volume [veh/h]	1	70	2018	180	4	548	2190	265	159	9	17	1	71	33	398
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	49	49	15	60	60	7	7	7	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.15	0.59	0.59	0.07	0.07	0.07	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.44	0.13	0.18	0.48	0.19	0.05	0.01	0.01	0.04	0.15	0.15
s, saturation flow rate [veh/h]	3113	4584	1431	3113	4584	1431	3113	1683	1431	1603	1464	1431
c, Capacity [veh/h]	120	2191	684	455	2686	838	228	124	105	235	214	209
d1, Uniform Delay [s]	48.50	24.96	15.98	43.76	16.84	10.79	46.38	44.25	44.54	39.12	43.76	43.76
k, delay calibration	0.04	0.04	0.04	0.09	0.04	0.04	0.08	0.08	0.08	0.08	0.44	0.44
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.75	0.75	0.08	99.22	0.24	0.08	2.83	0.18	0.53	0.54	62.16	62.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.92	0.26	1.21	0.82	0.32	0.70	0.07	0.16	0.31	1.02	1.02
d, Delay for Lane Group [s/veh]	50.25	25.71	16.06	142.98	17.07	10.87	49.22	44.43	45.07	39.66	105.92	106.60
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.92	14.53	2.48	11.98	12.46	2.90	2.06	0.22	0.42	1.65	9.06	8.90
50th-Percentile Queue Length [ft/ln]	22.96	363.26	61.95	299.50	311.52	72.61	51.43	5.47	10.49	41.19	226.58	222.41
95th-Percentile Queue Length [veh/ln]	1.65	20.78	4.46	19.14	18.25	5.23	3.70	0.39	0.75	2.97	14.11	13.90
95th-Percentile Queue Length [ft/ln]	41.32	519.55	111.52	478.53	456.25	130.71	92.57	9.84	18.87	74.15	352.85	347.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.25	50.25	25.71	16.06	142.9	142.9	17.07	10.87	49.22	44.43	45.07	39.66	39.66	105.9	106.2
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	25.71				39.64				48.60			96.73			
Approach LOS	C				D				D			F			
d_I, Intersection Delay [s/veh]	39.43														
Intersection LOS	D														
Intersection V/C	0.969														

Emissions

Vehicle Miles Traveled [mph]	15.85	450.37	40.17	79.87	316.89	38.34	20.28	1.15	2.17	25.27	76.50	74.77
Stops [stops/h]	64.58	1532.90	87.15	842.57	1314.56	102.14	144.68	7.69	14.75	57.94	318.70	312.85
Fuel consumption [US gal/h]	1.74	37.57	2.72	24.00	27.92	2.73	3.23	0.17	0.33	1.94	9.61	9.43
CO [g/h]	121.28	2625.97	190.37	1677.70	1951.47	190.77	225.54	11.96	22.83	135.71	671.59	658.94
NOx [g/h]	23.60	510.92	37.04	326.42	379.68	37.12	43.88	2.33	4.44	26.40	130.67	128.21
VOC [g/h]	28.11	608.59	44.12	388.82	452.27	44.21	52.27	2.77	5.29	31.45	155.65	152.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.78	0.00	40.78	40.78
l_p,int, Pedestrian LOS Score for Intersectio	3.465	0.000	2.578	2.833
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	987	987	400	303
d_b, Bicycle Delay [s]	13.14	13.14	32.74	36.86
l_b,int, Bicycle LOS Score for Intersection	2.849	2.974	1.718	2.548
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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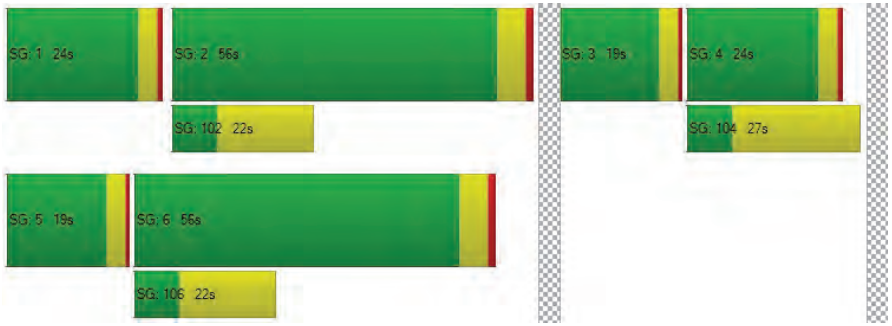

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	121	1681	388	1	95	1737	444	2	355	391	78	425	318	248
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	16	4	0	0	-30	0	0	0	0	0	-7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	118	0	0	0	133	0	0	0	23	0	0	74
Total Hourly Volume [veh/h]	2	121	1697	274	1	95	1707	311	2	355	391	55	418	318	174
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	451	73	0	25	454	83	1	94	104	15	111	85	46
Total Analysis Volume [veh/h]	2	129	1805	291	1	101	1816	331	2	378	416	59	445	338	185
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	13	82	82	10	79	79	20	23	23	20	23	23
g / C, Green / Cycle	0.09	0.52	0.52	0.06	0.50	0.50	0.12	0.14	0.14	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.18	0.03	0.36	0.21	0.11	0.13	0.13	0.13	0.10	0.12
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1775	3431	3532	1577
c, Capacity [veh/h]	151	3520	824	218	2529	789	427	267	255	437	518	231
d1, Uniform Delay [s]	70.87	24.45	21.95	70.93	30.58	24.80	67.65	66.21	66.22	68.50	63.22	64.77
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.04	0.23	0.23	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.03	0.54	1.19	0.58	1.79	1.64	2.57	20.82	21.61	17.05	0.52	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.51	0.35	0.47	0.72	0.42	0.89	0.91	0.91	1.02	0.65	0.80
d, Delay for Lane Group [s/veh]	90.91	24.99	23.14	71.51	32.37	26.43	70.22	87.03	87.83	85.55	63.74	67.21
Lane Group LOS	F	C	C	E	C	C	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.08	11.17	6.66	1.98	17.63	7.99	7.69	11.16	10.75	9.84	6.46	7.35
50th-Percentile Queue Length [ft/ln]	151.91	279.32	166.62	49.43	440.65	199.70	192.37	279.09	268.70	246.06	161.38	183.85
95th-Percentile Queue Length [veh/ln]	10.12	16.65	10.90	3.56	24.51	12.62	12.24	16.64	16.12	15.11	10.62	11.80
95th-Percentile Queue Length [ft/ln]	252.98	416.37	272.46	88.98	612.79	315.58	306.10	416.08	403.12	377.70	265.55	295.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.91	90.91	24.99	23.14	71.51	71.51	32.37	26.43	70.22	70.22	87.36	87.83	85.55	63.74	67.21
Movement LOS	F	F	C	C	E	E	C	C	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	28.62				33.27				79.78				74.43		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	44.26														
Intersection LOS	D														
Intersection V/C	0.773														

Emissions

Vehicle Miles Traveled [mph]	52.16	718.63	115.86	22.76	405.29	73.87	94.70	60.47	57.91	46.65	35.44	19.40
Stops [stops/h]	139.33	1024.78	152.82	90.68	1212.50	183.17	352.88	255.98	246.45	451.37	296.03	168.62
Fuel consumption [US gal/h]	5.34	44.42	6.98	3.39	40.93	6.59	11.28	8.20	7.90	12.16	7.48	4.26
CO [g/h]	373.26	3105.11	488.17	237.09	2861.01	460.65	788.30	573.16	552.08	849.98	522.72	297.77
NOx [g/h]	72.62	604.14	94.98	46.13	556.65	89.62	153.37	111.52	107.41	165.37	101.70	57.94
VOC [g/h]	86.51	719.64	113.14	54.95	663.07	106.76	182.70	132.84	127.95	196.99	121.15	69.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.551	3.888	2.806	3.000
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.526	2.814	1.972	2.419
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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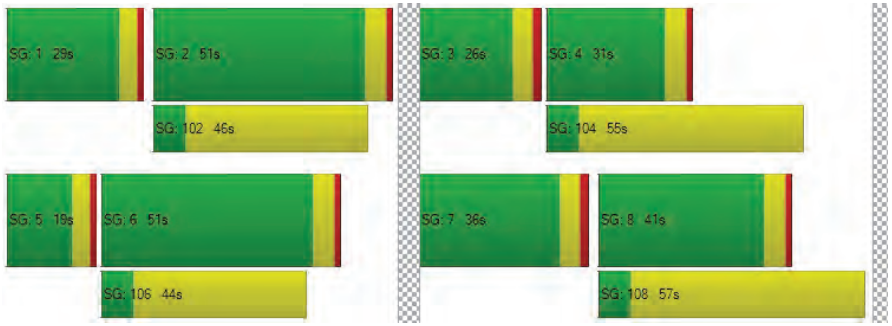

Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	84.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.094

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	57	1777	2	2	18	1704	532	257	5	15	4	9	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	0	0	0	-38	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	50	0	0	5	0	0	5
Total Hourly Volume [veh/h]	1	57	1797	2	2	18	1666	482	257	5	10	4	9	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	16	516	1	1	5	479	139	74	1	3	1	3	3
Total Analysis Volume [veh/h]	1	66	2066	2	2	21	1915	554	295	6	11	5	10	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	73	73	73	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	43	43	1	40	40	9	9	2
g / C, Green / Cycle	0.05	0.59	0.59	0.02	0.55	0.55	0.12	0.12	0.03
(v / s)_i Volume / Saturation Flow Rate	0.04	0.55	0.55	0.01	0.66	0.71	0.09	0.09	0.02
s, saturation flow rate [veh/h]	1781	1870	1869	1781	1870	1733	1781	1769	1725
c, Capacity [veh/h]	92	1093	1093	29	1026	951	219	217	51
d1, Uniform Delay [s]	34.04	14.08	14.08	35.73	16.44	16.44	30.75	30.75	34.86
k, delay calibration	0.04	0.44	0.44	0.04	0.50	0.50	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.98	15.55	15.61	16.03	100.65	141.88	4.33	4.37	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.95	0.95	0.79	1.20	1.30	0.72	0.72	0.51
d, Delay for Lane Group [s/veh]	38.02	29.63	29.69	51.76	117.09	158.32	35.08	35.12	37.79
Lane Group LOS	D	C	C	D	F	F	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.24	17.41	17.43	0.50	40.23	48.17	2.81	2.80	0.48
50th-Percentile Queue Length [ft/ln]	30.89	435.24	435.75	12.48	1005.85	1204.31	70.26	69.91	12.08
95th-Percentile Queue Length [veh/ln]	2.22	24.25	24.28	0.90	58.08	71.55	5.06	5.03	0.87
95th-Percentile Queue Length [ft/ln]	55.59	606.32	606.92	22.46	1451.88	1788.78	126.47	125.84	21.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.02	38.02	29.66	29.69	51.76	51.76	131.7	158.3	35.10	35.12	35.12	37.79	37.79	37.79
Movement LOS	D	D	C	C	D	D	F	F	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	29.92				136.91				35.10			37.79		
Approach LOS	C				F				D			D		
d_I, Intersection Delay [s/veh]	83.99													
Intersection LOS	F													
Intersection V/C	1.094													

Emissions

Vehicle Miles Traveled [mph]	23.71	365.89	365.89	9.16	491.49	491.49	37.68	37.46	0.49
Stops [stops/h]	61.15	861.72	862.72	24.71	1991.43	2384.36	139.11	138.42	23.92
Fuel consumption [US gal/h]	1.83	26.06	26.08	1.01	82.84	100.50	3.44	3.42	0.35
CO [g/h]	128.07	1821.43	1822.69	70.42	5790.78	7024.68	240.21	238.95	24.64
NOx [g/h]	24.92	354.38	354.63	13.70	1126.67	1366.75	46.74	46.49	4.79
VOC [g/h]	29.68	422.13	422.43	16.32	1342.07	1628.04	55.67	55.38	5.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.81	0.00	28.81	28.81
l_p,int, Pedestrian LOS Score for Intersectio	3.086	0.000	2.263	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	1100	550	550
d_b, Bicycle Delay [s]	7.37	7.37	19.12	19.12
l_b,int, Bicycle LOS Score for Intersection	3.320	3.639	2.083	1.611
Bicycle LOS	C	D	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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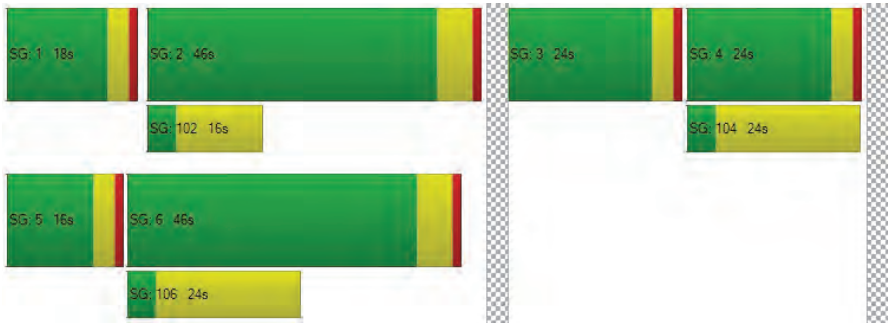

Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	92	1693	1327	397	153	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	-38	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	119	0	17
Total Hourly Volume [veh/h]	1	92	1713	1289	278	153	40
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	26	492	370	80	44	11
Total Analysis Volume [veh/h]	1	106	1969	1482	320	176	46
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5	47	38	38	9	9
g / C, Green / Cycle	0.08	0.72	0.58	0.58	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.06	0.55	0.48	0.51	0.10	0.03
s, saturation flow rate [veh/h]	1781	3560	1870	1760	1781	1589
c, Capacity [veh/h]	139	2548	1077	1014	234	209
d1, Uniform Delay [s]	29.53	5.91	11.32	12.03	27.35	25.38
k, delay calibration	0.04	0.15	0.30	0.33	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.34	0.73	4.85	8.15	4.84	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.77	0.84	0.89	0.75	0.22
d, Delay for Lane Group [s/veh]	32.87	6.65	16.18	20.17	32.18	25.91
Lane Group LOS	C	A	B	C	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.70	5.26	9.78	11.14	2.82	0.64
50th-Percentile Queue Length [ft/ln]	42.55	131.42	244.57	278.51	70.61	15.98
95th-Percentile Queue Length [veh/ln]	3.06	9.02	14.91	16.61	5.08	1.15
95th-Percentile Queue Length [ft/ln]	76.58	225.42	372.81	415.35	127.09	28.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.87	32.87	6.65	17.74	20.17	32.18	25.91
Movement LOS	C	C	A	B	C	C	C
d_A, Approach Delay [s/veh]	8.00			18.17		30.88	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	13.71						
Intersection LOS	B						
Intersection V/C	0.822						

Emissions

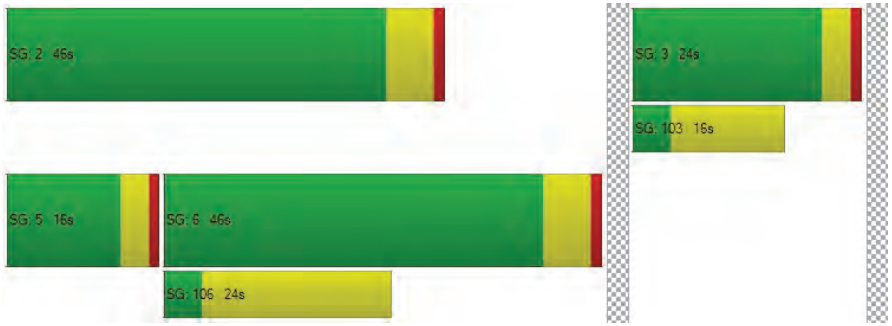
Vehicle Miles Traveled [mph]	74.65	1373.79	318.83	318.83	59.38	15.52
Stops [stops/h]	93.97	580.49	540.15	615.10	155.94	35.30
Fuel consumption [US gal/h]	4.31	62.43	19.08	20.22	4.46	1.08
CO [g/h]	301.14	4363.53	1333.39	1413.53	311.67	75.24
NOx [g/h]	58.59	848.98	259.43	275.02	60.64	14.64
VOC [g/h]	69.79	1011.29	309.03	327.60	72.23	17.44

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.09	0.00	25.09
l_p,int, Pedestrian LOS Score for Intersectio	2.992	0.000	2.206
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1227	1227	613
d_b, Bicycle Delay [s]	4.87	4.87	15.67
l_b,int, Bicycle LOS Score for Intersection	3.271	3.144	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	90.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.040

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

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Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	53	773	21	249	386	750	514	69	78	136	241	520
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	8	2	0	-15	-23	12	2	-5	-3	-4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	7	0	0	218	0	0	22	0	0	156
Total Hourly Volume [veh/h]	56	781	16	249	371	509	526	71	51	133	237	364
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	219	4	70	104	143	148	20	14	37	67	102
Total Analysis Volume [veh/h]	63	878	18	280	417	572	591	80	57	149	266	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	89	89	89	89	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	4	23	23	12	31	31	15	15	20	20
g / C, Green / Cycle	0.05	0.26	0.26	0.14	0.35	0.35	0.17	0.17	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.16	0.22	0.36	0.21	0.21	0.23	0.25
s, saturation flow rate [veh/h]	1781	1870	1857	1781	1870	1589	1781	1766	1829	1589
c, Capacity [veh/h]	83	484	481	241	650	552	301	298	412	358
d1, Uniform Delay [s]	41.83	32.10	32.10	38.40	24.33	28.97	36.90	36.90	34.40	34.40
k, delay calibration	0.04	0.27	0.27	0.50	0.22	0.50	0.50	0.50	0.41	0.47
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.16	17.20	17.29	109.22	2.19	47.85	122.84	123.96	50.48	78.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.93	0.93	1.16	0.64	1.04	1.21	1.22	1.04	1.11
d, Delay for Lane Group [s/veh]	46.99	49.29	49.38	147.62	26.53	76.82	159.74	160.86	84.88	112.52
Lane Group LOS	D	D	D	F	C	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.47	11.42	11.36	12.12	6.87	17.55	16.64	16.59	14.40	15.26
50th-Percentile Queue Length [ft/ln]	36.68	285.62	283.91	302.94	171.69	438.64	415.99	414.84	359.94	381.59
95th-Percentile Queue Length [veh/ln]	2.64	16.97	16.88	19.01	11.17	24.99	25.51	25.46	21.06	22.89
95th-Percentile Queue Length [ft/ln]	66.03	424.20	422.07	475.14	279.14	624.83	637.63	636.58	526.49	572.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.99	49.33	49.38	147.62	26.53	76.82	160.17	160.86	160.86	84.88	84.88	112.52
Movement LOS	D	D	D	F	C	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	49.18			75.91			160.29			98.17		
Approach LOS	D			E			F			F		
d_I, Intersection Delay [s/veh]	90.23											
Intersection LOS	F											
Intersection V/C	1.040											

Emissions

Vehicle Miles Traveled [mph]	36.38	259.65	257.81	195.36	290.94	399.09	27.47	27.30	47.30	43.84
Stops [stops/h]	59.50	463.26	460.48	491.35	278.47	711.45	674.71	672.84	583.80	618.91
Fuel consumption [US gal/h]	2.43	17.76	17.64	24.07	17.16	35.51	16.73	16.72	12.56	14.30
CO [g/h]	169.78	1241.25	1233.25	1682.59	1199.21	2481.90	1169.20	1168.46	877.78	999.46
NOx [g/h]	33.03	241.50	239.95	327.37	233.32	482.89	227.48	227.34	170.78	194.46
VOC [g/h]	39.35	287.67	285.82	389.96	277.93	575.20	270.97	270.80	203.43	231.63

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.07	0.00	34.07	34.07
l_p,int, Pedestrian LOS Score for Intersectio	2.623	0.000	2.578	2.605
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	556	349	451
d_b, Bicycle Delay [s]	23.13	23.13	30.24	26.64
l_b,int, Bicycle LOS Score for Intersection	2.357	2.786	2.797	3.177
Bicycle LOS	B	C	C	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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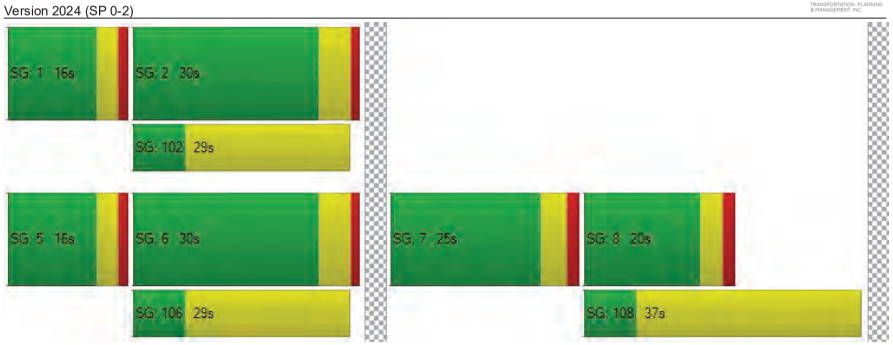

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	575	254	291	262	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-3	0	0	-23	13	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	575	254	268	275	90
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	160	71	74	76	25
Total Analysis Volume [veh/h]	132	639	282	298	306	100
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	19	11	11	9	9
g / C, Green / Cycle	0.10	0.50	0.29	0.29	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.07	0.34	0.15	0.19	0.17	0.06
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	178	935	550	467	420	375
d1, Uniform Delay [s]	16.55	7.19	11.11	11.61	13.34	11.79
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.26	1.27	1.06	2.06	2.43	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.68	0.51	0.64	0.73	0.27
d, Delay for Lane Group [s/veh]	18.81	8.46	12.17	13.68	15.77	12.16
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	1.52	1.29	1.51	2.18	0.59
50th-Percentile Queue Length [ft/ln]	22.09	37.97	32.13	37.72	54.46	14.66
95th-Percentile Queue Length [veh/ln]	1.59	2.73	2.31	2.72	3.92	1.06
95th-Percentile Queue Length [ft/ln]	39.76	68.34	57.83	67.89	98.03	26.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.81	8.46	12.17	13.68	15.77	12.16
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	10.24		12.94		14.88	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	12.20					
Intersection LOS	B					
Intersection V/C	0.753					

Emissions

Vehicle Miles Traveled [mph]	16.29	78.84	162.86	172.10	71.87	23.49
Stops [stops/h]	84.30	144.90	122.61	143.96	207.85	55.96
Fuel consumption [US gal/h]	2.62	6.43	8.42	9.26	5.09	1.52
CO [g/h]	182.85	449.43	588.83	647.31	355.71	106.50
NOx [g/h]	35.58	87.44	114.56	125.94	69.21	20.72
VOC [g/h]	42.38	104.16	136.47	150.02	82.44	24.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.71	0.00	11.71
l_p,int, Pedestrian LOS Score for Intersectio	2.583	0.000	2.168
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2120	2120	1060
d_b, Bicycle Delay [s]	0.07	0.07	4.17
l_b,int, Bicycle LOS Score for Intersection	2.832	2.517	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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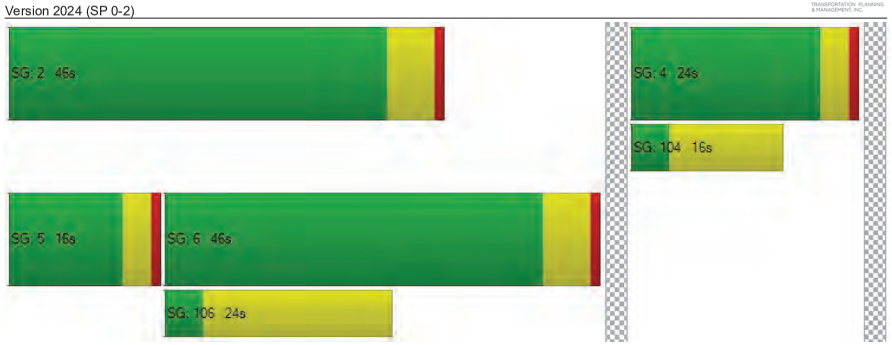

Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.090

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	328	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	0	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	655	0	14	330	0	0	0	0	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	178	0	4	90	0	0	0	0	0	0	10
Total Analysis Volume [veh/h]	0	712	0	14	359	0	0	0	0	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	8.00	0.00	0.00	9.07	0.00	0.00	26.92	22.28	10.25	25.16	23.11	14.15
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.30	0.30	0.30
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.59	0.59	0.59	0.00	0.00	0.00	7.39	7.39	7.39
d_A, Approach Delay [s/veh]	0.00			0.34			19.82			14.15		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.60											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	25.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.049

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	408	41	74	254	0	0	0	0	11	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	0	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	405	41	74	256	0	0	0	0	11	0	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	109	11	20	69	0	0	0	0	3	0	67
Total Analysis Volume [veh/h]	0	435	44	80	275	0	0	0	0	12	0	269
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.45
d_M, Delay for Movement [s/veh]	7.79	0.00	0.00	8.59	0.00	0.00	37.94	19.24	9.71	25.85	24.87	17.02
Movement LOS	A	A	A	A	A	A	E	C	A	D	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	2.73	2.73	2.73
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	5.97	0.00	0.00	0.00	0.00	0.00	68.30	68.30	68.30
d_A, Approach Delay [s/veh]	0.00			1.94			22.30			17.39		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	5.00											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	1,336.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.315

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	460	201	51	0	862	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	14	-5	-8	0	-26	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	18	474	196	43	0	836	185
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	131	54	12	0	231	51
Total Analysis Volume [veh/h]	0	20	523	216	47	0	923	204
Pedestrian Volume [ped/h]	0			0		0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	2.31	0.65	0.00	0.00	0.00	0.71	0.00
d_M, Delay for Movement [s/veh]	1336.45	1336.45	924.30	0.00	0.00	20.85	10.25	0.00
Movement LOS	F	F	F	A	A	C	B	A
95th-Percentile Queue Length [veh/ln]	49.16	49.16	49.16	0.00	0.00	3.44	3.44	3.44
95th-Percentile Queue Length [ft/ln]	1228.90	1228.90	1228.90	0.00	0.00	86.02	86.02	86.02
d_A, Approach Delay [s/veh]	939.48			0.00		8.40		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	268.80							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	203.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.712

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	9	149	80	2	30	779	37	11	17	0	240	45	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	-36	20	15	0	0	-26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	149	80	2	30	779	1	31	32	0	240	19	62
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	45	24	1	9	235	0	9	10	0	72	6	19
Total Analysis Volume [veh/h]	11	180	96	2	36	939	1	37	39	0	289	23	75
Pedestrian Volume [ped/h]	0			0				0			0		

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	543	978	453	530
Degree of Utilization, x	0.53	1.71	0.17	0.73

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.07	57.24	0.60	6.07
95th-Percentile Queue Length [ft]	76.74	1430.99	14.93	151.67
Approach Delay [s/veh]	16.82	344.09	12.54	26.03
Approach LOS	C	F	B	D
Intersection Delay [s/veh]	203.92			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.218

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	110	126	1	106	95	0	67	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-13	0	-1	0	0	7	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	113	1	105	95	0	74	129
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	30	0	28	25	0	19	34
Total Analysis Volume [veh/h]	116	119	1	111	100	0	78	136
Pedestrian Volume [ped/h]	0		0			0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.13	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	13.65	9.70	8.82	0.00	0.00	10.10	7.81	0.00
Movement LOS	B	A	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.82	0.46	0.00	0.00	0.00	0.18	0.18	0.00
95th-Percentile Queue Length [ft/ln]	20.61	11.61	0.05	0.05	0.05	4.56	4.56	0.00
d_A, Approach Delay [s/veh]	11.65		0.04			2.85		
Approach LOS	B		A			A		
d_I, Intersection Delay [s/veh]	5.08							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.192

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	83	80	145	57	121	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-13	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	80	132	57	121	102
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	22	36	15	33	28
Total Analysis Volume [veh/h]	90	87	143	62	132	111
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.10	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	15.06	11.34	0.00	0.00	7.92	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.19	1.19	0.00	0.00	0.32	0.00
95th-Percentile Queue Length [ft/ln]	29.78	29.78	0.00	0.00	8.00	0.00
d_A, Approach Delay [s/veh]	13.23		0.00		4.30	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.42					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.108

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	11	165	19	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	0	-13	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	10	11	152	19	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	3	3	41	5	5
Total Analysis Volume [veh/h]	80	11	12	165	21	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	723	748	690	764	764	732
Degree of Utilization, x	0.06	0.06	0.02	0.11	0.11	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.20	0.19	0.05	0.36	0.36	0.18
95th-Percentile Queue Length [ft]	5.03	4.85	1.33	9.05	9.05	4.44
Approach Delay [s/veh]	7.92		7.99			8.21
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	34.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.381

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	296	125	50	536	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	0	0	0	0	0	0	-13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	0	18	66	1	8	4	296	112	50	536	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	0	5	17	0	2	1	76	29	13	138	4
Total Analysis Volume [veh/h]	74	0	19	68	1	8	4	305	115	52	553	15
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Stop			Stop			Free			Free		
Flared Lane	No			No								
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance	No			No								
Number of Storage Spaces in Median	0			2			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.00	0.03	0.35	0.00	0.02	0.00	0.00	0.00	0.05	0.01	0.00
d_M, Delay for Movement [s/veh]	34.49	21.66	10.43	33.40	32.51	21.67	8.60	0.00	0.00	8.31	0.00	0.00
Movement LOS	D	C	B	D	D	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.66	0.09	0.09	1.61	1.61	1.61	0.01	0.00	0.00	0.14	0.00	0.00
95th-Percentile Queue Length [ft/ln]	41.54	2.15	2.15	40.18	40.18	40.18	0.30	0.00	0.00	3.58	0.00	0.00
d_A, Approach Delay [s/veh]	29.57			32.17			0.08			0.70		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	4.69											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd				
Approach	Northbound			Southbound			Eastbound			Westbound				
Lane Configuration														
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0	
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0	
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0	
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	
Speed [mph]	30.00			30.00			30.00			30.00				
Grade [%]	0.00			0.00			0.00			0.00				
Curb Present	No			No			No			No				
Crosswalk	Yes			Yes			Yes			No				

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Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	72	5	189	5	5	5	5	632	184	0	378	502	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	57	0	0	2	0	0	55	0	0	0	2
Total Hourly Volume [veh/h]	72	5	132	5	5	3	5	632	129	0	378	502	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	1	34	1	1	1	1	163	33	0	97	129	1
Total Analysis Volume [veh/h]	74	5	136	5	5	3	5	652	133	0	390	518	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	6	12	1	7	1	57	57	28	84	84
g / C, Green / Cycle	0.05	0.10	0.01	0.06	0.01	0.47	0.47	0.23	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.00	0.00	0.00	0.22	0.22	0.22	0.14	0.14
s, saturation flow rate [veh/h]	1781	1598	1781	1754	1781	1870	1762	1781	1870	1866
c, Capacity [veh/h]	96	165	12	99	12	885	834	415	1308	1305
d1, Uniform Delay [s]	56.04	52.90	59.33	53.65	59.34	21.23	21.24	45.20	6.30	6.30
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.83	4.72	19.50	0.13	19.95	1.69	1.81	8.64	0.34	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.85	0.40	0.08	0.40	0.46	0.46	0.94	0.20	0.20
d, Delay for Lane Group [s/veh]	60.87	57.61	78.83	53.78	79.29	22.92	23.05	53.84	6.65	6.65
Lane Group LOS	E	E	E	D	E	C	C	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	4.39	0.22	0.23	0.22	7.96	7.55	12.32	2.28	2.28
50th-Percentile Queue Length [ft/ln]	58.56	109.83	5.48	5.83	5.50	199.09	188.65	308.10	57.00	56.89
95th-Percentile Queue Length [veh/ln]	4.22	7.83	0.39	0.42	0.40	12.59	12.05	18.08	4.10	4.10
95th-Percentile Queue Length [ft/ln]	105.40	195.77	9.86	10.49	9.90	314.79	301.28	452.04	102.59	102.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.87	57.61	57.61	78.83	53.78	53.78	79.29	22.97	23.05	53.84	53.84	6.65	6.65
Movement LOS	E	E	E	E	D	D	E	C	C	D	D	A	A
d_A, Approach Delay [s/veh]	58.73			63.41			23.34			26.85			
Approach LOS	E			E			C			C			
d_I, Intersection Delay [s/veh]	29.21												
Intersection LOS	C												
Intersection V/C	0.585												

Emissions

Vehicle Miles Traveled [mph]	28.51	54.33	0.17	0.28	4.21	339.83	320.77	97.19	64.98	64.85
Stops [stops/h]	70.27	131.80	6.57	6.99	6.60	238.91	226.38	369.72	68.40	68.27
Fuel consumption [US gal/h]	2.48	4.62	0.12	0.14	0.29	17.19	16.24	10.32	3.41	3.40
CO [g/h]	173.25	322.77	8.65	9.62	20.30	1201.81	1135.42	721.11	238.07	237.59
NOx [g/h]	33.71	62.80	1.68	1.87	3.95	233.83	220.91	140.30	46.32	46.23
VOC [g/h]	40.15	74.80	2.00	2.23	4.70	278.53	263.15	167.12	55.18	55.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.313	1.967	2.673	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
I_b,int, Bicycle LOS Score for Intersection	2.008	1.584	2.257	1.991
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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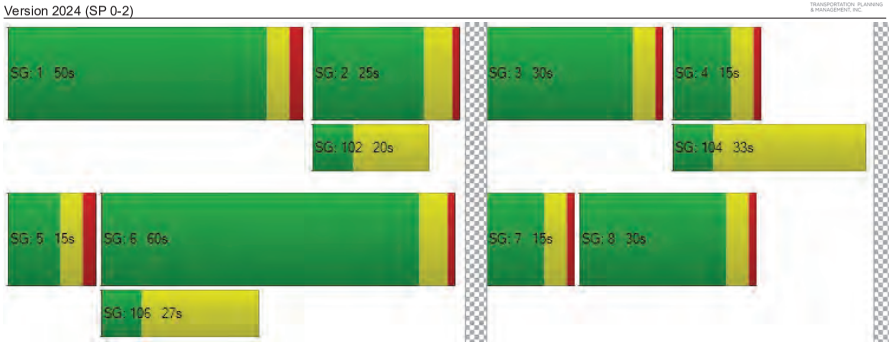

Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	59	7	20	114	11	203	0	243	569	62	55	729	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-2	0	1	3	0	0	-5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	60	0	0	0	19	0	0	62
Total Hourly Volume [veh/h]	59	7	14	114	11	141	0	244	572	43	55	724	143
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	4	31	3	39	0	67	157	12	15	199	39
Total Analysis Volume [veh/h]	65	8	15	125	12	155	0	268	629	47	60	796	157
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	7	16	9	17	23	90	90	6	73	73
g / C, Green / Cycle	0.05	0.11	0.06	0.12	0.16	0.64	0.64	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.10	0.15	0.18	0.03	0.03	0.26	0.26
s, saturation flow rate [veh/h]	1781	1677	1781	1607	1781	3560	1589	1781	1870	1764
c, Capacity [veh/h]	83	188	108	195	289	2283	1019	77	969	915
d1, Uniform Delay [s]	66.05	55.95	65.75	60.32	57.82	10.95	9.29	66.32	22.00	22.01
k, delay calibration	0.04	0.13	0.40	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.95	0.36	125.62	12.51	5.42	0.30	0.09	6.24	1.88	2.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.12	1.16	0.86	0.93	0.28	0.05	0.78	0.51	0.51
d, Delay for Lane Group [s/veh]	72.00	56.31	191.37	72.83	63.23	11.25	9.37	72.56	23.89	24.00
Lane Group LOS	E	E	F	E	E	B	A	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.44	0.76	7.65	6.51	9.80	4.32	0.56	2.26	11.05	10.45
50th-Percentile Queue Length [ft/ln]	61.10	18.92	191.15	162.71	244.91	108.06	14.00	56.62	276.19	261.33
95th-Percentile Queue Length [veh/ln]	4.40	1.36	12.73	10.69	14.93	7.73	1.01	4.08	16.50	15.76
95th-Percentile Queue Length [ft/ln]	109.98	34.06	318.26	267.31	373.23	193.31	25.21	101.91	412.46	393.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.00	56.31	56.31	191.37	72.83	72.83	63.23	63.23	11.25	9.37	72.56	23.93	24.00
Movement LOS	E	E	E	F	E	E	E	E	B	A	E	C	C
d_A, Approach Delay [s/veh]	67.90			123.57			25.91				26.82		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	40.09												
Intersection LOS	D												
Intersection V/C	0.625												

Emissions

Vehicle Miles Traveled [mph]	3.25	1.15	5.81	7.76	28.10	65.94	4.93	21.01	171.69	162.01
Stops [stops/h]	62.85	19.46	196.61	167.36	251.90	222.30	14.40	58.24	284.08	268.79
Fuel consumption [US gal/h]	1.43	0.42	6.19	3.72	6.00	5.38	0.37	2.07	11.02	10.41
CO [g/h]	100.19	29.25	432.86	259.95	419.16	376.25	26.01	144.86	770.37	727.95
NOx [g/h]	19.49	5.69	84.22	50.58	81.55	73.20	5.06	28.18	149.89	141.63
VOC [g/h]	23.22	6.78	100.32	60.25	97.14	87.20	6.03	33.57	178.54	168.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.045	2.322	2.832	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.715	2.140	2.133	2.446
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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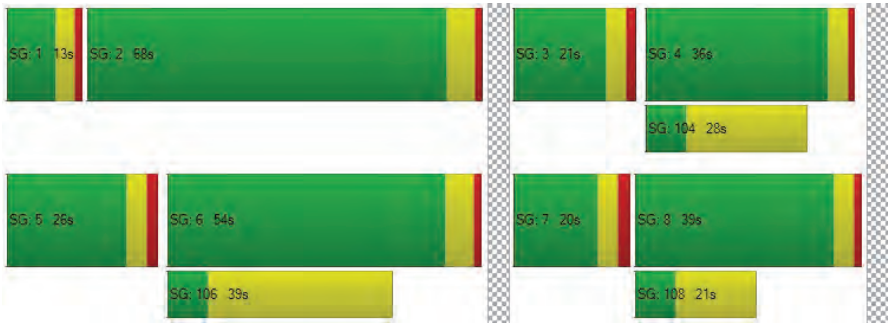

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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	252.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.314

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	115	53	383	193	45	46	218	278	224	320	839	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	1	0	-1	0	0	3	0	-2	-5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	115	0	0	14	0	0	67	0	0	92
Total Hourly Volume [veh/h]	115	54	269	193	44	32	218	281	157	318	834	215
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	16	77	55	13	9	63	81	45	91	240	62
Total Analysis Volume [veh/h]	132	62	309	222	51	37	251	323	180	366	959	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	138	138	138	138	138	138	138	138
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	33	33	20	20	21	42	25	45
g / C, Green / Cycle	0.24	0.24	0.15	0.15	0.15	0.31	0.18	0.33
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.12	0.05	0.14	0.29	0.21	0.67
s, saturation flow rate [veh/h]	1781	1630	1781	1741	1781	1759	1781	1805
c, Capacity [veh/h]	432	396	259	253	276	537	323	590
d1, Uniform Delay [s]	42.65	51.13	57.47	52.99	57.24	46.54	56.39	46.38
k, delay calibration	0.13	0.39	0.13	0.13	0.25	0.36	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	26.79	9.77	1.02	21.57	20.44	90.88	476.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.94	0.86	0.35	0.91	0.94	1.13	2.05
d, Delay for Lane Group [s/veh]	43.14	77.92	67.24	54.01	78.81	66.98	147.26	522.77
Lane Group LOS	D	E	E	D	E	E	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.77	15.46	8.25	2.83	10.25	19.71	19.36	98.00
50th-Percentile Queue Length [ft/ln]	94.33	386.47	206.34	70.78	256.15	492.77	484.01	2449.97
95th-Percentile Queue Length [veh/ln]	6.79	21.91	12.97	5.10	15.50	26.99	28.31	154.37
95th-Percentile Queue Length [ft/ln]	169.79	547.67	324.13	127.40	387.39	674.80	707.79	3859.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.14	77.92	77.92	67.24	54.01	54.01	78.81	66.98	66.98	147.26	522.77	522.77
Movement LOS	D	E	E	E	D	D	E	E	E	F	F	F
d_A, Approach Delay [s/veh]	68.79			63.48			70.92			435.34		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	252.35											
Intersection LOS	F											
Intersection V/C	1.314											

Emissions

Vehicle Miles Traveled [mph]	227.13	638.36	45.01	17.84	87.89	176.13	165.15	544.18
Stops [stops/h]	98.77	404.65	216.05	74.11	268.20	515.95	506.78	2565.22
Fuel consumption [US gal/h]	11.05	34.40	6.08	2.11	9.12	16.96	20.56	164.84
CO [g/h]	772.70	2404.32	425.26	147.55	637.82	1185.23	1437.47	11522.41
NOx [g/h]	150.34	467.79	82.74	28.71	124.10	230.60	279.68	2241.84
VOC [g/h]	179.08	557.22	98.56	34.20	147.82	274.69	333.15	2670.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.21	58.21	58.21	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.541	2.298	2.694	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	506	579	650	654
d_b, Bicycle Delay [s]	38.37	34.72	31.33	31.13
l_b,int, Bicycle LOS Score for Intersection	2.579	2.094	2.914	4.305
Bicycle LOS	B	B	C	E

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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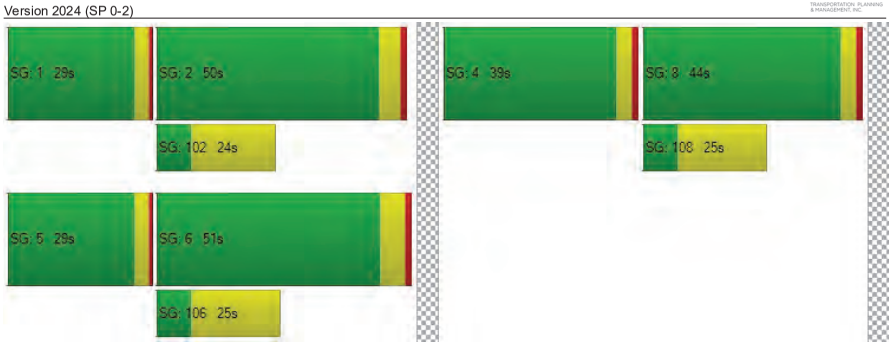

Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	5	4	0	354	3	851	0	4	1112	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	5	0	0	-8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	5	4	0	354	3	856	0	4	1104	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	1	0	113	1	274	0	1	354	10
Total Analysis Volume [veh/h]	0	0	6	5	0	454	4	1097	0	5	1415	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	1	1	20	20	0	38	38	1	39	39
g / C, Green / Cycle	0.01	0.01	0.24	0.24	0.01	0.47	0.47	0.01	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.29	0.29	0.00	0.40	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	15	13	435	389	10	882	882	12	1683	751
d1, Uniform Delay [s]	0.00	40.39	23.41	30.90	40.53	16.16	16.16	40.45	18.86	11.66
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	23.82	0.01	100.02	23.84	0.72	0.72	20.32	1.20	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.46	0.01	1.17	0.40	0.62	0.62	0.41	0.84	0.05
d, Delay for Lane Group [s/veh]	0.00	64.21	23.42	130.91	64.37	16.89	16.89	60.77	20.06	11.69
Lane Group LOS	A	E	C	F	E	B	B	E	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.20	0.07	18.13	0.15	7.25	7.25	0.17	10.95	0.38
50th-Percentile Queue Length [ft/ln]	0.00	5.09	1.82	453.15	3.63	181.31	181.31	4.19	273.74	9.47
95th-Percentile Queue Length [veh/ln]	0.00	0.37	0.13	27.31	0.26	11.67	11.67	0.30	16.38	0.68
95th-Percentile Queue Length [ft/ln]	0.00	9.16	3.27	682.68	6.53	291.73	291.73	7.55	409.42	17.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	64.21	23.42	23.42	130.91	64.37	16.89	16.89	60.77	20.06	11.69
Movement LOS	A	A	E	C	C	F	E	B	B	E	C	B
d_A, Approach Delay [s/veh]	64.21			129.74			17.06			19.97		
Approach LOS	E			F			B			B		
d_I, Intersection Delay [s/veh]	35.65											
Intersection LOS	D											
Intersection V/C	0.857											

Emissions

Vehicle Miles Traveled [mph]	0.00	0.30	2.37	215.36	1.80	247.50	247.50	0.87	246.84	6.98
Stops [stops/h]	0.00	8.97	3.20	798.99	6.40	319.69	319.69	7.39	965.32	16.70
Fuel consumption [US gal/h]	0.00	0.14	0.14	25.37	0.16	13.84	13.84	0.14	21.27	0.47
CO [g/h]	0.00	9.81	9.73	1773.59	11.33	967.40	967.40	9.69	1486.92	33.18
NOx [g/h]	0.00	1.91	1.89	345.08	2.20	188.22	188.22	1.88	289.30	6.46
VOC [g/h]	0.00	2.27	2.25	411.05	2.63	224.20	224.20	2.24	344.61	7.69

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	490	490	1224	1224
d_b, Bicycle Delay [s]	23.28	23.28	6.14	6.14
l_b,int, Bicycle LOS Score for Intersection	1.570	2.317	2.468	2.764
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

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Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	481	379	1054	278	213	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	1	-8	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	485	380	1046	278	213	81
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	146	114	315	84	64	24
Total Analysis Volume [veh/h]	584	458	1260	335	257	98
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	17	69	47	47	9	9	9
g / C, Green / Cycle	0.19	0.76	0.52	0.52	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.17	0.13	0.35	0.21	0.07	0.07	0.06
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	668	2716	1862	831	173	173	154
d1, Uniform Delay [s]	35.24	2.90	15.84	12.97	39.54	39.54	39.10
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.46	0.13	1.99	1.45	2.37	2.37	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.17	0.68	0.40	0.74	0.74	0.64
d, Delay for Lane Group [s/veh]	36.70	3.04	17.84	14.42	41.92	41.92	40.72
Lane Group LOS	D	A	B	B	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.21	0.85	9.32	4.17	2.84	2.84	2.13
50th-Percentile Queue Length [ft/ln]	155.22	21.18	232.91	104.16	71.06	71.06	53.17
95th-Percentile Queue Length [veh/ln]	10.30	1.52	14.32	7.50	5.12	5.12	3.83
95th-Percentile Queue Length [ft/ln]	257.39	38.12	358.05	187.49	127.91	127.91	95.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.70	3.04	17.84	14.42	41.92	40.72
Movement LOS	D	A	B	B	D	D
d_A, Approach Delay [s/veh]	21.90		17.12		41.59	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	21.69					
Intersection LOS	C					
Intersection V/C	0.686					

Emissions

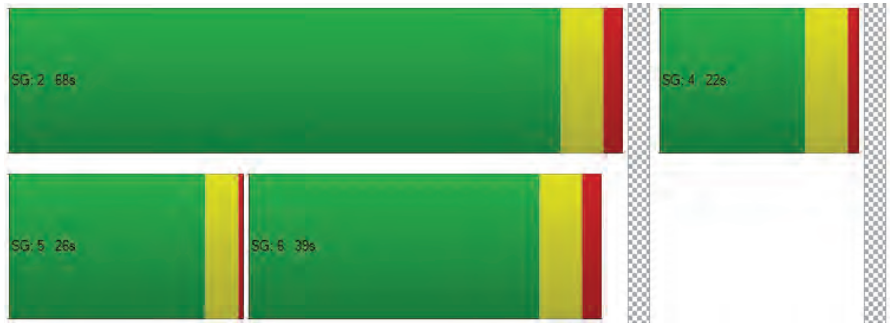
Vehicle Miles Traveled [mph]	101.87	79.89	223.28	59.36	7.78	7.78	5.93
Stops [stops/h]	496.72	67.77	745.30	166.66	113.70	113.70	85.07
Fuel consumption [US gal/h]	11.30	3.95	17.88	4.35	2.04	2.04	1.53
CO [g/h]	789.81	275.86	1250.07	303.92	142.92	142.92	106.69
NOx [g/h]	153.67	53.67	243.22	59.13	27.81	27.81	20.76
VOC [g/h]	183.05	63.93	289.72	70.44	33.12	33.12	24.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00	
l_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000	
Crosswalk LOS	F		F		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1360		716		360	
d_b, Bicycle Delay [s]	4.61		18.56		30.26	
l_b,int, Bicycle LOS Score for Intersection	2.419		2.875		2.165	
Bicycle LOS	B		C		B	

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	69.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.021

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

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Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	78	514	0	0	391	671	941	0	298	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	-1	0	-7	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	78	515	0	0	390	624	934	0	268	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	163	0	0	123	197	296	0	85	0	0	0
Total Analysis Volume [veh/h]	0	99	652	0	0	494	790	1182	0	339	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	7	51	40	40	26	26	26	
g / C, Green / Cycle	0.08	0.57	0.44	0.44	0.29	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.14	0.50	0.33	0.33	0.21	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	147	2027	1567	699	518	518	462	
d1, Uniform Delay [s]	40.10	10.22	16.39	25.20	31.91	31.91	28.77	
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.00	0.42	0.53	75.64	84.51	84.51	3.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.32	0.32	1.13	1.14	1.14	0.73	
d, Delay for Lane Group [s/veh]	42.10	10.64	16.92	100.84	116.42	116.42	32.28	
Lane Group LOS	D	B	B	F	F	F	C	
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	2.18	3.27	3.30	28.56	22.99	22.99	6.85	
50th-Percentile Queue Length [ft/ln]	54.62	81.67	82.50	714.05	574.84	574.84	171.16	
95th-Percentile Queue Length [veh/ln]	3.93	5.88	5.94	40.69	33.40	33.40	11.14	
95th-Percentile Queue Length [ft/ln]	98.32	147.01	148.50	1017.24	835.03	835.03	278.44	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	42.10	10.64	0.00	0.00	16.92	100.84	116.42	116.42	32.28	0.00	0.00	0.00
Movement LOS	D	D	B			B	F	F	F	C			
d_A, Approach Delay [s/veh]	14.79				68.55			97.67			0.00		
Approach LOS	B				E			F			A		
d_I, Intersection Delay [s/veh]	69.65												
Intersection LOS	E												
Intersection V/C	1.021												

Emissions

Vehicle Miles Traveled [mph]	17.54	115.54	67.55	108.02	20.47	20.47	11.74	
Stops [stops/h]	87.40	261.36	264.00	1142.49	919.75	919.75	273.86	
Fuel consumption [US gal/h]	2.05	7.61	5.94	26.97	19.92	19.92	4.22	
CO [g/h]	143.52	532.12	415.20	1885.09	1392.68	1392.68	295.22	
NOx [g/h]	27.92	103.53	80.78	366.77	270.96	270.96	57.44	
VOC [g/h]	33.26	123.32	96.23	436.89	322.77	322.77	68.42	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.179	2.658	4.119	4.132
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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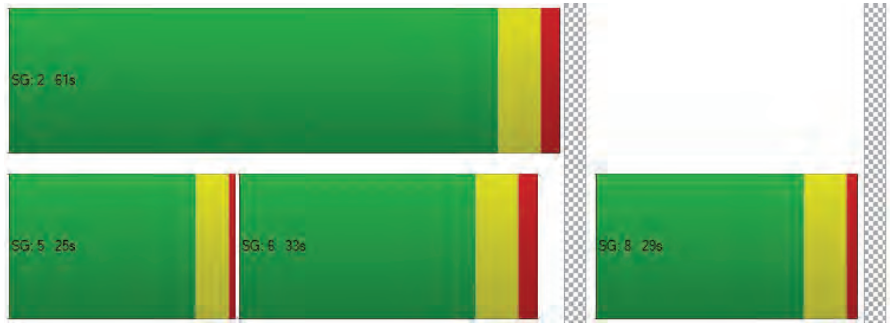

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	658	328	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	655	330	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	164	83	0	0	0
Total Analysis Volume [veh/h]	0	655	330	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.06
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.06	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	445	227	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	442	229	38	4	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	111	57	10	1	0
Total Analysis Volume [veh/h]	0	442	229	38	4	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.78	0.00	0.00	0.00	13.85	9.64
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.74	0.74
d_A, Approach Delay [s/veh]	0.00		0.00		13.85	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.142

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	238	41	52	127	9	47	81	0	37	73	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	0	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	235	41	52	129	9	47	81	0	37	73	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	59	10	13	32	2	12	20	0	9	18	11
Total Analysis Volume [veh/h]	6	235	41	52	129	9	47	81	0	37	73	43
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.14	0.19	0.00	0.11	0.16	0.05
d_M, Delay for Movement [s/veh]	7.50	0.00	0.00	7.86	0.00	0.00	20.32	17.72	13.38	18.90	16.74	13.23
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.09	0.09	0.09	1.41	1.41	1.41	1.39	1.39	1.39
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.26	2.26	2.26	35.13	35.13	35.13	34.85	34.85	34.85
d_A, Approach Delay [s/veh]	0.16			2.15			18.67			16.27		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.08											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	655	344	39	0
2	635	334	38	0
3	622	327	37	0
4	583	306	35	0
5	517	272	31	0
6	511	268	30	0
7	504	265	30	0
8	458	241	27	0
9	452	237	27	0
10	445	234	27	0
11	386	203	23	0
12	360	189	21	0
13	354	186	21	0
14	262	138	16	0
15	262	138	16	0
16	183	96	11	0
17	105	55	6	0
18	105	55	6	0
19	59	31	4	0
20	33	17	2	0
21	20	10	1	0
22	7	3	0	0
23	7	3	0	0
24	7	3	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	999	1	39	No	No	No	No	No	No	No	No	No	No
2	1	969	1	38	No	No	No	No	No	No	No	No	No	No
3	1	949	1	37	No	No	No	No	No	No	No	No	No	No
4	1	889	1	35	No	No	No	No	No	No	No	No	No	No
5	1	789	1	31	No	No	No	No	No	No	No	No	No	No
6	1	779	1	30	No	No	No	No	No	No	No	No	No	No
7	1	769	1	30	No	No	No	No	No	No	No	No	No	No
8	1	699	1	27	No	No	No	No	No	No	No	No	No	No
9	1	689	1	27	No	No	No	No	No	No	No	No	No	No
10	1	679	1	27	No	No	No	No	No	No	No	No	No	No
11	1	589	1	23	No	No	No	No	No	No	No	No	No	No
12	1	549	1	21	No	No	No	No	No	No	No	No	No	No
13	1	540	1	21	No	No	No	No	No	No	No	No	No	No
14	1	400	1	16	No	No	No	No	No	No	No	No	No	No
15	1	400	1	16	No	No	No	No	No	No	No	No	No	No
16	1	279	1	11	No	No	No	No	No	No	No	No	No	No
17	1	160	1	6	No	No	No	No	No	No	No	No	No	No
18	1	160	1	6	No	No	No	No	No	No	No	No	No	No
19	1	90	1	4	No	No	No	No	No	No	No	No	No	No
20	1	50	1	2	No	No	No	No	No	No	No	No	No	No
21	1	30	1	1	No	No	No	No	No	No	No	No	No	No
22	1	10	1	0	No	No	No	No	No	No	No	No	No	No
23	1	10	1	0	No	No	No	No	No	No	No	No	No	No
24	1	10	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.1	19.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1038	1038
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	446	330	261	0
2	433	320	253	0
3	424	314	248	0
4	397	294	232	0
5	352	261	206	0
6	348	257	204	0
7	343	254	201	0
8	312	231	183	0
9	308	228	180	0
10	303	224	177	0
11	263	195	154	0
12	245	182	144	0
13	241	178	141	0
14	178	132	104	0
15	178	132	104	0
16	125	92	73	0
17	71	53	42	0
18	71	53	42	0
19	40	30	23	0
20	22	17	13	0
21	13	10	8	0
22	4	3	3	0
23	4	3	3	0
24	4	3	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	776	1	261	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	753	1	253	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	738	1	248	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	691	1	232	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
5	2	613	1	206	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	2	605	1	204	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	2	597	1	201	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	2	543	1	183	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
9	2	536	1	180	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
10	2	527	1	177	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
11	2	458	1	154	No	No	Yes	Yes	No	No	No	No	No	No
12	2	427	1	144	No	No	Yes	Yes	No	No	No	No	No	No
13	2	419	1	141	No	No	No	Yes	No	No	No	No	No	No
14	2	310	1	104	No	No	No	No	No	No	No	No	No	No
15	2	310	1	104	No	No	No	No	No	No	No	No	No	No
16	2	217	1	73	No	No	No	No	No	No	No	No	No	No
17	2	124	1	42	No	No	No	No	No	No	No	No	No	No
18	2	124	1	42	No	No	No	No	No	No	No	No	No	No
19	2	70	1	23	No	No	No	No	No	No	No	No	No	No
20	2	39	1	13	No	No	No	No	No	No	No	No	No	No
21	2	23	1	8	No	No	No	No	No	No	No	No	No	No
22	2	7	1	3	No	No	No	No	No	No	No	No	No	No
23	2	7	1	3	No	No	No	No	No	No	No	No	No	No
24	2	7	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					6	10	12	13	0	3	4	10	10	4

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.4	22.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:15	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	261	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1037	1037
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1021	239	492
2	990	232	477
3	970	227	467
4	909	213	438
5	807	189	389
6	796	186	384
7	786	184	379
8	715	167	344
9	704	165	339
10	694	163	335
11	602	141	290
12	562	131	271
13	551	129	266
14	408	96	197
15	408	96	197
16	286	67	138
17	163	38	79
18	163	38	79
19	92	22	44
20	51	12	25
21	31	7	15
22	10	2	5
23	10	2	5
24	10	2	5

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1260	1	492	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1222	1	477	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1197	1	467	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1122	1	438	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	996	1	389	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	982	1	384	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	970	1	379	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	882	1	344	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	869	1	339	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	857	1	335	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	743	1	290	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	693	1	271	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	680	1	266	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	504	1	197	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	504	1	197	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	353	1	138	No	No	Yes	Yes	No	No	No	No	No	No
17	1	201	1	79	No	No	No	No	No	No	No	No	No	No
18	1	201	1	79	No	No	No	No	No	No	No	No	No	No
19	1	114	1	44	No	No	No	No	No	No	No	No	No	No
20	1	63	1	25	No	No	No	No	No	No	No	No	No	No
21	1	38	1	15	No	No	No	No	No	No	No	No	No	No
22	1	12	1	5	No	No	No	No	No	No	No	No	No	No
23	1	12	1	5	No	No	No	No	No	No	No	No	No	No
24	1	12	1	5	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	10	13	13	15	13	9

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	939.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	128:23
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	492
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1752
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	238	812	321	63
2	231	788	311	61
3	226	771	305	60
4	212	723	286	56
5	188	641	254	50
6	186	633	250	49
7	183	625	247	49
8	167	568	225	44
9	164	560	221	43
10	162	552	218	43
11	140	479	189	37
12	131	447	177	35
13	129	438	173	34
14	95	325	128	25
15	95	325	128	25
16	67	227	90	18
17	38	130	51	10
18	38	130	51	10
19	21	73	29	6
20	12	41	16	3
21	7	24	10	2
22	2	8	3	1
23	2	8	3	1
24	2	8	3	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1050	1	321	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1019	1	311	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	997	1	305	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	935	1	286	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	829	1	254	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	819	1	250	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	808	1	247	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	735	1	225	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
9	1	724	1	221	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
10	1	714	1	218	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
11	1	619	1	189	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	578	1	177	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
13	1	567	1	173	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
14	1	420	1	128	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	420	1	128	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	294	1	90	No	No	No	Yes	No	No	No	No	No	No
17	1	168	1	51	No	No	No	No	No	No	No	No	No	No
18	1	168	1	51	No	No	No	No	No	No	No	No	No	No
19	1	94	1	29	No	No	No	No	No	No	No	No	No	No
20	1	53	1	16	No	No	No	No	No	No	No	No	No	No
21	1	31	1	10	No	No	No	No	No	No	No	No	No	No
22	1	10	1	3	No	No	No	No	No	No	No	No	No	No
23	1	10	1	3	No	No	No	No	No	No	No	No	No	No
24	1	10	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	7	11	13	15	10	3

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	26	12.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:19	0:13
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	321	63
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1434	1434
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	203	201	223
2	197	195	216
3	193	191	212
4	181	179	198
5	160	159	176
6	158	157	174
7	156	155	172
8	142	141	156
9	140	139	154
10	138	137	152
11	120	119	132
12	112	111	123
13	110	109	120
14	81	80	89
15	81	80	89
16	57	56	62
17	32	32	36
18	32	32	36
19	18	18	20
20	10	10	11
21	6	6	7
22	2	2	2
23	2	2	2
24	2	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	404	2	223	No	No	No	Yes	No	No	No	No	No	No
2	2	392	2	216	No	No	No	Yes	No	No	No	No	No	No
3	2	384	2	212	No	No	No	Yes	No	No	No	No	No	No
4	2	360	2	198	No	No	No	Yes	No	No	No	No	No	No
5	2	319	2	176	No	No	No	No	No	No	No	No	No	No
6	2	315	2	174	No	No	No	No	No	No	No	No	No	No
7	2	311	2	172	No	No	No	No	No	No	No	No	No	No
8	2	283	2	156	No	No	No	No	No	No	No	No	No	No
9	2	279	2	154	No	No	No	No	No	No	No	No	No	No
10	2	275	2	152	No	No	No	No	No	No	No	No	No	No
11	2	239	2	132	No	No	No	No	No	No	No	No	No	No
12	2	223	2	123	No	No	No	No	No	No	No	No	No	No
13	2	219	2	120	No	No	No	No	No	No	No	No	No	No
14	2	161	2	89	No	No	No	No	No	No	No	No	No	No
15	2	161	2	89	No	No	No	No	No	No	No	No	No	No
16	2	113	2	62	No	No	No	No	No	No	No	No	No	No
17	2	64	2	36	No	No	No	No	No	No	No	No	No	No
18	2	64	2	36	No	No	No	No	No	No	No	No	No	No
19	2	36	2	20	No	No	No	No	No	No	No	No	No	No
20	2	20	2	11	No	No	No	No	No	No	No	No	No	No
21	2	12	2	7	No	No	No	No	No	No	No	No	No	No
22	2	4	2	2	No	No	No	No	No	No	No	No	No	No
23	2	4	2	2	No	No	No	No	No	No	No	No	No	No
24	2	4	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	223
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	627
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	223	189	163
2	216	183	158
3	212	180	155
4	198	168	145
5	176	149	129
6	174	147	127
7	172	146	126
8	156	132	114
9	154	130	112
10	152	129	111
11	132	112	96
12	123	104	90
13	120	102	88
14	89	76	65
15	89	76	65
16	62	53	46
17	36	30	26
18	36	30	26
19	20	17	15
20	11	9	8
21	7	6	5
22	2	2	2
23	2	2	2
24	2	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	412	1	163	No	No	No	Yes	No	No	No	No	No	No
2	2	399	1	158	No	No	No	Yes	No	No	No	No	No	No
3	2	392	1	155	No	No	No	Yes	No	No	No	No	No	No
4	2	366	1	145	No	No	No	Yes	No	No	No	No	No	No
5	2	325	1	129	No	No	No	No	No	No	No	No	No	No
6	2	321	1	127	No	No	No	No	No	No	No	No	No	No
7	2	318	1	126	No	No	No	No	No	No	No	No	No	No
8	2	288	1	114	No	No	No	No	No	No	No	No	No	No
9	2	284	1	112	No	No	No	No	No	No	No	No	No	No
10	2	281	1	111	No	No	No	No	No	No	No	No	No	No
11	2	244	1	96	No	No	No	No	No	No	No	No	No	No
12	2	227	1	90	No	No	No	No	No	No	No	No	No	No
13	2	222	1	88	No	No	No	No	No	No	No	No	No	No
14	2	165	1	65	No	No	No	No	No	No	No	No	No	No
15	2	165	1	65	No	No	No	No	No	No	No	No	No	No
16	2	115	1	46	No	No	No	No	No	No	No	No	No	No
17	2	66	1	26	No	No	No	No	No	No	No	No	No	No
18	2	66	1	26	No	No	No	No	No	No	No	No	No	No
19	2	37	1	15	No	No	No	No	No	No	No	No	No	No
20	2	20	1	8	No	No	No	No	No	No	No	No	No	No
21	2	13	1	5	No	No	No	No	No	No	No	No	No	No
22	2	4	1	2	No	No	No	No	No	No	No	No	No	No
23	2	4	1	2	No	No	No	No	No	No	No	No	No	No
24	2	4	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:35
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	163
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	575
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	84	163	37
2	81	158	36
3	80	155	35
4	75	145	33
5	66	129	29
6	66	127	29
7	65	126	28
8	59	114	26
9	58	112	26
10	57	111	25
11	50	96	22
12	46	90	20
13	45	88	20
14	34	65	15
15	34	65	15
16	24	46	10
17	13	26	6
18	13	26	6
19	8	15	3
20	4	8	2
21	3	5	1
22	1	2	0
23	1	2	0
24	1	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	247	1	37	No	No	No	No	No	No	No	No	No	No
2	3	239	1	36	No	No	No	No	No	No	No	No	No	No
3	3	235	1	35	No	No	No	No	No	No	No	No	No	No
4	3	220	1	33	No	No	No	No	No	No	No	No	No	No
5	3	195	1	29	No	No	No	No	No	No	No	No	No	No
6	3	193	1	29	No	No	No	No	No	No	No	No	No	No
7	3	191	1	28	No	No	No	No	No	No	No	No	No	No
8	3	173	1	26	No	No	No	No	No	No	No	No	No	No
9	3	170	1	26	No	No	No	No	No	No	No	No	No	No
10	3	168	1	25	No	No	No	No	No	No	No	No	No	No
11	3	146	1	22	No	No	No	No	No	No	No	No	No	No
12	3	136	1	20	No	No	No	No	No	No	No	No	No	No
13	3	133	1	20	No	No	No	No	No	No	No	No	No	No
14	3	99	1	15	No	No	No	No	No	No	No	No	No	No
15	3	99	1	15	No	No	No	No	No	No	No	No	No	No
16	3	70	1	10	No	No	No	No	No	No	No	No	No	No
17	3	39	1	6	No	No	No	No	No	No	No	No	No	No
18	3	39	1	6	No	No	No	No	No	No	No	No	No	No
19	3	23	1	3	No	No	No	No	No	No	No	No	No	No
20	3	12	1	2	No	No	No	No	No	No	No	No	No	No
21	3	8	1	1	No	No	No	No	No	No	No	No	No	No
22	3	3	1	0	No	No	No	No	No	No	No	No	No	No
23	3	3	1	0	No	No	No	No	No	No	No	No	No	No
24	3	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	37
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	284
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	601	412	90	75
2	583	400	87	73
3	571	391	86	71
4	535	367	80	67
5	475	325	71	59
6	469	321	70	59
7	463	317	69	58
8	421	288	63	53
9	415	284	62	52
10	409	280	61	51
11	355	243	53	44
12	331	227	50	41
13	325	222	49	41
14	240	165	36	30
15	240	165	36	30
16	168	115	25	21
17	96	66	14	12
18	96	66	14	12
19	54	37	8	7
20	30	21	5	4
21	18	12	3	2
22	6	4	1	1
23	6	4	1	1
24	6	4	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1013	1	90	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
2	2	983	1	87	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
3	2	962	1	86	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
4	2	902	1	80	No	No	No	No	Yes	Yes	Yes	Yes	No	No
5	2	800	1	71	No	No	No	No	No	Yes	Yes	Yes	No	No
6	2	790	1	70	No	No	No	No	No	Yes	Yes	Yes	No	No
7	2	780	1	69	No	No	No	No	No	Yes	Yes	Yes	No	No
8	2	709	1	63	No	No	No	No	No	No	Yes	Yes	No	No
9	2	699	1	62	No	No	No	No	No	No	Yes	Yes	No	No
10	2	689	1	61	No	No	No	No	No	No	Yes	Yes	No	No
11	2	598	1	53	No	No	No	No	No	No	No	Yes	No	No
12	2	558	1	50	No	No	No	No	No	No	No	Yes	No	No
13	2	547	1	49	No	No	No	No	No	No	No	Yes	No	No
14	2	405	1	36	No	No	No	No	No	No	No	No	No	No
15	2	405	1	36	No	No	No	No	No	No	No	No	No	No
16	2	283	1	25	No	No	No	No	No	No	No	No	No	No
17	2	162	1	14	No	No	No	No	No	No	No	No	No	No
18	2	162	1	14	No	No	No	No	No	No	No	No	No	No
19	2	91	1	8	No	No	No	No	No	No	No	No	No	No
20	2	51	1	5	No	No	No	No	No	No	No	No	No	No
21	2	30	1	3	No	No	No	No	No	No	No	No	No	No
22	2	10	1	1	No	No	No	No	No	No	No	No	No	No
23	2	10	1	1	No	No	No	No	No	No	No	No	No	No
24	2	10	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	4	7	10	13	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	29.6	32.2
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:44	0:40
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	90	75
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1178	1178
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	655	330	0
2	635	320	0
3	622	314	0
4	583	294	0
5	517	261	0
6	511	257	0
7	504	254	0
8	458	231	0
9	452	228	0
10	445	224	0
11	386	195	0
12	360	182	0
13	354	178	0
14	262	132	0
15	262	132	0
16	183	92	0
17	105	53	0
18	105	53	0
19	59	30	0
20	33	17	0
21	20	10	0
22	7	3	0
23	7	3	0
24	7	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	985	1	0	No	No	No	No	No	No	No	No	No	No
2	1	955	1	0	No	No	No	No	No	No	No	No	No	No
3	1	936	1	0	No	No	No	No	No	No	No	No	No	No
4	1	877	1	0	No	No	No	No	No	No	No	No	No	No
5	1	778	1	0	No	No	No	No	No	No	No	No	No	No
6	1	768	1	0	No	No	No	No	No	No	No	No	No	No
7	1	758	1	0	No	No	No	No	No	No	No	No	No	No
8	1	689	1	0	No	No	No	No	No	No	No	No	No	No
9	1	680	1	0	No	No	No	No	No	No	No	No	No	No
10	1	669	1	0	No	No	No	No	No	No	No	No	No	No
11	1	581	1	0	No	No	No	No	No	No	No	No	No	No
12	1	542	1	0	No	No	No	No	No	No	No	No	No	No
13	1	532	1	0	No	No	No	No	No	No	No	No	No	No
14	1	394	1	0	No	No	No	No	No	No	No	No	No	No
15	1	394	1	0	No	No	No	No	No	No	No	No	No	No
16	1	275	1	0	No	No	No	No	No	No	No	No	No	No
17	1	158	1	0	No	No	No	No	No	No	No	No	No	No
18	1	158	1	0	No	No	No	No	No	No	No	No	No	No
19	1	89	1	0	No	No	No	No	No	No	No	No	No	No
20	1	50	1	0	No	No	No	No	No	No	No	No	No	No
21	1	30	1	0	No	No	No	No	No	No	No	No	No	No
22	1	10	1	0	No	No	No	No	No	No	No	No	No	No
23	1	10	1	0	No	No	No	No	No	No	No	No	No	No
24	1	10	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	985
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	442	267	4
2	429	259	4
3	420	254	4
4	393	238	4
5	349	211	3
6	345	208	3
7	340	206	3
8	309	187	3
9	305	184	3
10	301	182	3
11	261	158	2
12	243	147	2
13	239	144	2
14	177	107	2
15	177	107	2
16	124	75	1
17	71	43	1
18	71	43	1
19	40	24	0
20	22	13	0
21	13	8	0
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	709	1	4	No	No	No	No	No	No	No	No	No	No
2	1	688	1	4	No	No	No	No	No	No	No	No	No	No
3	1	674	1	4	No	No	No	No	No	No	No	No	No	No
4	1	631	1	4	No	No	No	No	No	No	No	No	No	No
5	1	560	1	3	No	No	No	No	No	No	No	No	No	No
6	1	553	1	3	No	No	No	No	No	No	No	No	No	No
7	1	546	1	3	No	No	No	No	No	No	No	No	No	No
8	1	496	1	3	No	No	No	No	No	No	No	No	No	No
9	1	489	1	3	No	No	No	No	No	No	No	No	No	No
10	1	483	1	3	No	No	No	No	No	No	No	No	No	No
11	1	419	1	2	No	No	No	No	No	No	No	No	No	No
12	1	390	1	2	No	No	No	No	No	No	No	No	No	No
13	1	383	1	2	No	No	No	No	No	No	No	No	No	No
14	1	284	1	2	No	No	No	No	No	No	No	No	No	No
15	1	284	1	2	No	No	No	No	No	No	No	No	No	No
16	1	199	1	1	No	No	No	No	No	No	No	No	No	No
17	1	114	1	1	No	No	No	No	No	No	No	No	No	No
18	1	114	1	1	No	No	No	No	No	No	No	No	No	No
19	1	64	1	0	No	No	No	No	No	No	No	No	No	No
20	1	35	1	0	No	No	No	No	No	No	No	No	No	No
21	1	21	1	0	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	4
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	713
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	282	190	153	128
2	274	184	148	124
3	268	181	145	122
4	251	169	136	114
5	223	150	121	101
6	220	148	119	100
7	217	146	118	99
8	197	133	107	90
9	195	131	106	88
10	192	129	104	87
11	166	112	90	76
12	155	105	84	70
13	152	103	83	69
14	113	76	61	51
15	113	76	61	51
16	79	53	43	36
17	45	30	24	20
18	45	30	24	20
19	25	17	14	12
20	14	10	8	6
21	8	6	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1

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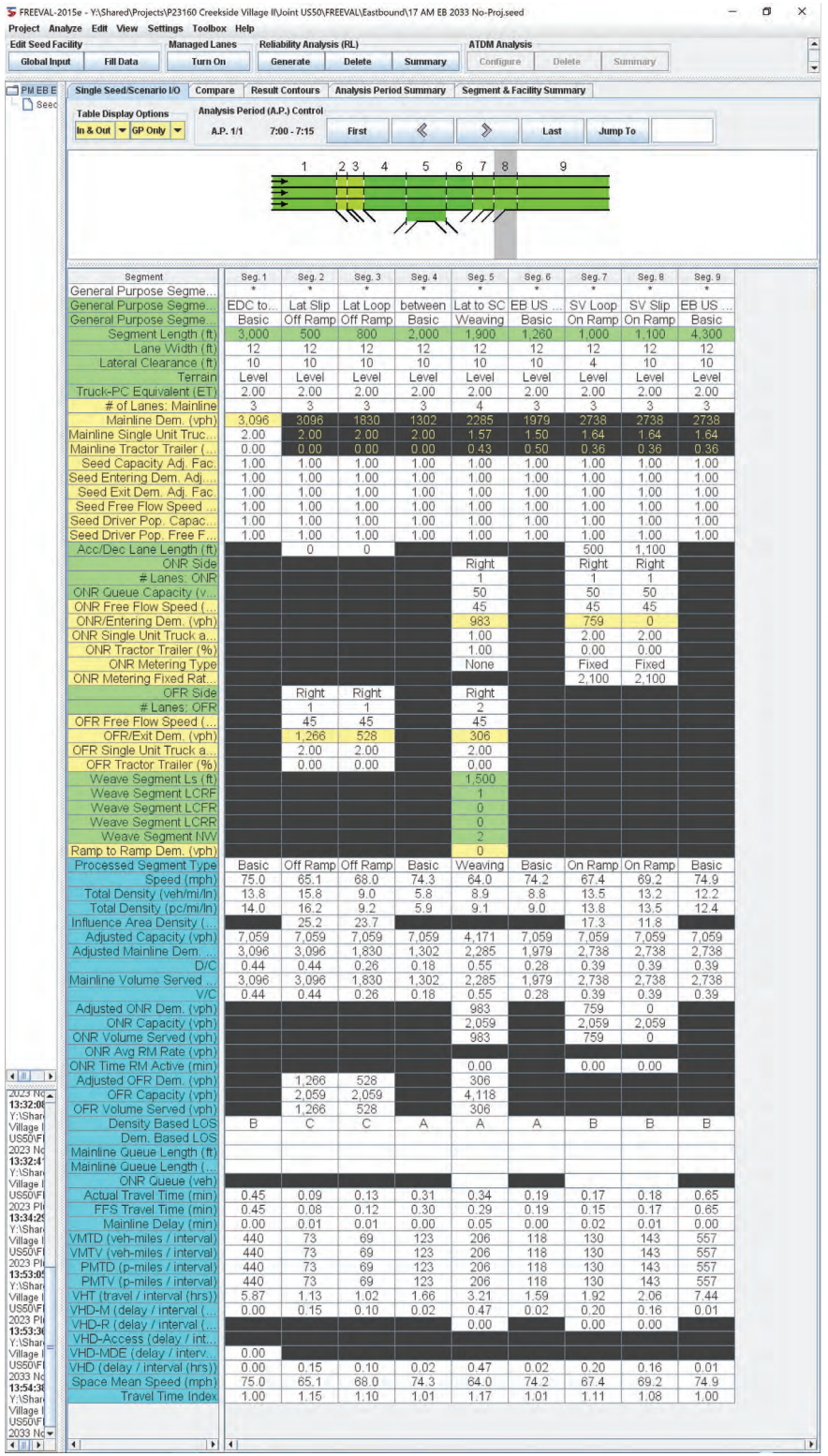
Warrant Analysis by Hour

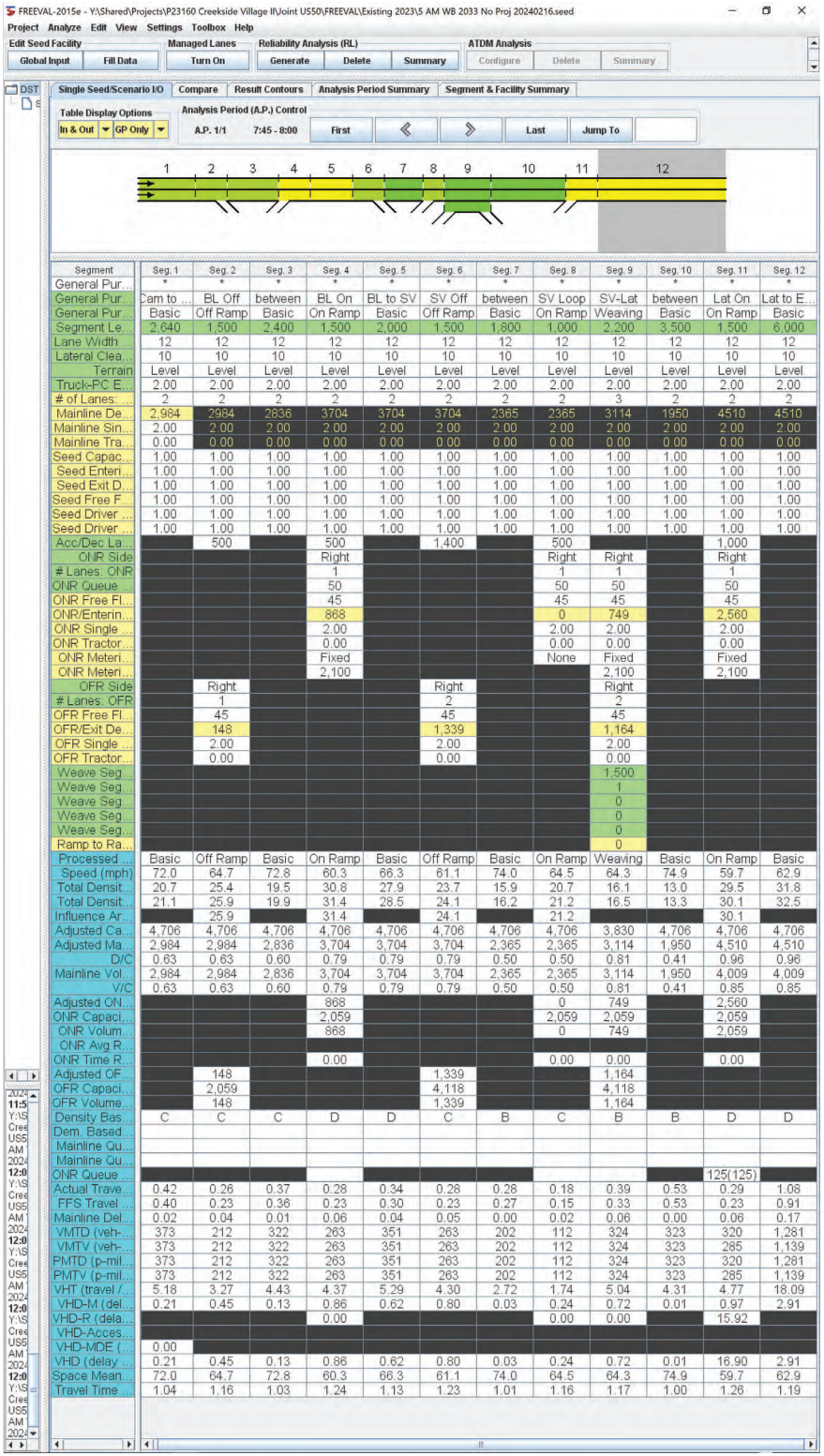
Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	472	1	153	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	458	1	148	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	449	1	145	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	420	1	136	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	1	373	1	121	No	No	Yes	Yes	No	No	No	No	No	No
6	1	368	1	119	No	No	Yes	Yes	No	No	No	No	No	No
7	1	363	1	118	No	No	Yes	Yes	No	No	No	No	No	No
8	1	330	1	107	No	No	No	Yes	No	No	No	No	No	No
9	1	326	1	106	No	No	No	Yes	No	No	No	No	No	No
10	1	321	1	104	No	No	No	Yes	No	No	No	No	No	No
11	1	278	1	90	No	No	No	No	No	No	No	No	No	No
12	1	260	1	84	No	No	No	No	No	No	No	No	No	No
13	1	255	1	83	No	No	No	No	No	No	No	No	No	No
14	1	189	1	61	No	No	No	No	No	No	No	No	No	No
15	1	189	1	61	No	No	No	No	No	No	No	No	No	No
16	1	132	1	43	No	No	No	No	No	No	No	No	No	No
17	1	75	1	24	No	No	No	No	No	No	No	No	No	No
18	1	75	1	24	No	No	No	No	No	No	No	No	No	No
19	1	42	1	14	No	No	No	No	No	No	No	No	No	No
20	1	24	1	8	No	No	No	No	No	No	No	No	No	No
21	1	14	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	4	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.3	18.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:41	0:39
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	153	128
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	753	753
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9
General Purpose Segme...	*	*	*	*	*	*	*	*	*
General Purpose Segme...	EDC to...	Lat Slip	Lat Loop	between	Lat to SC	EB US ...	SV Loop	SV Slip	EB US ...
General Purpose Segme...	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Segment Length (ft)	3,000	500	800	2,000	1,900	1,260	1,000	1,100	4,300
Lane Width (ft)	12	12	12	12	12	12	12	12	12
Lateral Clearance (ft)	10	10	10	10	10	10	4	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: Mainline	3	3	3	3	4	3	3	3	3
Mainline Dem. (vph)	3,096	3096	1830	1302	2285	1979	2738	2738	2738
Mainline Single Unit Truc...	2.00	2.00	2.00	2.00	1.57	1.50	1.64	1.64	1.64
Mainline Tractor Trailer (...	0.00	0.00	0.00	0.00	0.43	0.50	0.36	0.36	0.36
Seed Capacity Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Entering Dem. Adj....	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit Dem. Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free Flow Speed ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec Lane Length (ft)		0	0				500	1,100	
ONR Side					Right		Right	Right	
# Lanes: ONR					1		1	1	
ONR Queue Capacity (v...					50		50	50	
ONR Free Flow Speed (...					45		45	45	
ONR/Entering Dem. (vph)					983		759	0	
ONR Single Unit Truck a...					1.00		2.00	2.00	
ONR Tractor Trailer (%)					1.00		0.00	0.00	
ONR Metering Type					None		Fixed	Fixed	
ONR Metering Fixed Rat...							2,100	2,100	
OFR Side		Right	Right		Right				
# Lanes: OFR		1	1		2				
OFR Free Flow Speed (...		45	45		45				
OFR/Exit Dem. (vph)		1,266	528		306				
OFR Single Unit Truck a...		2.00	2.00		2.00				
OFR Tractor Trailer (%)		0.00	0.00		0.00				
Weave Segment Ls (ft)					1,500				
Weave Segment LCRF					1				
Weave Segment LCFR					0				
Weave Segment LCRR					0				
Weave Segment NW					2				
Ramp to Ramp Dem. (vph)					0				
Processed Segment Type	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Speed (mph)	75.0	65.1	68.0	74.3	64.0	74.2	67.4	69.2	74.9
Total Density (veh/mi/ln)	13.8	15.8	9.0	5.8	8.9	8.8	13.5	13.2	12.2
Total Density (pc/mi/ln)	14.0	16.2	9.2	5.9	9.1	9.0	13.8	13.5	12.4
Influence Area Density (...		25.2	23.7				17.3	11.8	
Adjusted Capacity (vph)	7,059	7,059	7,059	7,059	4,171	7,059	7,059	7,059	7,059
Adjusted Mainline Dem. ...	3,096	3,096	1,830	1,302	2,285	1,979	2,738	2,738	2,738
D/C	0.44	0.44	0.26	0.18	0.55	0.28	0.39	0.39	0.39
Mainline Volume Served ...	3,096	3,096	1,830	1,302	2,285	1,979	2,738	2,738	2,738
V/C	0.44	0.44	0.26	0.18	0.55	0.28	0.39	0.39	0.39
Adjusted ONR Dem. (vph)					983		759	0	
ONR Capacity (vph)					2,059		2,059	2,059	
ONR Volume Served (vph)					983		759	0	
ONR Avg RM Rate (vph)									
ONR Time RM Active (min)					0.00		0.00	0.00	
Adjusted OFR Dem. (vph)		1,266	528		306				
OFR Capacity (vph)		2,059	2,059		4,118				
OFR Volume Served (vph)		1,266	528		306				
Density Based LOS	B	C	C	A	A	A	B	B	B
Dem. Based LOS									
Mainline Queue Length (ft)									
Mainline Queue Length (...									
ONR Queue (veh)									
Actual Travel Time (min)	0.45	0.09	0.13	0.31	0.34	0.19	0.17	0.18	0.65
FFS Travel Time (min)	0.45	0.08	0.12	0.30	0.29	0.19	0.15	0.17	0.65
Mainline Delay (min)	0.00	0.01	0.01	0.00	0.05	0.00	0.02	0.01	0.00
VMTD (veh-miles / interval)	440	73	69	123	206	118	130	143	557
VMTV (veh-miles / interval)	440	73	69	123	206	118	130	143	557
PMTD (p-miles / interval)	440	73	69	123	206	118	130	143	557
PMTV (p-miles / interval)	440	73	69	123	206	118	130	143	557
VHT (travel / interval (hrs))	5.87	1.13	1.02	1.66	3.21	1.59	1.92	2.06	7.44
VHD-M (delay / interval (...	0.00	0.15	0.10	0.02	0.47	0.02	0.20	0.16	0.01
VHD-R (delay / interval (...					0.00		0.00	0.00	
VHD-Access (delay / int...									
VHD-MDE (delay / interv...	0.00								
VHD (delay / interval (hrs))	0.00	0.15	0.10	0.02	0.47	0.02	0.20	0.16	0.01
Space Mean Speed (mph)	75.0	65.1	68.0	74.3	64.0	74.2	67.4	69.2	74.9
Travel Time Index	1.00	1.15	1.10	1.01	1.17	1.01	1.11	1.08	1.00



EPAP PM no Project

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Report File: C:\...\8 2033 PM no Proj.pdf

Scenario 2 2033 PM with CCSP, No Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.974	55.7	E
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.242	112.0	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	WB Right	0.985	50.7	D
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.938	58.1	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	1.016	52.3	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	WB Left	0.786	79.6	E
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	1.069	80.0	E
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	EB Left	0.875	22.6	C
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Left	1.102	132.3	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.785	19.1	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Left	0.011	24.9	C
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.355	35.9	E
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	27.742	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	NB Thru	1.351	135.9	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.374	21.4	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.308	20.2	C
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.147	8.2	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	1.659	411.5	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.581	32.9	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.603	67.2	E
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	1.375	259.5	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.901	37.9	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	NB Left	0.775	49.9	D
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.686	23.0	C
25	New Intersection	Two-way stop	HCM 6th Edition	SB Thru	0.005	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.074	15.7	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	WB Left	0.147	19.2	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 4015 of 4853

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	55.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	113	1766	404	35	1126	67	53	25	85	339	61	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-7	0	0	1	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	20	0	0	26	0	0	7
Total Hourly Volume [veh/h]	3	113	1759	404	35	1127	47	53	25	59	339	61	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	505	116	10	324	14	15	7	17	97	18	4
Total Analysis Volume [veh/h]	3	130	2022	464	40	1295	54	61	29	68	390	70	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	81	81	81	81	81	81	81	81	81	81
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	40	40	2	35	35	7	7	15	15
g / C, Green / Cycle	0.10	0.49	0.49	0.03	0.43	0.43	0.08	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.07	0.57	0.29	0.02	0.36	0.36	0.03	0.06	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1844	1781	1664	1781	1791
c, Capacity [veh/h]	170	1750	781	51	794	783	147	137	321	322
d1, Uniform Delay [s]	36.03	20.72	14.88	39.32	21.16	21.19	35.52	36.43	31.62	31.62
k, delay calibration	0.04	0.07	0.08	0.04	0.20	0.20	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.96	70.96	0.54	9.24	4.99	5.17	0.70	2.48	4.77	4.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	1.16	0.59	0.78	0.85	0.86	0.42	0.71	0.74	0.74
d, Delay for Lane Group [s/veh]	38.99	91.68	15.42	48.56	26.15	26.37	36.21	38.91	36.39	36.36
Lane Group LOS	D	F	B	D	C	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.57	30.85	5.30	0.88	11.12	11.04	1.16	1.93	4.72	4.74
50th-Percentile Queue Length [ft/ln]	64.15	771.29	132.47	22.09	277.97	276.07	28.90	48.34	118.03	118.61
95th-Percentile Queue Length [veh/ln]	4.62	44.37	9.07	1.59	16.59	16.49	2.08	3.48	8.28	8.32
95th-Percentile Queue Length [ft/ln]	115.47	1109.21	226.85	39.76	414.68	412.31	52.02	87.01	207.11	207.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.99	38.99	91.68	15.42	48.56	26.25	26.37	36.21	38.91	38.91	36.38	36.36	36.36
Movement LOS	D	D	F	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	75.49				26.90			37.87			36.37		
Approach LOS	E				C			D			D		
d_I, Intersection Delay [s/veh]	55.66												
Intersection LOS	E												
Intersection V/C	0.974												

Emissions

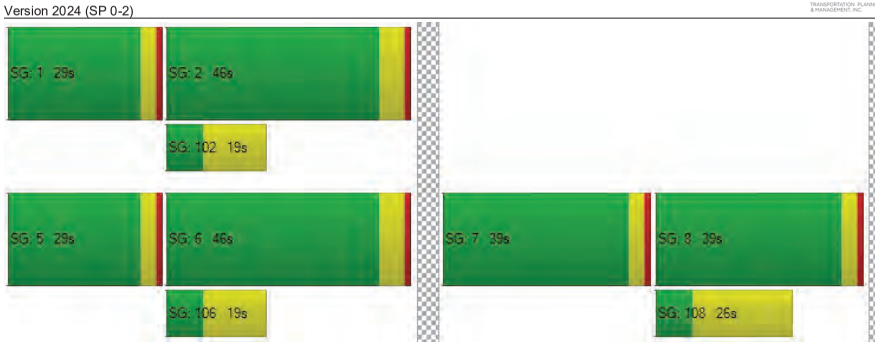
Vehicle Miles Traveled [mph]	31.76	482.92	110.82	5.88	99.74	98.60	2.61	4.14	12.45	12.51
Stops [stops/h]	113.59	2731.39	234.57	39.11	492.19	488.82	51.17	85.59	208.99	210.02
Fuel consumption [US gal/h]	3.56	88.23	8.17	1.08	13.15	13.06	0.84	1.41	3.43	3.44
CO [g/h]	248.59	6167.45	571.19	75.71	919.11	912.58	58.68	98.66	239.63	240.80
NOx [g/h]	48.37	1199.96	111.13	14.73	178.83	177.56	11.42	19.20	46.62	46.85
VOC [g/h]	57.61	1429.37	132.38	17.55	213.01	211.50	13.60	22.87	55.54	55.81

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	30.41	30.41	30.41
I_p,int, Pedestrian LOS Score for Intersectio	0.000	3.351	2.120	2.275
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	991	991	861	861
d_b, Bicycle Delay [s]	10.35	10.35	13.19	13.19
I_b,int, Bicycle LOS Score for Intersection	3.718	2.722	1.863	2.358
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	112.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.242

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	173	4	218	1133	198	380	48	581	63	107	286
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	-7	0	0	0	1	0	0	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	52	0	0	0	59	0	0	175	0	0	86
Total Hourly Volume [veh/h]	5	439	1609	121	4	218	1134	139	380	48	407	63	107	200
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	118	433	33	1	59	305	37	102	13	109	17	29	54
Total Analysis Volume [veh/h]	5	472	1730	130	4	234	1219	149	409	52	438	68	115	215
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	125	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	48	48	18	47	47	20	20	20	20	20
g / C, Green / Cycle	0.16	0.39	0.39	0.15	0.38	0.38	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.27	0.35	0.35	0.13	0.34	0.09	0.13	0.13	0.28	0.04	0.20
s, saturation flow rate [veh/h]	1781	3560	1804	1781	3560	1589	1781	1800	1589	1781	1677
c, Capacity [veh/h]	286	1383	701	264	1340	598	286	289	255	286	269
d1, Uniform Delay [s]	52.30	35.58	35.82	52.14	36.84	26.73	50.42	50.36	52.30	45.65	52.30
k, delay calibration	0.50	0.13	0.36	0.28	0.13	0.13	0.25	0.25	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	315.82	2.58	12.95	22.60	3.27	0.26	11.63	10.96	338.60	0.16	129.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.67	0.89	0.90	0.90	0.91	0.25	0.81	0.80	1.72	0.24	1.23
d, Delay for Lane Group [s/veh]	368.11	38.16	48.77	74.75	40.11	26.99	62.05	61.32	390.89	45.80	182.27
Lane Group LOS	F	D	D	E	D	C	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	33.75	17.00	19.58	8.78	17.31	3.01	7.84	7.81	31.95	1.86	18.11
50th-Percentile Queue Length [ft/ln]	843.85	425.08	489.60	219.39	432.68	75.14	195.91	195.15	798.67	46.54	452.69
95th-Percentile Queue Length [veh/ln]	52.48	23.77	26.84	13.63	24.13	5.41	12.43	12.39	50.21	3.35	27.52
95th-Percentile Queue Length [ft/ln]	1311.97	594.15	671.04	340.85	603.25	135.25	310.68	309.70	1255.13	83.78	687.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	368.1	368.1	41.23	48.77	74.75	74.75	40.11	26.99	61.73	61.32	390.89	45.80	182.27	182.27
Movement LOS	F	F	D	D	E	E	D	C	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	108.37				44.02				222.08			158.95		
Approach LOS	F				D				F			F		
d_I, Intersection Delay [s/veh]	112.00													
Intersection LOS	F													
Intersection V/C	1.242													

Emissions

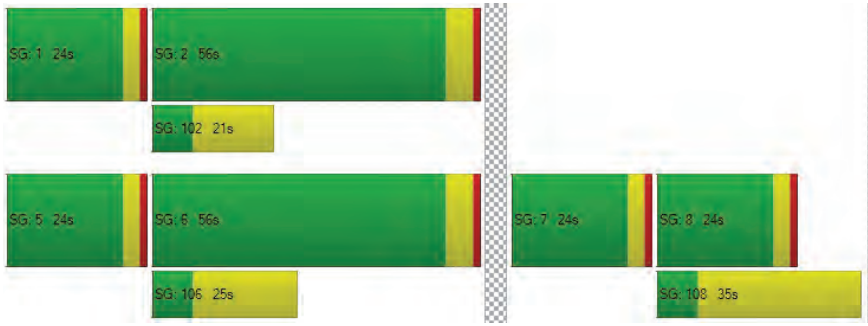
Vehicle Miles Traveled [mph]	89.45	230.49	118.31	56.84	291.14	35.59	14.35	14.40	27.32	3.32	16.09
Stops [stops/h]	975.70	982.99	566.09	253.67	1000.57	86.88	226.52	225.64	923.46	53.81	523.42
Fuel consumption [US gal/h]	50.92	29.67	17.35	8.72	32.37	3.12	4.75	4.72	41.06	1.07	15.79
CO [g/h]	3559.45	2073.67	1213.11	609.69	2262.56	217.98	331.88	329.91	2870.09	74.62	1103.87
NOx [g/h]	692.54	403.46	236.03	118.62	440.21	42.41	64.57	64.19	558.42	14.52	214.77
VOC [g/h]	824.94	480.59	281.15	141.30	524.37	50.52	76.92	76.46	665.17	17.29	255.83

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.76	51.76	51.76
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.551	2.851	2.388
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	808	808	321	321
d_b, Bicycle Delay [s]	22.13	22.13	43.88	43.88
l_b,int, Bicycle LOS Score for Intersection	2.871	2.740	3.332	2.358
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	50.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.985

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1224	1679	414	0	37	1252	493	306	130	404	236	88	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-10	-10	-2	0	0	2	0	0	0	1	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	124	0	0	0	148	0	0	122	0	0	75
Total Hourly Volume [veh/h]	1	1214	1669	288	0	37	1254	345	306	130	283	237	88	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	304	417	72	0	9	314	86	77	33	71	59	22	44
Total Analysis Volume [veh/h]	1	1214	1669	288	0	37	1254	345	306	130	283	237	88	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.35	0.36	0.39	0.02	0.25	0.22	0.12	0.12	0.09	0.09	0.11
s, saturation flow rate [veh/h]	3459	3532	1725	1781	5053	1589	1781	1832	1781	1828	1589
c, Capacity [veh/h]	1155	1914	935	81	1279	685	249	257	223	228	199
d1, Uniform Delay [s]	45.28	22.41	23.41	63.30	50.45	28.15	57.19	57.19	57.24	57.21	58.55
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.12	0.11	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.55	1.89	4.79	1.51	20.87	2.64	12.22	11.90	4.77	4.44	23.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.05	0.67	0.72	0.46	0.98	0.50	0.86	0.86	0.72	0.72	0.89
d, Delay for Lane Group [s/veh]	70.83	24.29	28.20	64.81	71.32	30.79	69.41	69.09	62.01	61.65	81.74
Lane Group LOS	F	C	C	E	E	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	23.42	15.01	17.17	1.26	16.17	8.41	8.08	8.29	5.63	5.72	7.25
50th-Percentile Queue Length [ft/ln]	585.62	375.18	429.14	31.57	404.27	210.14	202.10	207.28	140.79	143.07	181.28
95th-Percentile Queue Length [veh/ln]	32.44	21.36	23.96	2.27	22.77	13.16	12.75	13.01	9.52	9.65	11.67
95th-Percentile Queue Length [ft/ln]	811.09	534.01	599.01	56.82	569.14	329.01	318.67	325.34	238.08	241.15	291.68

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.83	70.83	25.20	28.20	64.81	64.81	71.32	30.79	69.32	69.09	0.00	61.90	61.65	81.74
Movement LOS	E	F	C	C	E	E	E	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	42.95				62.62				41.99			68.82		
Approach LOS	D				E				D			E		
d_I, Intersection Delay [s/veh]	50.74													
Intersection LOS	D													
Intersection V/C	0.985													

Emissions

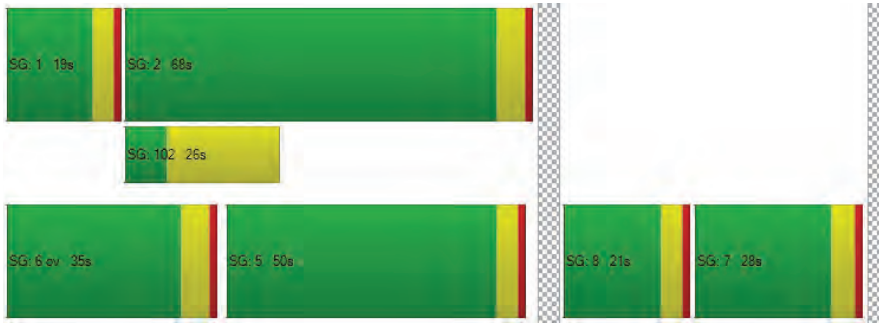
Vehicle Miles Traveled [mph]	208.99	220.70	115.91	6.94	235.16	64.70	9.94	10.23	5.11	5.22	5.60
Stops [stops/h]	1240.14	794.49	454.38	33.42	1284.14	222.51	213.99	219.48	149.07	151.48	191.94
Fuel consumption [US gal/h]	32.97	19.82	11.15	1.14	42.22	7.15	4.63	4.74	3.06	3.11	4.22
CO [g/h]	2304.35	1385.29	779.37	79.78	2951.48	499.48	323.44	331.40	214.18	217.42	294.84
NOx [g/h]	448.34	269.53	151.64	15.52	574.25	97.18	62.93	64.48	41.67	42.30	57.36
VOC [g/h]	534.06	321.05	180.63	18.49	684.03	115.76	74.96	76.80	49.64	50.39	68.33

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.539
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.372	2.520	2.279	2.035
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	58.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.938

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2456	609	1	388	1504	0	0	0	1591	0	0	861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-22	-4	0	0	4	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	182	0	0	0	0	0	0	478	0	0	258
Total Hourly Volume [veh/h]	0	2434	423	1	388	1508	0	0	0	1115	0	0	603
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	641	126	0	115	397	0	0	0	332	0	0	179
Total Analysis Volume [veh/h]	0	2562	504	1	462	1587	0	0	0	1327	0	0	718
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.45	0.46	0.26	0.23	0.47	
s, saturation flow rate [veh/h]	5094	1676	1781	6792	2813	
c, Capacity [veh/h]	2809	924	516	3476	927	
d1, Uniform Delay [s]	12.47	12.61	23.17	10.58	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.80	8.54	8.80	0.43	196.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.82	0.83	0.90	0.46	1.43	
d, Delay for Lane Group [s/veh]	15.27	21.15	31.97	11.01	219.31	
Lane Group LOS	B	C	C	B	F	
Critical Lane Group	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	7.57	9.11	7.43	3.03	32.05	
50th-Percentile Queue Length [ft/ln]	189.14	227.63	185.84	75.84	801.34	
95th-Percentile Queue Length [veh/ln]	12.08	14.05	11.90	5.46	50.02	
95th-Percentile Queue Length [ft/ln]	301.91	351.35	297.62	136.52	1250.55	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.88	21.15	31.97	31.97	11.01	0.00	0.00	0.00	219.31	0.00	0.00	0.00
Movement LOS		B	C	C	C	B				F			
d_A, Approach Delay [s/veh]	16.74			15.74				219.31			0.00		
Approach LOS	B			B				F			A		
d_I, Intersection Delay [s/veh]	58.15												
Intersection LOS	E												
Intersection V/C	0.938												

Emissions

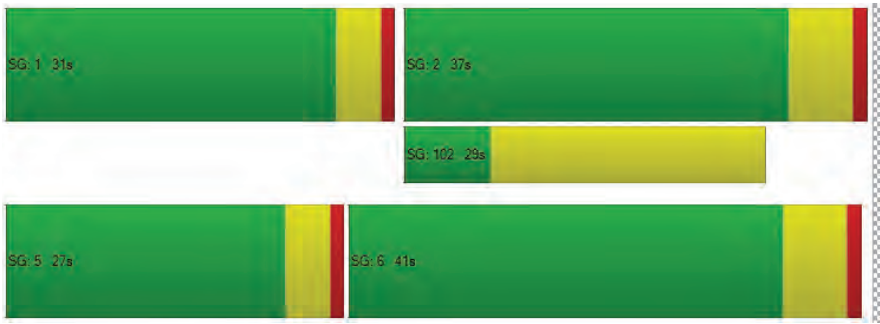
Vehicle Miles Traveled [mph]	332.73	110.91	79.64	272.97	94.96	
Stops [stops/h]	1201.60	482.04	393.53	642.43	3393.91	
Fuel consumption [US gal/h]	33.49	13.09	10.64	20.90	81.87	
CO [g/h]	2341.14	915.31	743.40	1460.96	5722.94	
NOx [g/h]	455.50	178.09	144.64	284.25	1113.48	
VOC [g/h]	542.58	212.13	172.29	338.59	1326.35	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.259
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.899	2.215	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	52.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.016

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	1987	233	3	570	1937	585	460	37	83	1	92	6	615
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-26	-2	0	0	6	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	69	0	0	0	176	0	0	25	0	0	0	185
Total Hourly Volume [veh/h]	1	24	1961	162	3	570	1943	409	460	37	58	1	92	6	430
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	511	42	1	148	506	107	120	10	15	0	24	2	112
Total Analysis Volume [veh/h]	1	25	2043	169	3	594	2024	426	479	39	60	1	96	6	448
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	101	101	101	101	101	101	101	101	101	101	101	101
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	42	42	12	51	51	16	16	16	15	15	15
g / C, Green / Cycle	0.02	0.41	0.41	0.12	0.51	0.51	0.16	0.16	0.16	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.01	0.40	0.11	0.17	0.40	0.27	0.14	0.02	0.04	0.05	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	72	2100	655	411	2599	811	561	304	258	264	237	236
d1, Uniform Delay [s]	48.83	29.15	19.53	44.54	20.11	16.56	41.16	36.22	36.85	38.76	42.74	42.74
k, delay calibration	0.04	0.04	0.04	0.17	0.04	0.04	0.08	0.08	0.08	0.08	0.39	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	2.10	0.08	209.05	0.20	0.20	2.86	0.14	0.34	0.63	42.70	42.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.97	0.26	1.45	0.78	0.53	0.85	0.13	0.23	0.37	0.96	0.96
d, Delay for Lane Group [s/veh]	49.98	31.25	19.61	253.59	20.31	16.75	44.03	36.36	37.19	39.39	85.45	85.56
Lane Group LOS	D	C	B	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.33	15.88	2.59	17.01	12.19	6.36	5.95	0.83	1.31	2.20	8.38	8.35
50th-Percentile Queue Length [ft/ln]	8.33	396.99	64.67	425.16	304.87	158.99	148.83	20.82	32.74	54.99	209.42	208.78
95th-Percentile Queue Length [veh/ln]	0.60	22.41	4.66	27.16	17.92	10.50	9.95	1.50	2.36	3.96	13.12	13.09
95th-Percentile Queue Length [ft/ln]	15.00	560.37	116.41	679.10	448.04	262.38	248.87	37.47	58.92	98.98	328.08	327.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.98	49.98	31.25	19.61	253.5	253.5	20.31	16.75	44.03	36.36	37.19	39.39	39.39	85.45	85.50
Movement LOS	D	D	C	B	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	30.59				65.52				42.80			77.39			
Approach LOS	C				E				D			E			
d_I, Intersection Delay [s/veh]	52.30														
Intersection LOS	D														
Intersection V/C	1.016														

Emissions

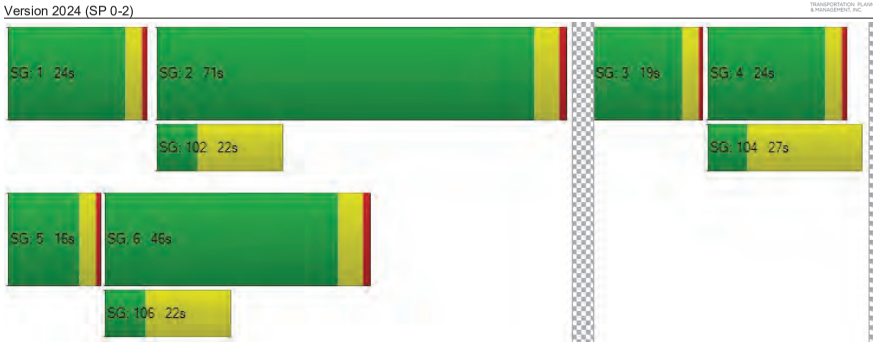
Vehicle Miles Traveled [mph]	5.80	456.07	37.73	86.38	292.87	61.64	61.10	4.97	7.65	34.04	79.83	79.51
Stops [stops/h]	23.78	1698.92	92.26	1212.97	1304.68	226.79	424.61	29.70	46.70	78.45	298.73	297.83
Fuel consumption [US gal/h]	0.63	41.15	2.74	41.06	27.63	5.24	9.15	0.66	1.03	2.61	8.89	8.86
CO [g/h]	44.37	2876.65	191.33	2870.09	1931.22	366.49	639.76	45.95	71.80	182.61	621.47	619.52
NOx [g/h]	8.63	559.69	37.23	558.42	375.75	71.31	124.47	8.94	13.97	35.53	120.92	120.54
VOC [g/h]	10.28	666.69	44.34	665.17	447.58	84.94	148.27	10.65	16.64	42.32	144.03	143.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.07	0.00	40.07	40.07
l_p,int, Pedestrian LOS Score for Intersectio	3.441	0.000	2.695	2.882
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	802	1298	406	307
d_b, Bicycle Delay [s]	18.10	6.22	32.05	36.16
l_b,int, Bicycle LOS Score for Intersection	2.828	3.006	2.057	2.616
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	79.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	125	1673	518	2	253	1422	436	2	376	472	124	516	223	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-28	-8	0	0	6	0	0	0	0	0	1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	153	0	0	0	131	0	0	0	37	0	0	58
Total Hourly Volume [veh/h]	6	125	1645	357	2	253	1428	305	2	376	472	87	517	223	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	442	96	1	68	384	82	1	101	127	23	139	60	37
Total Analysis Volume [veh/h]	6	134	1769	384	2	272	1535	328	2	404	508	94	556	240	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	25	50	0	0	35	50	0	0	25	15	0	15	25	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	40	56	0	0	31	21	0	21	31	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	158	158	158	158	158	158	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	14	84	84	15	84	84	21	22	22	15	17	17
g / C, Green / Cycle	0.09	0.53	0.53	0.09	0.53	0.53	0.13	0.14	0.14	0.09	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.24	0.08	0.30	0.21	0.12	0.17	0.17	0.16	0.07	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1770	3459	3560	1589
c, Capacity [veh/h]	162	3588	840	321	2702	843	453	266	252	328	378	169
d1, Uniform Delay [s]	70.88	23.77	23.18	70.60	24.94	21.95	67.60	67.77	67.77	71.50	67.68	69.50
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.50	0.50	0.19	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	0.49	1.79	2.50	0.87	1.35	2.61	106.79	108.24	317.14	0.66	5.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.49	0.46	0.85	0.57	0.39	0.90	1.16	1.16	1.69	0.64	0.87
d, Delay for Lane Group [s/veh]	76.17	24.26	24.98	73.10	25.81	23.31	70.21	174.56	176.01	388.64	68.34	74.58
Lane Group LOS	E	C	C	E	C	C	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.86	10.77	9.43	5.51	12.69	7.36	8.27	18.66	17.76	21.14	4.71	6.08
50th-Percentile Queue Length [ft/ln]	146.59	269.16	235.79	137.66	317.31	183.91	206.85	466.50	444.01	528.62	117.80	152.05
95th-Percentile Queue Length [veh/ln]	9.84	16.15	14.47	9.35	18.54	11.80	12.99	27.59	26.43	33.61	8.27	10.13
95th-Percentile Queue Length [ft/ln]	245.88	403.69	361.70	233.87	463.38	295.11	324.78	689.78	660.77	840.33	206.80	253.16

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.17	76.17	24.26	24.98	73.10	73.10	25.81	23.31	70.21	70.21	175.1	176.0	388.64	68.34	74.58
Movement LOS	E	E	C	C	E	E	C	C	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	27.55				31.49				132.95				258.36		
Approach LOS	C				C				F				F		
d_I, Intersection Delay [s/veh]	79.60														
Intersection LOS	E														
Intersection V/C	0.786														

Emissions

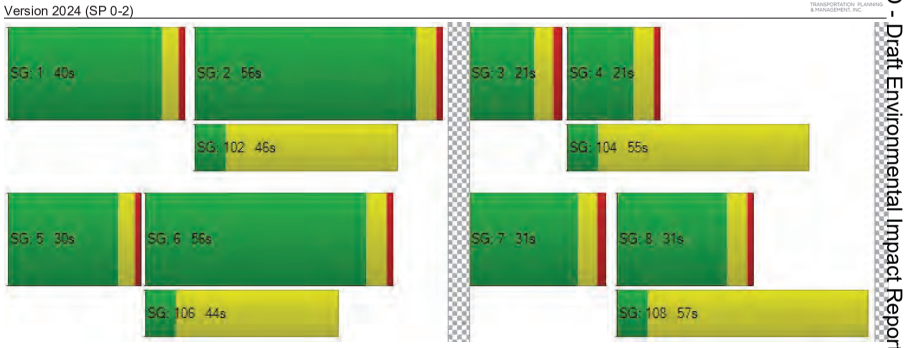
Vehicle Miles Traveled [mph]	55.74	704.35	152.89	61.17	342.67	73.22	101.33	77.19	73.05	58.09	25.08	15.25
Stops [stops/h]	133.60	981.26	214.89	250.93	867.59	167.61	377.04	425.16	404.67	963.56	214.73	138.58
Fuel consumption [US gal/h]	5.20	43.15	9.43	9.29	30.60	6.15	12.05	16.51	15.73	51.68	5.56	3.61
CO [g/h]	363.67	3016.20	659.37	649.50	2138.63	429.85	842.60	1154.14	1099.23	3612.24	388.37	252.27
NOx [g/h]	70.76	586.84	128.29	126.37	416.10	83.63	163.94	224.55	213.87	702.81	75.56	49.08
VOC [g/h]	84.28	699.03	152.81	150.53	495.65	99.62	195.28	267.48	254.76	837.17	90.01	58.47

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.38	68.38	68.38	68.38
l_p,int, Pedestrian LOS Score for Intersectio	3.599	3.859	2.837	3.026
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	637	637	194	320
d_b, Bicycle Delay [s]	36.71	36.71	64.44	55.73
l_b,int, Bicycle LOS Score for Intersection	2.566	2.657	2.088	2.385
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	80.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.069

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	11	1588	30	0	34	1590	454	703	9	27	1	6	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-36	0	0	0	7	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	9	0	0	0	136	0	0	8	0	0	6
Total Hourly Volume [veh/h]	1	11	1552	21	0	34	1597	318	703	9	19	1	6	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	436	6	0	10	449	89	197	3	5	0	2	4
Total Analysis Volume [veh/h]	1	12	1744	24	0	39	1794	357	790	10	21	1	7	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	40	40	2	41	41	20	20	2
g / C, Green / Cycle	0.02	0.49	0.49	0.03	0.50	0.50	0.24	0.24	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.47	0.47	0.02	0.58	0.61	0.23	0.23	0.01
s, saturation flow rate [veh/h]	1781	1870	1861	1781	1870	1767	1781	1772	1674
c, Capacity [veh/h]	30	905	901	52	928	877	431	429	45
d1, Uniform Delay [s]	40.22	20.86	20.92	39.82	20.81	20.81	30.85	30.87	39.66
k, delay calibration	0.04	0.42	0.42	0.04	0.50	0.50	0.40	0.40	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.61	22.50	23.28	8.10	83.61	112.17	28.58	29.15	3.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.98	0.98	0.76	1.16	1.23	0.95	0.96	0.51
d, Delay for Lane Group [s/veh]	43.83	43.36	44.20	47.92	104.42	132.98	59.43	60.02	42.97
Lane Group LOS	D	D	D	D	F	F	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.29	20.62	20.81	0.84	35.37	40.37	11.15	11.19	0.49
50th-Percentile Queue Length [ft/ln]	7.19	515.47	520.19	21.08	884.31	1009.23	278.83	279.72	12.36
95th-Percentile Queue Length [veh/ln]	0.52	28.07	28.29	1.52	50.29	58.69	16.63	16.67	0.89
95th-Percentile Queue Length [ft/ln]	12.94	701.64	707.21	37.95	1257.32	1467.16	415.76	416.86	22.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.83	43.83	43.77	44.20	47.92	47.92	115.8	132.9	59.71	60.02	60.02	42.97	42.97	42.97
Movement LOS	D	D	D	D	D	D	F	F	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	43.78				117.44				59.72			42.97		
Approach LOS	D				F				E			D		
d_I, Intersection Delay [s/veh]	80.00													
Intersection LOS	E													
Intersection V/C	1.069													

Emissions

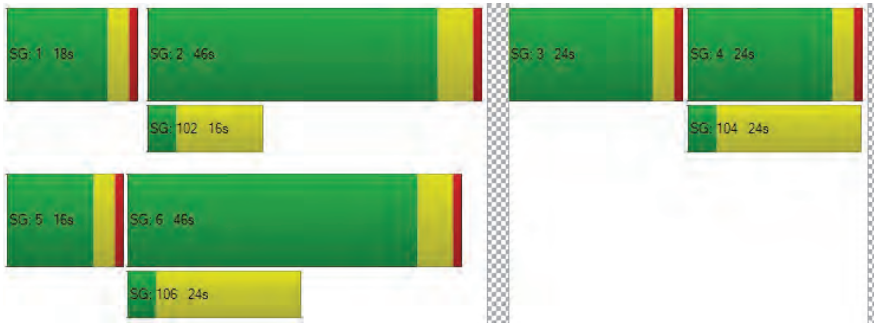
Vehicle Miles Traveled [mph]	4.60	312.98	312.52	15.53	428.22	428.22	99.04	98.78	0.44
Stops [stops/h]	12.55	900.19	908.43	36.82	1544.31	1762.46	486.94	488.48	21.59
Fuel consumption [US gal/h]	0.37	25.66	25.83	1.58	65.86	76.16	11.74	11.77	0.34
CO [g/h]	26.19	1793.88	1805.41	110.69	4603.67	5323.69	820.51	822.84	23.65
NOx [g/h]	5.09	349.02	351.27	21.54	895.71	1035.80	159.64	160.10	4.60
VOC [g/h]	6.07	415.75	418.42	25.65	1066.94	1233.82	190.16	190.70	5.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.62	0.00	33.62	33.62
l_p,int, Pedestrian LOS Score for Intersectio	3.016	0.000	2.386	1.776
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	970	970	485	485
d_b, Bicycle Delay [s]	10.93	10.93	23.65	23.65
l_b,int, Bicycle LOS Score for Intersection	3.036	3.446	2.927	1.607
Bicycle LOS	C	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 4036 of 4853

Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

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TKEAR TRANSPORTATION, PLANNING & MANAGEMENT, INC.

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	90	1321	1429	190	309	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-36	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	57	0	53
Total Hourly Volume [veh/h]	0	89	1285	1436	133	309	125
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	361	403	37	87	35
Total Analysis Volume [veh/h]	0	100	1444	1613	149	347	140
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	6	49	39	39	17	17
g / C, Green / Cycle	0.07	0.64	0.52	0.52	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.41	0.47	0.49	0.19	0.09
s, saturation flow rate [veh/h]	1781	3560	1870	1816	1781	1589
c, Capacity [veh/h]	131	2295	970	942	399	356
d1, Uniform Delay [s]	34.58	8.08	16.66	17.12	28.44	25.11
k, delay calibration	0.04	0.15	0.37	0.39	0.24	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.48	0.41	10.84	14.41	12.21	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.63	0.91	0.94	0.87	0.39
d, Delay for Lane Group [s/veh]	38.06	8.49	27.50	31.52	40.66	25.82
Lane Group LOS	D	A	C	C	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.89	5.72	15.00	16.17	7.16	2.14
50th-Percentile Queue Length [ft/ln]	47.25	143.00	374.90	404.37	178.99	53.46
95th-Percentile Queue Length [veh/ln]	3.40	9.64	21.35	22.77	11.55	3.85
95th-Percentile Queue Length [ft/ln]	85.05	241.05	533.68	569.26	288.69	96.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.06	38.06	8.49	29.33	31.52	40.66	25.82
Movement LOS	D	D	A	C	C	D	C
d_A, Approach Delay [s/veh]	10.40			29.51		36.39	
Approach LOS	B			C		D	
d_I, Intersection Delay [s/veh]	22.62						
Intersection LOS	C						
Intersection V/C	0.875						

Emissions

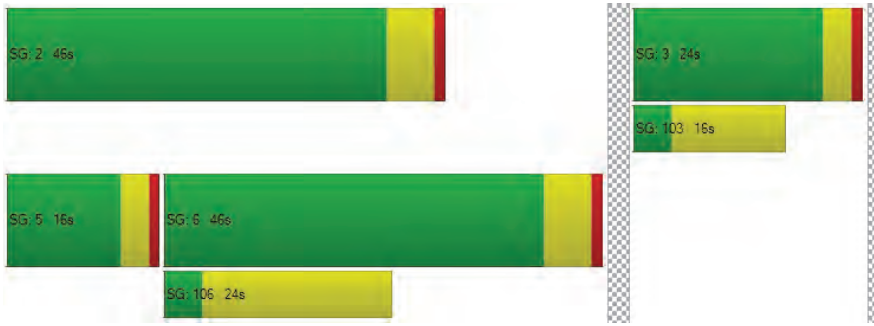
Vehicle Miles Traveled [mph]	69.56	1004.38	311.69	311.69	117.08	47.24
Stops [stops/h]	89.71	543.04	711.87	767.82	339.86	101.51
Fuel consumption [US gal/h]	4.13	46.84	21.69	22.72	9.57	3.24
CO [g/h]	288.94	3274.22	1516.44	1588.47	668.81	226.54
NOx [g/h]	56.22	637.04	295.04	309.06	130.13	44.08
VOC [g/h]	66.96	758.83	351.45	368.14	155.00	52.50

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.34	0.00	30.34
l_p,int, Pedestrian LOS Score for Intersectio	2.947	0.000	2.285
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1055	1055	527
d_b, Bicycle Delay [s]	8.47	8.47	20.56
l_b,int, Bicycle LOS Score for Intersection	2.833	3.060	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	132.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.102

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	108	575	28	352	446	809	686	216	57	68	155	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-5	-15	-3	0	3	4	-22	-4	1	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	244	0	0	17	0	0	45
Total Hourly Volume [veh/h]	103	560	17	352	449	569	664	212	41	69	156	105
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	154	5	97	123	156	182	58	11	19	43	29
Total Analysis Volume [veh/h]	113	615	19	387	493	625	730	233	45	76	171	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	77	77	77	77	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	6	19	19	12	25	25	15	15	12	12
g / C, Green / Cycle	0.08	0.25	0.25	0.16	0.32	0.32	0.19	0.19	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.17	0.22	0.26	0.39	0.28	0.28	0.13	0.07
s, saturation flow rate [veh/h]	1781	1870	1850	1781	1870	1589	1781	1801	1842	1589
c, Capacity [veh/h]	145	467	462	276	604	513	345	349	293	253
d1, Uniform Delay [s]	34.86	26.28	26.28	32.71	24.10	26.21	31.21	31.21	31.63	29.52
k, delay calibration	0.04	0.04	0.04	0.50	0.24	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.34	0.66	0.67	201.35	6.02	114.74	222.72	215.48	2.57	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.68	0.68	1.40	0.82	1.22	1.46	1.44	0.84	0.46
d, Delay for Lane Group [s/veh]	38.20	26.94	26.95	234.06	30.12	140.95	253.93	246.69	34.20	30.00
Lane Group LOS	D	C	C	F	C	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.17	5.17	5.12	20.05	8.05	24.33	27.52	27.13	4.54	1.92
50th-Percentile Queue Length [ft/ln]	54.20	129.24	127.99	501.30	201.21	608.16	688.01	678.30	113.57	47.92
95th-Percentile Queue Length [veh/ln]	3.90	8.90	8.83	31.44	12.70	36.41	42.64	41.96	8.04	3.45
95th-Percentile Queue Length [ft/ln]	97.56	222.46	220.76	786.08	317.52	910.33	1065.99	1048.91	200.95	86.26

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 4041 of 4853

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.20	26.94	26.95	234.06	30.12	140.95	251.69	246.69	246.69	34.20	34.20	30.00
Movement LOS	D	C	C	F	C	F	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	28.65			128.59			250.31			32.86		
Approach LOS	C			F			F			C		
d_I, Intersection Delay [s/veh]	132.29											
Intersection LOS	F											
Intersection V/C	1.102											

Emissions

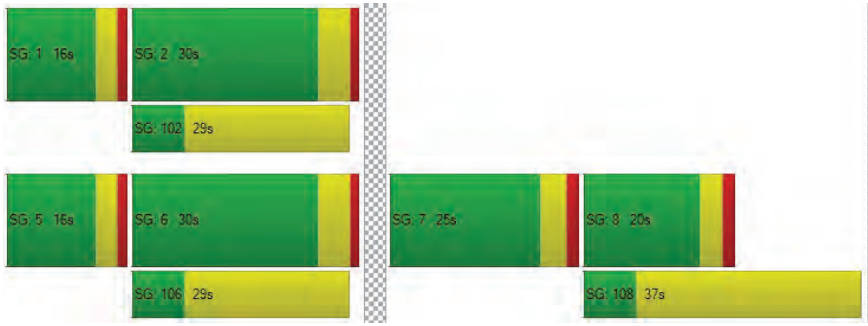
Vehicle Miles Traveled [mph]	65.26	183.99	182.16	269.18	342.91	434.72	37.92	37.92	27.32	12.72
Stops [stops/h]	100.94	240.70	238.37	933.60	374.73	1132.63	1281.33	1263.24	211.50	89.24
Fuel consumption [US gal/h]	4.12	10.65	10.55	44.78	21.45	53.50	34.68	33.84	4.01	1.72
CO [g/h]	288.18	744.48	737.14	3129.83	1499.59	3740.00	2424.11	2365.23	280.44	120.14
NOx [g/h]	56.07	144.85	143.42	608.95	291.77	727.67	471.64	460.19	54.56	23.37
VOC [g/h]	66.79	172.54	170.84	725.37	347.55	866.78	561.81	548.16	64.99	27.84

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.44	0.00	28.44	28.44
l_p,int, Pedestrian LOS Score for Intersectio	2.573	0.000	2.664	2.338
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	639	639	401	517
d_b, Bicycle Delay [s]	17.91	17.91	24.71	21.25
l_b,int, Bicycle LOS Score for Intersection	2.182	3.003	3.251	2.231
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	148	314	452	119	397	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	4	-23	-3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	37	0	0
Total Hourly Volume [veh/h]	149	314	452	86	374	117
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	87	126	27	118	33
Total Analysis Volume [veh/h]	166	349	502	109	473	130
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	7	31	20	20	19	19
g / C, Green / Cycle	0.12	0.52	0.33	0.33	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.19	0.27	0.07	0.27	0.08
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	213	969	620	527	560	500
d1, Uniform Delay [s]	25.58	8.54	18.28	14.35	19.14	15.31
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.32	0.32	3.64	0.27	3.57	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.36	0.81	0.21	0.84	0.26
d, Delay for Lane Group [s/veh]	27.90	8.86	21.92	14.63	22.72	15.58
Lane Group LOS	C	A	C	B	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.07	1.79	5.48	0.87	6.02	1.24
50th-Percentile Queue Length [ft/ln]	51.87	44.78	136.94	21.68	150.57	30.99
95th-Percentile Queue Length [veh/ln]	3.73	3.22	9.32	1.56	10.05	2.23
95th-Percentile Queue Length [ft/ln]	93.37	80.61	232.90	39.03	251.19	55.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.90	8.86	21.92	14.63	22.72	15.58
Movement LOS	C	A	C	B	C	B
d_A, Approach Delay [s/veh]	15.00		20.62		21.18	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	19.14					
Intersection LOS	B					
Intersection V/C	0.785					

Emissions

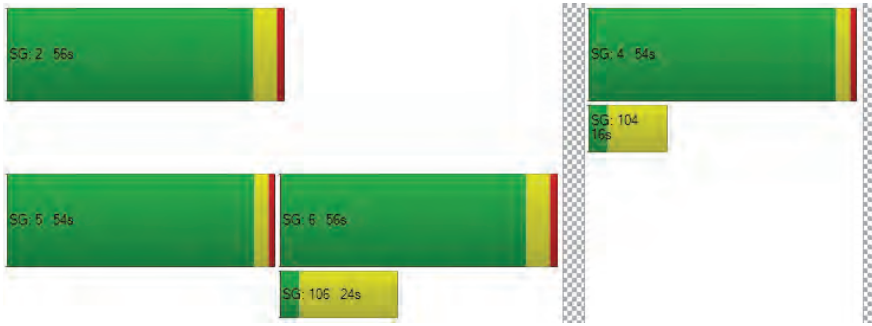
Vehicle Miles Traveled [mph]	20.48	43.06	289.92	62.95	111.09	30.53
Stops [stops/h]	125.08	107.99	330.21	52.28	363.08	74.73
Fuel consumption [US gal/h]	3.95	4.08	18.07	3.40	8.77	2.08
CO [g/h]	276.16	284.89	1263.14	237.76	612.75	145.54
NOx [g/h]	53.73	55.43	245.76	46.26	119.22	28.32
VOC [g/h]	64.00	66.03	292.75	55.10	142.01	33.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.39	0.00	22.39
l_p,int, Pedestrian LOS Score for Intersectio	2.606	0.000	2.220
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1675	1675	1675
d_b, Bicycle Delay [s]	0.79	0.79	0.79
l_b,int, Bicycle LOS Score for Intersection	2.409	2.629	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	24.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	413	0	25	547	0	0	0	0	2	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	414	0	25	544	0	0	0	0	2	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	113	0	6	148	0	0	0	0	1	0	12
Total Analysis Volume [veh/h]	0	450	0	25	591	0	0	0	0	2	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.08
d_M, Delay for Movement [s/veh]	8.66	0.00	0.00	8.27	0.00	0.00	26.89	22.34	12.10	24.87	22.85	11.42
Movement LOS	A	A	A	A	A	A	D	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.26	0.26	0.26
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.06	1.06	1.06	0.00	0.00	0.00	6.60	6.60	6.60
d_A, Approach Delay [s/veh]	0.00			0.34			20.44			11.94		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.73											
Intersection LOS	C											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	35.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.355

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	314	19	123	426	0	0	0	0	59	0	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	315	19	123	423	0	0	0	0	59	0	99
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	85	5	33	114	0	0	0	0	16	0	27
Total Analysis Volume [veh/h]	0	339	20	132	455	0	0	0	0	63	0	106
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.15
d_M, Delay for Movement [s/veh]	8.26	0.00	0.00	8.37	0.00	0.00	31.02	23.50	10.95	35.92	33.89	20.83
Movement LOS	A	A	A	A	A	A	D	C	B	E	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	2.73	2.73	2.73
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	9.25	0.00	0.00	0.00	0.00	0.00	68.24	68.24	68.24
d_A, Approach Delay [s/veh]	0.00			1.88			21.82			26.45		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	5.00											
Intersection LOS	E											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	27.742

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	114	790	168	55	1	886	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-9	-26	1	1	0	5	-5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	105	764	169	56	1	891	180
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	30	217	48	16	0	253	51
Total Analysis Volume [veh/h]	0	119	868	192	64	1	1013	205
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	27.74	1.06	0.00	0.00	0.00	0.77	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	10000.00	14.29	0.00
Movement LOS	F	F	F	A	A	F	B	A
95th-Percentile Queue Length [veh/ln]	122.12	122.12	122.12	0.00	0.00	6.98	6.98	6.98
95th-Percentile Queue Length [ft/ln]	3053.07	3053.07	3053.07	0.00	0.00	174.39	174.39	174.39
d_A, Approach Delay [s/veh]	10000.00			0.00		20.08		
Approach LOS	F			A		C		
d_I, Intersection Delay [s/veh]	4018.88							
Intersection LOS	F							

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Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	135.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.351

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	49	466	87	0	33	476	32	39	34	32	218	16	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	7	-37	-26	0	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	466	87	0	33	476	39	2	8	32	218	21	66
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	140	26	0	10	143	12	1	2	10	66	6	21
Total Analysis Volume [veh/h]	59	561	105	0	42	573	47	2	10	39	263	25	84
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	725	662	423	491
Degree of Utilization, x	1.35	1.24	0.12	0.76

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	32.01	25.71	0.41	6.53
95th-Percentile Queue Length [ft]	800.34	642.71	10.21	163.15
Approach Delay [s/veh]	190.04	145.74	12.69	29.82
Approach LOS	F	F	B	D
Intersection Delay [s/veh]	135.91			
Intersection LOS	F			

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Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	21.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.374

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	109	80	0	143	180	2	109	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	0	0	0	-13	-1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	82	0	143	180	2	96	194
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	24	0	43	54	1	29	58
Total Analysis Volume [veh/h]	130	98	0	170	214	2	114	231
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.13	0.00	0.00	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	21.42	10.42	9.41	0.00	0.00	11.72	8.41	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.69	0.44	0.00	0.00	0.00	0.33	0.33	0.00
95th-Percentile Queue Length [ft/ln]	42.21	11.01	0.00	0.00	0.00	8.37	8.37	0.00
d_A, Approach Delay [s/veh]	16.69			0.00			2.83	
Approach LOS	C			A			A	
d_I, Intersection Delay [s/veh]	4.99							
Intersection LOS	C							

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Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.308

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	107	158	87	152	170	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	2	0	0	-13
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	158	89	152	170	161
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	43	24	41	46	44
Total Analysis Volume [veh/h]	116	172	97	165	185	175
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.31	0.18	0.00	0.00	0.14	0.00
d_M, Delay for Movement [s/veh]	20.23	14.42	0.00	0.00	8.22	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.67	2.67	0.00	0.00	0.49	0.00
95th-Percentile Queue Length [ft/ln]	66.69	66.69	0.00	0.00	12.37	0.00
d_A, Approach Delay [s/veh]	16.76		0.00		4.22	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	6.98					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.147

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	199	12	27	171	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-13	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	12	27	173	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	3	7	47	0	1
Total Analysis Volume [veh/h]	202	13	29	188	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	730	743	692	766	766	744
Degree of Utilization, x	0.15	0.14	0.04	0.12	0.12	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.51	0.50	0.13	0.42	0.42	0.01
95th-Percentile Queue Length [ft]	12.86	12.61	3.27	10.44	10.44	0.30
Approach Delay [s/veh]	8.42		8.07			7.86
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.24					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	411.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.659

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	172	0	29	7	1	21	5	578	115	81	536	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-13	0	0	0	0	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	0	29	7	1	21	5	578	117	81	536	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	0	8	2	0	5	1	149	30	22	138	3
Total Analysis Volume [veh/h]	164	0	31	7	1	22	5	596	121	87	553	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.66	0.00	0.07	0.07	0.01	0.04	0.00	0.01	0.00	0.10	0.01	0.00
d_M, Delay for Movement [s/veh]	411.55	34.33	13.29	43.43	38.07	13.80	8.59	0.00	0.00	9.52	0.00	0.00
Movement LOS	F	D	B	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	12.91	0.21	0.21	0.41	0.41	0.41	0.01	0.00	0.00	0.33	0.00	0.00
95th-Percentile Queue Length [ft/ln]	322.72	5.33	5.33	10.18	10.18	10.18	0.37	0.00	0.00	8.16	0.00	0.00
d_A, Approach Delay [s/veh]	348.24			21.52			0.06			1.27		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	43.44											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Windfield Way									White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	278	5	310	5	5	5	5	663	84	14	225	542	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	93	0	0	0	0	0	25	0	0	0	0
Total Hourly Volume [veh/h]	278	5	217	5	5	5	5	663	59	14	225	542	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	74	1	58	1	1	1	1	176	16	4	60	144	1
Total Analysis Volume [veh/h]	296	5	231	5	5	5	5	705	63	14	239	577	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	22	22	1	1	1	57	57	19	75	75
g / C, Green / Cycle	0.18	0.18	0.01	0.01	0.01	0.47	0.47	0.16	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.17	0.15	0.00	0.01	0.00	0.21	0.21	0.14	0.16	0.16
s, saturation flow rate [veh/h]	1781	1595	1781	1718	1781	1870	1817	1781	1870	1864
c, Capacity [veh/h]	321	289	12	13	12	881	856	280	1162	1159
d1, Uniform Delay [s]	48.33	47.22	59.33	59.43	59.34	21.19	21.20	49.66	10.18	10.18
k, delay calibration	0.24	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.74	2.17	19.50	27.26	19.95	1.61	1.66	4.34	0.52	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.82	0.40	0.76	0.40	0.44	0.44	0.90	0.25	0.25
d, Delay for Lane Group [s/veh]	68.07	49.39	78.83	86.69	79.29	22.80	22.86	53.99	10.70	10.70
Lane Group LOS	E	D	E	F	E	C	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.44	6.94	0.22	0.40	0.22	7.63	7.44	7.77	3.52	3.51
50th-Percentile Queue Length [ft/ln]	260.93	173.40	5.48	10.09	5.50	190.84	185.96	194.31	87.98	87.74
95th-Percentile Queue Length [veh/ln]	15.74	11.25	0.39	0.73	0.40	12.16	11.91	12.34	6.33	6.32
95th-Percentile Queue Length [ft/ln]	393.38	281.37	9.86	18.17	9.90	304.11	297.78	308.62	158.37	157.93

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.07	49.39	49.39	78.83	86.69	86.69	79.29	22.83	22.86	53.99	53.99	10.70	10.70
Movement LOS	E	D	D	E	F	F	E	C	C	D	D	B	B
d_A, Approach Delay [s/veh]	59.78			84.07			23.20			23.81			
Approach LOS	E			F			C			C			
d_I, Intersection Delay [s/veh]	32.89												
Intersection LOS	C												
Intersection V/C	0.581												

Emissions

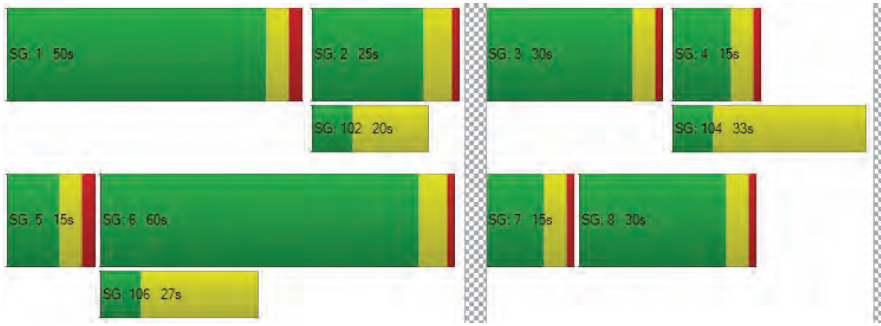
Vehicle Miles Traveled [mph]	114.05	90.93	0.23	0.46	4.21	327.63	318.66	63.14	72.73	72.52
Stops [stops/h]	313.11	208.08	6.57	12.11	6.60	229.00	223.15	233.18	105.58	105.28
Fuel consumption [US gal/h]	10.53	7.26	0.13	0.26	0.29	16.56	16.11	6.67	4.21	4.20
CO [g/h]	735.70	507.80	8.80	18.32	20.29	1157.47	1126.28	466.03	294.41	293.55
NOx [g/h]	143.14	98.80	1.71	3.56	3.95	225.20	219.13	90.67	57.28	57.11
VOC [g/h]	170.51	117.69	2.04	4.25	4.70	268.25	261.03	108.01	68.23	68.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.397	1.964	2.676	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.591	1.584	2.218	2.051
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	67.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	69	16	29	189	15	238	3	218	967	55	86	623	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-2	-6	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	71	0	0	0	17	0	0	53
Total Hourly Volume [veh/h]	69	16	20	189	15	167	3	216	961	38	86	624	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	4	5	52	4	46	1	59	279	10	24	171	34
Total Analysis Volume [veh/h]	76	18	22	208	16	184	3	237	1117	42	95	686	137
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	8	20	9	20	21	83	83	9	71	71
g / C, Green / Cycle	0.05	0.14	0.06	0.14	0.15	0.59	0.59	0.07	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.12	0.12	0.13	0.31	0.03	0.05	0.23	0.23
s, saturation flow rate [veh/h]	1781	1705	1781	1609	1781	3560	1589	1781	1870	1763
c, Capacity [veh/h]	96	240	108	229	261	2101	938	117	945	891
d1, Uniform Delay [s]	65.45	52.93	65.75	58.78	58.90	17.13	12.08	64.56	22.14	22.14
k, delay calibration	0.04	0.13	0.50	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.40	447.82	11.99	5.39	0.97	0.09	5.05	1.54	1.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.17	1.92	0.87	0.92	0.53	0.04	0.81	0.45	0.45
d, Delay for Lane Group [s/veh]	70.84	53.34	513.57	70.77	64.28	18.10	12.17	69.61	23.67	23.77
Lane Group LOS	E	D	F	E	E	B	B	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.84	1.28	17.32	7.72	8.79	10.90	0.59	3.52	9.36	8.85
50th-Percentile Queue Length [ft/ln]	70.90	31.95	433.09	193.05	219.75	272.39	14.65	88.04	234.01	221.28
95th-Percentile Queue Length [veh/ln]	5.11	2.30	28.06	12.28	13.65	16.31	1.05	6.34	14.38	13.73
95th-Percentile Queue Length [ft/ln]	127.63	57.52	701.52	306.99	341.30	407.73	26.37	158.46	359.45	343.26

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.84	53.34	53.34	513.57	70.77	70.77	64.28	64.28	18.10	12.17	69.61	23.71	23.77
Movement LOS	E	D	D	F	E	E	E	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	64.81			296.51			25.85				28.47		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	67.15												
Intersection LOS	E												
Intersection V/C	0.603												

Emissions

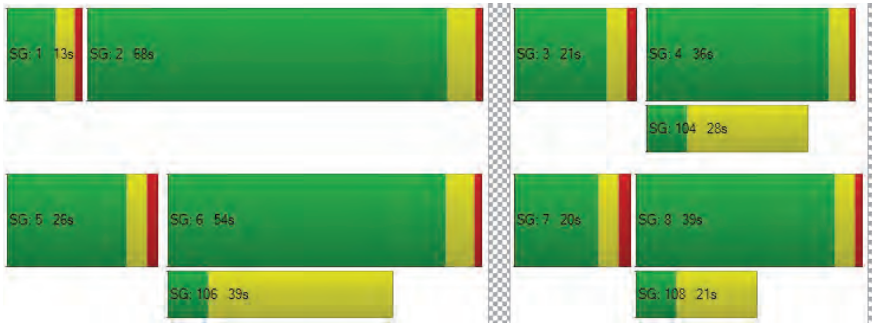
Vehicle Miles Traveled [mph]	3.80	2.00	9.67	9.30	25.08	116.71	4.39	33.26	148.31	139.87
Stops [stops/h]	72.93	32.87	445.46	198.57	226.03	560.35	15.07	90.55	240.70	227.61
Fuel consumption [US gal/h]	1.65	0.70	24.59	4.36	5.42	12.01	0.37	3.22	9.48	8.95
CO [g/h]	115.68	48.80	1719.00	304.74	378.88	839.85	25.72	224.75	662.35	625.43
NOx [g/h]	22.51	9.49	334.45	59.29	73.72	163.40	5.00	43.73	128.87	121.69
VOC [g/h]	26.81	11.31	398.39	70.63	87.81	194.64	5.96	52.09	153.51	144.95

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.070	2.363	2.894	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.766	2.350	2.532	2.361
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	259.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.375

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	102	74	453	315	125	60	66	907	231	350	734	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-3	0	0	0	0	-6	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	135	0	0	18	0	0	69	0	0	56
Total Hourly Volume [veh/h]	102	73	315	315	125	42	66	901	162	350	735	131
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	19	81	81	32	11	17	232	42	90	189	34
Total Analysis Volume [veh/h]	105	75	325	325	129	43	68	929	167	361	758	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	35	35	31	31	7	45	25	62
g / C, Green / Cycle	0.23	0.23	0.20	0.20	0.05	0.29	0.16	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.18	0.10	0.04	0.60	0.20	0.49
s, saturation flow rate [veh/h]	1781	1635	1781	1791	1781	1821	1781	1821
c, Capacity [veh/h]	407	374	359	361	88	535	291	735
d1, Uniform Delay [s]	48.39	59.04	59.67	53.96	71.94	54.04	64.04	45.65
k, delay calibration	0.13	0.50	0.25	0.13	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	66.30	17.22	1.22	5.44	477.68	134.26	108.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	1.07	0.90	0.48	0.78	2.05	1.24	1.21
d, Delay for Lane Group [s/veh]	48.81	125.34	76.88	55.18	77.38	531.71	198.30	154.61
Lane Group LOS	D	F	E	E	E	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.38	21.38	14.07	6.03	2.79	91.61	22.21	49.91
50th-Percentile Queue Length [ft/ln]	84.58	534.59	351.64	150.80	69.68	2290.25	555.21	1247.85
95th-Percentile Queue Length [veh/ln]	6.09	30.12	20.22	10.06	5.02	143.54	33.09	70.23
95th-Percentile Queue Length [ft/ln]	152.25	753.06	505.41	251.50	125.43	3588.62	827.37	1755.87

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.81	125.34	125.34	76.88	55.18	55.18	77.38	531.71	531.71	198.30	154.61	154.61
Movement LOS	D	F	F	E	E	E	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	109.43			69.37			505.17			167.18		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	259.48											
Intersection LOS	F											
Intersection V/C	1.375											

Emissions

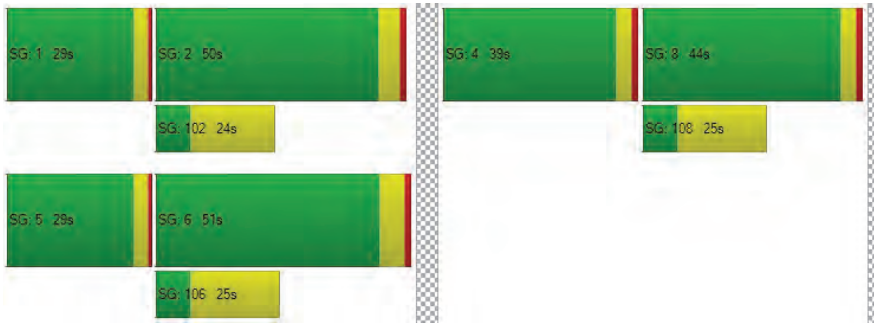
Vehicle Miles Traveled [mph]	180.67	688.26	65.89	34.87	23.81	383.77	162.89	402.94
Stops [stops/h]	79.59	503.03	330.89	141.90	65.57	2155.06	522.44	1174.19
Fuel consumption [US gal/h]	8.92	41.31	9.62	4.15	2.41	146.27	24.16	51.17
CO [g/h]	623.50	2887.78	672.77	290.12	168.68	10224.02	1688.57	3576.44
NOx [g/h]	121.31	561.86	130.90	56.45	32.82	1989.22	328.53	695.85
VOC [g/h]	144.50	669.27	155.92	67.24	39.09	2369.52	391.34	828.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.91	65.91	65.91	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.601	2.267	2.765	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	455	520	584	588
d_b, Bicycle Delay [s]	45.67	41.89	38.34	38.13
l_b,int, Bicycle LOS Score for Intersection	2.616	2.409	3.594	3.721
Bicycle LOS	B	B	D	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	37.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.901

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	1666	1	0	937	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-9	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1657	1	0	938	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	432	0	0	244	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	1726	1	0	977	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	86	86	86	86	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	44	44	0	42	42
g / C, Green / Cycle	0.00	0.00	0.23	0.23	0.01	0.51	0.51	0.00	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.46	0.46	0.00	0.27	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	8	7	414	370	22	948	948	0	1761	786
d1, Uniform Delay [s]	0.00	42.69	26.85	32.97	42.13	19.40	19.41	0.00	15.13	11.00
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.28	0.28	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	41.72	0.31	96.82	13.39	8.94	8.95	0.00	0.27	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.45	0.25	1.16	0.45	0.91	0.91	0.00	0.55	0.00
d, Delay for Lane Group [s/veh]	0.00	84.41	27.16	129.79	55.52	28.34	28.35	0.00	15.40	11.00
Lane Group LOS	A	F	C	F	E	C	C	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.14	1.72	17.38	0.29	16.60	16.61	0.00	6.25	0.03
50th-Percentile Queue Length [ft/ln]	0.00	3.48	43.02	434.50	7.27	415.08	415.16	0.00	156.14	0.70
95th-Percentile Queue Length [veh/ln]	0.00	0.25	3.10	26.17	0.52	23.29	23.29	0.00	10.34	0.05
95th-Percentile Queue Length [ft/ln]	0.00	6.27	77.43	654.34	13.09	582.15	582.24	0.00	258.61	1.26

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	84.41	27.16	27.16	129.79	55.52	28.35	28.35	0.00	15.40	11.00
Movement LOS	A	A	F	C	C	F	E	C	C	A	B	B
d_A, Approach Delay [s/veh]		84.41			109.88			28.50			15.39	
Approach LOS		F			F			C			B	
d_I, Intersection Delay [s/veh]	37.89											
Intersection LOS	D											
Intersection V/C	0.901											

Emissions

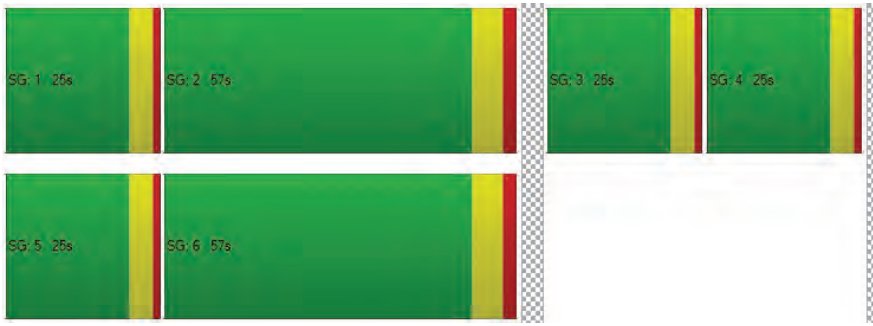
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	389.65	389.62	0.00	170.43	0.52
Stops [stops/h]	0.00	5.84	72.14	728.64	12.20	696.08	696.22	0.00	523.70	1.17
Fuel consumption [US gal/h]	0.00	0.09	2.98	23.69	0.37	24.87	24.87	0.00	12.97	0.03
CO [g/h]	0.00	6.29	208.25	1655.70	25.59	1738.16	1738.28	0.00	906.75	2.43
NOx [g/h]	0.00	1.22	40.52	322.14	4.98	338.18	338.21	0.00	176.42	0.47
VOC [g/h]	0.00	1.46	48.26	383.72	5.93	402.84	402.86	0.00	210.15	0.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	466	466	1165	1165
d_b, Bicycle Delay [s]	25.26	25.26	7.49	7.49
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	2.993	2.368
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	49.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	995	753	861	261	511	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-7	-2	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	988	751	862	261	511	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	247	188	216	65	128	17
Total Analysis Volume [veh/h]	988	751	862	261	511	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	22	63	37	37	15	15	15
g / C, Green / Cycle	0.24	0.70	0.41	0.41	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.29	0.21	0.24	0.16	0.14	0.14	0.04
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	838	2476	1447	646	293	293	262
d1, Uniform Delay [s]	34.10	5.29	20.92	18.97	36.66	36.66	32.76
k, delay calibration	0.07	0.50	0.50	0.50	0.17	0.17	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	82.72	0.32	1.81	1.88	11.98	11.98	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	0.30	0.60	0.40	0.87	0.87	0.25
d, Delay for Lane Group [s/veh]	116.82	5.61	22.73	20.84	48.64	48.64	32.95
Lane Group LOS	F	A	C	C	D	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	18.50	2.36	7.16	4.07	6.35	6.35	1.25
50th-Percentile Queue Length [ft/ln]	462.56	58.98	179.03	101.72	158.65	158.65	31.33
95th-Percentile Queue Length [veh/ln]	27.92	4.25	11.55	7.32	10.48	10.48	2.26
95th-Percentile Queue Length [ft/ln]	697.92	106.16	288.75	183.09	261.94	261.94	56.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	116.82	5.61	22.73	20.84	48.64	32.95
Movement LOS	F	A	C	C	D	C
d_A, Approach Delay [s/veh]	68.79		22.29		46.85	
Approach LOS	E		C		D	
d_I, Intersection Delay [s/veh]	49.93					
Intersection LOS	D					
Intersection V/C	0.775					

Emissions

Vehicle Miles Traveled [mph]	172.35	131.01	152.75	46.25	15.47	15.47	4.00
Stops [stops/h]	1480.19	188.74	572.89	162.75	253.85	253.85	50.13
Fuel consumption [US gal/h]	38.76	7.29	13.44	3.91	4.57	4.57	0.88
CO [g/h]	2709.12	509.80	939.53	273.33	319.34	319.34	61.79
NOx [g/h]	527.10	99.19	182.80	53.18	62.13	62.13	12.02
VOC [g/h]	627.86	118.15	217.74	63.35	74.01	74.01	14.32

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.994	2.486	2.531
Bicycle LOS	C	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	1	152	1111	0	0	559	236	562	1	263	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-2	0	0	0	0	1	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	1	152	1109	0	0	559	189	563	1	233	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	351	0	0	177	60	178	0	74	0	0	0
Total Analysis Volume [veh/h]	1	192	1404	0	0	708	239	713	1	295	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	12	57	42	42	20	20	20	
g / C, Green / Cycle	0.13	0.64	0.46	0.46	0.22	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.39	0.20	0.15	0.20	0.20	0.19	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	231	2274	1646	735	394	394	352	
d1, Uniform Delay [s]	38.24	9.70	16.24	15.31	34.12	34.12	33.50	
k, delay calibration	0.04	0.50	0.50	0.50	0.13	0.13	0.09	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.07	1.27	0.82	1.18	9.52	9.50	4.60	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.62	0.43	0.33	0.91	0.91	0.84	
d, Delay for Lane Group [s/veh]	41.30	10.97	17.06	16.49	43.63	43.62	38.10	
Lane Group LOS	D	B	B	B	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.28	7.53	4.85	3.21	8.45	8.44	6.46	
50th-Percentile Queue Length [ft/ln]	107.12	188.20	121.19	80.16	211.16	211.12	161.41	
95th-Percentile Queue Length [veh/ln]	7.68	12.03	8.46	5.77	13.21	13.21	10.62	
95th-Percentile Queue Length [ft/ln]	191.99	300.69	211.47	144.29	330.32	330.26	265.58	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.30	41.30	10.97	0.00	0.00	17.06	16.49	43.63	43.62	38.10	0.00	0.00	0.00
Movement LOS	D	D	B			B	B	D	D	D			
d_A, Approach Delay [s/veh]	14.64				16.92			42.01			0.00		
Approach LOS	B				B			D			A		
d_I, Intersection Delay [s/veh]	23.02												
Intersection LOS	C												
Intersection V/C	0.686												

Emissions

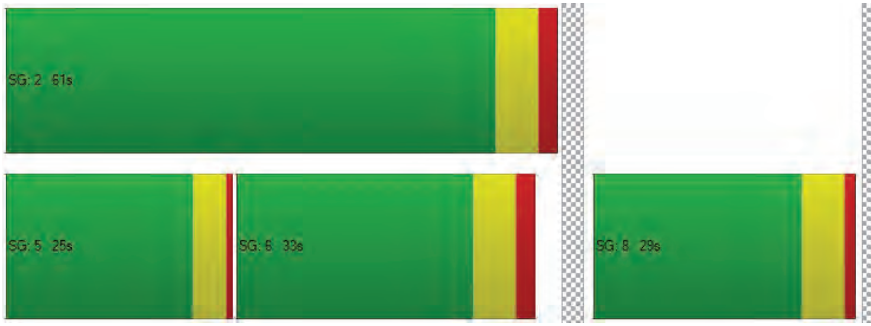
Vehicle Miles Traveled [mph]	34.20	248.80	96.81	32.68	12.37	12.37	10.22	
Stops [stops/h]	171.39	602.24	387.82	128.26	337.85	337.78	258.25	
Fuel consumption [US gal/h]	3.98	16.71	8.59	2.86	5.55	5.54	4.13	
CO [g/h]	277.99	1167.68	600.17	199.63	387.63	387.52	288.99	
NOx [g/h]	54.09	227.19	116.77	38.84	75.42	75.40	56.23	
VOC [g/h]	64.43	270.62	139.10	46.27	89.84	89.81	66.98	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.876	2.380	3.274	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	413	549	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	-3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	414	546	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	104	137	0	0	0
Total Analysis Volume [veh/h]	0	414	546	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	11.70
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		11.70	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.074

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	306	465	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	-3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	307	462	20	27	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	77	116	5	7	0
Total Analysis Volume [veh/h]	0	307	462	20	27	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	8.33	0.00	0.00	0.00	15.67	11.87
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.24	0.24
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	5.97	5.97
d_A, Approach Delay [s/veh]	0.00		0.00		15.67	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.52					
Intersection LOS	C					

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Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.147

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	66	45	288	40	10	37	2	47	20	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-3	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	186	66	45	285	40	10	37	2	47	20	84
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	17	12	73	10	3	10	1	12	5	22
Total Analysis Volume [veh/h]	0	192	68	46	294	41	10	38	2	48	21	87
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.03	0.10	0.00	0.15	0.06	0.11
d_M, Delay for Movement [s/veh]	7.94	0.00	0.00	7.81	0.00	0.00	19.01	16.58	11.63	19.22	17.93	12.62
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.08	0.08	0.08	0.49	0.49	0.49	1.31	1.31	1.31
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.02	2.02	2.02	12.22	12.22	12.22	32.81	32.81	32.81
d_A, Approach Delay [s/veh]	0.00			0.94			16.87			15.37		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.25											
Intersection LOS	C											

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Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	414	569	51	0
2	402	552	49	0
3	393	541	48	0
4	368	506	45	0
5	327	450	40	0
6	323	444	40	0
7	319	438	39	0
8	290	398	36	0
9	286	393	35	0
10	282	387	35	0
11	244	336	30	0
12	228	313	28	0
13	224	307	28	0
14	166	228	20	0
15	166	228	20	0
16	116	159	14	0
17	66	91	8	0
18	66	91	8	0
19	37	51	5	0
20	21	28	3	0
21	12	17	2	0
22	4	6	1	0
23	4	6	1	0
24	4	6	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	983	1	51	No	No	No	No	No	No	No	Yes	No	No
2	1	954	1	49	No	No	No	No	No	No	No	Yes	No	No
3	1	934	1	48	No	No	No	No	No	No	No	Yes	No	No
4	1	874	1	45	No	No	No	No	No	No	No	Yes	No	No
5	1	777	1	40	No	No	No	No	No	No	No	No	No	No
6	1	767	1	40	No	No	No	No	No	No	No	No	No	No
7	1	757	1	39	No	No	No	No	No	No	No	No	No	No
8	1	688	1	36	No	No	No	No	No	No	No	No	No	No
9	1	679	1	35	No	No	No	No	No	No	No	No	No	No
10	1	669	1	35	No	No	No	No	No	No	No	No	No	No
11	1	580	1	30	No	No	No	No	No	No	No	No	No	No
12	1	541	1	28	No	No	No	No	No	No	No	No	No	No
13	1	531	1	28	No	No	No	No	No	No	No	No	No	No
14	1	394	1	20	No	No	No	No	No	No	No	No	No	No
15	1	394	1	20	No	No	No	No	No	No	No	No	No	No
16	1	275	1	14	No	No	No	No	No	No	No	No	No	No
17	1	157	1	8	No	No	No	No	No	No	No	No	No	No
18	1	157	1	8	No	No	No	No	No	No	No	No	No	No
19	1	88	1	5	No	No	No	No	No	No	No	No	No	No
20	1	49	1	3	No	No	No	No	No	No	No	No	No	No
21	1	29	1	2	No	No	No	No	No	No	No	No	No	No
22	1	10	1	1	No	No	No	No	No	No	No	No	No	No
23	1	10	1	1	No	No	No	No	No	No	No	No	No	No
24	1	10	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.9	20.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	51	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1034	1034
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	334	546	158	0
2	324	530	153	0
3	317	519	150	0
4	297	486	141	0
5	264	431	125	0
6	261	426	123	0
7	257	420	122	0
8	234	382	111	0
9	230	377	109	0
10	227	371	107	0
11	197	322	93	0
12	184	300	87	0
13	180	295	85	0
14	134	218	63	0
15	134	218	63	0
16	94	153	44	0
17	53	87	25	0
18	53	87	25	0
19	30	49	14	0
20	17	27	8	0
21	10	16	5	0
22	3	5	2	0
23	3	5	2	0
24	3	5	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	880	1	158	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	854	1	153	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	836	1	150	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	2	783	1	141	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	2	695	1	125	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
6	2	687	1	123	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
7	2	677	1	122	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
8	2	616	1	111	No	No	Yes	Yes	No	No	No	Yes	No	No
9	2	607	1	109	No	No	Yes	Yes	No	No	No	Yes	No	No
10	2	598	1	107	No	No	Yes	Yes	No	No	No	Yes	No	No
11	2	519	1	93	No	No	No	Yes	No	No	No	Yes	No	No
12	2	484	1	87	No	No	No	Yes	No	No	No	No	No	No
13	2	475	1	85	No	No	No	Yes	No	No	No	No	No	No
14	2	352	1	63	No	No	No	No	No	No	No	No	No	No
15	2	352	1	63	No	No	No	No	No	No	No	No	No	No
16	2	247	1	44	No	No	No	No	No	No	No	No	No	No
17	2	140	1	25	No	No	No	No	No	No	No	No	No	No
18	2	140	1	25	No	No	No	No	No	No	No	No	No	No
19	2	79	1	14	No	No	No	No	No	No	No	No	No	No
20	2	44	1	8	No	No	No	No	No	No	No	No	No	No
21	2	26	1	5	No	No	No	No	No	No	No	No	No	No
22	2	8	1	2	No	No	No	No	No	No	No	No	No	No
23	2	8	1	2	No	No	No	No	No	No	No	No	No	No
24	2	8	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	4	7	11	7	2

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	26.5	21.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:09	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	158	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1038	1038
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1072	225	869
2	1040	218	843
3	1018	214	826
4	954	200	773
5	847	178	687
6	836	176	678
7	825	173	669
8	750	158	608
9	740	155	600
10	729	153	591
11	632	133	513
12	590	124	478
13	579	122	469
14	429	90	348
15	429	90	348
16	300	63	243
17	172	36	139
18	172	36	139
19	96	20	78
20	54	11	43
21	32	7	26
22	11	2	9
23	11	2	9
24	11	2	9

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1297	1	869	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1258	1	843	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1232	1	826	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1154	1	773	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1025	1	687	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1012	1	678	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	998	1	669	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	908	1	608	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	895	1	600	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	882	1	591	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	765	1	513	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	714	1	478	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
13	1	701	1	469	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
14	1	519	1	348	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
15	1	519	1	348	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
16	1	363	1	243	No	No	Yes	Yes	No	No	No	No	No	No
17	1	208	1	139	No	No	No	No	No	No	No	No	No	No
18	1	208	1	139	No	No	No	No	No	No	No	No	No	No
19	1	116	1	78	No	No	No	No	No	No	No	No	No	No
20	1	65	1	43	No	No	No	No	No	No	No	No	No	No
21	1	39	1	26	No	No	No	No	No	No	No	No	No	No
22	1	13	1	9	No	No	No	No	No	No	No	No	No	No
23	1	13	1	9	No	No	No	No	No	No	No	No	No	No
24	1	13	1	9	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	11	13	13	15	15	13

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2413:53
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	869
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2166
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	602	548	305	42
2	584	532	296	41
3	572	521	290	40
4	536	488	271	37
5	476	433	241	33
6	470	427	238	33
7	464	422	235	32
8	421	384	214	29
9	415	378	210	29
10	409	373	207	29
11	355	323	180	25
12	331	301	168	23
13	325	296	165	23
14	241	219	122	17
15	241	219	122	17
16	169	153	85	12
17	96	88	49	7
18	96	88	49	7
19	54	49	27	4
20	30	27	15	2
21	18	16	9	1
22	6	5	3	0
23	6	5	3	0
24	6	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1150	1	305	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1116	1	296	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1093	1	290	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1024	1	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	909	1	241	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	897	1	238	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	886	1	235	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	805	1	214	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	793	1	210	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	782	1	207	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	678	1	180	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	632	1	168	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
13	1	621	1	165	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
14	1	460	1	122	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	460	1	122	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	322	1	85	No	No	No	Yes	No	No	No	No	No	No
17	1	184	1	49	No	No	No	No	No	No	No	No	No	No
18	1	184	1	49	No	No	No	No	No	No	No	No	No	No
19	1	103	1	27	No	No	No	No	No	No	No	No	No	No
20	1	57	1	15	No	No	No	No	No	No	No	No	No	No
21	1	34	1	9	No	No	No	No	No	No	No	No	No	No
22	1	11	1	3	No	No	No	No	No	No	No	No	No	No
23	1	11	1	3	No	No	No	No	No	No	No	No	No	No
24	1	11	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	10	3

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	29.8	12.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:31	0:08
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	305	42
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1497	1497
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	292	323	191
2	283	313	185
3	277	307	181
4	260	287	170
5	231	255	151
6	228	252	149
7	225	249	147
8	204	226	134
9	201	223	132
10	199	220	130
11	172	191	113
12	161	178	105
13	158	174	103
14	117	129	76
15	117	129	76
16	82	90	53
17	47	52	31
18	47	52	31
19	26	29	17
20	15	16	10
21	9	10	6
22	3	3	2
23	3	3	2
24	3	3	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	615	2	191	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	596	2	185	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	584	2	181	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	547	2	170	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	486	2	151	No	No	Yes	Yes	No	No	No	No	No	No
6	2	480	2	149	No	No	Yes	Yes	No	No	No	No	No	No
7	2	474	2	147	No	No	Yes	Yes	No	No	No	No	No	No
8	2	430	2	134	No	No	No	Yes	No	No	No	No	No	No
9	2	424	2	132	No	No	No	Yes	No	No	No	No	No	No
10	2	419	2	130	No	No	No	Yes	No	No	No	No	No	No
11	2	363	2	113	No	No	No	Yes	No	No	No	No	No	No
12	2	339	2	105	No	No	No	No	No	No	No	No	No	No
13	2	332	2	103	No	No	No	No	No	No	No	No	No	No
14	2	246	2	76	No	No	No	No	No	No	No	No	No	No
15	2	246	2	76	No	No	No	No	No	No	No	No	No	No
16	2	172	2	53	No	No	No	No	No	No	No	No	No	No
17	2	99	2	31	No	No	No	No	No	No	No	No	No	No
18	2	99	2	31	No	No	No	No	No	No	No	No	No	No
19	2	55	2	17	No	No	No	No	No	No	No	No	No	No
20	2	31	2	10	No	No	No	No	No	No	No	No	No	No
21	2	19	2	6	No	No	No	No	No	No	No	No	No	No
22	2	6	2	2	No	No	No	No	No	No	No	No	No	No
23	2	6	2	2	No	No	No	No	No	No	No	No	No	No
24	2	6	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.7
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:53
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	191
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	806
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	331	241	265
2	321	234	257
3	314	229	252
4	295	214	236
5	261	190	209
6	258	188	207
7	255	186	204
8	232	169	186
9	228	166	183
10	225	164	180
11	195	142	156
12	182	133	146
13	179	130	143
14	132	96	106
15	132	96	106
16	93	67	74
17	53	39	42
18	53	39	42
19	30	22	24
20	17	12	13
21	10	7	8
22	3	2	3
23	3	2	3
24	3	2	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	572	1	265	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	555	1	257	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	543	1	252	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	509	1	236	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	451	1	209	No	No	Yes	Yes	No	No	No	No	No	No
6	2	446	1	207	No	No	Yes	Yes	No	No	No	No	No	No
7	2	441	1	204	No	No	Yes	Yes	No	No	No	No	No	No
8	2	401	1	186	No	No	No	Yes	No	No	No	No	No	No
9	2	394	1	183	No	No	No	Yes	No	No	No	No	No	No
10	2	389	1	180	No	No	No	Yes	No	No	No	No	No	No
11	2	337	1	156	No	No	No	Yes	No	No	No	No	No	No
12	2	315	1	146	No	No	No	No	No	No	No	No	No	No
13	2	309	1	143	No	No	No	No	No	No	No	No	No	No
14	2	228	1	106	No	No	No	No	No	No	No	No	No	No
15	2	228	1	106	No	No	No	No	No	No	No	No	No	No
16	2	160	1	74	No	No	No	No	No	No	No	No	No	No
17	2	92	1	42	No	No	No	No	No	No	No	No	No	No
18	2	92	1	42	No	No	No	No	No	No	No	No	No	No
19	2	52	1	24	No	No	No	No	No	No	No	No	No	No
20	2	29	1	13	No	No	No	No	No	No	No	No	No	No
21	2	17	1	8	No	No	No	No	No	No	No	No	No	No
22	2	5	1	3	No	No	No	No	No	No	No	No	No	No
23	2	5	1	3	No	No	No	No	No	No	No	No	No	No
24	2	5	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:14
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	265
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	837
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	198	200	3
2	192	194	3
3	188	190	3
4	176	178	3
5	156	158	2
6	154	156	2
7	152	154	2
8	139	140	2
9	137	138	2
10	135	136	2
11	117	118	2
12	109	110	2
13	107	108	2
14	79	80	1
15	79	80	1
16	55	56	1
17	32	32	0
18	32	32	0
19	18	18	0
20	10	10	0
21	6	6	0
22	2	2	0
23	2	2	0
24	2	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	398	1	3	No	No	No	No	No	No	No	No	No	No
2	3	386	1	3	No	No	No	No	No	No	No	No	No	No
3	3	378	1	3	No	No	No	No	No	No	No	No	No	No
4	3	354	1	3	No	No	No	No	No	No	No	No	No	No
5	3	314	1	2	No	No	No	No	No	No	No	No	No	No
6	3	310	1	2	No	No	No	No	No	No	No	No	No	No
7	3	306	1	2	No	No	No	No	No	No	No	No	No	No
8	3	279	1	2	No	No	No	No	No	No	No	No	No	No
9	3	275	1	2	No	No	No	No	No	No	No	No	No	No
10	3	271	1	2	No	No	No	No	No	No	No	No	No	No
11	3	235	1	2	No	No	No	No	No	No	No	No	No	No
12	3	219	1	2	No	No	No	No	No	No	No	No	No	No
13	3	215	1	2	No	No	No	No	No	No	No	No	No	No
14	3	159	1	1	No	No	No	No	No	No	No	No	No	No
15	3	159	1	1	No	No	No	No	No	No	No	No	No	No
16	3	111	1	1	No	No	No	No	No	No	No	No	No	No
17	3	64	1	0	No	No	No	No	No	No	No	No	No	No
18	3	64	1	0	No	No	No	No	No	No	No	No	No	No
19	3	36	1	0	No	No	No	No	No	No	No	No	No	No
20	3	20	1	0	No	No	No	No	No	No	No	No	No	No
21	3	12	1	0	No	No	No	No	No	No	No	No	No	No
22	3	4	1	0	No	No	No	No	No	No	No	No	No	No
23	3	4	1	0	No	No	No	No	No	No	No	No	No	No
24	3	4	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	401
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	628	700	188	29
2	609	679	182	28
3	597	665	179	28
4	559	623	167	26
5	496	553	149	23
6	490	546	147	23
7	484	539	145	22
8	440	490	132	20
9	433	483	130	20
10	427	476	128	20
11	371	413	111	17
12	345	385	103	16
13	339	378	102	16
14	251	280	75	12
15	251	280	75	12
16	176	196	53	8
17	100	112	30	5
18	100	112	30	5
19	57	63	17	3
20	31	35	9	1
21	19	21	6	1
22	6	7	2	0
23	6	7	2	0
24	6	7	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1328	2	188	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	2	1288	2	182	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	2	1262	2	179	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	2	1182	2	167	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	2	1049	2	149	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
6	2	1036	2	147	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
7	2	1023	2	145	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
8	2	930	2	132	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
9	2	916	2	130	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
10	2	903	2	128	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
11	2	784	2	111	No	No	No	No	No	Yes	Yes	Yes	No	No
12	2	730	2	103	No	No	No	No	No	Yes	Yes	Yes	No	No
13	2	717	2	102	No	No	No	No	No	No	Yes	Yes	No	No
14	2	531	2	75	No	No	No	No	No	No	No	Yes	No	No
15	2	531	2	75	No	No	No	No	No	No	No	Yes	No	No
16	2	372	2	53	No	No	No	No	No	No	No	No	No	No
17	2	212	2	30	No	No	No	No	No	No	No	No	No	No
18	2	212	2	30	No	No	No	No	No	No	No	No	No	No
19	2	120	2	17	No	No	No	No	No	No	No	No	No	No
20	2	66	2	9	No	No	No	No	No	No	No	No	No	No
21	2	40	2	6	No	No	No	No	No	No	No	No	No	No
22	2	13	2	2	No	No	No	No	No	No	No	No	No	No
23	2	13	2	2	No	No	No	No	No	No	No	No	No	No
24	2	13	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	10	12	13	15	4	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	348.2	21.5
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	18:11	0:10
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	188	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1545	1545
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	No
Warrant Met for Intersection	**Yes**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	414	546	0
2	402	530	0
3	393	519	0
4	368	486	0
5	327	431	0
6	323	426	0
7	319	420	0
8	290	382	0
9	286	377	0
10	282	371	0
11	244	322	0
12	228	300	0
13	224	295	0
14	166	218	0
15	166	218	0
16	116	153	0
17	66	87	0
18	66	87	0
19	37	49	0
20	21	27	0
21	12	16	0
22	4	5	0
23	4	5	0
24	4	5	0

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	960	1	0	No	No	No	No	No	No	No	No	No	No
2	1	932	1	0	No	No	No	No	No	No	No	No	No	No
3	1	912	1	0	No	No	No	No	No	No	No	No	No	No
4	1	854	1	0	No	No	No	No	No	No	No	No	No	No
5	1	758	1	0	No	No	No	No	No	No	No	No	No	No
6	1	749	1	0	No	No	No	No	No	No	No	No	No	No
7	1	739	1	0	No	No	No	No	No	No	No	No	No	No
8	1	672	1	0	No	No	No	No	No	No	No	No	No	No
9	1	663	1	0	No	No	No	No	No	No	No	No	No	No
10	1	653	1	0	No	No	No	No	No	No	No	No	No	No
11	1	566	1	0	No	No	No	No	No	No	No	No	No	No
12	1	528	1	0	No	No	No	No	No	No	No	No	No	No
13	1	519	1	0	No	No	No	No	No	No	No	No	No	No
14	1	384	1	0	No	No	No	No	No	No	No	No	No	No
15	1	384	1	0	No	No	No	No	No	No	No	No	No	No
16	1	269	1	0	No	No	No	No	No	No	No	No	No	No
17	1	153	1	0	No	No	No	No	No	No	No	No	No	No
18	1	153	1	0	No	No	No	No	No	No	No	No	No	No
19	1	86	1	0	No	No	No	No	No	No	No	No	No	No
20	1	48	1	0	No	No	No	No	No	No	No	No	No	No
21	1	28	1	0	No	No	No	No	No	No	No	No	No	No
22	1	9	1	0	No	No	No	No	No	No	No	No	No	No
23	1	9	1	0	No	No	No	No	No	No	No	No	No	No
24	1	9	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	960
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	307	482	27
2	298	468	26
3	292	458	26
4	273	429	24
5	243	381	21
6	239	376	21
7	236	371	21
8	215	337	19
9	212	333	19
10	209	328	18
11	181	284	16
12	169	265	15
13	166	260	15
14	123	193	11
15	123	193	11
16	86	135	8
17	49	77	4
18	49	77	4
19	28	43	2
20	15	24	1
21	9	14	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	789	1	27	No	No	No	No	No	No	No	No	No	No
2	1	766	1	26	No	No	No	No	No	No	No	No	No	No
3	1	750	1	26	No	No	No	No	No	No	No	No	No	No
4	1	702	1	24	No	No	No	No	No	No	No	No	No	No
5	1	624	1	21	No	No	No	No	No	No	No	No	No	No
6	1	615	1	21	No	No	No	No	No	No	No	No	No	No
7	1	607	1	21	No	No	No	No	No	No	No	No	No	No
8	1	552	1	19	No	No	No	No	No	No	No	No	No	No
9	1	545	1	19	No	No	No	No	No	No	No	No	No	No
10	1	537	1	18	No	No	No	No	No	No	No	No	No	No
11	1	465	1	16	No	No	No	No	No	No	No	No	No	No
12	1	434	1	15	No	No	No	No	No	No	No	No	No	No
13	1	426	1	15	No	No	No	No	No	No	No	No	No	No
14	1	316	1	11	No	No	No	No	No	No	No	No	No	No
15	1	316	1	11	No	No	No	No	No	No	No	No	No	No
16	1	221	1	8	No	No	No	No	No	No	No	No	No	No
17	1	126	1	4	No	No	No	No	No	No	No	No	No	No
18	1	126	1	4	No	No	No	No	No	No	No	No	No	No
19	1	71	1	2	No	No	No	No	No	No	No	No	No	No
20	1	39	1	1	No	No	No	No	No	No	No	No	No	No
21	1	23	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	27
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	816
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	252	370	151	49
2	244	359	146	48
3	239	352	143	47
4	224	329	134	44
5	199	292	119	39
6	197	289	118	38
7	194	285	116	38
8	176	259	106	34
9	174	255	104	34
10	171	252	103	33
11	149	218	89	29
12	139	204	83	27
13	136	200	82	26
14	101	148	60	20
15	101	148	60	20
16	71	104	42	14
17	40	59	24	8
18	40	59	24	8
19	23	33	14	4
20	13	19	8	2
21	8	11	5	1
22	3	4	2	0
23	3	4	2	0
24	3	4	2	0

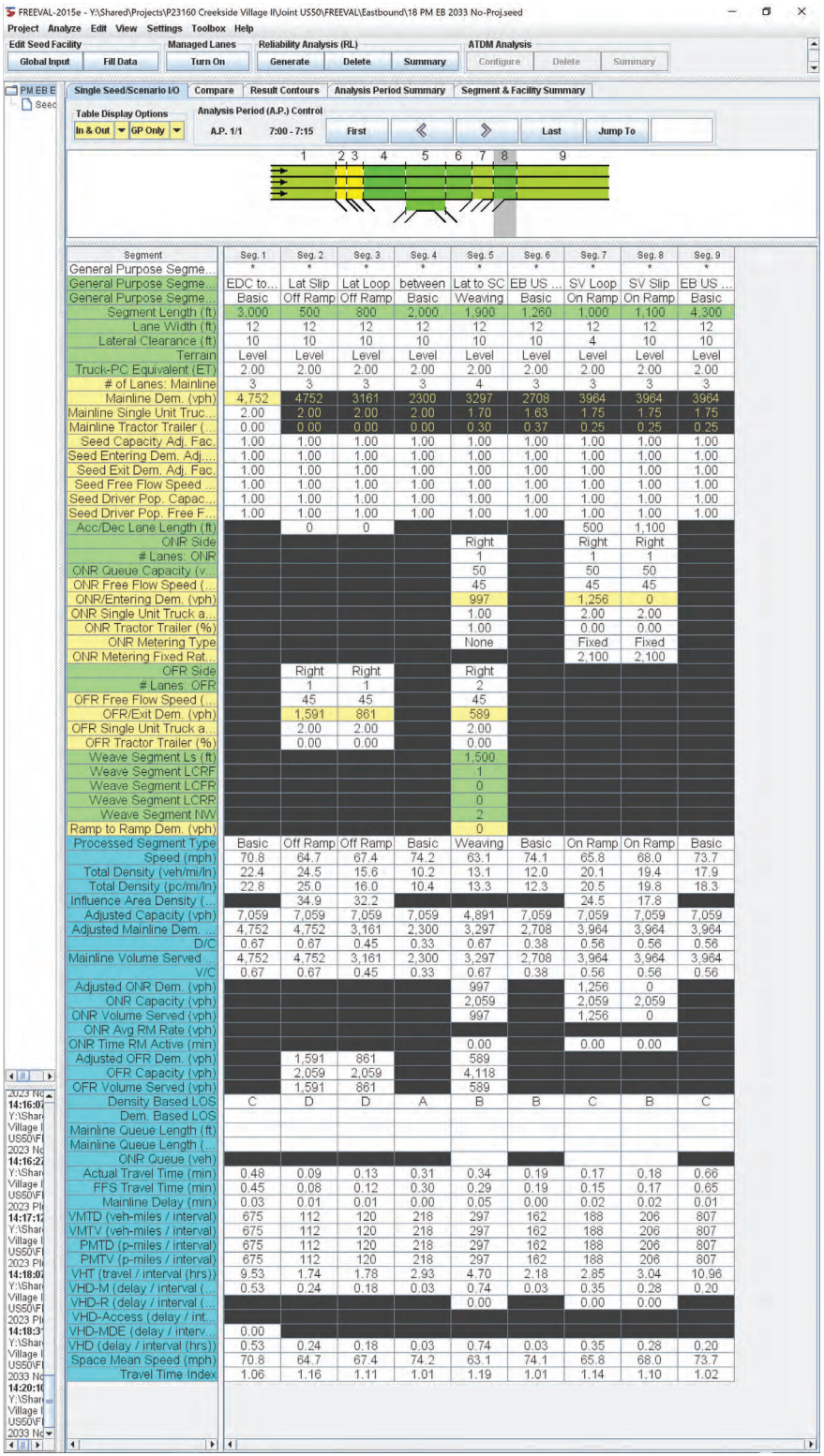
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	622	1	151	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	603	1	146	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	591	1	143	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	553	1	134	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	491	1	119	No	No	Yes	Yes	No	No	No	Yes	No	No
6	1	486	1	118	No	No	Yes	Yes	No	No	No	Yes	No	No
7	1	479	1	116	No	No	Yes	Yes	No	No	No	Yes	No	No
8	1	435	1	106	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	429	1	104	No	No	No	Yes	No	No	No	Yes	No	No
10	1	423	1	103	No	No	No	Yes	No	No	No	Yes	No	No
11	1	367	1	89	No	No	No	Yes	No	No	No	No	No	No
12	1	343	1	83	No	No	No	No	No	No	No	No	No	No
13	1	336	1	82	No	No	No	No	No	No	No	No	No	No
14	1	249	1	60	No	No	No	No	No	No	No	No	No	No
15	1	249	1	60	No	No	No	No	No	No	No	No	No	No
16	1	175	1	42	No	No	No	No	No	No	No	No	No	No
17	1	99	1	24	No	No	No	No	No	No	No	No	No	No
18	1	99	1	24	No	No	No	No	No	No	No	No	No	No
19	1	56	1	14	No	No	No	No	No	No	No	No	No	No
20	1	32	1	8	No	No	No	No	No	No	No	No	No	No
21	1	19	1	5	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					1	4	8	11	0	2	4	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.4	16.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:38	0:13
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	151	49
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	822	822
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 4085 of 4853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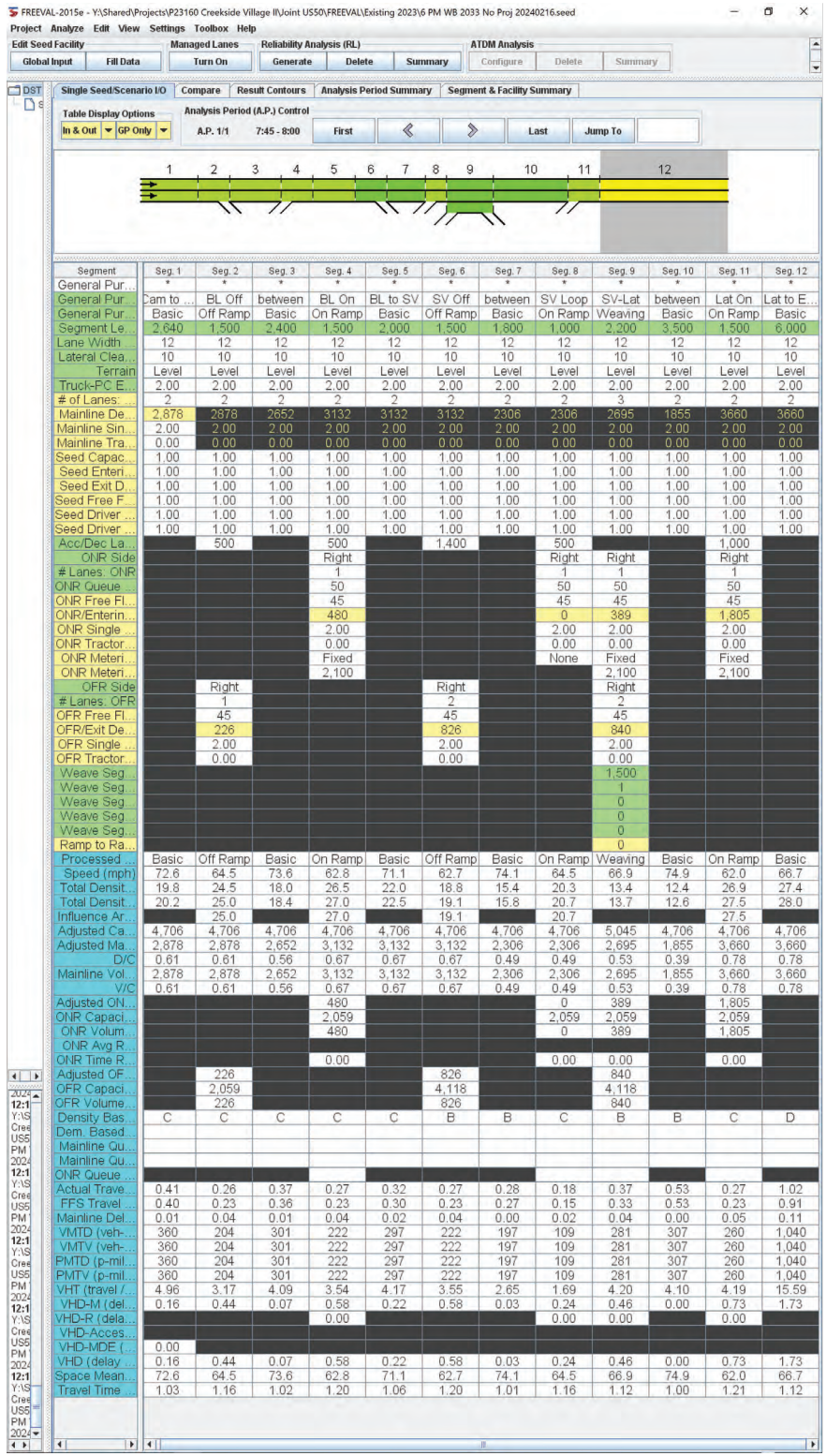
Project Analyze Edit View Settings Toolbox Help
Edit Seed Facility
Global Input
Fill Data
Managed Lanes
Turn On
Reliability Analysis (RL)
Generate
Delete
Summary
ATDM Analysis
Configure
Delete
Summary
Single Seed/Scenario I/O
Compare
Result Contours
Analysis Period Summary
Segment & Facility Summary
Table Display Options
In & Out
GP Only
Analysis Period (A.P.) Control
A.P. 1/1
7:00 - 7:15
First
Last
Jump To
1 2 3 4 5 6 7 8 9
Segment
Seg. 1 Seg. 2 Seg. 3 Seg. 4 Seg. 5 Seg. 6 Seg. 7 Seg. 8 Seg. 9
EDC to... Lat Slip Lat Loop between Lat to SC EB US ... SV Loop SV Slip EB US ...
Basic Off Ramp Off Ramp Basic Weaving Basic On Ramp On Ramp Basic
Segment Length (ft) 3,000 500 800 2,000 1,900 1,260 1,000 1,100 4,300
Lane Width (ft) 12 12 12 12 12 12 12 12 12
Lateral Clearance (ft) 10 10 10 10 10 10 4 10 10
Terrain Level Level Level Level Level Level Level Level Level
Truck-PC Equivalent (ET) 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00
# of Lanes: Mainline 3 3 3 3 4 3 3 3 3
Mainline Dem. (vph) 4,752 4752 3161 2300 3297 2708 3964 3964 3964
Mainline Single Unit Truc... 2.00 2.00 2.00 2.00 1.70 1.63 1.75 1.75 1.75
Mainline Tractor Trailer (... 0.00 0.00 0.00 0.00 0.30 0.37 0.25 0.25 0.25
Seed Capacity Adj. Fac. 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Entering Dem. Adj.... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Exit Dem. Adj. Fac. 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Free Flow Speed ... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Driver Pop. Capac... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Driver Pop. Free F... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Acc/Dec Lane Length (ft) 0 0 500 1,100
ONR Side Right Right Right
Lanes: ONR 1 1 1
ONR Queue Capacity (v... 50 50 50
ONR Free Flow Speed (... 45 45 45
ONR/Entering Dem. (vph) 997 1,256 0
ONR Single Unit Truck a... 1.00 2.00 2.00
ONR Tractor Trailer (%) 1.00 0.00 0.00
ONR Metering Type None Fixed Fixed
ONR Metering Fixed Rat... 2,100 2,100
OFR Side Right Right Right
Lanes: OFR 1 1 2
OFR Free Flow Speed (... 45 45 45
OFR/Exit Dem. (vph) 1,591 861 589
OFR Single Unit Truck a... 2.00 2.00 2.00
OFR Tractor Trailer (%) 0.00 0.00 0.00
Weave Segment Ls (ft) 1,500
Weave Segment LCRF 1
Weave Segment LCFR 0
Weave Segment LCRR 0
Weave Segment NW 2
Ramp to Ramp Dem. (vph) 0
Processed Segment Type Basic Off Ramp Off Ramp Basic Weaving Basic On Ramp On Ramp Basic
Speed (mph) 70.8 64.7 67.4 74.2 63.1 74.1 65.8 68.0 73.7
Total Density (veh/mi/ln) 22.4 24.5 15.6 10.2 13.1 12.0 20.1 19.4 17.9
Total Density (pc/mi/ln) 22.8 25.0 16.0 10.4 13.3 12.3 20.5 19.8 18.3
Influence Area Density (... 34.9 32.2 24.5 17.8
Adjusted Capacity (vph) 7,059 7,059 7,059 7,059 4,891 7,059 7,059 7,059 7,059
Adjusted Mainline Dem. ... 4,752 4,752 3,161 2,300 3,297 2,708 3,964 3,964 3,964
D/C 0.67 0.67 0.45 0.33 0.67 0.38 0.56 0.56 0.56
Mainline Volume Served... 4,752 4,752 3,161 2,300 3,297 2,708 3,964 3,964 3,964
V/C 0.67 0.67 0.45 0.33 0.67 0.38 0.56 0.56 0.56
Adjusted ONR Dem. (vph) 997 1,256 0
ONR Capacity (vph) 2,059 2,059 2,059
ONR Volume Served (vph) 997 1,256 0
ONR Avg RM Rate (vph)
ONR Time RM Active (min) 0.00 0.00 0.00
Adjusted OFR Dem. (vph) 1,591 861 589
OFR Capacity (vph) 2,059 2,059 4,118
OFR Volume Served (vph) 1,591 861 589
Density Based LOS C D D A B B C B C
Dem. Based LOS
Mainline Queue Length (ft)
Mainline Queue Length (...
ONR Queue (veh)
Actual Travel Time (min) 0.48 0.09 0.13 0.31 0.34 0.19 0.17 0.18 0.66
FFS Travel Time (min) 0.45 0.08 0.12 0.30 0.29 0.19 0.15 0.17 0.65
Mainline Delay (min) 0.03 0.01 0.01 0.00 0.05 0.00 0.02 0.02 0.01
VMTD (veh-miles / interval) 675 112 120 218 297 162 188 206 807
VMTV (veh-miles / interval) 675 112 120 218 297 162 188 206 807
PMTD (p-miles / interval) 675 112 120 218 297 162 188 206 807
PMTV (p-miles / interval) 675 112 120 218 297 162 188 206 807
VHT (travel / interval (hrs)) 9.53 1.74 1.78 2.93 4.70 2.18 2.85 3.04 10.96
VHD-M (delay / interval (... 0.53 0.24 0.18 0.03 0.74 0.03 0.35 0.28 0.20
VHD-R (delay / interval (... 0.00 0.00 0.00
VHD-Access (delay / int...
VHD-MDE (delay / interv... 0.00
VHD (delay / interval (hrs)) 0.53 0.24 0.18 0.03 0.74 0.03 0.35 0.28 0.20
Space Mean Speed (mph) 70.8 64.7 67.4 74.2 63.1 74.1 65.8 68.0 73.7
Travel Time Index 1.06 1.16 1.11 1.01 1.19 1.01 1.14 1.10 1.02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Edit Seed Facility
Global Input
Fill Data
Managed Lanes
Turn On
Reliability Analysis (RL)
Generate
Delete
Summary
ATDM Analysis
Configure
Delete
Summary
Single Seed/Scenario I/O
Compare
Result Contours
Analysis Period Summary
Segment & Facility Summary
Table Display Options
In & Out
GP Only
Analysis Period (A.P.) Control
A.P. 1/1
7:45 - 8:00
First
Last
Jump To
1 2 3 4 5 6 7 8 9 10 11 12
Segment
Seg. 1 Seg. 2 Seg. 3 Seg. 4 Seg. 5 Seg. 6 Seg. 7 Seg. 8 Seg. 9 Seg. 10 Seg. 11 Seg. 12
Cam to ... BL Off between BL On BL to SV SV Off between SV Loop SV-Lat between Lat On Lat to E...
Basic Off Ramp Basic On Ramp Basic Off Ramp Basic On Ramp Weaving Basic On Ramp Basic
Segment Le... 2,640 1,500 2,400 1,500 2,000 1,500 1,800 1,000 2,200 3,500 1,500 6,000
Lane Width 12 12 12 12 12 12 12 12 12 12 12 12
Lateral Clea... 10 10 10 10 10 10 10 10 10 10 10 10
Terrain Level Level Level Level Level Level Level Level Level Level Level Level
Truck-PC E... 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00
# of Lanes: 2 2 2 2 2 2 2 2 3 2 2 2
Mainline De... 2,878 2878 2652 3132 3132 3132 2306 2306 2695 1855 3660 3660
Mainline Sin... 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00
Mainline Tra... 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
Seed Capac... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Enteri... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Exit D... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Free F... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Driver ... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Seed Driver ... 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Acc/Dec La... 500 500 1,400 500 1,000
ONR Side Right Right Right Right
Lanes: ONR 1 1 1 1
ONR Queue ... 50 50 50 50
ONR Free Fl... 45 45 45 45
ONR/Enterin... 480 0 389 1,805
ONR Single ... 2.00 2.00 2.00 2.00
ONR Tractor... 0.00 0.00 0.00 0.00
ONR Meteri... Fixed None Fixed Fixed
ONR Meteri... 2,100 2,100 2,100
OFR Side Right Right Right
Lanes: OFR 1 2 2
OFR Free Fl... 45 45 45
OFR/Exit De... 226 826 840
OFR Single ... 2.00 2.00 2.00
OFR Tractor... 0.00 0.00 0.00
Weave Seg... 1,500
Weave Seg... 1
Weave Seg... 0
Weave Seg... 0
Weave Seg... 0
Ramp to Ra... 0
Processed ... Basic Off Ramp Basic On Ramp Basic Off Ramp Basic On Ramp Weaving Basic On Ramp Basic
Speed (mph) 72.6 64.5 73.6 62.8 71.1 62.7 74.1 64.5 66.9 74.9 62.0 66.7
Total Densit... 19.8 24.5 18.0 26.5 22.0 18.8 15.4 20.3 13.4 12.4 26.9 27.4
Total Densit... 20.2 25.0 18.4 27.0 22.5 19.1 15.8 20.7 13.7 12.6 27.5 28.0
Influence Ar... 25.0 27.0 19.1 20.7 27.5
Adjusted Ca... 4,706 4,706 4,706 4,706 4,706 4,706 4,706 4,706 5,045 4,706 4,706 4,706
Adjusted Ma... 2,878 2,878 2,652 3,132 3,132 3,132 2,306 2,306 2,695 1,855 3,660 3,660
D/C 0.61 0.61 0.56 0.67 0.67 0.67 0.49 0.49 0.53 0.39 0.78 0.78
Mainline Vol... 2,878 2,878 2,652 3,132 3,132 3,132 2,306 2,306 2,695 1,855 3,660 3,660
V/C 0.61 0.61 0.56 0.67 0.67 0.67 0.49 0.49 0.53 0.39 0.78 0.78
Adjusted ON... 480 0 389 1,805
ONR Capaci... 2,059 2,059 2,059
ONR Volum... 480 0 389 1,805
ONR Avg R...
ONR Time R... 0.00 0.00 0.00
Adjusted OF... 226 826 840
OFR Capaci... 2,059 4,118 4,118
OFR Volume... 226 826 840
Density Bas... C C C C C B B C B B C D
Dem. Based...
Mainline Qu...
Mainline Qu...
ONR Queue ...
Actual Trave... 0.41 0.26 0.37 0.27 0.32 0.27 0.28 0.18 0.37 0.53 0.27 1.02
FFS Travel ... 0.40 0.23 0.36 0.23 0.30 0.23 0.27 0.15 0.33 0.53 0.23 0.91
Mainline Del... 0.01 0.04 0.01 0.04 0.02 0.04 0.00 0.02 0.04 0.00 0.05 0.11
VMTD (veh-... 360 204 301 222 297 222 197 109 281 307 260 1,040
VMTV (veh-... 360 204 301 222 297 222 197 109 281 307 260 1,040
PMTD (p-mil... 360 204 301 222 297 222 197 109 281 307 260 1,040
PMTV (p-mil... 360 204 301 222 297 222 197 109 281 307 260 1,040
VHT (travel /... 4.96 3.17 4.09 3.54 4.17 3.55 2.65 1.69 4.20 4.10 4.19 15.59
VHD-M (del... 0.16 0.44 0.07 0.58 0.22 0.58 0.03 0.24 0.46 0.00 0.73 1.73
VHD-R (dela... 0.00 0.00 0.00
VHD-Acces...
VHD-MDE (... 0.00
VHD (delay ... 0.16 0.44 0.07 0.58 0.22 0.58 0.03 0.24 0.46 0.00 0.73 1.73
Space Mean... 72.6 64.5 73.6 62.8 71.1 62.7 74.1 64.5 66.9 74.9 62.0 66.7
Travel Time ... 1.03 1.16 1.02 1.20 1.06 1.20 1.01 1.16 1.12 1.00 1.21 1.12

EPAP AM plus Project

Vistro File: C:\...\AM 918 DU 20241003.vistro Scenario 4 2033 AM with CCSP, + Project
Report File: C:\...\9 2033 AM plus Proj.pdf 9/30/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.148	172.7	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.385	158.6	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.102	94.7	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	1.047	30.5	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.976	39.9	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.739	43.0	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	0.984	54.8	D
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.820	12.9	B
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	1.046	84.0	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.847	12.3	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.152	44.5	E
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	1.677	428.8	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	0.314	198.7	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	1.060	51.0	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.222	13.9	B
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.182	14.4	B
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.077	7.9	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.407	34.6	D
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.585	29.2	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.611	39.5	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	WB Thru	1.305	247.0	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.849	34.5	C
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.680	21.7	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	1.011	65.9	E
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.008	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.027	14.1	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.160	21.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	172.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.148

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	232	792	301	70	1655	46	23	14	260	467	64	111
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	9	0	0	-28	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	14	0	0	78	0	0	33
Total Hourly Volume [veh/h]	5	232	801	301	70	1627	32	23	14	182	467	64	78
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	67	230	86	20	468	9	7	4	52	134	18	22
Total Analysis Volume [veh/h]	5	267	921	346	80	1870	37	26	16	209	537	74	90
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Calculated Cycle Length [s]	128	128	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	54	54	7	40	40	20	20	29	29
g / C, Green / Cycle	0.17	0.42	0.42	0.06	0.31	0.31	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.15	0.26	0.22	0.04	0.51	0.51	0.01	0.14	0.20	0.20
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1857	1781	1607	1781	1744
c, Capacity [veh/h]	299	1499	669	103	581	577	279	252	405	396
d1, Uniform Delay [s]	52.59	29.08	27.56	59.83	44.34	44.34	46.44	53.21	47.95	47.99
k, delay calibration	0.25	0.04	0.17	0.04	0.50	0.50	0.04	0.04	0.29	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.28	0.15	0.97	4.78	295.87	300.90	0.05	4.43	14.10	14.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.61	0.52	0.78	1.64	1.65	0.09	0.89	0.87	0.88
d, Delay for Lane Group [s/veh]	72.87	29.24	28.53	64.61	340.21	345.24	46.49	57.65	62.05	62.73
Lane Group LOS	E	C	C	E	F	F	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.07	10.63	7.73	2.65	65.49	65.85	0.72	7.43	12.48	12.34
50th-Percentile Queue Length [ft/ln]	251.84	265.86	193.24	66.36	1637.15	1646.18	18.05	185.75	311.90	308.49
95th-Percentile Queue Length [veh/ln]	15.28	15.98	12.29	4.78	100.50	101.20	1.30	11.90	18.27	18.10
95th-Percentile Queue Length [ft/ln]	381.96	399.56	307.23	119.44	2512.49	2530.11	32.50	297.51	456.72	452.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.87	72.87	29.24	28.53	64.61	342.67	345.24	46.49	57.65	57.65	62.28	62.73	62.73
Movement LOS	E	E	C	C	E	F	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	36.79				331.53			56.49			62.39		
Approach LOS	D				F			E			E		
d_I, Intersection Delay [s/veh]	172.68												
Intersection LOS	F												
Intersection V/C	1.148												

Emissions

Vehicle Miles Traveled [mph]	64.96	219.96	82.64	11.76	140.19	140.19	1.11	9.61	18.50	18.18
Stops [stops/h]	282.37	596.18	216.67	74.40	1835.63	1845.75	20.24	208.27	349.71	345.89
Fuel consumption [US gal/h]	9.77	20.43	7.54	2.38	93.63	94.73	0.40	4.19	7.16	7.10
CO [g/h]	682.96	1428.20	526.73	166.36	6544.51	6621.51	28.21	292.56	500.23	495.95
NOx [g/h]	132.88	277.88	102.48	32.37	1273.32	1288.31	5.49	56.92	97.33	96.49
VOC [g/h]	158.28	331.00	122.07	38.56	1516.75	1534.60	6.54	67.80	115.93	114.94

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	53.69	53.69	53.69
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.235	2.303	2.386
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	628	628	545	545
d_b, Bicycle Delay [s]	30.24	30.24	33.98	33.98
l_b,int, Bicycle LOS Score for Intersection	2.825	3.210	2.102	2.771
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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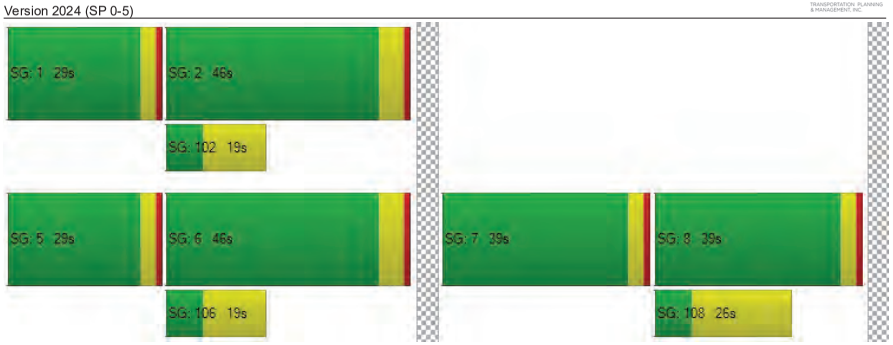

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	158.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.385

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	413	988	150	1	218	1727	441	150	61	708	33	34	191
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	9	0	0	0	-28	0	0	0	-14	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	132	0	0	208	0	0	57
Total Hourly Volume [veh/h]	1	418	997	105	1	218	1699	309	150	61	486	33	34	134
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	112	268	28	0	59	457	83	40	16	131	9	9	36
Total Analysis Volume [veh/h]	1	449	1072	113	1	234	1827	332	161	66	523	35	37	144
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Calculated Cycle Length [s]	123	123	123	123	123	123	123	123	123	123	123
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	52	52	18	50	50	20	20	20	16	16
g / C, Green / Cycle	0.16	0.42	0.42	0.15	0.41	0.41	0.16	0.16	0.16	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.25	0.22	0.22	0.13	0.51	0.21	0.06	0.06	0.33	0.02	0.11
s, saturation flow rate [veh/h]	1781	3560	1780	1781	3560	1589	1781	1831	1589	1781	1640
c, Capacity [veh/h]	289	1497	749	262	1444	644	289	297	258	225	208
d1, Uniform Delay [s]	51.66	26.61	26.61	51.66	36.66	27.55	46.19	46.17	51.66	47.98	52.87
k, delay calibration	0.50	0.13	0.14	0.26	0.20	0.13	0.04	0.04	0.50	0.04	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	267.39	0.35	0.74	21.29	121.77	0.77	0.32	0.31	476.30	0.12	14.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.56	0.53	0.53	0.90	1.27	0.52	0.39	0.39	2.03	0.16	0.87
d, Delay for Lane Group [s/veh]	319.05	26.96	27.35	72.95	158.43	28.32	46.51	46.47	527.96	48.09	67.01
Lane Group LOS	F	C	C	E	F	C	D	D	F	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	30.11	8.32	8.41	8.49	44.79	7.18	3.12	3.18	42.05	0.97	6.32
50th-Percentile Queue Length [ft/ln]	752.82	207.99	210.19	212.30	1119.74	179.49	77.98	79.48	1051.13	24.31	157.89
95th-Percentile Queue Length [veh/ln]	46.62	13.05	13.16	13.27	65.02	11.57	5.61	5.72	66.28	1.75	10.44
95th-Percentile Queue Length [ft/ln]	1165.48	326.26	329.07	331.78	1625.58	289.35	140.37	143.07	1656.92	43.76	260.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	319.0	319.0	27.06	27.35	72.95	72.95	158.4	28.32	46.51	46.47	527.96	48.09	67.01	67.01
Movement LOS	F	F	C	C	E	E	F	C	D	D	F	D	E	E
d_A, Approach Delay [s/veh]	107.44				132.00				382.24			63.95		
Approach LOS	F				F				F			E		
d_I, Intersection Delay [s/veh]	158.59													
Intersection LOS	F													
Intersection V/C	1.385													

Emissions

Vehicle Miles Traveled [mph]	84.69	148.64	74.37	56.13	436.35	79.29	7.01	7.15	32.62	1.71	8.83
Stops [stops/h]	879.63	486.06	245.59	248.06	2616.72	209.73	91.12	92.87	1228.20	28.41	184.49
Fuel consumption [US gal/h]	43.05	15.47	7.80	8.50	106.38	7.24	1.86	1.89	64.31	0.57	3.85
CO [g/h]	3009.22	1081.44	545.37	593.91	7436.28	505.99	129.69	132.20	4494.99	39.82	269.16
NOx [g/h]	585.49	210.41	106.11	115.55	1446.83	98.45	25.23	25.72	874.56	7.75	52.37
VOC [g/h]	697.42	250.63	126.40	137.64	1723.43	117.27	30.06	30.64	1041.76	9.23	62.38

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.11	51.11	51.11
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.624	2.907	2.274
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	816	816	325	325
d_b, Bicycle Delay [s]	21.59	21.59	43.24	43.24
l_b,int, Bicycle LOS Score for Intersection	2.483	3.451	3.140	2.010
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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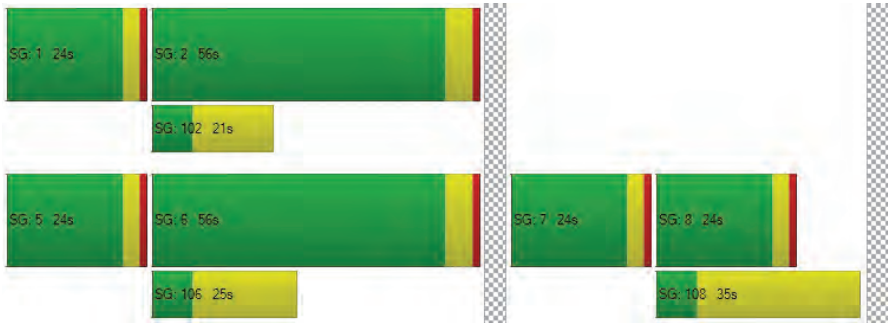

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	94.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.102

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1417	1188	141	3	69	1353	1044	256	92	816	171	99	105
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	14	4	0	0	-42	0	0	0	-22	-8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	44	0	0	0	313	0	0	238	0	0	32
Total Hourly Volume [veh/h]	1	1437	1202	101	3	69	1311	731	256	92	556	163	99	73
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	359	301	25	1	17	328	183	64	23	139	41	25	18
Total Analysis Volume [veh/h]	1	1437	1202	101	3	69	1311	731	256	92	556	163	99	73
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	71	71	8	41	73	27	27	11	11	11
g / C, Green / Cycle	0.28	0.52	0.52	0.06	0.30	0.53	0.20	0.20	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.42	0.24	0.25	0.04	0.26	0.46	0.10	0.10	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1798	1781	5094	1589	1781	1826	1781	1830	1671
c, Capacity [veh/h]	951	1849	934	99	1527	849	351	360	143	147	135
d1, Uniform Delay [s]	36.83	4.88	4.91	63.24	44.90	27.32	48.54	48.53	61.37	61.32	61.48
k, delay calibration	0.23	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	232.91	0.84	1.75	3.85	6.50	11.14	0.79	0.77	3.54	3.28	4.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.51	0.46	0.48	0.73	0.86	0.86	0.49	0.49	0.78	0.78	0.81
d, Delay for Lane Group [s/veh]	269.74	5.72	6.66	67.09	51.40	38.46	49.33	49.29	64.90	64.60	65.71
Lane Group LOS	F	A	A	E	D	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	44.51	2.17	2.49	2.52	14.38	21.61	5.30	5.42	3.96	4.02	3.85
50th-Percentile Queue Length [ft/ln]	1112.81	54.16	62.23	62.90	359.59	540.33	132.58	135.62	99.12	100.38	96.20
95th-Percentile Queue Length [veh/ln]	68.04	3.90	4.48	4.53	20.60	29.24	9.08	9.24	7.14	7.23	6.93
95th-Percentile Queue Length [ft/ln]	1701.00	97.49	112.01	113.23	515.09	730.94	227.00	231.11	178.41	180.69	173.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	269.7	269.7	5.99	6.66	67.09	67.09	51.40	38.46	49.32	49.29	0.00	64.81	65.00	65.71
Movement LOS	F	F	A	A	E	E	D	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	144.39				47.46				18.98			65.06		
Approach LOS	F				D				B			E		
d_I, Intersection Delay [s/veh]	94.71													
Intersection LOS	F													
Intersection V/C	1.102													

Emissions

Vehicle Miles Traveled [mph]	246.28	146.77	76.39	13.55	246.72	137.57	7.95	8.14	3.58	3.63	3.44
Stops [stops/h]	2356.53	114.69	65.89	66.60	1142.24	572.11	140.38	143.60	104.95	106.29	101.86
Fuel consumption [US gal/h]	102.08	7.67	4.11	2.28	36.37	17.55	2.83	2.89	2.21	2.24	2.15
CO [g/h]	7135.17	536.39	287.50	159.05	2542.28	1226.69	197.76	202.29	154.63	156.44	150.47
NOx [g/h]	1388.25	104.36	55.94	30.95	494.64	238.67	38.48	39.36	30.08	30.44	29.28
VOC [g/h]	1653.65	124.31	66.63	36.86	589.20	284.30	45.83	46.88	35.84	36.26	34.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.360	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
I_b,int, Bicycle LOS Score for Intersection	3.091		2.857		2.134		1.862	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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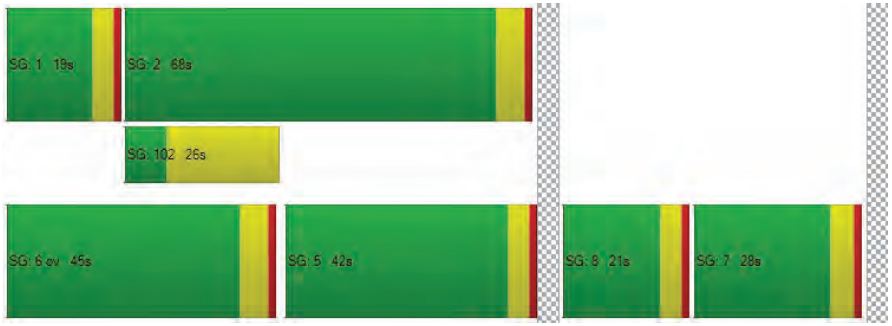

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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	30.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.047

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2219	463	0	520	1821	0	0	0	1266	0	0	528
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	38	4	0	0	-72	0	0	0	-54	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	140	0	0	0	0	0	0	364	0	0	158
Total Hourly Volume [veh/h]	0	2257	327	0	520	1749	0	0	0	848	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	672	97	0	155	521	0	0	0	252	0	0	110
Total Analysis Volume [veh/h]	0	2687	389	0	619	2082	0	0	0	1010	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Calculated Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	25	35	22	
g / C, Green / Cycle	0.47	0.47	0.37	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.45	0.45	0.35	0.31	0.36	
s, saturation flow rate [veh/h]	5094	1717	1781	6792	2813	
c, Capacity [veh/h]	2395	807	661	3476	927	
d1, Uniform Delay [s]	17.45	17.29	20.61	11.69	22.80	
k, delay calibration	0.50	0.50	0.14	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	11.61	22.10	8.51	0.77	42.22	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.96	0.95	0.94	0.60	1.09	
d, Delay for Lane Group [s/veh]	29.07	39.39	29.13	12.46	65.02	
Lane Group LOS	C	D	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	11.61	13.90	9.47	4.43	12.19	
50th-Percentile Queue Length [ft/ln]	290.15	347.57	236.75	110.80	304.86	
95th-Percentile Queue Length [veh/ln]	17.19	20.02	14.52	7.88	18.86	
95th-Percentile Queue Length [ft/ln]	429.83	500.45	362.92	197.12	471.51	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	30.53	39.39	29.13	29.13	12.46	0.00	0.00	0.00	65.02	0.00	0.00	0.00
Movement LOS		C	D	C	C	B				F			
d_A, Approach Delay [s/veh]	31.65			16.28			65.02				0.00		
Approach LOS	C			B			E				A		
d_I, Intersection Delay [s/veh]	30.50												
Intersection LOS	C												
Intersection V/C	1.047												

Emissions

Vehicle Miles Traveled [mph]	333.82	111.27	106.02	356.58	72.28	
Stops [stops/h]	1843.31	736.04	501.35	938.57	1291.17	
Fuel consumption [US gal/h]	48.01	19.13	13.54	29.17	23.47	
CO [g/h]	3355.68	1337.17	946.20	2039.07	1640.71	
NOx [g/h]	652.89	260.16	184.10	396.73	319.22	
VOC [g/h]	777.71	309.90	219.29	472.57	380.25	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.259
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.886	2.418	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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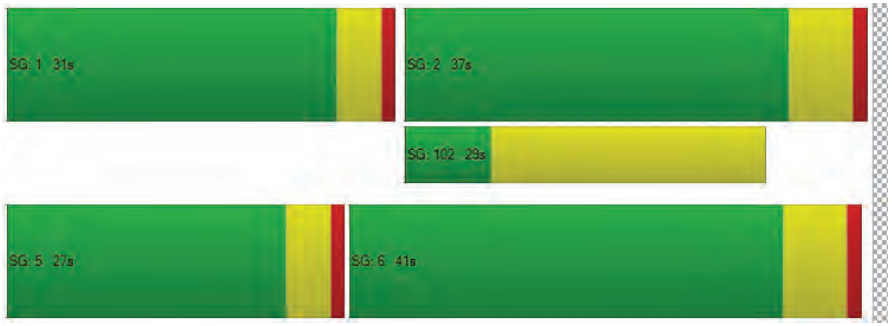

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.976

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

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Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	68	1965	251	4	537	2174	372	156	9	24	1	72	32	557
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	42	5	0	0	-126	0	0	0	-2	0	-7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	77	0	0	0	112	0	0	7	0	0	0	167
Total Hourly Volume [veh/h]	1	70	2007	179	4	537	2048	260	156	9	15	1	65	32	390
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	18	512	46	1	137	522	66	40	2	4	0	17	8	99
Total Analysis Volume [veh/h]	1	71	2048	183	4	548	2090	265	159	9	15	1	66	33	398
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	103	103	103	103	103	103	103	103	103	103	103	103
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	49	49	15	60	60	7	7	7	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.15	0.59	0.59	0.07	0.07	0.07	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.45	0.13	0.18	0.46	0.19	0.05	0.01	0.01	0.04	0.15	0.15
s, saturation flow rate [veh/h]	3113	4584	1431	3113	4584	1431	3113	1683	1431	1603	1464	1431
c, Capacity [veh/h]	121	2200	687	454	2690	840	228	123	105	234	213	208
d1, Uniform Delay [s]	48.68	25.16	15.96	43.97	16.15	10.78	46.59	44.45	44.68	39.20	43.97	43.97
k, delay calibration	0.04	0.04	0.04	0.09	0.04	0.04	0.08	0.08	0.08	0.08	0.44	0.44
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.75	0.86	0.08	101.49	0.19	0.08	2.87	0.18	0.46	0.50	63.63	64.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.93	0.27	1.22	0.78	0.32	0.70	0.07	0.14	0.29	1.02	1.02
d, Delay for Lane Group [s/veh]	50.43	26.02	16.04	145.46	16.33	10.86	49.46	44.64	45.14	39.70	107.60	108.27
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.94	14.94	2.53	12.10	11.43	2.91	2.07	0.22	0.37	1.54	9.14	8.97
50th-Percentile Queue Length [ft/ln]	23.38	373.59	63.16	302.58	285.82	72.77	51.70	5.50	9.28	38.40	228.49	224.28
95th-Percentile Queue Length [veh/ln]	1.68	21.28	4.55	19.33	16.98	5.24	3.72	0.40	0.67	2.77	14.24	14.02
95th-Percentile Queue Length [ft/ln]	42.09	532.09	113.68	483.36	424.45	130.99	93.05	9.89	16.70	69.13	355.96	350.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.43	50.43	26.02	16.04	145.4	145.4	16.33	10.86	49.46	44.64	45.14	39.70	39.70	107.6	107.9
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	25.99				40.35				48.87			98.75			
Approach LOS	C				D				D			F			
d_I, Intersection Delay [s/veh]	39.94														
Intersection LOS	D														
Intersection V/C	0.976														

Emissions

Vehicle Miles Traveled [mph]	16.07	457.07	40.84	79.87	302.42	38.34	20.28	1.15	1.91	23.51	76.50	74.77
Stops [stops/h]	65.50	1569.73	88.46	847.55	1200.92	101.92	144.81	7.70	12.99	53.79	320.02	314.12
Fuel consumption [US gal/h]	1.76	38.33	2.77	24.31	26.03	2.73	3.24	0.17	0.29	1.81	9.69	9.51
CO [g/h]	123.17	2679.42	193.43	1699.14	1819.62	190.65	226.13	11.99	20.15	126.27	677.29	664.50
NOx [g/h]	23.97	521.32	37.64	330.59	354.03	37.09	44.00	2.33	3.92	24.57	131.78	129.29
VOC [g/h]	28.55	620.98	44.83	393.79	421.71	44.18	52.41	2.78	4.67	29.26	156.97	154.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.00	0.00	41.00	41.00
I_p,int, Pedestrian LOS Score for Intersectio	3.459	0.000	2.578	2.833
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	982	982	399	302
d_b, Bicycle Delay [s]	13.31	13.31	32.95	37.08
I_b,int, Bicycle LOS Score for Intersection	2.868	2.919	1.716	2.548
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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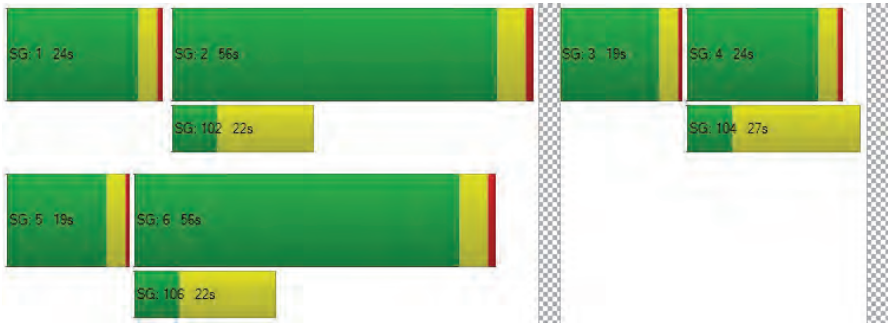

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	121	1681	388	1	95	1737	444	2	355	391	78	425	318	248
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	49	11	0	0	-135	0	0	0	0	0	-33	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	120	0	0	0	133	0	0	0	23	0	0	74
Total Hourly Volume [veh/h]	2	121	1730	279	1	95	1602	311	2	355	391	55	392	318	174
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	460	74	0	25	426	83	1	94	104	15	104	85	46
Total Analysis Volume [veh/h]	2	129	1840	297	1	101	1704	331	2	378	416	59	417	338	185
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	13	82	82	10	79	79	20	23	23	20	23	23
g / C, Green / Cycle	0.09	0.52	0.52	0.06	0.50	0.50	0.12	0.14	0.14	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.19	0.03	0.34	0.21	0.11	0.13	0.13	0.12	0.10	0.12
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1775	3431	3532	1577
c, Capacity [veh/h]	151	3520	824	218	2529	789	427	267	255	437	518	231
d1, Uniform Delay [s]	70.87	24.62	22.05	70.93	29.56	24.80	67.65	66.21	66.22	68.04	63.22	64.77
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.04	0.23	0.23	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.03	0.56	1.23	0.58	1.46	1.64	2.57	20.82	21.61	5.43	0.52	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.52	0.36	0.47	0.67	0.42	0.89	0.91	0.91	0.95	0.65	0.80
d, Delay for Lane Group [s/veh]	90.91	25.18	23.28	71.51	31.02	26.43	70.22	87.03	87.83	73.47	63.74	67.21
Lane Group LOS	F	C	C	E	C	C	E	F	F	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.08	11.47	6.84	1.98	15.95	7.99	7.69	11.16	10.75	8.68	6.46	7.35
50th-Percentile Queue Length [ft/ln]	151.91	286.82	170.89	49.43	398.68	199.70	192.37	279.09	268.70	216.93	161.38	183.85
95th-Percentile Queue Length [veh/ln]	10.12	17.03	11.12	3.56	22.50	12.62	12.24	16.64	16.12	13.51	10.62	11.80
95th-Percentile Queue Length [ft/ln]	252.98	425.70	278.09	88.98	562.41	315.58	306.10	416.08	403.12	337.71	265.55	295.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.91	90.91	25.18	23.28	71.51	71.51	31.02	26.43	70.22	70.22	87.36	87.83	73.47	63.74	67.21
Movement LOS	F	F	C	C	E	E	C	C	E	E	F	F	E	E	E
d_A, Approach Delay [s/veh]	28.73				32.24				79.78				68.74		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	43.04														
Intersection LOS	D														
Intersection V/C	0.739														

Emissions

Vehicle Miles Traveled [mph]	52.16	732.56	118.24	22.76	380.29	73.87	94.70	60.47	57.91	43.72	35.44	19.40
Stops [stops/h]	139.33	1052.29	156.74	90.68	1097.00	183.17	352.88	255.98	246.45	397.94	296.03	168.62
Fuel consumption [US gal/h]	5.34	45.40	7.14	3.39	37.43	6.59	11.28	8.20	7.90	10.23	7.48	4.26
CO [g/h]	373.26	3173.40	499.13	237.09	2616.33	460.65	788.30	573.16	552.08	715.22	522.72	297.77
NOx [g/h]	72.62	617.43	97.11	46.13	509.04	89.62	153.37	111.52	107.41	139.16	101.70	57.94
VOC [g/h]	86.51	735.47	115.68	54.95	606.36	106.76	182.70	132.84	127.95	165.76	121.15	69.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
l_p,int, Pedestrian LOS Score for Intersectio	3.544	3.876	2.806	2.997
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
l_b,int, Bicycle LOS Score for Intersection	2.544	2.753	1.972	2.396
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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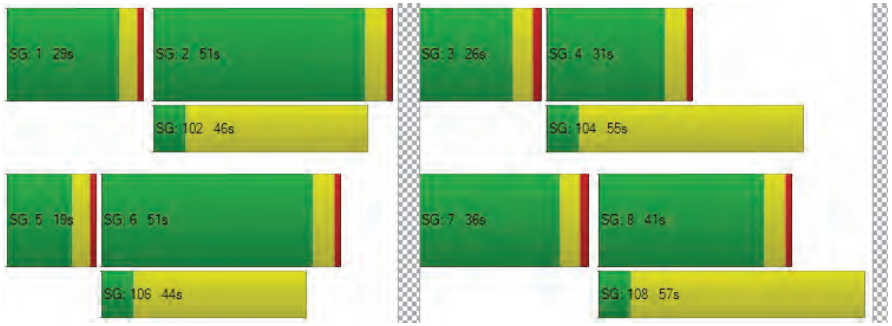

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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	54.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.984

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	57	1777	2	2	18	1704	532	257	5	15	4	9	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	61	0	0	0	-168	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	160	0	0	5	0	0	5
Total Hourly Volume [veh/h]	1	57	1838	1	2	18	1536	372	257	5	10	4	9	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	16	528	0	1	5	441	107	74	1	3	1	3	3
Total Analysis Volume [veh/h]	1	66	2113	1	2	21	1766	428	295	6	11	5	10	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	73	73	73	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	43	43	1	40	40	9	9	2
g / C, Green / Cycle	0.05	0.59	0.59	0.02	0.55	0.55	0.12	0.12	0.03
(v / s)_i Volume / Saturation Flow Rate	0.04	0.57	0.57	0.01	0.59	0.63	0.09	0.09	0.02
s, saturation flow rate [veh/h]	1781	1870	1870	1781	1870	1750	1781	1769	1725
c, Capacity [veh/h]	92	1093	1093	29	1026	960	219	217	51
d1, Uniform Delay [s]	34.04	14.47	14.48	35.73	16.44	16.44	30.75	30.75	34.86
k, delay calibration	0.04	0.46	0.46	0.04	0.48	0.50	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.98	19.21	19.24	16.03	47.87	76.63	4.33	4.37	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.97	0.97	0.79	1.07	1.14	0.72	0.72	0.51
d, Delay for Lane Group [s/veh]	38.02	33.68	33.72	51.76	64.31	93.07	35.08	35.12	37.79
Lane Group LOS	D	C	C	D	F	F	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.24	19.17	19.18	0.50	25.19	31.23	2.81	2.80	0.48
50th-Percentile Queue Length [ft/ln]	30.89	479.22	479.52	12.48	629.64	780.84	70.26	69.91	12.08
95th-Percentile Queue Length [veh/ln]	2.22	26.35	26.36	0.90	35.21	44.69	5.06	5.03	0.87
95th-Percentile Queue Length [ft/ln]	55.59	658.73	659.09	22.46	880.27	1117.29	126.47	125.84	21.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.02	38.02	33.70	33.72	51.76	51.76	75.21	93.07	35.10	35.12	35.12	37.79	37.79	37.79
Movement LOS	D	D	C	C	D	D	E	F	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	33.83				78.41				35.10			37.79		
Approach LOS	C				E				D			D		
d_I, Intersection Delay [s/veh]	54.81													
Intersection LOS	D													
Intersection V/C	0.984													

Emissions

Vehicle Miles Traveled [mph]	23.71	374.03	374.03	9.16	436.75	436.75	37.68	37.46	0.49
Stops [stops/h]	61.15	948.79	949.39	24.71	1246.59	1545.96	139.11	138.42	23.92
Fuel consumption [US gal/h]	1.83	27.88	27.90	1.01	52.12	64.10	3.44	3.42	0.35
CO [g/h]	128.07	1949.12	1949.89	70.42	3643.26	4480.58	240.21	238.95	24.64
NOx [g/h]	24.92	379.23	379.38	13.70	708.85	871.76	46.74	46.49	4.79
VOC [g/h]	29.68	451.73	451.91	16.32	844.36	1038.42	55.67	55.38	5.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.81	0.00	28.81	28.81
l_p,int, Pedestrian LOS Score for Intersectio	3.067	0.000	2.258	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1100	1100	550	550
d_b, Bicycle Delay [s]	7.37	7.37	19.12	19.12
l_b,int, Bicycle LOS Score for Intersection	3.359	3.503	2.083	1.611
Bicycle LOS	C	D	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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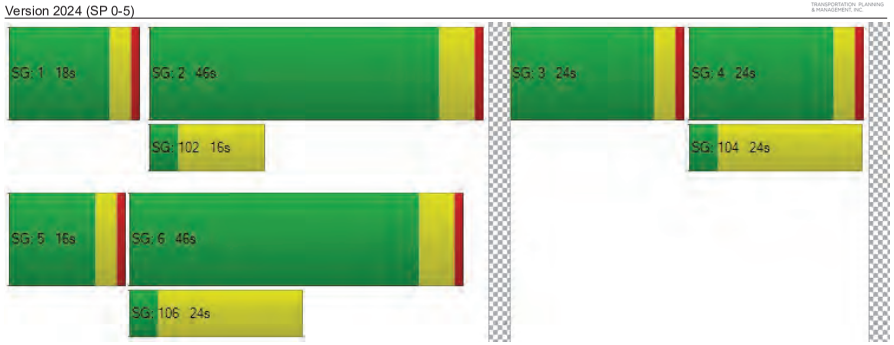

Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.820

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	92	1693	1327	397	153	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	66	0	0	0
Site-Generated Trips [veh/h]	0	3	61	-168	0	0	-1
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	119	0	17
Total Hourly Volume [veh/h]	1	95	1754	1225	278	153	39
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	27	504	352	80	44	11
Total Analysis Volume [veh/h]	1	109	2016	1408	320	176	45
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Calculated Cycle Length [s]	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5	45	36	36	8	8
g / C, Green / Cycle	0.08	0.71	0.57	0.57	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.06	0.57	0.46	0.49	0.10	0.03
s, saturation flow rate [veh/h]	1781	3560	1870	1755	1781	1589
c, Capacity [veh/h]	143	2533	1063	998	235	209
d1, Uniform Delay [s]	28.75	6.12	11.04	11.70	26.67	24.74
k, delay calibration	0.04	0.15	0.27	0.30	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.28	0.85	3.82	6.36	4.76	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.80	0.81	0.87	0.75	0.21
d, Delay for Lane Group [s/veh]	32.03	6.97	14.86	18.06	31.44	25.24
Lane Group LOS	C	A	B	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.70	5.46	8.75	9.84	2.75	0.61
50th-Percentile Queue Length [ft/ln]	42.48	136.46	218.80	246.02	68.67	15.18
95th-Percentile Queue Length [veh/ln]	3.06	9.29	13.60	14.99	4.94	1.09
95th-Percentile Queue Length [ft/ln]	76.47	232.25	340.09	374.64	123.60	27.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.03	32.03	6.97	16.09	18.06	31.44	25.24
Movement LOS	C	C	A	B	B	C	C
d_A, Approach Delay [s/veh]	8.27			16.46		30.18	
Approach LOS	A			B		C	
d_I, Intersection Delay [s/veh]	12.93						
Intersection LOS	B						
Intersection V/C	0.820						

Emissions

Vehicle Miles Traveled [mph]	76.75	1406.58	305.74	305.74	59.38	15.18
Stops [stops/h]	96.09	617.30	494.89	556.46	155.31	34.33
Fuel consumption [US gal/h]	4.41	64.17	17.93	18.84	4.43	1.05
CO [g/h]	308.07	4485.75	1253.51	1316.59	309.56	73.11
NOx [g/h]	59.94	872.76	243.89	256.16	60.23	14.22
VOC [g/h]	71.40	1039.61	290.51	305.13	71.74	16.94

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00	0.00
d_p, Pedestrian Delay [s]	24.34		0.00	24.34
l_p,int, Pedestrian LOS Score for Intersectio	2.986		0.000	2.205
Crosswalk LOS	C		F	B
s_b, Saturation Flow Rate of the bicycle lane	2000		2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1257		1257	628
d_b, Bicycle Delay [s]	4.40		4.40	14.97
l_b,int, Bicycle LOS Score for Intersection	3.313		3.083	1.560
Bicycle LOS	C		C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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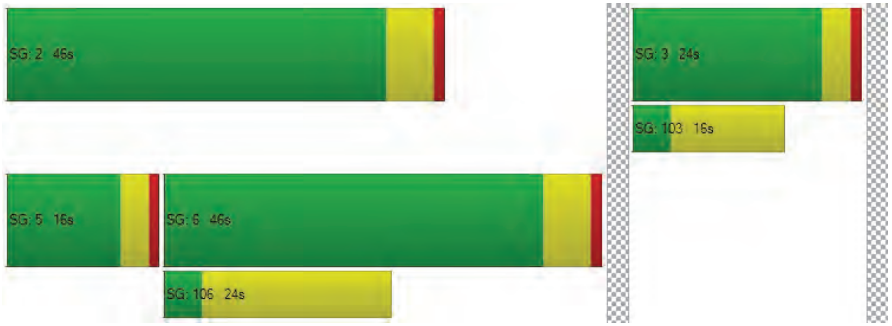

Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	84.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.046

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

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Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	53	773	21	249	386	750	514	69	78	136	241	520
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	4	0	100	0	0	0	0	17	0	0
Site-Generated Trips [veh/h]	26	99	10	0	-25	-145	-35	-6	-10	-8	-25	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	11	0	0	182	0	0	20	0	0	156
Total Hourly Volume [veh/h]	79	872	24	249	461	423	479	63	48	145	216	364
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	245	7	70	129	119	135	18	13	41	61	102
Total Analysis Volume [veh/h]	89	980	27	280	518	475	538	71	54	163	243	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	91	91	91	91	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	6	25	25	12	31	31	15	15	20	20
g / C, Green / Cycle	0.06	0.28	0.28	0.13	0.34	0.34	0.17	0.17	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.27	0.16	0.28	0.30	0.19	0.19	0.23	0.25
s, saturation flow rate [veh/h]	1781	1870	1852	1781	1870	1589	1781	1764	1822	1589
c, Capacity [veh/h]	117	515	510	235	639	544	294	291	401	350
d1, Uniform Delay [s]	41.73	32.68	32.68	39.40	27.19	28.04	37.90	37.90	35.40	35.40
k, delay calibration	0.04	0.38	0.38	0.50	0.40	0.46	0.47	0.47	0.42	0.48
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.83	30.49	30.69	119.58	8.67	16.44	91.34	92.09	56.56	83.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.98	0.98	1.19	0.81	0.87	1.13	1.13	1.05	1.12
d, Delay for Lane Group [s/veh]	45.56	63.17	63.37	158.98	35.86	44.48	129.24	129.99	91.96	118.51
Lane Group LOS	D	E	E	F	D	D	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.06	15.03	14.92	12.66	10.53	10.99	13.87	13.80	14.94	15.62
50th-Percentile Queue Length [ft/ln]	51.60	375.87	373.09	316.59	263.35	274.67	346.71	344.98	373.53	390.46
95th-Percentile Queue Length [veh/ln]	3.72	21.39	21.26	19.88	15.86	16.42	21.17	21.09	21.92	23.46
95th-Percentile Queue Length [ft/ln]	92.89	534.85	531.48	497.12	396.42	410.58	529.28	527.29	547.91	586.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.56	63.27	63.37	158.98	35.86	44.48	129.52	129.99	129.99	91.96	91.96	118.41
Movement LOS	D	E	E	F	D	D	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	61.84			66.15			129.61			104.72		
Approach LOS	E			E			F			F		
d_I, Intersection Delay [s/veh]	84.03											
Intersection LOS	F											
Intersection V/C	1.046											

Emissions

Vehicle Miles Traveled [mph]	51.40	292.14	289.43	195.36	361.41	331.41	25.04	24.84	46.81	43.33
Stops [stops/h]	81.84	596.10	591.69	502.09	417.65	435.61	549.85	547.11	592.39	619.23
Fuel consumption [US gal/h]	3.39	21.82	21.65	24.92	23.63	23.48	12.82	12.78	13.12	14.65
CO [g/h]	237.19	1525.36	1513.08	1741.77	1651.53	1641.01	896.22	893.09	917.07	1024.11
NOx [g/h]	46.15	296.78	294.39	338.89	321.33	319.28	174.37	173.76	178.43	199.26
VOC [g/h]	54.97	353.52	350.67	403.67	382.76	380.32	207.71	206.98	212.54	237.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.07	0.00	35.07	35.07
l_p,int, Pedestrian LOS Score for Intersectio	2.679	0.000	2.512	2.604
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	544	544	341	441
d_b, Bicycle Delay [s]	24.06	24.06	31.22	27.60
l_b,int, Bicycle LOS Score for Intersection	2.473	2.760	2.687	3.162
Bicycle LOS	B	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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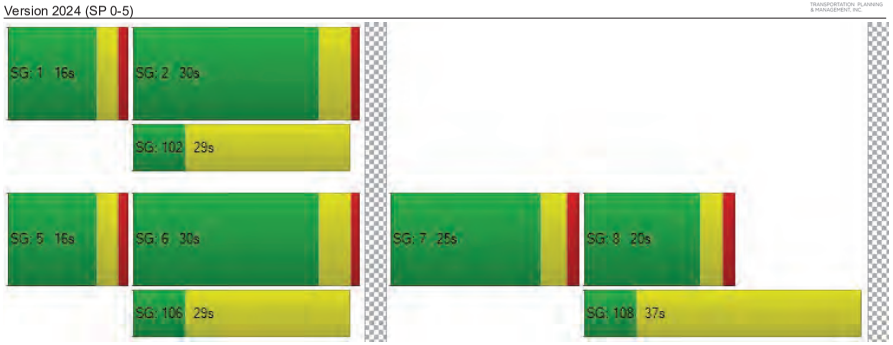

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	575	254	291	262	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	27	0	1	130	0	0
Site-Generated Trips [veh/h]	-23	171	104	-148	-36	-6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	746	359	273	226	82
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	207	100	76	63	23
Total Analysis Volume [veh/h]	140	829	399	303	251	91
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Calculated Cycle Length [s]	39	39	39	39	39	39
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	21	13	13	8	8
g / C, Green / Cycle	0.10	0.54	0.34	0.34	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.08	0.44	0.21	0.19	0.14	0.06
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	183	1014	629	535	357	318
d1, Uniform Delay [s]	16.96	7.31	10.86	10.56	14.45	13.17
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.52	2.38	1.51	1.35	2.55	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.82	0.63	0.57	0.70	0.29
d, Delay for Lane Group [s/veh]	19.47	9.69	12.38	11.90	17.00	13.66
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.98	2.02	1.85	1.37	1.92	0.60
50th-Percentile Queue Length [ft/ln]	24.59	50.48	46.13	34.17	48.08	14.88
95th-Percentile Queue Length [veh/ln]	1.77	3.63	3.32	2.46	3.46	1.07
95th-Percentile Queue Length [ft/ln]	44.25	90.86	83.04	61.50	86.54	26.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.47	9.69	12.38	11.90	17.00	13.66
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	11.10		12.17		16.11	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	12.33					
Intersection LOS	B					
Intersection V/C	0.847					

Emissions

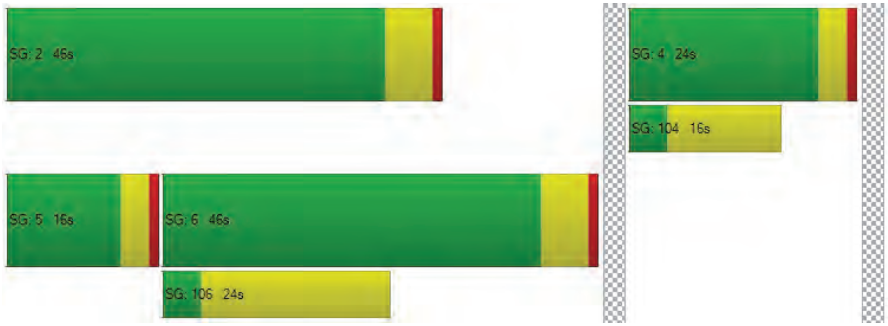
Vehicle Miles Traveled [mph]	17.27	102.29	230.43	174.99	58.95	21.37
Stops [stops/h]	91.47	187.80	171.62	127.10	178.87	55.36
Fuel consumption [US gal/h]	2.83	8.54	11.90	8.95	4.28	1.44
CO [g/h]	197.93	597.25	831.90	625.52	299.42	100.57
NOx [g/h]	38.51	116.20	161.86	121.70	58.26	19.57
VOC [g/h]	45.87	138.42	192.80	144.97	69.39	23.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.18	0.00	12.18
l_p,int, Pedestrian LOS Score for Intersectio	2.767	0.000	2.153
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2067	2067	1033
d_b, Bicycle Delay [s]	0.02	0.02	4.52
l_b,int, Bicycle LOS Score for Intersection	3.158	2.718	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	44.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.152

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	328	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	3	7	0	0	0	0	0
Site-Generated Trips [veh/h]	1	140	0	0	94	4	8	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	798	0	14	422	7	15	0	2	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	217	0	4	115	2	4	0	1	0	0	10
Total Analysis Volume [veh/h]	1	867	0	14	459	8	16	0	2	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	8.29	0.00	0.00	9.65	0.00	0.00	44.50	35.28	16.37	35.85	31.33	16.49
Movement LOS	A	A	A	A	A	A	E	E	C	E	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.52	0.52	0.52	0.37	0.37	0.37
95th-Percentile Queue Length [ft/ln]	0.04	0.04	0.04	0.59	0.59	0.59	12.89	12.89	12.89	9.25	9.25	9.25
d_A, Approach Delay [s/veh]	0.01			0.28			41.37			16.49		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	1.09											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	428.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.677

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	408	41	74	254	0	0	0	0	11	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	-12	0	0	1	64	152	2	17	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	31	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	396	41	74	260	95	152	2	17	11	1	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	106	11	20	70	26	41	1	5	3	0	67
Total Analysis Volume [veh/h]	12	426	44	80	280	102	163	2	18	12	1	269
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.07	0.00	0.00	1.68	0.01	0.03	0.06	0.00	0.44
d_M, Delay for Movement [s/veh]	8.09	0.00	0.00	8.56	0.00	0.00	428.84	407.63	396.88	28.88	27.79	17.23
Movement LOS	A	A	A	A	A	A	F	F	F	D	D	C
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.24	0.00	0.00	14.30	14.30	14.30	2.81	2.81	2.81
95th-Percentile Queue Length [ft/ln]	0.77	0.00	0.00	5.92	0.00	0.00	357.55	357.55	357.55	70.36	70.36	70.36
d_A, Approach Delay [s/veh]	0.20			1.48			425.47			17.77		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	59.37											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	198.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.314

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	460	201	51	0	862	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-13	-41	-10	-52	0	-170	26
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	6	0	0	37	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	6	419	191	36	0	692	208
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	116	53	10	0	191	57
Total Analysis Volume [veh/h]	0	7	462	211	40	0	764	230
Pedestrian Volume [ped/h]	0			0		0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.31	0.57	0.00	0.00	0.00	0.58	0.00
d_M, Delay for Movement [s/veh]	198.65	198.65	41.75	0.00	0.00	17.07	9.21	0.00
Movement LOS	F	F	E	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	10.00	10.00	10.00	0.00	0.00	2.18	2.18	2.18
95th-Percentile Queue Length [ft/ln]	250.00	250.00	250.00	0.00	0.00	54.39	54.39	54.39
d_A, Approach Delay [s/veh]	44.09			0.00		7.08		
Approach LOS	E			A		A		
d_I, Intersection Delay [s/veh]	16.17							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	51.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.060

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	9	149	80	2	30	779	37	11	17	0	240	45	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-76	-59	0	2	-194	-36	20	15	0	-148	-26	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	73	21	2	32	585	1	31	32	0	92	19	66
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	22	6	1	10	176	0	9	10	0	28	6	20
Total Analysis Volume [veh/h]	11	88	25	2	39	705	1	37	39	0	111	23	80
Pedestrian Volume [ped/h]	0			0				0			0		

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	620	747	539	587
Degree of Utilization, x	0.20	1.06	0.14	0.36

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.74	19.59	0.49	1.66
95th-Percentile Queue Length [ft]	18.50	489.73	12.22	41.57
Approach Delay [s/veh]	10.24	72.80	10.78	12.61
Approach LOS	B	F	B	B
Intersection Delay [s/veh]	50.96			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.222

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	110	126	1	106	95	0	67	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-57	0	-5	0	0	15	-1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	69	1	101	95	0	82	127
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	18	0	27	25	0	22	33
Total Analysis Volume [veh/h]	116	73	1	106	100	0	86	134
Pedestrian Volume [ped/h]	0		0			0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.08	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	13.85	9.41	8.81	0.00	0.00	9.80	7.81	0.00
Movement LOS	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.84	0.27	0.00	0.00	0.00	0.20	0.20	0.00
95th-Percentile Queue Length [ft/ln]	21.07	6.69	0.05	0.05	0.05	5.04	5.04	0.00
d_A, Approach Delay [s/veh]	12.14		0.04			3.05		
Approach LOS	B		A			A		
d_I, Intersection Delay [s/veh]	4.83							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.182

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	83	80	145	57	121	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-57	0	0	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	80	88	57	121	110
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	22	24	15	33	30
Total Analysis Volume [veh/h]	90	87	96	62	132	120
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.09	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	14.35	10.82	0.00	0.00	7.79	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.10	1.10	0.00	0.00	0.31	0.00
95th-Percentile Queue Length [ft/ln]	27.61	27.61	0.00	0.00	7.66	0.00
d_A, Approach Delay [s/veh]	12.61		0.00		4.08	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.56					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	7.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.077

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	11	165	19	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	0	-57	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	10	11	108	19	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	3	3	29	5	5
Total Analysis Volume [veh/h]	89	11	12	117	21	20
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	735	759	690	763	763	744
Degree of Utilization, x	0.07	0.07	0.02	0.08	0.08	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.22	0.21	0.05	0.25	0.25	0.17
95th-Percentile Queue Length [ft]	5.46	5.28	1.33	6.21	6.21	4.37
Approach Delay [s/veh]	7.87		7.83			8.12
Approach LOS	A		A			A
Intersection Delay [s/veh]	7.89					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	34.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	296	125	50	536	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	0	0	0	0	0	0	-57	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	0	18	66	1	8	4	296	68	50	536	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	0	5	17	0	2	1	76	18	13	138	4
Total Analysis Volume [veh/h]	82	0	19	68	1	8	4	305	70	52	553	15
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.41	0.00	0.03	0.34	0.00	0.02	0.00	0.00	0.00	0.04	0.01	0.00
d_M, Delay for Movement [s/veh]	34.56	21.12	10.27	31.85	30.58	20.82	8.60	0.00	0.00	8.18	0.00	0.00
Movement LOS	D	C	B	D	D	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.83	0.08	0.08	1.53	1.53	1.53	0.01	0.00	0.00	0.14	0.00	0.00
95th-Percentile Queue Length [ft/ln]	45.77	2.08	2.08	38.28	38.28	38.28	0.30	0.00	0.00	3.44	0.00	0.00
d_A, Approach Delay [s/veh]	29.99			30.69			0.09			0.69		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	4.97											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	72	5	189	5	5	5	5	632	184	0	378	502	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	57	0	0	2	0	0	55	0	0	0	2
Total Hourly Volume [veh/h]	72	5	132	5	5	3	5	632	129	0	378	502	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	1	34	1	1	1	1	163	33	0	97	129	1
Total Analysis Volume [veh/h]	74	5	136	5	5	3	5	652	133	0	390	518	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	6	12	1	7	1	57	57	28	84	84
g / C, Green / Cycle	0.05	0.10	0.01	0.06	0.01	0.47	0.47	0.23	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.00	0.00	0.00	0.22	0.22	0.22	0.14	0.14
s, saturation flow rate [veh/h]	1781	1598	1781	1754	1781	1870	1762	1781	1870	1866
c, Capacity [veh/h]	96	165	12	99	12	885	834	415	1308	1305
d1, Uniform Delay [s]	56.04	52.90	59.33	53.65	59.34	21.23	21.24	45.20	6.30	6.30
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.83	4.72	19.50	0.13	19.95	1.69	1.81	8.64	0.34	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.85	0.40	0.08	0.40	0.46	0.46	0.94	0.20	0.20
d, Delay for Lane Group [s/veh]	60.87	57.61	78.83	53.78	79.29	22.92	23.05	53.84	6.65	6.65
Lane Group LOS	E	E	E	D	E	C	C	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	4.39	0.22	0.23	0.22	7.96	7.55	12.32	2.28	2.28
50th-Percentile Queue Length [ft/ln]	58.56	109.83	5.48	5.83	5.50	199.09	188.65	308.10	57.00	56.89
95th-Percentile Queue Length [veh/ln]	4.22	7.83	0.39	0.42	0.40	12.59	12.05	18.08	4.10	4.10
95th-Percentile Queue Length [ft/ln]	105.40	195.77	9.86	10.49	9.90	314.79	301.28	452.04	102.59	102.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.87	57.61	57.61	78.83	53.78	53.78	79.29	22.97	23.05	53.84	53.84	6.65	6.65
Movement LOS	E	E	E	E	D	D	E	C	C	D	D	A	A
d_A, Approach Delay [s/veh]	58.73			63.41			23.34			26.85			
Approach LOS	E			E			C			C			
d_I, Intersection Delay [s/veh]	29.21												
Intersection LOS	C												
Intersection V/C	0.585												

Emissions

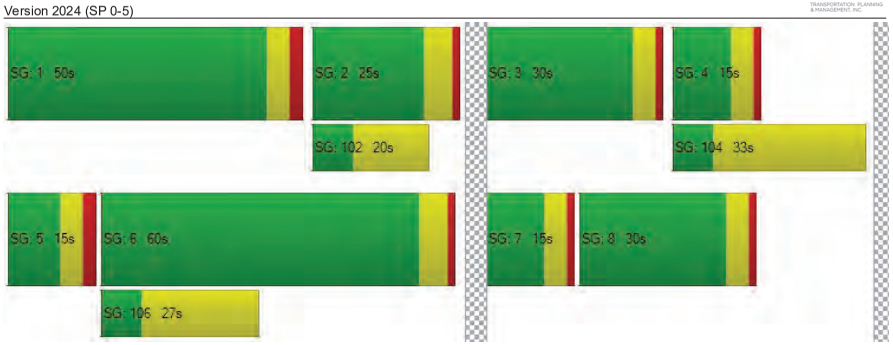
Vehicle Miles Traveled [mph]	28.51	54.33	0.17	0.28	4.21	339.83	320.77	97.19	64.98	64.85
Stops [stops/h]	70.27	131.80	6.57	6.99	6.60	238.91	226.38	369.72	68.40	68.27
Fuel consumption [US gal/h]	2.48	4.62	0.12	0.14	0.29	17.19	16.24	10.32	3.41	3.40
CO [g/h]	173.25	322.77	8.65	9.62	20.30	1201.81	1135.42	721.11	238.07	237.59
NOx [g/h]	33.71	62.80	1.68	1.87	3.95	233.83	220.91	140.30	46.32	46.23
VOC [g/h]	40.15	74.80	2.00	2.23	4.70	278.53	263.15	167.12	55.18	55.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.313	1.967	2.673	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
I_b,int, Bicycle LOS Score for Intersection	2.008	1.584	2.257	1.991
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.611

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	59	7	20	114	11	203	0	243	569	62	55	729	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-12	0	-2	14	0	0	-22	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	57	0	0	0	19	0	0	62
Total Hourly Volume [veh/h]	59	7	14	114	11	134	0	241	583	43	55	707	143
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	4	31	3	37	0	66	160	12	15	194	39
Total Analysis Volume [veh/h]	65	8	15	125	12	147	0	265	641	47	60	777	157
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	7	15	9	16	23	91	91	6	73	73
g / C, Green / Cycle	0.05	0.11	0.06	0.12	0.16	0.65	0.65	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.10	0.15	0.18	0.03	0.03	0.26	0.26
s, saturation flow rate [veh/h]	1781	1677	1781	1608	1781	3560	1589	1781	1870	1762
c, Capacity [veh/h]	83	179	108	187	286	2301	1027	77	982	926
d1, Uniform Delay [s]	66.05	56.61	65.75	60.70	57.92	10.68	9.02	66.32	21.24	21.24
k, delay calibration	0.04	0.13	0.40	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.95	0.40	125.62	12.62	5.37	0.30	0.08	6.24	1.74	1.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.13	1.16	0.85	0.93	0.28	0.05	0.78	0.49	0.49
d, Delay for Lane Group [s/veh]	72.00	57.01	191.37	73.32	63.29	10.98	9.10	72.56	22.99	23.09
Lane Group LOS	E	E	F	E	E	B	A	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.44	0.76	7.65	6.21	9.69	4.34	0.55	2.26	10.57	9.99
50th-Percentile Queue Length [ft/ln]	61.10	19.07	191.15	155.27	242.13	108.57	13.75	56.62	264.23	249.70
95th-Percentile Queue Length [veh/ln]	4.40	1.37	12.73	10.30	14.79	7.76	0.99	4.08	15.90	15.17
95th-Percentile Queue Length [ft/ln]	109.98	34.32	318.26	257.45	369.72	194.02	24.76	101.91	397.53	379.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.00	57.01	57.01	191.37	73.32	73.32	63.29	63.29	10.98	9.10	72.56	23.03	23.09
Movement LOS	E	E	E	F	E	E	E	E	B	A	E	C	C
d_A, Approach Delay [s/veh]	68.08			125.28			25.43				26.03		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	39.53												
Intersection LOS	D												
Intersection V/C	0.611												

Emissions

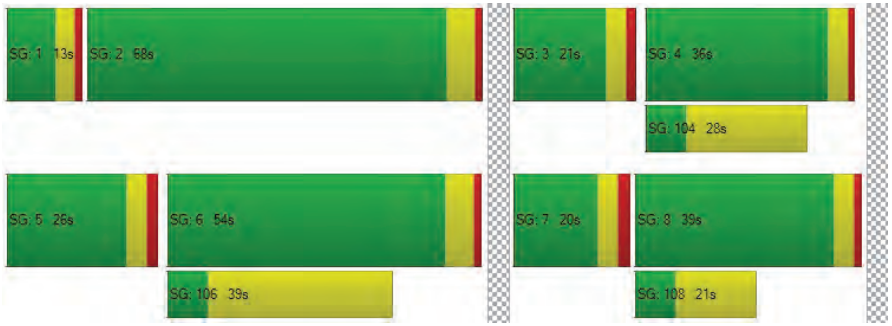
Vehicle Miles Traveled [mph]	3.25	1.15	5.81	7.39	27.78	67.20	4.93	21.01	168.37	158.67
Stops [stops/h]	62.85	19.61	196.61	159.71	249.04	223.35	14.15	58.24	271.78	256.83
Fuel consumption [US gal/h]	1.43	0.42	6.19	3.56	5.93	5.43	0.37	2.07	10.68	10.08
CO [g/h]	100.19	29.54	432.86	248.74	414.66	379.73	25.73	144.86	746.69	704.64
NOx [g/h]	19.49	5.75	84.22	48.40	80.68	73.88	5.01	28.18	145.28	137.10
VOC [g/h]	23.22	6.85	100.32	57.65	96.10	88.01	5.96	33.57	173.05	163.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.045	2.313	2.829	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
I_b,int, Bicycle LOS Score for Intersection	1.715	2.122	2.143	2.431
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	247.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.305

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

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Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	115	53	383	193	45	46	218	278	224	320	839	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	8	0	-6	5	7	7	0	-9	-26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	117	0	0	15	0	0	67	0	0	92
Total Hourly Volume [veh/h]	115	52	274	193	39	36	225	285	157	311	813	215
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	15	79	55	11	10	65	82	45	89	234	62
Total Analysis Volume [veh/h]	132	60	315	222	45	41	259	328	180	357	934	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	163
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	139	139	139	139	139	139	139	139
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	34	34	20	20	22	43	25	45
g / C, Green / Cycle	0.24	0.24	0.14	0.14	0.16	0.31	0.18	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.12	0.05	0.15	0.29	0.20	0.65
s, saturation flow rate [veh/h]	1781	1629	1781	1725	1781	1760	1781	1803
c, Capacity [veh/h]	435	398	258	250	283	542	320	583
d1, Uniform Delay [s]	42.96	51.68	58.16	53.58	57.62	46.91	57.14	47.14
k, delay calibration	0.13	0.40	0.13	0.13	0.28	0.37	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	28.34	9.95	1.01	23.68	21.07	85.62	468.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.94	0.86	0.34	0.91	0.94	1.12	2.03
d, Delay for Lane Group [s/veh]	43.45	80.02	68.11	54.60	81.29	67.98	142.77	515.24
Lane Group LOS	D	F	E	D	F	E	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.81	15.96	8.36	2.80	10.84	20.21	18.83	95.78
50th-Percentile Queue Length [ft/ln]	95.28	398.88	209.06	70.00	270.96	505.25	470.64	2394.47
95th-Percentile Queue Length [veh/ln]	6.86	22.51	13.10	5.04	16.24	27.58	27.45	150.70
95th-Percentile Queue Length [ft/ln]	171.51	562.65	327.62	126.01	405.94	689.57	686.13	3767.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.45	80.02	80.02	68.11	54.60	54.60	81.29	67.98	67.98	142.77	515.24	515.24
Movement LOS	D	F	F	E	D	D	F	E	E	F	F	F
d_A, Approach Delay [s/veh]	70.50			64.34			72.48			428.78		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	246.99											
Intersection LOS	F											
Intersection V/C	1.305											

Emissions

Vehicle Miles Traveled [mph]	227.13	645.24	45.01	17.44	90.69	177.88	161.09	532.90
Stops [stops/h]	98.65	412.97	216.44	72.48	280.53	523.10	487.26	2479.04
Fuel consumption [US gal/h]	11.06	34.95	6.13	2.07	9.57	17.24	19.69	159.43
CO [g/h]	773.23	2442.98	428.15	144.94	668.76	1205.05	1376.57	11144.40
NOx [g/h]	150.44	475.31	83.30	28.20	130.12	234.46	267.83	2168.30
VOC [g/h]	179.20	566.18	99.23	33.59	154.99	279.28	319.03	2582.82

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.98	58.98	58.98	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.541	2.301	2.692	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	572	643	647
d_b, Bicycle Delay [s]	39.10	35.44	32.03	31.82
l_b,int, Bicycle LOS Score for Intersection	2.589	2.093	2.936	4.249
Bicycle LOS	B	B	C	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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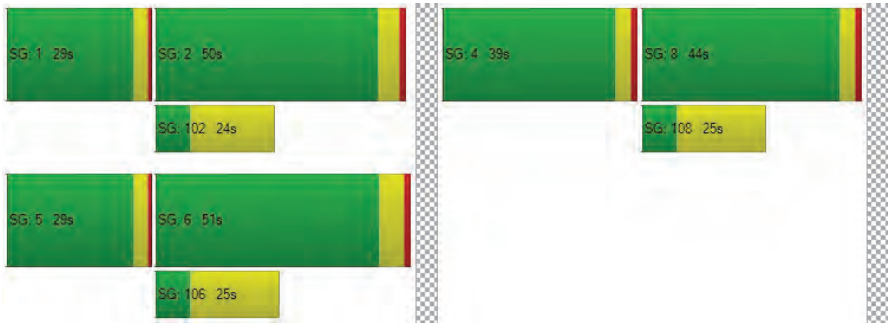

Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	34.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	5	4	0	354	3	851	0	4	1112	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	15	0	0	-35	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	5	4	0	354	3	866	0	4	1077	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	1	0	113	1	278	0	1	345	10
Total Analysis Volume [veh/h]	0	0	6	5	0	454	4	1110	0	5	1381	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	1	1	20	20	0	37	37	1	37	37
g / C, Green / Cycle	0.01	0.01	0.25	0.25	0.01	0.46	0.46	0.01	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.30	0.30	0.00	0.39	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	15	13	444	396	10	864	864	12	1649	736
d1, Uniform Delay [s]	0.00	39.63	22.67	30.11	39.77	16.53	16.53	39.69	18.90	11.86
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	24.89	0.01	91.15	25.28	0.81	0.81	21.35	1.20	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.47	0.01	1.15	0.41	0.64	0.64	0.42	0.84	0.05
d, Delay for Lane Group [s/veh]	0.00	64.52	22.68	121.26	65.05	17.33	17.33	61.04	20.09	11.90
Lane Group LOS	A	E	C	F	E	B	B	E	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.20	0.07	17.33	0.15	7.38	7.38	0.17	10.52	0.38
50th-Percentile Queue Length [ft/ln]	0.00	5.08	1.76	433.25	3.64	184.52	184.52	4.19	262.88	9.47
95th-Percentile Queue Length [veh/ln]	0.00	0.37	0.13	26.03	0.26	11.84	11.84	0.30	15.83	0.68
95th-Percentile Queue Length [ft/ln]	0.00	9.15	3.17	650.75	6.56	295.91	295.91	7.55	395.83	17.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	64.52	22.68	22.68	121.26	65.05	17.33	17.33	61.04	20.09	11.90
Movement LOS	A	A	E	C	C	F	E	B	B	E	C	B
d_A, Approach Delay [s/veh]	64.52			120.19			17.50			20.01		
Approach LOS	E			F			B			C		
d_I, Intersection Delay [s/veh]	34.47											
Intersection LOS	C											
Intersection V/C	0.849											

Emissions

Vehicle Miles Traveled [mph]	0.00	0.30	2.37	215.36	1.80	250.43	250.43	0.87	240.91	6.98
Stops [stops/h]	0.00	9.13	3.17	778.32	6.55	331.49	331.49	7.53	944.52	17.01
Fuel consumption [US gal/h]	0.00	0.14	0.14	24.37	0.16	14.10	14.10	0.14	20.78	0.48
CO [g/h]	0.00	9.89	9.66	1703.29	11.42	985.47	985.47	9.76	1452.71	33.42
NOx [g/h]	0.00	1.93	1.88	331.40	2.22	191.74	191.74	1.90	282.64	6.50
VOC [g/h]	0.00	2.29	2.24	394.75	2.65	228.39	228.39	2.26	336.68	7.74

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	499	499	1248	1248
d_b, Bicycle Delay [s]	22.57	22.57	5.67	5.67
l_b,int, Bicycle LOS Score for Intersection	1.570	2.317	2.479	2.736
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.680

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	481	379	1054	278	213	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	2	-35	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	494	381	1019	278	213	81
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	149	115	307	84	64	24
Total Analysis Volume [veh/h]	595	459	1228	335	257	98
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	18	69	47	47	9	9	9
g / C, Green / Cycle	0.20	0.76	0.52	0.52	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.17	0.13	0.34	0.21	0.07	0.07	0.06
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	679	2716	1852	827	173	173	154
d1, Uniform Delay [s]	35.11	2.90	15.82	13.13	39.54	39.54	39.10
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	0.13	1.89	1.48	2.37	2.37	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.17	0.66	0.41	0.74	0.74	0.64
d, Delay for Lane Group [s/veh]	36.58	3.04	17.71	14.61	41.92	41.92	40.72
Lane Group LOS	D	A	B	B	D	D	D
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.32	0.85	9.02	4.20	2.84	2.84	2.13
50th-Percentile Queue Length [ft/ln]	158.09	21.23	225.40	105.04	71.06	71.06	53.17
95th-Percentile Queue Length [veh/ln]	10.45	1.53	13.94	7.56	5.12	5.12	3.83
95th-Percentile Queue Length [ft/ln]	261.19	38.22	348.51	189.08	127.91	127.91	95.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.58	3.04	17.71	14.61	41.92	40.72
Movement LOS	D	A	B	B	D	D
d_A, Approach Delay [s/veh]	21.97		17.05		41.59	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	21.73					
Intersection LOS	C					
Intersection V/C	0.680					

Emissions

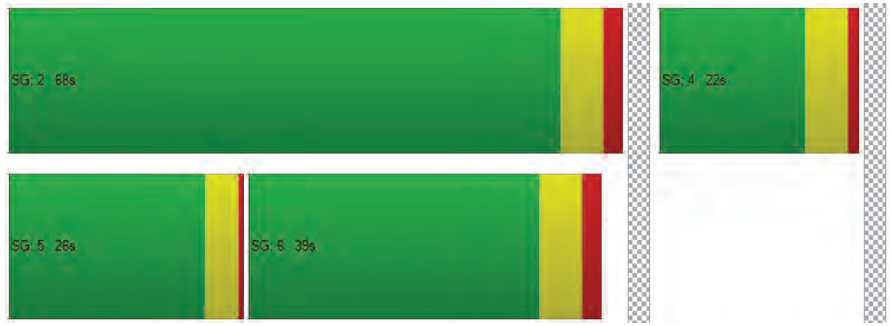
Vehicle Miles Traveled [mph]	103.79	80.07	217.61	59.36	7.78	7.78	5.93
Stops [stops/h]	505.89	67.94	721.28	168.07	113.70	113.70	85.07
Fuel consumption [US gal/h]	11.50	3.96	17.37	4.37	2.04	2.04	1.53
CO [g/h]	803.65	276.48	1214.18	305.35	142.92	142.92	106.69
NOx [g/h]	156.36	53.79	236.24	59.41	27.81	27.81	20.76
VOC [g/h]	186.25	64.08	281.40	70.77	33.12	33.12	24.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00	
l_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000	
Crosswalk LOS	F		F		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1360		716		360	
d_b, Bicycle Delay [s]	4.61		18.56		30.26	
l_b,int, Bicycle LOS Score for Intersection	2.429		2.849		2.165	
Bicycle LOS	B		C		B	

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	65.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.011

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

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Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	78	514	0	0	391	671	941	0	298	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	2	0	0	-6	0	-29	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	78	516	0	0	385	624	912	0	268	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	163	0	0	122	197	289	0	85	0	0	0
Total Analysis Volume [veh/h]	0	99	653	0	0	487	790	1154	0	339	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	7	51	40	40	26	26	26	
g / C, Green / Cycle	0.08	0.57	0.44	0.44	0.29	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.14	0.50	0.32	0.32	0.21	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	147	2027	1567	699	518	518	462	
d1, Uniform Delay [s]	40.10	10.23	16.35	25.20	31.91	31.91	28.77	
k, delay calibration	0.04	0.50	0.50	0.50	0.47	0.47	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.00	0.42	0.52	75.64	73.79	73.79	3.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.32	0.31	1.13	1.11	1.11	0.73	
d, Delay for Lane Group [s/veh]	42.10	10.65	16.87	100.84	105.70	105.70	32.28	
Lane Group LOS	D	B	B	F	F	F	C	
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	2.18	3.27	3.25	28.56	21.45	21.45	6.85	
50th-Percentile Queue Length [ft/ln]	54.62	81.83	81.13	714.05	536.30	536.30	171.16	
95th-Percentile Queue Length [veh/ln]	3.93	5.89	5.84	40.69	31.02	31.02	11.14	
95th-Percentile Queue Length [ft/ln]	98.32	147.29	146.04	1017.24	775.43	775.43	278.44	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	42.10	10.65	0.00	0.00	16.87	100.84	105.70	105.70	32.28	0.00	0.00	0.00
Movement LOS	D	D	B			B	F	F	F	C			
d_A, Approach Delay [s/veh]	14.79				68.82			89.03			0.00		
Approach LOS	B				E			F			A		
d_I, Intersection Delay [s/veh]	65.85												
Intersection LOS	E												
Intersection V/C	1.011												

Emissions

Vehicle Miles Traveled [mph]	17.54	115.72	66.59	108.02	19.99	19.99	11.74	
Stops [stops/h]	87.40	261.85	259.63	1142.49	858.09	858.09	273.86	
Fuel consumption [US gal/h]	2.05	7.63	5.85	26.97	17.97	17.97	4.22	
CO [g/h]	143.52	533.02	408.74	1885.08	1256.36	1256.36	295.22	
NOx [g/h]	27.92	103.71	79.53	366.77	244.44	244.44	57.44	
VOC [g/h]	33.26	123.53	94.73	436.89	291.17	291.17	68.42	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.180	2.652	4.073	4.132
Bicycle LOS	B	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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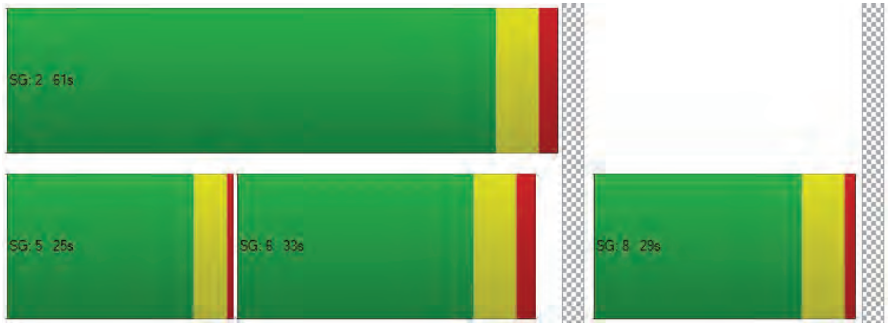

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	658	328	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	141	65	31	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	31	-31	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	799	424	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	200	106	0	0	0
Total Analysis Volume [veh/h]	0	799	424	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.71
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.71	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.027

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	445	227	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-8	14	4	7	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	437	241	42	11	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	109	60	11	3	0
Total Analysis Volume [veh/h]	0	437	241	42	11	1
Pedestrian Volume [ped/h]	0		0		0	

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Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	7.81	0.00	0.00	0.00	14.09	9.86
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	2.09	2.09
d_A, Approach Delay [s/veh]	0.00		0.00		13.74	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.23					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	21.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.160

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	238	41	52	127	9	47	81	0	37	73	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-18	0	8	-1	8	5	0	0	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	220	41	60	126	17	52	81	0	37	73	48
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	55	10	15	32	4	13	20	0	9	18	12
Total Analysis Volume [veh/h]	6	220	41	60	126	17	52	81	0	37	73	48
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.16	0.19	0.00	0.11	0.17	0.06
d_M, Delay for Movement [s/veh]	7.51	0.00	0.00	7.83	0.00	0.00	21.06	18.31	13.89	19.13	16.98	13.26
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.11	0.11	0.11	1.53	1.53	1.53	1.45	1.45	1.45
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.65	2.65	2.65	38.21	38.21	38.21	36.19	36.19	36.19
d_A, Approach Delay [s/veh]	0.17			2.32			19.38			16.35		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.46											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	799	443	39	17
2	775	430	38	16
3	759	421	37	16
4	711	394	35	15
5	631	350	31	13
6	623	346	30	13
7	615	341	30	13
8	559	310	27	12
9	551	306	27	12
10	543	301	27	12
11	471	261	23	10
12	439	244	21	9
13	431	239	21	9
14	320	177	16	7
15	320	177	16	7
16	224	124	11	5
17	128	71	6	3
18	128	71	6	3
19	72	40	4	2
20	40	22	2	1
21	24	13	1	1
22	8	4	0	0
23	8	4	0	0
24	8	4	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1242	1	39	No	No	No	No	No	No	No	No	No	No
2	1	1205	1	38	No	No	No	No	No	No	No	No	No	No
3	1	1180	1	37	No	No	No	No	No	No	No	No	No	No
4	1	1105	1	35	No	No	No	No	No	No	No	No	No	No
5	1	981	1	31	No	No	No	No	No	No	No	No	No	No
6	1	969	1	30	No	No	No	No	No	No	No	No	No	No
7	1	956	1	30	No	No	No	No	No	No	No	No	No	No
8	1	869	1	27	No	No	No	No	No	No	No	No	No	No
9	1	857	1	27	No	No	No	No	No	No	No	No	No	No
10	1	844	1	27	No	No	No	No	No	No	No	No	No	No
11	1	732	1	23	No	No	No	No	No	No	No	No	No	No
12	1	683	1	21	No	No	No	No	No	No	No	No	No	No
13	1	670	1	21	No	No	No	No	No	No	No	No	No	No
14	1	497	1	16	No	No	No	No	No	No	No	No	No	No
15	1	497	1	16	No	No	No	No	No	No	No	No	No	No
16	1	348	1	11	No	No	No	No	No	No	No	No	No	No
17	1	199	1	6	No	No	No	No	No	No	No	No	No	No
18	1	199	1	6	No	No	No	No	No	No	No	No	No	No
19	1	112	1	4	No	No	No	No	No	No	No	No	No	No
20	1	62	1	2	No	No	No	No	No	No	No	No	No	No
21	1	37	1	1	No	No	No	No	No	No	No	No	No	No
22	1	12	1	0	No	No	No	No	No	No	No	No	No	No
23	1	12	1	0	No	No	No	No	No	No	No	No	No	No
24	1	12	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.5	41.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10	0:11
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	17
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1298	1298
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	448	429	262	171
2	435	416	254	166
3	426	408	249	162
4	399	382	233	152
5	354	339	207	135
6	349	335	204	133
7	345	330	202	132
8	314	300	183	120
9	309	296	181	118
10	305	292	178	116
11	264	253	155	101
12	246	236	144	94
13	242	232	141	92
14	179	172	105	68
15	179	172	105	68
16	125	120	73	48
17	72	69	42	27
18	72	69	42	27
19	40	39	24	15
20	22	21	13	9
21	13	13	8	5
22	4	4	3	2
23	4	4	3	2
24	4	4	3	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	877	1	262	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	851	1	254	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	834	1	249	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	781	1	233	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
5	2	693	1	207	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
6	2	684	1	204	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
7	2	675	1	202	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
8	2	614	1	183	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
9	2	605	1	181	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
10	2	597	1	178	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
11	2	517	1	155	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	2	482	1	144	No	Yes	Yes	Yes	No	No	No	No	No	No
13	2	474	1	141	No	No	Yes	Yes	No	No	No	No	No	No
14	2	351	1	105	No	No	No	Yes	No	No	No	No	No	No
15	2	351	1	105	No	No	No	Yes	No	No	No	No	No	No
16	2	245	1	73	No	No	No	No	No	No	No	No	No	No
17	2	141	1	42	No	No	No	No	No	No	No	No	No	No
18	2	141	1	42	No	No	No	No	No	No	No	No	No	No
19	2	79	1	24	No	No	No	No	No	No	No	No	No	No
20	2	43	1	13	No	No	No	No	No	No	No	No	No	No
21	2	26	1	8	No	No	No	No	No	No	No	No	No	No
22	2	8	1	3	No	No	No	No	No	No	No	No	No	No
23	2	8	1	3	No	No	No	No	No	No	No	No	No	No
24	2	8	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					9	12	13	15	0	4	7	11	10	5

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.8	425.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:17	20:12
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	262	171
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1310	1310
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	900	227	425
2	873	220	412
3	855	216	404
4	801	202	378
5	711	179	336
6	702	177	332
7	693	175	327
8	630	159	298
9	621	157	293
10	612	154	289
11	531	134	251
12	495	125	234
13	486	123	230
14	360	91	170
15	360	91	170
16	252	64	119
17	144	36	68
18	144	36	68
19	81	20	38
20	45	11	21
21	27	7	13
22	9	2	4
23	9	2	4
24	9	2	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1127	1	425	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1093	1	412	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1071	1	404	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1003	1	378	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	890	1	336	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	879	1	332	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	868	1	327	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	789	1	298	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	778	1	293	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	766	1	289	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	665	1	251	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	620	1	234	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	609	1	230	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	451	1	170	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	451	1	170	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	316	1	119	No	No	No	Yes	No	No	No	No	No	No
17	1	180	1	68	No	No	No	No	No	No	No	No	No	No
18	1	180	1	68	No	No	No	No	No	No	No	No	No	No
19	1	101	1	38	No	No	No	No	No	No	No	No	No	No
20	1	56	1	21	No	No	No	No	No	No	No	No	No	No
21	1	34	1	13	No	No	No	No	No	No	No	No	No	No
22	1	11	1	4	No	No	No	No	No	No	No	No	No	No
23	1	11	1	4	No	No	No	No	No	No	No	No	No	No
24	1	11	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	13	5

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	44.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	5:12
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	425
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1552
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	103	620	177	63
2	100	601	172	61
3	98	589	168	60
4	92	552	158	56
5	81	490	140	50
6	80	484	138	49
7	79	477	136	49
8	72	434	124	44
9	71	428	122	43
10	70	422	120	43
11	61	366	104	37
12	57	341	97	35
13	56	335	96	34
14	41	248	71	25
15	41	248	71	25
16	29	174	50	18
17	16	99	28	10
18	16	99	28	10
19	9	56	16	6
20	5	31	9	3
21	3	19	5	2
22	1	6	2	1
23	1	6	2	1
24	1	6	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	723	1	177	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	701	1	172	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	1	687	1	168	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	1	644	1	158	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
5	1	571	1	140	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
6	1	564	1	138	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
7	1	556	1	136	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
8	1	506	1	124	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	499	1	122	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	492	1	120	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	427	1	104	No	No	No	Yes	No	No	No	Yes	No	No
12	1	398	1	97	No	No	No	Yes	No	No	No	No	No	No
13	1	391	1	96	No	No	No	Yes	No	No	No	No	No	No
14	1	289	1	71	No	No	No	No	No	No	No	No	No	No
15	1	289	1	71	No	No	No	No	No	No	No	No	No	No
16	1	203	1	50	No	No	No	No	No	No	No	No	No	No
17	1	115	1	28	No	No	No	No	No	No	No	No	No	No
18	1	115	1	28	No	No	No	No	No	No	No	No	No	No
19	1	65	1	16	No	No	No	No	No	No	No	No	No	No
20	1	36	1	9	No	No	No	No	No	No	No	No	No	No
21	1	22	1	5	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	10	13	0	4	7	11	1	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.6	10.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:37	0:11
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	177	63
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	963	963
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	209	197	179
2	203	191	174
3	199	187	170
4	186	175	159
5	165	156	141
6	163	154	140
7	161	152	138
8	146	138	125
9	144	136	124
10	142	134	122
11	123	116	106
12	115	108	98
13	113	106	97
14	84	79	72
15	84	79	72
16	59	55	50
17	33	32	29
18	33	32	29
19	19	18	16
20	10	10	9
21	6	6	5
22	2	2	2
23	2	2	2
24	2	2	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	406	2	179	No	No	No	Yes	No	No	No	No	No	No
2	2	394	2	174	No	No	No	Yes	No	No	No	No	No	No
3	2	386	2	170	No	No	No	Yes	No	No	No	No	No	No
4	2	361	2	159	No	No	No	Yes	No	No	No	No	No	No
5	2	321	2	141	No	No	No	No	No	No	No	No	No	No
6	2	317	2	140	No	No	No	No	No	No	No	No	No	No
7	2	313	2	138	No	No	No	No	No	No	No	No	No	No
8	2	284	2	125	No	No	No	No	No	No	No	No	No	No
9	2	280	2	124	No	No	No	No	No	No	No	No	No	No
10	2	276	2	122	No	No	No	No	No	No	No	No	No	No
11	2	239	2	106	No	No	No	No	No	No	No	No	No	No
12	2	223	2	98	No	No	No	No	No	No	No	No	No	No
13	2	219	2	97	No	No	No	No	No	No	No	No	No	No
14	2	163	2	72	No	No	No	No	No	No	No	No	No	No
15	2	163	2	72	No	No	No	No	No	No	No	No	No	No
16	2	114	2	50	No	No	No	No	No	No	No	No	No	No
17	2	65	2	29	No	No	No	No	No	No	No	No	No	No
18	2	65	2	29	No	No	No	No	No	No	No	No	No	No
19	2	37	2	16	No	No	No	No	No	No	No	No	No	No
20	2	20	2	9	No	No	No	No	No	No	No	No	No	No
21	2	12	2	5	No	No	No	No	No	No	No	No	No	No
22	2	4	2	2	No	No	No	No	No	No	No	No	No	No
23	2	4	2	2	No	No	No	No	No	No	No	No	No	No
24	2	4	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.1
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:36
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	179
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	585
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	231	145	163
2	224	141	158
3	219	138	155
4	206	129	145
5	182	115	129
6	180	113	127
7	178	112	126
8	162	102	114
9	159	100	112
10	157	99	111
11	136	86	96
12	127	80	90
13	125	78	88
14	92	58	65
15	92	58	65
16	65	41	46
17	37	23	26
18	37	23	26
19	21	13	15
20	12	7	8
21	7	4	5
22	2	1	2
23	2	1	2
24	2	1	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	376	1	163	No	No	No	Yes	No	No	No	No	No	No
2	2	365	1	158	No	No	No	Yes	No	No	No	No	No	No
3	2	357	1	155	No	No	No	Yes	No	No	No	No	No	No
4	2	335	1	145	No	No	No	No	No	No	No	No	No	No
5	2	297	1	129	No	No	No	No	No	No	No	No	No	No
6	2	293	1	127	No	No	No	No	No	No	No	No	No	No
7	2	290	1	126	No	No	No	No	No	No	No	No	No	No
8	2	264	1	114	No	No	No	No	No	No	No	No	No	No
9	2	259	1	112	No	No	No	No	No	No	No	No	No	No
10	2	256	1	111	No	No	No	No	No	No	No	No	No	No
11	2	222	1	96	No	No	No	No	No	No	No	No	No	No
12	2	207	1	90	No	No	No	No	No	No	No	No	No	No
13	2	203	1	88	No	No	No	No	No	No	No	No	No	No
14	2	150	1	65	No	No	No	No	No	No	No	No	No	No
15	2	150	1	65	No	No	No	No	No	No	No	No	No	No
16	2	106	1	46	No	No	No	No	No	No	No	No	No	No
17	2	60	1	26	No	No	No	No	No	No	No	No	No	No
18	2	60	1	26	No	No	No	No	No	No	No	No	No	No
19	2	34	1	15	No	No	No	No	No	No	No	No	No	No
20	2	19	1	8	No	No	No	No	No	No	No	No	No	No
21	2	11	1	5	No	No	No	No	No	No	No	No	No	No
22	2	3	1	2	No	No	No	No	No	No	No	No	No	No
23	2	3	1	2	No	No	No	No	No	No	No	No	No	No
24	2	3	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:34
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	163
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	539
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	92	119	37
2	89	115	36
3	87	113	35
4	82	106	33
5	73	94	29
6	72	93	29
7	71	92	28
8	64	83	26
9	63	82	26
10	63	81	25
11	54	70	22
12	51	65	20
13	50	64	20
14	37	48	15
15	37	48	15
16	26	33	10
17	15	19	6
18	15	19	6
19	8	11	3
20	5	6	2
21	3	4	1
22	1	1	0
23	1	1	0
24	1	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	211	1	37	No	No	No	No	No	No	No	No	No	No
2	3	204	1	36	No	No	No	No	No	No	No	No	No	No
3	3	200	1	35	No	No	No	No	No	No	No	No	No	No
4	3	188	1	33	No	No	No	No	No	No	No	No	No	No
5	3	167	1	29	No	No	No	No	No	No	No	No	No	No
6	3	165	1	29	No	No	No	No	No	No	No	No	No	No
7	3	163	1	28	No	No	No	No	No	No	No	No	No	No
8	3	147	1	26	No	No	No	No	No	No	No	No	No	No
9	3	145	1	26	No	No	No	No	No	No	No	No	No	No
10	3	144	1	25	No	No	No	No	No	No	No	No	No	No
11	3	124	1	22	No	No	No	No	No	No	No	No	No	No
12	3	116	1	20	No	No	No	No	No	No	No	No	No	No
13	3	114	1	20	No	No	No	No	No	No	No	No	No	No
14	3	85	1	15	No	No	No	No	No	No	No	No	No	No
15	3	85	1	15	No	No	No	No	No	No	No	No	No	No
16	3	59	1	10	No	No	No	No	No	No	No	No	No	No
17	3	34	1	6	No	No	No	No	No	No	No	No	No	No
18	3	34	1	6	No	No	No	No	No	No	No	No	No	No
19	3	19	1	3	No	No	No	No	No	No	No	No	No	No
20	3	11	1	2	No	No	No	No	No	No	No	No	No	No
21	3	7	1	1	No	No	No	No	No	No	No	No	No	No
22	3	2	1	0	No	No	No	No	No	No	No	No	No	No
23	3	2	1	0	No	No	No	No	No	No	No	No	No	No
24	3	2	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	37
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	248
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	601	368	98	75
2	583	357	95	73
3	571	350	93	71
4	535	328	87	67
5	475	291	77	59
6	469	287	76	59
7	463	283	75	58
8	421	258	69	53
9	415	254	68	52
10	409	250	67	51
11	355	217	58	44
12	331	202	54	41
13	325	199	53	41
14	240	147	39	30
15	240	147	39	30
16	168	103	27	21
17	96	59	16	12
18	96	59	16	12
19	54	33	9	7
20	30	18	5	4
21	18	11	3	2
22	6	4	1	1
23	6	4	1	1
24	6	4	1	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	969	1	98	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
2	2	940	1	95	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
3	2	921	1	93	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
4	2	863	1	87	No	No	No	Yes	No	Yes	Yes	Yes	No	No
5	2	766	1	77	No	No	No	No	No	Yes	Yes	Yes	No	No
6	2	756	1	76	No	No	No	No	No	Yes	Yes	Yes	No	No
7	2	746	1	75	No	No	No	No	No	Yes	Yes	Yes	No	No
8	2	679	1	69	No	No	No	No	No	No	Yes	Yes	No	No
9	2	669	1	68	No	No	No	No	No	No	Yes	Yes	No	No
10	2	659	1	67	No	No	No	No	No	No	Yes	Yes	No	No
11	2	572	1	58	No	No	No	No	No	No	No	Yes	No	No
12	2	533	1	54	No	No	No	No	No	No	No	Yes	No	No
13	2	524	1	53	No	No	No	No	No	No	No	Yes	No	No
14	2	387	1	39	No	No	No	No	No	No	No	No	No	No
15	2	387	1	39	No	No	No	No	No	No	No	No	No	No
16	2	271	1	27	No	No	No	No	No	No	No	No	No	No
17	2	155	1	16	No	No	No	No	No	No	No	No	No	No
18	2	155	1	16	No	No	No	No	No	No	No	No	No	No
19	2	87	1	9	No	No	No	No	No	No	No	No	No	No
20	2	48	1	5	No	No	No	No	No	No	No	No	No	No
21	2	29	1	3	No	No	No	No	No	No	No	No	No	No
22	2	10	1	1	No	No	No	No	No	No	No	No	No	No
23	2	10	1	1	No	No	No	No	No	No	No	No	No	No
24	2	10	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	3	7	10	13	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	30	30.7
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:48	0:38
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	98	75
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1142	1142
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	799	424	0
2	775	411	0
3	759	403	0
4	711	377	0
5	631	335	0
6	623	331	0
7	615	326	0
8	559	297	0
9	551	293	0
10	543	288	0
11	471	250	0
12	439	233	0
13	431	229	0
14	320	170	0
15	320	170	0
16	224	119	0
17	128	68	0
18	128	68	0
19	72	38	0
20	40	21	0
21	24	13	0
22	8	4	0
23	8	4	0
24	8	4	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1223	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1186	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1162	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1088	1	0	No	No	No	No	No	No	No	No	No	No
5	1	966	1	0	No	No	No	No	No	No	No	No	No	No
6	1	954	1	0	No	No	No	No	No	No	No	No	No	No
7	1	941	1	0	No	No	No	No	No	No	No	No	No	No
8	1	856	1	0	No	No	No	No	No	No	No	No	No	No
9	1	844	1	0	No	No	No	No	No	No	No	No	No	No
10	1	831	1	0	No	No	No	No	No	No	No	No	No	No
11	1	721	1	0	No	No	No	No	No	No	No	No	No	No
12	1	672	1	0	No	No	No	No	No	No	No	No	No	No
13	1	660	1	0	No	No	No	No	No	No	No	No	No	No
14	1	490	1	0	No	No	No	No	No	No	No	No	No	No
15	1	490	1	0	No	No	No	No	No	No	No	No	No	No
16	1	343	1	0	No	No	No	No	No	No	No	No	No	No
17	1	196	1	0	No	No	No	No	No	No	No	No	No	No
18	1	196	1	0	No	No	No	No	No	No	No	No	No	No
19	1	110	1	0	No	No	No	No	No	No	No	No	No	No
20	1	61	1	0	No	No	No	No	No	No	No	No	No	No
21	1	37	1	0	No	No	No	No	No	No	No	No	No	No
22	1	12	1	0	No	No	No	No	No	No	No	No	No	No
23	1	12	1	0	No	No	No	No	No	No	No	No	No	No
24	1	12	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1223
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	437	283	12
2	424	275	12
3	415	269	11
4	389	252	11
5	345	224	9
6	341	221	9
7	336	218	9
8	306	198	8
9	302	195	8
10	297	192	8
11	258	167	7
12	240	156	7
13	236	153	6
14	175	113	5
15	175	113	5
16	122	79	3
17	70	45	2
18	70	45	2
19	39	25	1
20	22	14	1
21	13	8	0
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	720	1	12	No	No	No	No	No	No	No	No	No	No
2	1	699	1	12	No	No	No	No	No	No	No	No	No	No
3	1	684	1	11	No	No	No	No	No	No	No	No	No	No
4	1	641	1	11	No	No	No	No	No	No	No	No	No	No
5	1	569	1	9	No	No	No	No	No	No	No	No	No	No
6	1	562	1	9	No	No	No	No	No	No	No	No	No	No
7	1	554	1	9	No	No	No	No	No	No	No	No	No	No
8	1	504	1	8	No	No	No	No	No	No	No	No	No	No
9	1	497	1	8	No	No	No	No	No	No	No	No	No	No
10	1	489	1	8	No	No	No	No	No	No	No	No	No	No
11	1	425	1	7	No	No	No	No	No	No	No	No	No	No
12	1	396	1	7	No	No	No	No	No	No	No	No	No	No
13	1	389	1	6	No	No	No	No	No	No	No	No	No	No
14	1	288	1	5	No	No	No	No	No	No	No	No	No	No
15	1	288	1	5	No	No	No	No	No	No	No	No	No	No
16	1	201	1	3	No	No	No	No	No	No	No	No	No	No
17	1	115	1	2	No	No	No	No	No	No	No	No	No	No
18	1	115	1	2	No	No	No	No	No	No	No	No	No	No
19	1	64	1	1	No	No	No	No	No	No	No	No	No	No
20	1	36	1	1	No	No	No	No	No	No	No	No	No	No
21	1	21	1	0	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	12
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	732
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	267	203	158	133
2	259	197	153	129
3	254	193	150	126
4	238	181	141	118
5	211	160	125	105
6	208	158	123	104
7	206	156	122	102
8	187	142	111	93
9	184	140	109	92
10	182	138	107	90
11	158	120	93	78
12	147	112	87	73
13	144	110	85	72
14	107	81	63	53
15	107	81	63	53
16	75	57	44	37
17	43	32	25	21
18	43	32	25	21
19	24	18	14	12
20	13	10	8	7
21	8	6	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1

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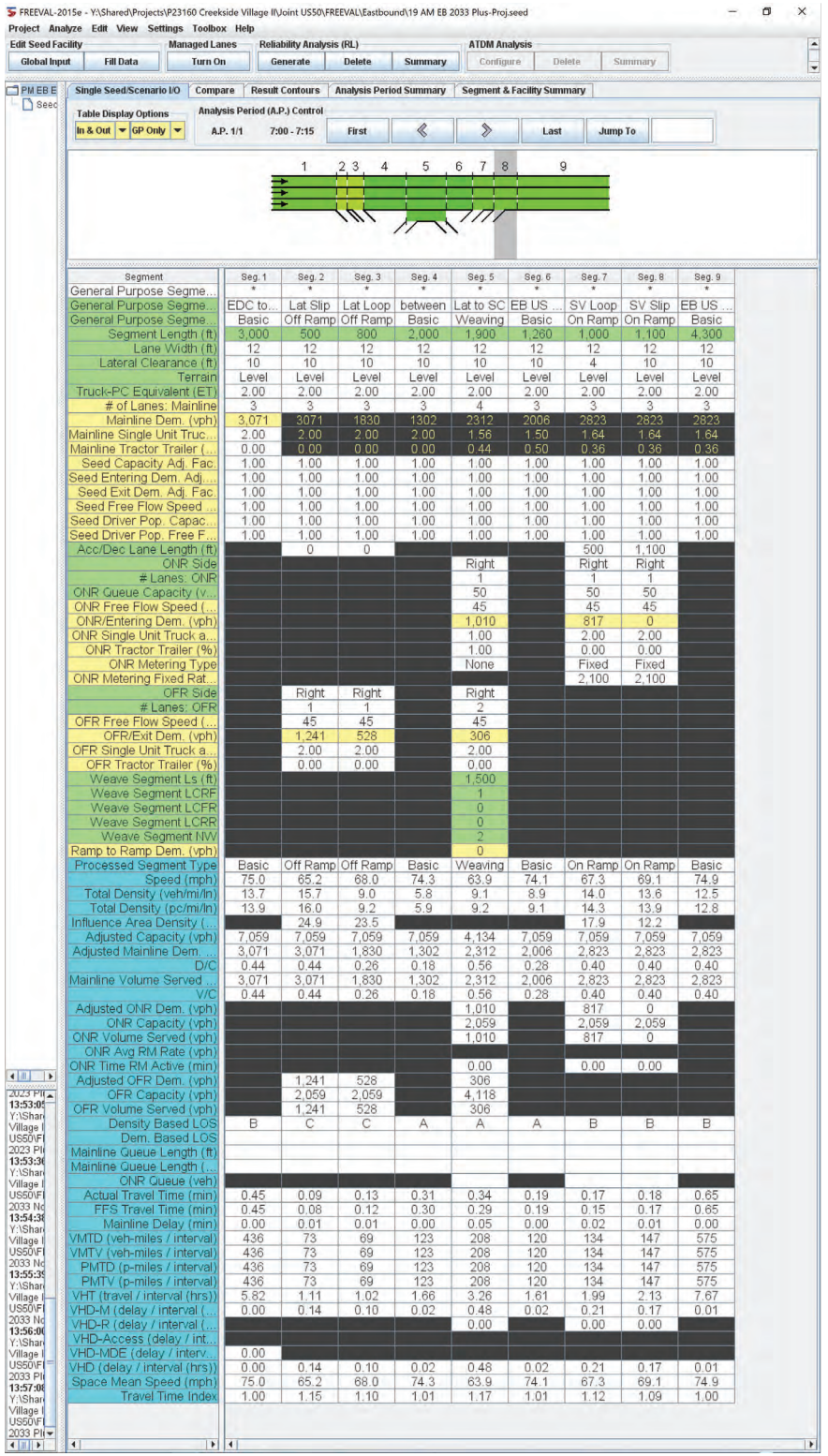
Version 2024 (SP 0-5)

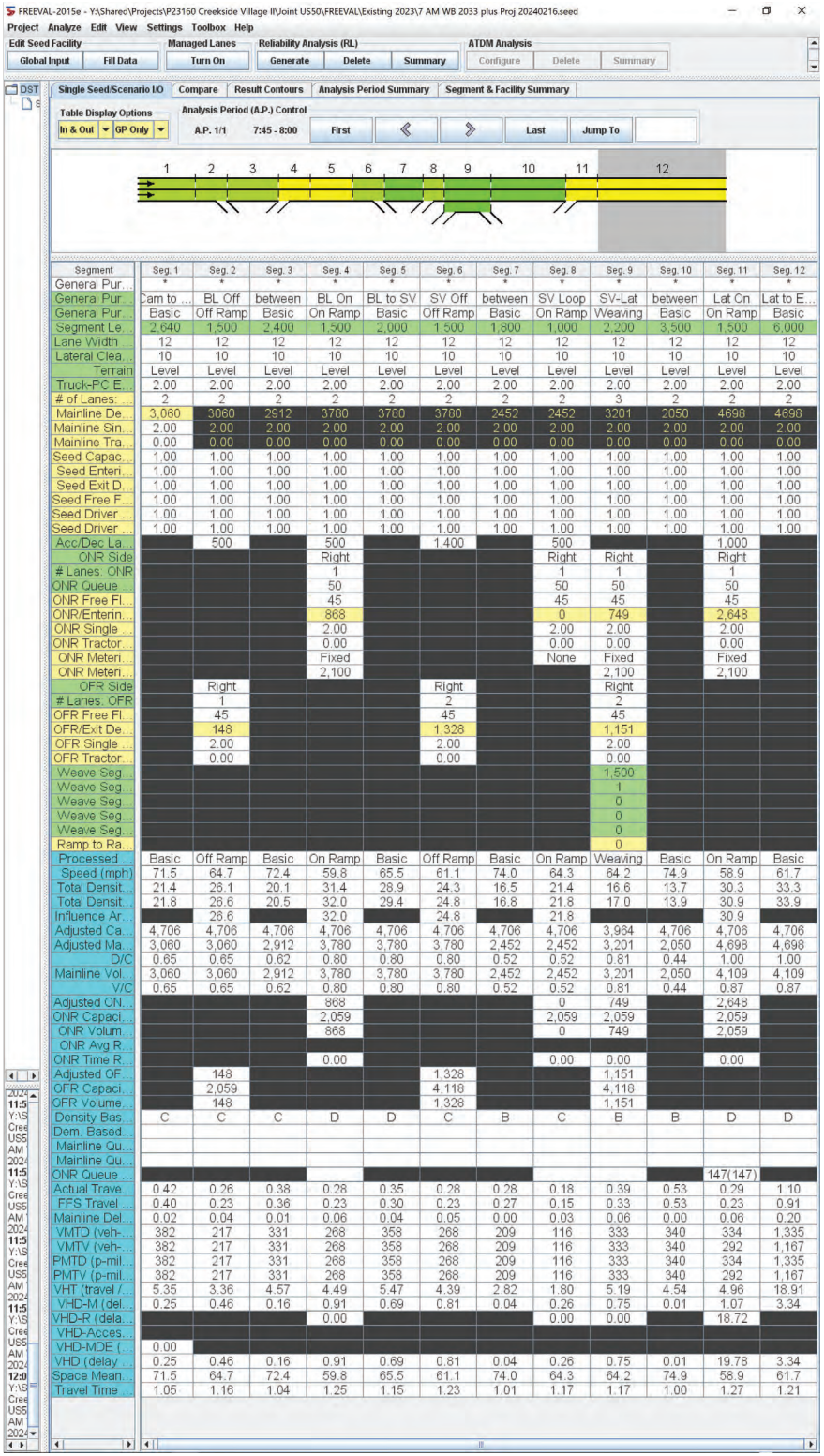
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	470	1	158	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	456	1	153	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	447	1	150	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	419	1	141	No	Yes	Yes	Yes	No	No	No	No	No	No
5	1	371	1	125	No	No	Yes	Yes	No	No	No	No	No	No
6	1	366	1	123	No	No	Yes	Yes	No	No	No	No	No	No
7	1	362	1	122	No	No	Yes	Yes	No	No	No	No	No	No
8	1	329	1	111	No	No	No	Yes	No	No	No	No	No	No
9	1	324	1	109	No	No	No	Yes	No	No	No	No	No	No
10	1	320	1	107	No	No	No	Yes	No	No	No	No	No	No
11	1	278	1	93	No	No	No	No	No	No	No	No	No	No
12	1	259	1	87	No	No	No	No	No	No	No	No	No	No
13	1	254	1	85	No	No	No	No	No	No	No	No	No	No
14	1	188	1	63	No	No	No	No	No	No	No	No	No	No
15	1	188	1	63	No	No	No	No	No	No	No	No	No	No
16	1	132	1	44	No	No	No	No	No	No	No	No	No	No
17	1	75	1	25	No	No	No	No	No	No	No	No	No	No
18	1	75	1	25	No	No	No	No	No	No	No	No	No	No
19	1	42	1	14	No	No	No	No	No	No	No	No	No	No
20	1	23	1	8	No	No	No	No	No	No	No	No	No	No
21	1	14	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	3	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.4	19.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43	0:42
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	158	133
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	761	761
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	





Creekside Village
Traffic Impact Analysis

El Dorado Hills, California

EPAP PM plus Project

T.KEAR www.tkearinc.com

Vistro File: C:\...\PM 918 DU 20241003.vistro
Report File: C:\...\10 2033 PM plus Proj.pdf

Scenario 4 2033 PM with CCSP, + Project
9/30/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.966	53.2	D
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	1.238	110.8	F
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	WB Right	0.975	48.4	D
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.926	58.9	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.995	52.5	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	WB Left	0.790	80.8	F
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Right	1.077	80.9	F
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	EB Left	0.880	23.5	C
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	1.030	112.8	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.862	26.6	C
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.146	48.5	E
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	1.208	232.3	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	13.774	6,664.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.851	24.2	C
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.316	17.7	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.293	19.3	C
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.123	8.1	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	1.276	261.0	F
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.581	32.9	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	SB Left	0.596	66.9	E
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 6th Edition	EB Thru	1.363	254.8	F
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.895	37.1	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	NB Left	0.770	46.8	D
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.687	23.1	C
25	New Intersection	Two-way stop	HCM 6th Edition	SB Thru	0.007	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.093	16.1	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.070	19.9	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 4160 of 4853

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	53.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	113	1766	404	35	1126	67	53	25	85	339	61	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-25	0	0	4	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	20	0	0	26	0	0	7
Total Hourly Volume [veh/h]	3	113	1741	404	35	1130	47	53	25	59	339	61	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	500	116	10	325	14	15	7	17	97	18	4
Total Analysis Volume [veh/h]	3	130	2001	464	40	1299	54	61	29	68	390	70	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Calculated Cycle Length [s]	81	81	81	81	81	81	81	81	81	81
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	40	40	2	35	35	7	7	15	15
g / C, Green / Cycle	0.10	0.49	0.49	0.03	0.43	0.43	0.08	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.07	0.56	0.29	0.02	0.36	0.36	0.03	0.06	0.13	0.13
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1844	1781	1664	1781	1791
c, Capacity [veh/h]	170	1750	781	51	794	783	147	137	321	322
d1, Uniform Delay [s]	36.03	20.72	14.88	39.33	21.20	21.23	35.52	36.43	31.62	31.62
k, delay calibration	0.04	0.06	0.08	0.04	0.20	0.21	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.96	65.56	0.54	9.23	5.13	5.32	0.70	2.48	4.77	4.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	1.14	0.59	0.78	0.86	0.86	0.42	0.71	0.74	0.74
d, Delay for Lane Group [s/veh]	38.99	86.28	15.43	48.56	26.32	26.55	36.22	38.91	36.39	36.36
Lane Group LOS	D	F	B	D	C	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.57	29.54	5.30	0.88	11.20	11.12	1.16	1.93	4.72	4.74
50th-Percentile Queue Length [ft/ln]	64.15	738.50	132.49	22.09	279.88	278.02	28.90	48.34	118.03	118.61
95th-Percentile Queue Length [veh/ln]	4.62	42.39	9.07	1.59	16.68	16.59	2.08	3.48	8.28	8.32
95th-Percentile Queue Length [ft/ln]	115.47	1059.84	226.87	39.76	417.06	414.75	52.02	87.01	207.11	207.92

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.99	38.99	86.28	15.43	48.56	26.43	26.55	36.22	38.91	38.91	36.38	36.36	36.36
Movement LOS	D	D	F	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	71.21				27.07			37.87			36.37		
Approach LOS	E				C			D			D		
d_I, Intersection Delay [s/veh]	53.19												
Intersection LOS	D												
Intersection V/C	0.966												

Emissions

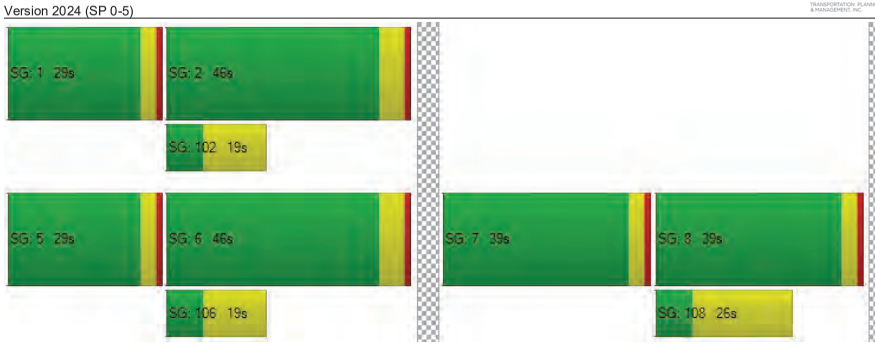
Vehicle Miles Traveled [mph]	31.76	477.90	110.82	5.88	100.03	98.89	2.61	4.14	12.45	12.51
Stops [stops/h]	113.58	2615.18	234.58	39.11	495.56	492.27	51.17	85.59	208.98	210.01
Fuel consumption [US gal/h]	3.56	84.03	8.17	1.08	13.24	13.14	0.84	1.41	3.43	3.44
CO [g/h]	248.59	5873.56	571.22	75.71	925.14	918.77	58.68	98.66	239.62	240.80
NOx [g/h]	48.37	1142.78	111.14	14.73	180.00	178.76	11.42	19.20	46.62	46.85
VOC [g/h]	57.61	1361.25	132.38	17.55	214.41	212.93	13.60	22.87	55.53	55.81

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	30.41	30.41	30.41
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.346	2.120	2.275
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	991	991	861	861
d_b, Bicycle Delay [s]	10.35	10.35	13.20	13.20
l_b,int, Bicycle LOS Score for Intersection	3.700	2.725	1.863	2.358
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	110.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.238

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	442	1616	173	4	218	1133	198	380	48	581	63	107	286
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-11	-25	0	0	0	4	0	0	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	52	0	0	0	59	0	0	175	0	0	86
Total Hourly Volume [veh/h]	5	431	1591	121	4	218	1137	139	380	48	408	63	107	200
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	116	428	33	1	59	306	37	102	13	110	17	29	54
Total Analysis Volume [veh/h]	5	463	1711	130	4	234	1223	149	409	52	439	68	115	215
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	18	0	0	0	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Calculated Cycle Length [s]	125	125	125	125	125	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	49	49	19	47	47	20	20	20	20	20
g / C, Green / Cycle	0.16	0.39	0.39	0.15	0.38	0.38	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.26	0.34	0.35	0.13	0.34	0.09	0.13	0.13	0.28	0.04	0.20
s, saturation flow rate [veh/h]	1781	3560	1804	1781	3560	1589	1781	1800	1589	1781	1677
c, Capacity [veh/h]	285	1385	701	265	1344	600	285	288	255	285	269
d1, Uniform Delay [s]	52.41	35.41	35.63	52.19	36.84	26.69	50.54	50.48	52.41	45.76	52.41
k, delay calibration	0.50	0.13	0.36	0.28	0.13	0.13	0.25	0.25	0.50	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	303.33	2.36	11.86	22.33	3.27	0.26	11.79	11.10	341.67	0.16	130.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.64	0.88	0.89	0.90	0.91	0.25	0.81	0.80	1.72	0.24	1.23
d, Delay for Lane Group [s/veh]	355.73	37.77	47.50	74.52	40.11	26.95	62.33	61.58	394.08	45.91	183.26
Lane Group LOS	F	D	D	E	D	C	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	32.72	16.73	19.11	8.77	17.39	3.01	7.86	7.83	32.12	1.87	18.15
50th-Percentile Queue Length [ft/ln]	817.96	418.20	477.65	219.23	434.83	75.14	196.50	195.72	803.02	46.63	453.86
95th-Percentile Queue Length [veh/ln]	50.82	23.44	26.27	13.63	24.23	5.41	12.46	12.42	50.49	3.36	27.60
95th-Percentile Queue Length [ft/ln]	1270.56	585.89	656.87	340.65	605.82	135.25	311.45	310.44	1262.19	83.93	689.92

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	355.7	355.7	40.58	47.50	74.52	74.52	40.11	26.95	62.00	61.58	394.08	45.91	183.26	183.26
Movement LOS	F	F	D	D	E	E	D	C	E	E	F	D	F	F
d_A, Approach Delay [s/veh]	104.84				43.98				223.96			159.80		
Approach LOS	F				D				F			F		
d_I, Intersection Delay [s/veh]	110.80													
Intersection LOS	F													
Intersection V/C	1.238													

Emissions

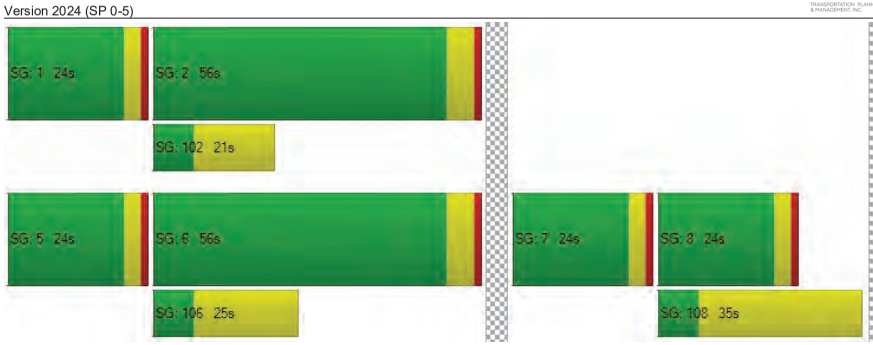
Vehicle Miles Traveled [mph]	87.76	228.22	117.02	56.84	292.09	35.59	14.35	14.40	27.38	3.32	16.09
Stops [stops/h]	944.42	965.70	551.50	253.13	1004.10	86.75	226.88	225.98	927.17	53.84	524.03
Fuel consumption [US gal/h]	48.62	29.18	16.90	8.70	32.48	3.12	4.76	4.73	41.45	1.07	15.86
CO [g/h]	3398.71	2039.90	1181.24	608.43	2270.21	217.77	332.94	330.91	2897.17	74.74	1108.77
NOx [g/h]	661.27	396.89	229.83	118.38	441.70	42.37	64.78	64.38	563.68	14.54	215.73
VOC [g/h]	787.68	472.77	273.76	141.01	526.14	50.47	77.16	76.69	671.45	17.32	256.97

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	51.84	51.84	51.84
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.548	2.849	2.388
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	807	807	321	321
d_b, Bicycle Delay [s]	22.20	22.20	43.96	43.96
l_b,int, Bicycle LOS Score for Intersection	2.855	2.743	3.333	2.358
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.975

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1224	1679	414	0	37	1252	493	306	130	404	236	88	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-44	-36	-8	0	0	6	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	122	0	0	0	148	0	0	121	0	0	75
Total Hourly Volume [veh/h]	1	1180	1643	284	0	37	1258	345	306	130	283	238	88	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	295	411	71	0	9	315	86	77	33	71	60	22	44
Total Analysis Volume [veh/h]	1	1180	1643	284	0	37	1258	345	306	130	283	238	88	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.34	0.36	0.38	0.02	0.25	0.22	0.12	0.12	0.09	0.09	0.11
s, saturation flow rate [veh/h]	3459	3532	1725	1781	5053	1589	1781	1832	1781	1827	1589
c, Capacity [veh/h]	1155	1914	935	81	1279	685	249	257	223	228	199
d1, Uniform Delay [s]	45.28	22.21	23.19	63.30	50.50	28.15	57.19	57.19	57.26	57.22	58.55
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.12	0.12	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.08	1.80	4.55	1.51	21.50	2.64	12.22	11.90	4.89	4.55	23.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.66	0.71	0.46	0.98	0.50	0.86	0.86	0.73	0.72	0.89
d, Delay for Lane Group [s/veh]	59.36	24.02	27.74	64.81	72.00	30.79	69.41	69.09	62.15	61.78	81.74
Lane Group LOS	F	C	C	E	E	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	21.58	14.64	16.71	1.26	16.30	8.41	8.08	8.29	5.66	5.75	7.25
50th-Percentile Queue Length [ft/ln]	539.60	365.97	417.71	31.57	407.59	210.15	202.10	207.29	141.42	143.70	181.27
95th-Percentile Queue Length [veh/ln]	29.64	20.91	23.41	2.27	22.93	13.16	12.75	13.01	9.56	9.68	11.67
95th-Percentile Queue Length [ft/ln]	741.10	522.84	585.30	56.82	573.14	329.02	318.67	325.34	238.93	241.99	291.67

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.36	59.36	24.88	27.74	64.81	64.81	72.00	30.79	69.32	69.09	0.00	62.03	61.78	81.74
Movement LOS	E	F	C	C	E	E	E	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	38.24				63.17				41.99			68.89		
Approach LOS	D				E				D			E		
d_I, Intersection Delay [s/veh]	48.43													
Intersection LOS	D													
Intersection V/C	0.975													

Emissions

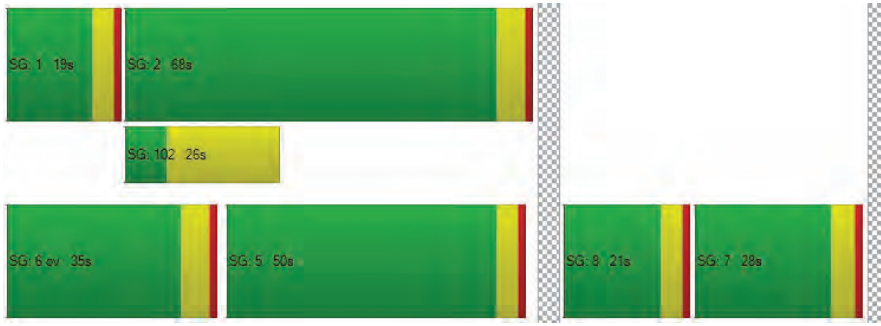
Vehicle Miles Traveled [mph]	203.14	217.32	114.14	6.94	235.91	64.70	9.94	10.23	5.13	5.23	5.60
Stops [stops/h]	1142.68	774.99	442.28	33.42	1294.71	222.51	213.99	219.48	149.74	152.15	191.94
Fuel consumption [US gal/h]	28.94	19.40	10.89	1.14	42.61	7.15	4.63	4.74	3.08	3.13	4.22
CO [g/h]	2022.93	1356.24	761.07	79.78	2978.76	499.48	323.44	331.40	215.23	218.47	294.83
NOx [g/h]	393.59	263.88	148.08	15.52	579.56	97.18	62.93	64.48	41.88	42.51	57.36
VOC [g/h]	468.83	314.32	176.39	18.49	690.36	115.76	74.96	76.80	49.88	50.63	68.33

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.538
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.336	2.523	2.279	2.036
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	58.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.926

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2456	609	1	388	1504	0	0	0	1591	0	0	861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-88	-19	0	0	8	0	0	0	8	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	177	0	0	0	0	0	0	480	0	0	258
Total Hourly Volume [veh/h]	0	2368	413	1	388	1512	0	0	0	1119	0	0	603
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	623	123	0	115	398	0	0	0	333	0	0	179
Total Analysis Volume [veh/h]	0	2493	492	1	462	1592	0	0	0	1332	0	0	718
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	
C, Calculated Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.44	0.45	0.26	0.23	0.47	
s, saturation flow rate [veh/h]	5094	1675	1781	6792	2813	
c, Capacity [veh/h]	2809	924	516	3476	927	
d1, Uniform Delay [s]	12.21	12.34	23.17	10.59	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.17	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.45	7.54	8.80	0.44	198.94	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.80	0.81	0.90	0.46	1.44	
d, Delay for Lane Group [s/veh]	14.66	19.88	31.97	11.02	221.74	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	No	No	No	Yes	Yes	
50th-Percentile Queue Length [veh/ln]	7.15	8.52	7.43	3.05	32.37	
50th-Percentile Queue Length [ft/ln]	178.83	213.02	185.84	76.16	809.18	
95th-Percentile Queue Length [veh/ln]	11.54	13.31	11.90	5.48	50.53	
95th-Percentile Queue Length [ft/ln]	288.48	332.70	297.62	137.09	1263.36	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.19	19.88	31.97	31.97	11.02	0.00	0.00	0.00	221.74	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]	15.97			15.74				221.74			0.00		
Approach LOS	B			B				F			A		
d_I, Intersection Delay [s/veh]	58.91												
Intersection LOS	E												
Intersection V/C	0.926												

Emissions

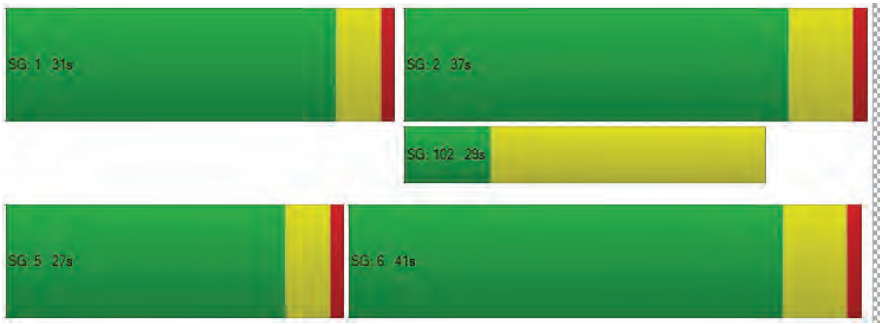
Vehicle Miles Traveled [mph]	323.94	107.98	79.64	273.83	95.32	
Stops [stops/h]	1136.09	451.11	393.53	645.11	3427.13	
Fuel consumption [US gal/h]	31.91	12.33	10.64	20.98	82.96	
CO [g/h]	2230.45	861.85	743.40	1466.42	5798.56	
NOx [g/h]	433.97	167.68	144.64	285.31	1128.19	
VOC [g/h]	516.93	199.74	172.29	339.86	1343.87	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.251
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.864	2.217	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	52.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.995

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd				Town Center Blvd			
Base Volume Input [veh/h]	1	24	1987	233	3	570	1937	585	460	37	83	1	92	6	615
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-2	-107	-6	0	0	16	0	0	0	0	0	3	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	68	0	0	0	176	0	0	25	0	0	0	185
Total Hourly Volume [veh/h]	1	22	1880	159	3	570	1953	409	460	37	58	1	95	6	430
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	490	41	1	148	509	107	120	10	15	0	25	2	112
Total Analysis Volume [veh/h]	1	23	1958	166	3	594	2034	426	479	39	60	1	99	6	448
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	42	42	12	52	52	16	16	16	15	15	15
g / C, Green / Cycle	0.02	0.42	0.42	0.12	0.51	0.51	0.16	0.16	0.16	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.01	0.38	0.10	0.17	0.40	0.27	0.14	0.02	0.04	0.06	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1596	1589
c, Capacity [veh/h]	68	2116	660	408	2617	817	560	303	258	263	235	234
d1, Uniform Delay [s]	49.25	28.25	19.42	44.87	20.03	16.43	41.46	36.48	37.12	39.18	43.13	43.13
k, delay calibration	0.04	0.04	0.04	0.18	0.04	0.04	0.08	0.08	0.08	0.08	0.40	0.40
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.17	0.83	0.07	213.47	0.19	0.19	2.90	0.14	0.34	0.67	44.56	44.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.93	0.25	1.46	0.78	0.52	0.85	0.13	0.23	0.38	0.97	0.97
d, Delay for Lane Group [s/veh]	50.42	29.08	19.49	258.34	20.22	16.63	44.37	36.62	37.46	39.85	87.68	87.80
Lane Group LOS	D	C	B	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.31	14.61	2.54	17.18	12.29	6.36	6.00	0.84	1.32	2.29	8.53	8.50
50th-Percentile Queue Length [ft/ln]	7.77	365.29	63.49	429.58	307.20	158.89	150.04	20.98	32.99	57.32	213.23	212.59
95th-Percentile Queue Length [veh/ln]	0.56	20.88	4.57	27.45	18.04	10.49	10.02	1.51	2.38	4.13	13.32	13.29
95th-Percentile Queue Length [ft/ln]	13.98	522.01	114.29	686.20	450.92	262.25	250.48	37.77	59.39	103.18	332.97	332.14

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.42	50.42	29.08	19.49	258.3	258.3	20.22	16.63	44.37	36.62	37.46	39.85	39.85	87.68	87.74
Movement LOS	D	D	C	B	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	28.57				66.22				43.13			79.10			
Approach LOS	C				E				D			E			
d_I, Intersection Delay [s/veh]	52.48														
Intersection LOS	D														
Intersection V/C	0.995														

Emissions

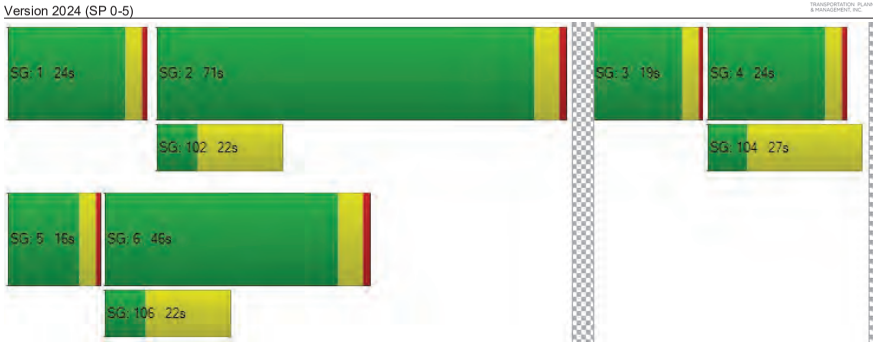
Vehicle Miles Traveled [mph]	5.36	437.10	37.06	86.38	294.31	61.64	61.10	4.97	7.65	35.10	79.83	79.51
Stops [stops/h]	22.01	1552.83	89.97	1217.43	1305.90	225.15	425.20	29.73	46.75	81.23	302.14	301.23
Fuel consumption [US gal/h]	0.59	38.16	2.68	41.66	27.70	5.22	9.19	0.66	1.03	2.70	9.01	8.98
CO [g/h]	41.13	2667.24	187.40	2912.16	1936.20	365.08	642.28	46.11	72.05	189.05	630.02	628.05
NOx [g/h]	8.00	518.95	36.46	566.60	376.71	71.03	124.96	8.97	14.02	36.78	122.58	122.20
VOC [g/h]	9.53	618.16	43.43	674.92	448.73	84.61	148.85	10.69	16.70	43.81	146.01	145.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.41	0.00	40.41	40.41
l_p,int, Pedestrian LOS Score for Intersectio	3.432	0.000	2.695	2.882
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	797	1289	403	305
d_b, Bicycle Delay [s]	18.38	6.42	32.38	36.49
l_b,int, Bicycle LOS Score for Intersection	2.778	3.011	2.057	2.616
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	80.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	125	1673	518	2	253	1422	436	2	376	472	124	516	223	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-116	-29	0	0	19	0	0	0	0	0	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	147	0	0	0	131	0	0	0	37	0	0	58
Total Hourly Volume [veh/h]	6	125	1557	342	2	253	1441	305	2	376	472	87	520	223	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	419	92	1	68	387	82	1	101	127	23	140	60	37
Total Analysis Volume [veh/h]	6	134	1674	368	2	272	1549	328	2	404	508	94	559	240	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	25	50	0	0	35	50	0	0	25	15	0	15	25	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	56	0	0	40	56	0	0	31	21	0	21	31	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	158	158	158	158	158	158	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	14	84	84	15	84	84	21	22	22	15	17	17
g / C, Green / Cycle	0.09	0.53	0.53	0.09	0.53	0.53	0.13	0.14	0.14	0.09	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.23	0.08	0.30	0.21	0.12	0.17	0.17	0.16	0.07	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1770	3459	3560	1589
c, Capacity [veh/h]	162	3588	840	321	2702	843	453	266	252	328	378	169
d1, Uniform Delay [s]	70.88	23.33	22.88	70.60	25.04	21.95	67.60	67.77	67.77	71.50	67.68	69.50
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.50	0.50	0.20	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	0.44	1.66	2.50	0.89	1.35	2.61	106.79	108.24	321.30	0.66	5.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.47	0.44	0.85	0.57	0.39	0.90	1.16	1.16	1.70	0.64	0.87
d, Delay for Lane Group [s/veh]	76.17	23.77	24.54	73.10	25.93	23.31	70.21	174.56	176.01	392.80	68.34	74.58
Lane Group LOS	E	C	C	E	C	C	E	F	F	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.86	10.00	8.91	5.51	12.86	7.36	8.27	18.66	17.76	21.33	4.71	6.08
50th-Percentile Queue Length [ft/ln]	146.59	249.89	222.80	137.66	321.52	183.91	206.85	466.50	444.01	533.36	117.80	152.05
95th-Percentile Queue Length [veh/ln]	9.84	15.18	13.81	9.35	18.74	11.80	12.99	27.59	26.43	33.91	8.27	10.13
95th-Percentile Queue Length [ft/ln]	245.88	379.52	345.20	233.87	468.55	295.11	324.78	689.78	660.77	847.77	206.80	253.16

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.17	76.17	23.77	24.54	73.10	73.10	25.93	23.31	70.21	70.21	175.1	176.0	392.80	68.34	74.58
Movement LOS	E	E	C	C	E	E	C	C	E	E	F	F	F	E	E
d_A, Approach Delay [s/veh]	27.26				31.54				132.95				261.23		
Approach LOS	C				C				F				F		
d_I, Intersection Delay [s/veh]	80.85														
Intersection LOS	F														
Intersection V/C	0.790														

Emissions

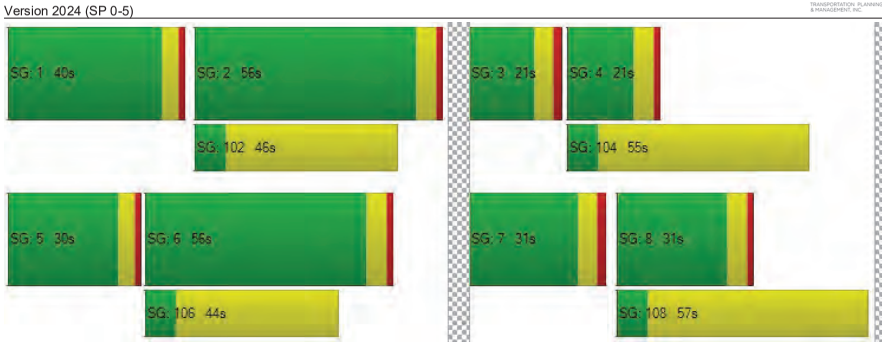
Vehicle Miles Traveled [mph]	55.73	666.40	146.50	61.17	345.79	73.22	101.33	77.19	73.05	58.41	25.08	15.25
Stops [stops/h]	133.60	911.00	203.06	250.93	879.08	167.61	377.04	425.16	404.67	972.20	214.73	138.58
Fuel consumption [US gal/h]	5.20	40.56	8.99	9.29	30.96	6.15	12.05	16.51	15.73	52.45	5.56	3.61
CO [g/h]	363.64	2835.41	628.42	649.50	2163.82	429.85	842.60	1154.14	1099.23	3666.12	388.37	252.27
NOx [g/h]	70.75	551.67	122.27	126.37	421.00	83.63	163.94	224.55	213.87	713.29	75.56	49.08
VOC [g/h]	84.28	657.13	145.64	150.53	501.49	99.62	195.28	267.48	254.76	849.66	90.01	58.47

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.38	68.38	68.38	68.38
l_p,int, Pedestrian LOS Score for Intersectio	3.580	3.847	2.837	3.023
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	637	637	194	320
d_b, Bicycle Delay [s]	36.71	36.71	64.44	55.73
l_b,int, Bicycle LOS Score for Intersection	2.518	2.665	2.088	2.387
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	80.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.077

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	11	1588	30	0	34	1590	454	703	9	27	1	6	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-144	0	0	0	23	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	9	0	0	0	136	0	0	8	0	0	6
Total Hourly Volume [veh/h]	1	11	1444	21	0	34	1613	318	703	9	19	1	6	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	406	6	0	10	453	89	197	3	5	0	2	4
Total Analysis Volume [veh/h]	1	12	1622	24	0	39	1812	357	790	10	21	1	7	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	39	39	2	40	40	20	20	2
g / C, Green / Cycle	0.02	0.48	0.48	0.03	0.49	0.49	0.25	0.25	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.44	0.44	0.02	0.58	0.61	0.23	0.23	0.01
s, saturation flow rate [veh/h]	1781	1870	1860	1781	1870	1767	1781	1772	1674
c, Capacity [veh/h]	30	896	892	52	919	869	435	433	45
d1, Uniform Delay [s]	39.81	19.82	19.86	39.42	20.80	20.80	30.35	30.37	39.26
k, delay calibration	0.04	0.37	0.38	0.04	0.50	0.50	0.39	0.39	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.56	12.72	13.06	7.93	92.33	121.50	26.44	26.97	3.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.92	0.92	0.75	1.18	1.25	0.94	0.95	0.51
d, Delay for Lane Group [s/veh]	43.37	32.54	32.92	47.35	113.13	142.30	56.79	57.34	42.51
Lane Group LOS	D	C	C	D	F	F	E	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.28	16.28	16.34	0.83	37.11	42.11	10.79	10.83	0.49
50th-Percentile Queue Length [ft/ln]	7.10	407.01	408.52	20.79	927.78	1052.77	269.86	270.68	12.20
95th-Percentile Queue Length [veh/ln]	0.51	22.90	22.97	1.50	53.10	61.57	16.18	16.22	0.88
95th-Percentile Queue Length [ft/ln]	12.78	572.45	574.26	37.42	1327.57	1539.35	404.56	405.59	21.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.37	43.37	32.73	32.92	47.35	47.35	124.8	142.3	57.05	57.34	57.34	42.51	42.51	42.51
Movement LOS	D	D	C	C	D	D	F	F	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	32.81				126.29				57.06			42.51		
Approach LOS	C				F				E			D		
d_I, Intersection Delay [s/veh]	80.90													
Intersection LOS	F													
Intersection V/C	1.077													

Emissions

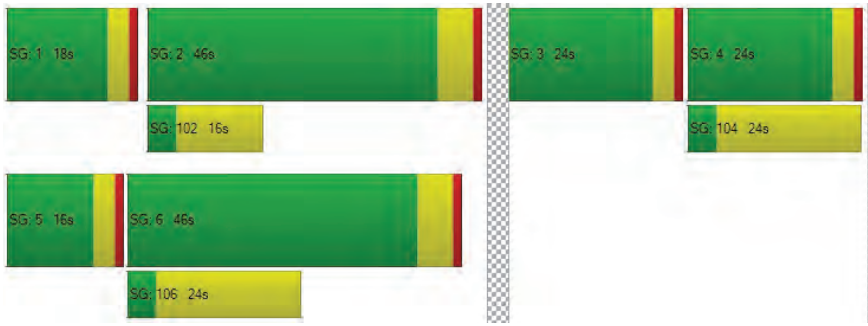
Vehicle Miles Traveled [mph]	4.60	291.61	290.85	15.53	431.73	431.73	98.99	98.73	0.44
Stops [stops/h]	12.53	718.65	721.31	36.71	1638.15	1858.83	476.47	477.93	21.55
Fuel consumption [US gal/h]	0.37	21.43	21.46	1.58	69.83	80.37	11.46	11.49	0.34
CO [g/h]	26.10	1498.07	1500.38	110.23	4881.33	5617.74	800.89	803.01	23.49
NOx [g/h]	5.08	291.47	291.92	21.45	949.73	1093.01	155.82	156.24	4.57
VOC [g/h]	6.05	347.19	347.73	25.55	1131.30	1301.97	185.61	186.11	5.44

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.17	0.00	33.17	33.17
l_p,int, Pedestrian LOS Score for Intersectio	2.995	0.000	2.385	1.775
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	981	981	490	490
d_b, Bicycle Delay [s]	10.59	10.59	23.23	23.23
l_b,int, Bicycle LOS Score for Intersection	2.935	3.461	2.927	1.607
Bicycle LOS	C	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	23.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.880

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	90	1321	1429	190	309	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	46	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-144	23	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	57	0	54
Total Hourly Volume [veh/h]	0	90	1223	1452	133	309	127
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	25	344	408	37	87	36
Total Analysis Volume [veh/h]	0	101	1374	1631	149	347	143
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Calculated Cycle Length [s]	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	6	49	40	40	17	17
g / C, Green / Cycle	0.07	0.65	0.52	0.52	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.39	0.48	0.49	0.19	0.09
s, saturation flow rate [veh/h]	1781	3560	1870	1816	1781	1589
c, Capacity [veh/h]	132	2298	970	943	398	355
d1, Uniform Delay [s]	34.70	7.82	16.85	17.32	28.57	25.28
k, delay calibration	0.04	0.15	0.38	0.40	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.48	0.36	11.82	15.74	12.41	0.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.60	0.92	0.94	0.87	0.40
d, Delay for Lane Group [s/veh]	38.17	8.17	28.67	33.05	40.98	26.02
Lane Group LOS	D	A	C	C	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.92	5.28	15.56	16.83	7.21	2.20
50th-Percentile Queue Length [ft/ln]	47.93	131.97	388.91	420.79	180.28	55.04
95th-Percentile Queue Length [veh/ln]	3.45	9.05	22.02	23.56	11.62	3.96
95th-Percentile Queue Length [ft/ln]	86.27	226.17	550.62	589.00	290.39	99.07

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.17	38.17	8.17	30.66	33.05	40.98	26.02
Movement LOS	D	D	A	C	C	D	C
d_A, Approach Delay [s/veh]	10.23			30.86		36.61	
Approach LOS	B			C		D	
d_I, Intersection Delay [s/veh]	23.49						
Intersection LOS	C						
Intersection V/C	0.880						

Emissions

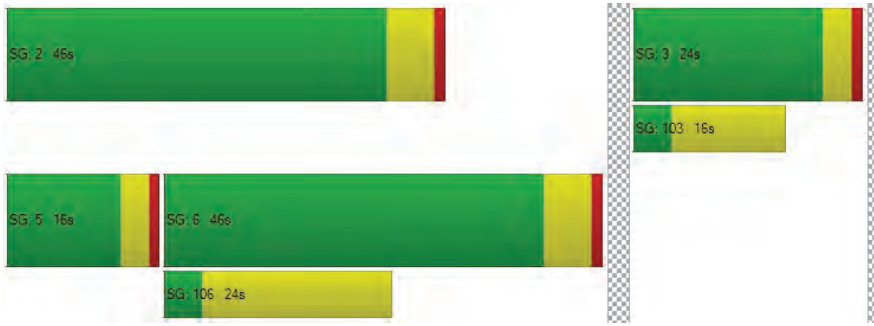
Vehicle Miles Traveled [mph]	70.25	955.69	314.94	314.94	117.08	48.25
Stops [stops/h]	90.62	499.03	735.33	795.61	340.87	104.06
Fuel consumption [US gal/h]	4.18	44.39	22.22	23.35	9.60	3.32
CO [g/h]	291.98	3102.53	1553.22	1631.95	670.80	231.94
NOx [g/h]	56.81	603.64	302.20	317.52	130.51	45.13
VOC [g/h]	67.67	719.04	359.97	378.22	155.46	53.75

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.50	0.00	30.50
l_p,int, Pedestrian LOS Score for Intersectio	2.938	0.000	2.288
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1050	1050	525
d_b, Bicycle Delay [s]	8.58	8.58	20.71
l_b,int, Bicycle LOS Score for Intersection	2.776	3.075	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	112.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.030

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	108	575	28	352	446	809	686	216	57	68	155	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	21	98	10	0	46	0	0	0	0	0	12	0
Site-Generated Trips [veh/h]	-4	-2	-3	0	93	-67	-142	-25	25	9	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	11	0	0	223	0	0	25	0	0	45
Total Hourly Volume [veh/h]	125	671	24	352	585	519	544	191	57	77	155	105
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	184	7	97	161	143	149	52	16	21	43	29
Total Analysis Volume [veh/h]	137	737	26	387	643	570	598	210	63	85	170	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	8	21	21	12	25	25	15	15	13	13
g / C, Green / Cycle	0.10	0.26	0.26	0.15	0.31	0.31	0.19	0.19	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.21	0.22	0.34	0.36	0.24	0.24	0.14	0.07
s, saturation flow rate [veh/h]	1781	1870	1848	1781	1870	1592	1781	1791	1839	1589
c, Capacity [veh/h]	174	488	482	269	588	500	336	338	301	260
d1, Uniform Delay [s]	35.10	27.34	27.34	33.77	27.27	27.27	32.27	32.27	32.32	30.01
k, delay calibration	0.04	0.11	0.11	0.50	0.46	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.02	2.93	2.96	218.14	59.83	89.71	153.32	151.42	2.59	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.79	0.79	1.44	1.08	1.15	1.30	1.29	0.85	0.44
d, Delay for Lane Group [s/veh]	38.12	30.27	30.30	251.91	87.10	116.99	185.60	183.69	34.91	30.45
Lane Group LOS	D	C	C	F	F	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.67	6.88	6.80	20.93	19.27	20.56	20.51	20.45	4.83	1.96
50th-Percentile Queue Length [ft/ln]	66.84	171.95	170.03	523.22	481.70	514.07	512.77	511.15	120.73	49.09
95th-Percentile Queue Length [veh/ln]	4.81	11.18	11.08	32.87	27.81	30.50	31.51	31.38	8.43	3.53
95th-Percentile Queue Length [ft/ln]	120.31	279.48	276.95	821.77	695.31	762.57	787.65	784.47	210.83	88.36

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.12	30.28	30.30	251.91	87.43	116.99	185.08	183.69	183.69	34.91	34.91	30.45
Movement LOS	D	C	C	F	F	F	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	31.48			137.74			184.64			33.52		
Approach LOS	C			F			F			C		
d_I, Intersection Delay [s/veh]	112.79											
Intersection LOS	F											
Intersection V/C	1.030											

Emissions

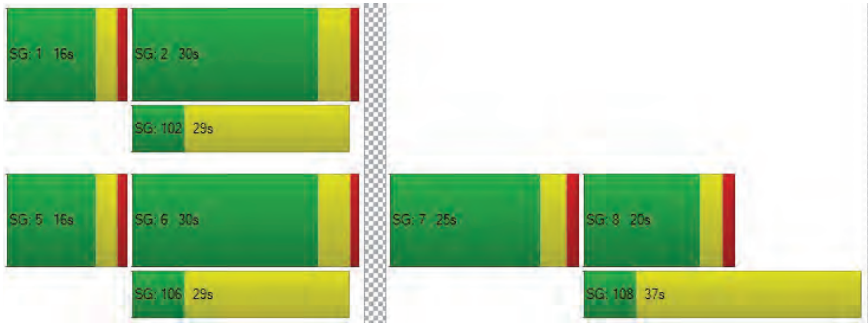
Vehicle Miles Traveled [mph]	79.12	221.64	219.01	269.18	442.31	401.40	32.73	32.80	28.20	12.72
Stops [stops/h]	121.24	311.90	308.42	949.08	873.77	932.48	930.13	927.18	218.99	89.04
Fuel consumption [US gal/h]	4.99	13.21	13.06	46.47	42.30	44.49	22.91	22.77	4.18	1.73
CO [g/h]	348.77	923.47	912.77	3248.16	2956.49	3109.51	1601.71	1591.40	292.33	120.80
NOx [g/h]	67.86	179.67	177.59	631.97	575.23	605.00	311.63	309.63	56.88	23.50
VOC [g/h]	80.83	214.02	211.54	752.79	685.19	720.66	371.21	368.82	67.75	28.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.46	0.00	29.46	29.46
l_p,int, Pedestrian LOS Score for Intersectio	2.645	0.000	2.617	2.338
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	622	622	390	504
d_b, Bicycle Delay [s]	18.84	18.84	25.71	22.21
l_b,int, Bicycle LOS Score for Intersection	2.311	3.064	3.038	2.244
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	148	314	452	119	397	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	129	0
Site-Generated Trips [veh/h]	-9	136	195	-68	-146	-22
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	15	0	0
Total Hourly Volume [veh/h]	139	450	647	36	380	98
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	125	180	11	120	27
Total Analysis Volume [veh/h]	154	500	719	46	481	109
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Calculated Cycle Length [s]	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	9	50	37	37	26	26
g / C, Green / Cycle	0.11	0.58	0.43	0.43	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.09	0.27	0.38	0.03	0.27	0.07
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	191	1085	797	678	540	482
d1, Uniform Delay [s]	37.48	10.33	22.97	14.56	28.58	22.39
k, delay calibration	0.04	0.15	0.23	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.02	0.44	8.10	0.06	5.28	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.46	0.90	0.07	0.89	0.23
d, Delay for Lane Group [s/veh]	40.50	10.77	31.07	14.62	33.86	22.63
Lane Group LOS	D	B	C	B	C	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.07	4.22	13.07	0.47	9.84	1.64
50th-Percentile Queue Length [ft/ln]	76.73	105.38	326.77	11.71	245.91	40.94
95th-Percentile Queue Length [veh/ln]	5.52	7.58	19.00	0.84	14.98	2.95
95th-Percentile Queue Length [ft/ln]	138.12	189.56	475.00	21.08	374.50	73.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.50	10.77	31.07	14.62	33.86	22.63
Movement LOS	D	B	C	B	C	C
d_A, Approach Delay [s/veh]	17.77		30.09		31.79	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	26.57					
Intersection LOS	C					
Intersection V/C	0.862					

Emissions

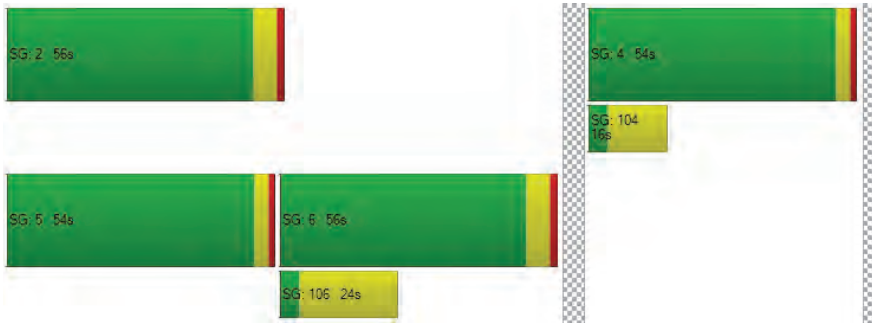
Vehicle Miles Traveled [mph]	19.00	61.69	415.24	26.57	112.97	25.60
Stops [stops/h]	128.78	176.85	548.39	19.66	412.69	68.70
Fuel consumption [US gal/h]	4.30	6.44	28.62	1.39	10.24	1.94
CO [g/h]	300.34	450.45	2000.77	97.21	716.12	135.29
NOx [g/h]	58.44	87.64	389.28	18.91	139.33	26.32
VOC [g/h]	69.61	104.40	463.70	22.53	165.97	31.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0		8.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	35.28		0.00		35.28	
l_p,int, Pedestrian LOS Score for Intersectio	2.823		0.000		2.202	
Crosswalk LOS	C		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1165		1165		1165	
d_b, Bicycle Delay [s]	7.47		7.47		7.47	
l_b,int, Bicycle LOS Score for Intersection	2.639		2.847		1.560	
Bicycle LOS	B		C		A	

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	48.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.146

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	413	0	25	547	0	0	0	0	2	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	7	4	0	0	0	0	0
Site-Generated Trips [veh/h]	2	118	0	0	161	12	9	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	531	0	25	708	19	13	0	1	2	0	49
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	144	0	6	192	5	4	0	0	1	0	12
Total Analysis Volume [veh/h]	2	577	0	25	770	21	14	0	1	2	0	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.03	0.01	0.00	0.15	0.00	0.00	0.02	0.00	0.09
d_M, Delay for Movement [s/veh]	9.34	0.00	0.00	8.64	0.00	0.00	48.49	38.31	20.03	38.54	33.53	12.70
Movement LOS	A	A	A	A	A	A	E	E	C	E	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.49	0.49	0.49	0.32	0.32	0.32
95th-Percentile Queue Length [ft/ln]	0.08	0.08	0.08	1.06	1.06	1.06	12.29	12.29	12.29	7.98	7.98	7.98
d_A, Approach Delay [s/veh]	0.03			0.26			46.59			13.72		
Approach LOS	A			A			E			B		
d_I, Intersection Delay [s/veh]	1.12											
Intersection LOS	E											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	232.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.208

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	314	19	123	426	0	0	0	0	59	0	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	6	0	0	1	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	-1	0	0	-9	161	121	0	14	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	10	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	319	19	123	418	171	121	0	14	59	2	99
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	86	5	33	112	46	33	0	4	16	1	27
Total Analysis Volume [veh/h]	22	343	20	132	449	184	130	0	15	63	2	106
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.11	0.00	0.00	1.21	0.00	0.03	0.47	0.01	0.15
d_M, Delay for Movement [s/veh]	8.88	0.00	0.00	8.38	0.00	0.00	232.25	221.58	205.47	52.38	51.15	30.88
Movement LOS	A	A	A	A	A	A	F	F	F	F	F	D
95th-Percentile Queue Length [veh/ln]	0.07	0.00	0.00	0.37	0.00	0.00	9.30	9.30	9.30	3.95	3.95	3.95
95th-Percentile Queue Length [ft/ln]	1.78	0.00	0.00	9.28	0.00	0.00	232.48	232.48	232.48	98.76	98.76	98.76
d_A, Approach Delay [s/veh]	0.51			1.45			229.48			39.04		
Approach LOS	A			A			F			E		
d_I, Intersection Delay [s/veh]	28.14											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	6,664.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	13.774

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	114	790	168	55	1	886	185
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-52	-167	25	-24	0	-79	-4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	37	0	0	23	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	99	623	193	54	1	807	181
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	28	177	55	15	0	229	51
Total Analysis Volume [veh/h]	0	113	708	219	61	1	917	206
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	13.77	0.90	0.00	0.00	0.01	0.71	0.00
d_M, Delay for Movement [s/veh]	6664.00	6664.00	6229.75	0.00	0.00	55.02	11.73	0.00
Movement LOS	F	F	F	A	A	F	B	A
95th-Percentile Queue Length [veh/ln]	98.75	98.75	98.75	0.00	0.00	4.63	4.63	4.63
95th-Percentile Queue Length [ft/ln]	2468.69	2468.69	2468.69	0.00	0.00	115.82	115.82	115.82
d_A, Approach Delay [s/veh]	6289.52			0.00		9.62		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	2325.62							
Intersection LOS	F							

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Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	24.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.851

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	49	466	87	0	33	476	32	39	34	32	218	16	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-191	-146	0	5	-113	7	-37	-26	0	-87	5	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	275	0	0	38	363	39	2	8	32	131	21	70
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	83	0	0	12	109	12	1	2	10	39	6	22
Total Analysis Volume [veh/h]	59	331	0	0	48	437	47	2	10	39	158	25	89
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	595	625	513	547
Degree of Utilization, x	0.66	0.85	0.10	0.50

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.80	9.46	0.33	2.76
95th-Percentile Queue Length [ft]	120.08	236.48	8.23	68.88
Approach Delay [s/veh]	19.80	32.95	10.79	15.95
Approach LOS	C	D	B	C
Intersection Delay [s/veh]	24.21			
Intersection LOS	C			

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Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	17.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.316

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	109	80	0	143	180	2	109	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	-2	0	0	-50	-5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	83	0	141	180	2	59	190
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	25	0	42	54	1	18	57
Total Analysis Volume [veh/h]	130	99	0	168	214	2	70	226
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.13	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	17.74	10.41	9.37	0.00	0.00	11.57	8.27	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.33	0.44	0.00	0.00	0.00	0.20	0.20	0.00
95th-Percentile Queue Length [ft/ln]	33.37	11.11	0.00	0.00	0.00	5.04	5.04	0.00
d_A, Approach Delay [s/veh]	14.57			0.00			2.02	
Approach LOS	B			A			A	
d_I, Intersection Delay [s/veh]	4.33							
Intersection LOS	C							

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Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.293

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	107	158	87	152	170	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	3	0	0	-50
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	158	90	152	170	124
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	43	24	41	46	34
Total Analysis Volume [veh/h]	116	172	98	165	185	135
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.18	0.00	0.00	0.14	0.00
d_M, Delay for Movement [s/veh]	19.25	13.93	0.00	0.00	8.22	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.53	2.53	0.00	0.00	0.50	0.00
95th-Percentile Queue Length [ft/ln]	63.14	63.14	0.00	0.00	12.39	0.00
d_A, Approach Delay [s/veh]	16.07		0.00		4.75	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	7.06					
Intersection LOS	C					

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Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.123

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	199	12	27	171	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-50	0	0	3	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	12	27	174	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	3	7	47	0	1
Total Analysis Volume [veh/h]	162	13	29	189	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	731	746	697	771	771	757
Degree of Utilization, x	0.12	0.12	0.04	0.12	0.12	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.41	0.40	0.13	0.42	0.42	0.01
95th-Percentile Queue Length [ft]	10.16	9.92	3.25	10.42	10.42	0.30
Approach Delay [s/veh]	8.23		8.03			7.78
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.12					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	261.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.276

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	172	0	29	7	1	21	5	578	115	81	536	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-50	0	0	0	0	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	0	29	7	1	21	5	578	118	81	536	11
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	0	8	2	0	5	1	149	30	22	138	3
Total Analysis Volume [veh/h]	126	0	31	7	1	22	5	596	122	87	553	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.28	0.00	0.07	0.07	0.01	0.04	0.00	0.01	0.00	0.10	0.01	0.00
d_M, Delay for Movement [s/veh]	260.97	34.36	13.30	43.46	38.12	13.80	8.59	0.00	0.00	9.52	0.00	0.00
Movement LOS	F	D	B	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	8.78	0.21	0.21	0.41	0.41	0.41	0.01	0.00	0.00	0.33	0.00	0.00
95th-Percentile Queue Length [ft/ln]	219.62	5.34	5.34	10.19	10.19	10.19	0.37	0.00	0.00	8.17	0.00	0.00
d_A, Approach Delay [s/veh]	212.07			21.53			0.06			1.27		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	22.30											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Windfield Way									White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	278	5	310	5	5	5	5	663	84	14	225	542	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	93	0	0	0	0	0	25	0	0	0	0
Total Hourly Volume [veh/h]	278	5	217	5	5	5	5	663	59	14	225	542	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	74	1	58	1	1	1	1	176	16	4	60	144	1
Total Analysis Volume [veh/h]	296	5	231	5	5	5	5	705	63	14	239	577	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	22	22	1	1	1	57	57	19	75	75
g / C, Green / Cycle	0.18	0.18	0.01	0.01	0.01	0.47	0.47	0.16	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.17	0.15	0.00	0.01	0.00	0.21	0.21	0.14	0.16	0.16
s, saturation flow rate [veh/h]	1781	1595	1781	1718	1781	1870	1817	1781	1870	1864
c, Capacity [veh/h]	321	289	12	13	12	881	856	280	1162	1159
d1, Uniform Delay [s]	48.33	47.22	59.33	59.43	59.34	21.19	21.20	49.66	10.18	10.18
k, delay calibration	0.24	0.04	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.74	2.17	19.50	27.26	19.95	1.61	1.66	4.34	0.52	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.82	0.40	0.76	0.40	0.44	0.44	0.90	0.25	0.25
d, Delay for Lane Group [s/veh]	68.07	49.39	78.83	86.69	79.29	22.80	22.86	53.99	10.70	10.70
Lane Group LOS	E	D	E	F	E	C	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.44	6.94	0.22	0.40	0.22	7.63	7.44	7.77	3.52	3.51
50th-Percentile Queue Length [ft/ln]	260.93	173.40	5.48	10.09	5.50	190.84	185.96	194.31	87.98	87.74
95th-Percentile Queue Length [veh/ln]	15.74	11.25	0.39	0.73	0.40	12.16	11.91	12.34	6.33	6.32
95th-Percentile Queue Length [ft/ln]	393.38	281.37	9.86	18.17	9.90	304.11	297.78	308.62	158.37	157.93

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.07	49.39	49.39	78.83	86.69	86.69	79.29	22.83	22.86	53.99	53.99	10.70	10.70
Movement LOS	E	D	D	E	F	F	E	C	C	D	D	B	B
d_A, Approach Delay [s/veh]	59.78			84.07			23.20			23.81			
Approach LOS	E			F			C			C			
d_I, Intersection Delay [s/veh]	32.89												
Intersection LOS	C												
Intersection V/C	0.581												

Emissions

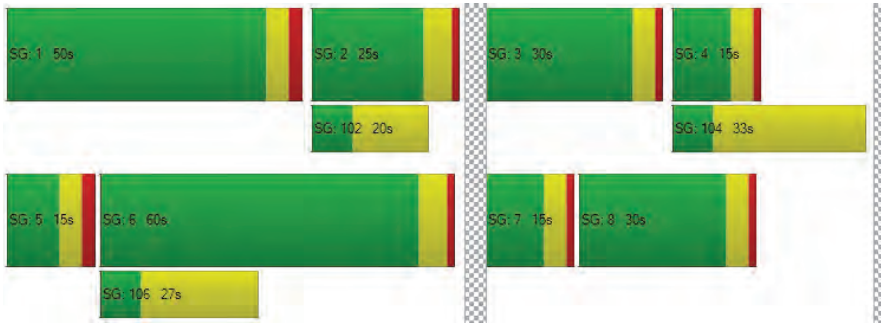
Vehicle Miles Traveled [mph]	114.05	90.93	0.23	0.46	4.21	327.63	318.66	63.14	72.73	72.52
Stops [stops/h]	313.11	208.08	6.57	12.11	6.60	229.00	223.15	233.18	105.58	105.28
Fuel consumption [US gal/h]	10.53	7.26	0.13	0.26	0.29	16.56	16.11	6.67	4.21	4.20
CO [g/h]	735.70	507.80	8.80	18.32	20.29	1157.47	1126.28	466.03	294.41	293.55
NOx [g/h]	143.14	98.80	1.71	3.56	3.95	225.20	219.13	90.67	57.28	57.11
VOC [g/h]	170.51	117.69	2.04	4.25	4.70	268.25	261.03	108.01	68.23	68.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.397	1.964	2.676	0.000
Crosswalk LOS	B	A	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.591	1.584	2.218	2.051
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	66.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	120.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			Yes				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	69	16	29	189	15	238	3	218	967	55	86	623	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-5	0	-12	-17	0	0	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	70	0	0	0	17	0	0	53
Total Hourly Volume [veh/h]	69	16	20	189	15	163	3	206	950	38	86	633	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	4	5	52	4	45	1	57	276	10	24	174	34
Total Analysis Volume [veh/h]	76	18	22	208	16	179	3	226	1105	42	95	696	137
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	62	0	8	48	0	0	14	31	0	16	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	32	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	0	13	54	0	0	20	36	0	21	39	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall	No	No		No	No			No	Yes		No	Yes	
Maximum Recall	No	No		No	No			No	No		No	No	
Pedestrian Recall	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.20	6.00	4.50	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.20	4.00	2.50	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	8	19	9	19	20	83	83	9	72	72
g / C, Green / Cycle	0.05	0.14	0.06	0.14	0.14	0.59	0.59	0.07	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.12	0.12	0.13	0.31	0.03	0.05	0.23	0.23
s, saturation flow rate [veh/h]	1781	1705	1781	1609	1781	3560	1589	1781	1870	1765
c, Capacity [veh/h]	96	234	108	224	251	2113	943	117	962	908
d1, Uniform Delay [s]	65.45	53.33	65.75	59.01	59.26	16.78	11.89	64.56	21.42	21.42
k, delay calibration	0.04	0.13	0.50	0.13	0.04	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.43	447.82	12.03	5.22	0.93	0.09	5.05	1.50	1.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.17	1.92	0.87	0.91	0.52	0.04	0.81	0.45	0.45
d, Delay for Lane Group [s/veh]	70.84	53.76	513.57	71.05	64.48	17.71	11.98	69.61	22.91	23.00
Lane Group LOS	E	D	F	E	E	B	B	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.84	1.28	17.32	7.54	8.38	10.62	0.58	3.52	9.30	8.80
50th-Percentile Queue Length [ft/ln]	70.90	32.10	433.09	188.44	209.54	265.50	14.51	88.04	232.39	219.88
95th-Percentile Queue Length [veh/ln]	5.11	2.31	28.06	12.04	13.13	15.96	1.04	6.34	14.30	13.66
95th-Percentile Queue Length [ft/ln]	127.63	57.78	701.52	301.00	328.24	399.12	26.12	158.46	357.39	341.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.84	53.76	53.76	513.57	71.05	71.05	64.48	64.48	17.71	11.98	69.61	22.95	23.00
Movement LOS	E	D	D	F	E	E	E	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	64.95			299.44			25.32				27.73		
Approach LOS	E			F			C				C		
d_I, Intersection Delay [s/veh]	66.88												
Intersection LOS	E												
Intersection V/C	0.596												

Emissions

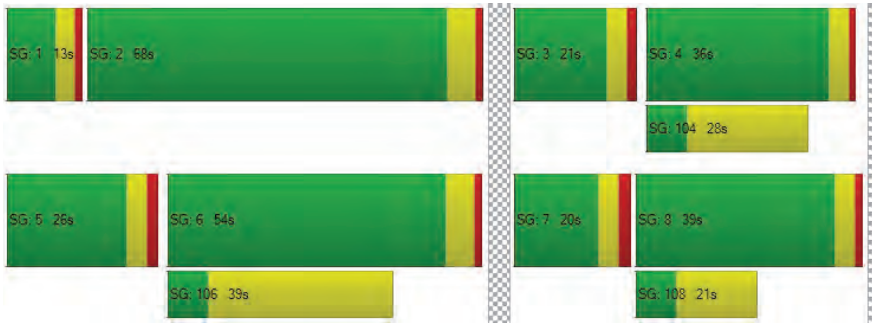
Vehicle Miles Traveled [mph]	3.80	2.00	9.67	9.07	23.93	115.45	4.39	33.26	150.06	141.62
Stops [stops/h]	72.93	33.02	445.46	193.82	215.53	546.18	14.93	90.55	239.03	226.16
Fuel consumption [US gal/h]	1.65	0.70	24.59	4.26	5.18	11.75	0.37	3.22	9.50	8.97
CO [g/h]	115.68	49.10	1719.00	297.98	362.09	821.56	25.55	224.75	663.81	627.19
NOx [g/h]	22.51	9.55	334.45	57.98	70.45	159.85	4.97	43.73	129.15	122.03
VOC [g/h]	26.81	11.38	398.39	69.06	83.92	190.41	5.92	52.09	153.85	145.36

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.070	2.356	2.890	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	686	450	493
d_b, Bicycle Delay [s]	21.73	30.23	42.04	39.75
l_b,int, Bicycle LOS Score for Intersection	1.766	2.340	2.522	2.369
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	254.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.363

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	102	74	453	315	125	60	66	907	231	350	734	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	-7	0	-3	8	6	-23	0	6	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	134	0	0	20	0	0	69	0	0	56
Total Hourly Volume [veh/h]	102	68	312	315	122	48	72	884	162	356	736	131
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	18	80	81	31	12	19	228	42	92	190	34
Total Analysis Volume [veh/h]	105	70	322	325	126	49	74	911	167	367	759	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00
g_i, Effective Green Time [s]	35	35	31	31	8	45	25	61
g / C, Green / Cycle	0.23	0.23	0.20	0.20	0.05	0.29	0.16	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.18	0.10	0.04	0.59	0.21	0.49
s, saturation flow rate [veh/h]	1781	1633	1781	1782	1781	1820	1781	1821
c, Capacity [veh/h]	407	373	359	359	94	535	291	728
d1, Uniform Delay [s]	48.40	59.04	59.66	54.09	71.63	54.04	64.04	45.95
k, delay calibration	0.13	0.49	0.25	0.13	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	59.81	17.18	1.27	5.28	463.12	142.51	114.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	1.05	0.90	0.49	0.78	2.01	1.26	1.23
d, Delay for Lane Group [s/veh]	48.81	118.85	76.84	55.36	76.91	517.16	206.55	160.41
Lane Group LOS	D	F	E	E	E	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.38	20.68	14.06	6.15	3.03	89.40	22.87	50.58
50th-Percentile Queue Length [ft/ln]	84.59	517.01	351.57	153.87	75.64	2235.01	571.85	1264.51
95th-Percentile Queue Length [veh/ln]	6.09	28.95	20.21	10.22	5.45	139.94	34.18	71.49
95th-Percentile Queue Length [ft/ln]	152.27	723.82	505.32	255.59	136.14	3498.39	854.57	1787.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.81	118.85	118.85	76.84	55.36	55.36	76.91	517.16	517.16	206.55	160.41	160.41
Movement LOS	D	F	F	E	E	E	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	104.06			69.32			488.88			173.84		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	254.78											
Intersection LOS	F											
Intersection V/C	1.363											

Emissions

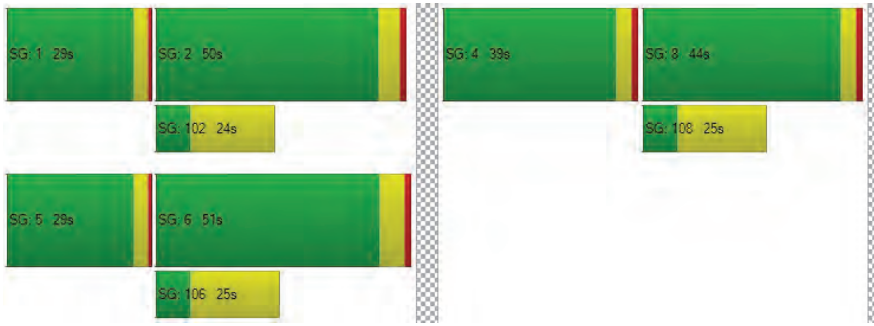
Vehicle Miles Traveled [mph]	180.67	674.49	65.89	35.48	25.91	377.47	165.60	403.39
Stops [stops/h]	79.59	486.45	330.79	144.78	71.17	2102.91	538.05	1189.77
Fuel consumption [US gal/h]	8.92	39.93	9.62	4.23	2.62	140.58	25.21	52.36
CO [g/h]	623.51	2791.36	672.54	295.80	182.98	9826.57	1762.38	3659.79
NOx [g/h]	121.31	543.10	130.85	57.55	35.60	1911.89	342.90	712.06
VOC [g/h]	144.50	646.92	155.87	68.55	42.41	2277.40	408.45	848.19

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.92	65.92	65.92	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.598	2.272	2.764	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	455	520	584	588
d_b, Bicycle Delay [s]	45.68	41.90	38.35	38.14
l_b,int, Bicycle LOS Score for Intersection	2.601	2.418	3.574	3.733
Bicycle LOS	B	B	D	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.895

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	1666	1	0	937	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-30	0	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1636	1	0	944	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	426	0	0	246	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	1704	1	0	983	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	85	85	85	85	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	43	43	0	42	42
g / C, Green / Cycle	0.00	0.00	0.23	0.23	0.01	0.50	0.50	0.00	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.46	0.46	0.00	0.28	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	8	7	418	373	22	940	940	0	1745	779
d1, Uniform Delay [s]	0.00	42.32	26.47	32.59	41.76	19.36	19.36	0.00	15.29	11.09
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.27	0.27	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	41.64	0.30	92.79	13.34	8.39	8.40	0.00	0.29	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.45	0.25	1.15	0.45	0.91	0.91	0.00	0.56	0.00
d, Delay for Lane Group [s/veh]	0.00	83.96	26.77	125.38	55.10	27.75	27.76	0.00	15.58	11.09
Lane Group LOS	A	F	C	F	E	C	C	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.14	1.70	17.03	0.29	16.11	16.11	0.00	6.30	0.03
50th-Percentile Queue Length [ft/ln]	0.00	3.47	42.43	425.84	7.22	402.63	402.70	0.00	157.46	0.70
95th-Percentile Queue Length [veh/ln]	0.00	0.25	3.06	25.62	0.52	22.69	22.69	0.00	10.41	0.05
95th-Percentile Queue Length [ft/ln]	0.00	6.24	76.38	640.46	12.99	567.17	567.25	0.00	260.36	1.26

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	83.96	26.77	26.77	125.38	55.10	27.76	27.76	0.00	15.58	11.09
Movement LOS	A	A	F	C	C	F	E	C	C	A	B	B
d_A, Approach Delay [s/veh]	83.96			106.26			27.92			15.56		
Approach LOS	F			F			C			B		
d_I, Intersection Delay [s/veh]	37.06											
Intersection LOS	D											
Intersection V/C	0.895											

Emissions

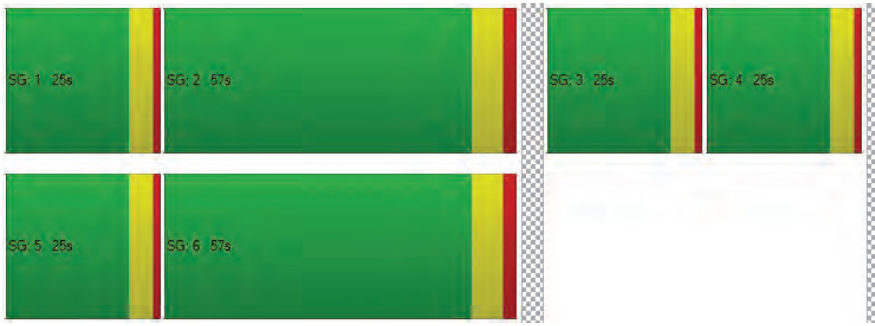
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	384.68	384.65	0.00	171.48	0.52
Stops [stops/h]	0.00	5.87	71.79	720.48	12.21	681.21	681.32	0.00	532.81	1.18
Fuel consumption [US gal/h]	0.00	0.09	2.97	23.26	0.37	24.41	24.42	0.00	13.12	0.03
CO [g/h]	0.00	6.28	207.55	1625.70	25.54	1706.55	1706.62	0.00	917.02	2.44
NOx [g/h]	0.00	1.22	40.38	316.30	4.97	332.03	332.05	0.00	178.42	0.47
VOC [g/h]	0.00	1.46	48.10	376.77	5.92	395.51	395.53	0.00	212.53	0.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	470	470	1175	1175
d_b, Bicycle Delay [s]	24.91	24.91	7.24	7.24
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	2.974	2.373
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	46.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	White Rock Rd		White Rock Rd		US 50 EB	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1
Entry Pocket Length [ft]	500.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	White Rock Rd		White Rock Rd		US 50 EB	
Base Volume Input [veh/h]	995	753	861	261	511	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-25	-5	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	12
Total Hourly Volume [veh/h]	970	748	868	261	511	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	243	187	217	65	128	17
Total Analysis Volume [veh/h]	970	748	868	261	511	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	21	61	32	0	16	0
Amber [s]	3.7	4.8	4.8	0.0	4.8	0.0
All red [s]	0.5	2.0	2.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	4.8	0.0	3.8	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	68	39	0	22	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	8	9	9	0	8	0
Vehicle Extension [s]	2.0	1.0	1.0	0.0	2.0	0.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80
g_i, Effective Green Time [s]	22	63	37	37	15	15	15
g / C, Green / Cycle	0.24	0.70	0.41	0.41	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.28	0.21	0.24	0.16	0.14	0.14	0.04
s, saturation flow rate [veh/h]	3459	3560	3560	1589	1781	1781	1589
c, Capacity [veh/h]	838	2476	1447	646	293	293	262
d1, Uniform Delay [s]	34.10	5.29	20.96	18.97	36.66	36.66	32.76
k, delay calibration	0.06	0.50	0.50	0.50	0.17	0.17	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	73.00	0.31	1.85	1.88	11.98	11.98	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.16	0.30	0.60	0.40	0.87	0.87	0.25
d, Delay for Lane Group [s/veh]	107.10	5.60	22.81	20.84	48.64	48.64	32.95
Lane Group LOS	F	A	C	C	D	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	17.37	2.35	7.23	4.07	6.35	6.35	1.25
50th-Percentile Queue Length [ft/ln]	434.29	58.68	180.75	101.72	158.65	158.65	31.33
95th-Percentile Queue Length [veh/ln]	26.20	4.22	11.64	7.32	10.48	10.48	2.26
95th-Percentile Queue Length [ft/ln]	654.93	105.62	290.99	183.09	261.94	261.94	56.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	107.10	5.60	22.81	20.84	48.64	32.95
Movement LOS	F	A	C	C	D	C
d_A, Approach Delay [s/veh]	62.91		22.35		46.85	
Approach LOS	E		C		D	
d_I, Intersection Delay [s/veh]	46.83					
Intersection LOS	D					
Intersection V/C	0.770					

Emissions

Vehicle Miles Traveled [mph]	169.21	130.48	153.82	46.25	15.47	15.47	4.00
Stops [stops/h]	1389.73	187.78	578.39	162.75	253.85	253.85	50.13
Fuel consumption [US gal/h]	35.78	7.26	13.56	3.91	4.57	4.57	0.88
CO [g/h]	2501.18	507.60	947.61	273.33	319.34	319.34	61.79
NOx [g/h]	486.64	98.76	184.37	53.18	62.13	62.13	12.02
VOC [g/h]	579.67	117.64	219.62	63.35	74.01	74.01	14.32

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	716	360
d_b, Bicycle Delay [s]	4.61	18.56	30.26
l_b,int, Bicycle LOS Score for Intersection	2.977	2.491	2.531
Bicycle LOS	C	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound				Southbound			Westbound			Northeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	550.0	100.0	100.0	100.0	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No					
Crosswalk	No				No			No			No		

Volumes

Name	White Rock Rd				Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	1	152	1111	0	0	559	236	562	1	263	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-5	0	0	1	0	6	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	1	152	1106	0	0	560	189	568	1	233	0	0	0
Peak Hour Factor	1.000	0.790	0.790	1.000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	48	350	0	0	177	60	180	0	74	0	0	0
Total Analysis Volume [veh/h]	1	192	1400	0	0	709	239	719	1	295	0	0	0
Presence of On-Street Parking	No			No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	0.0	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	61	0	0	33	0	0	29	0	0	0	0
Lead / Lag	-	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		No	Yes			Yes			No				
Maximum Recall		No	No			No			No				
Pedestrian Recall		No	No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.20	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	2.20	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	12	57	42	42	20	20	20	
g / C, Green / Cycle	0.13	0.64	0.46	0.46	0.22	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.39	0.20	0.15	0.20	0.20	0.19	
s, saturation flow rate [veh/h]	1781	3560	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	231	2268	1640	732	397	397	355	
d1, Uniform Delay [s]	38.24	9.77	16.34	15.40	34.05	34.05	33.36	
k, delay calibration	0.04	0.50	0.50	0.50	0.14	0.14	0.09	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.07	1.27	0.83	1.19	9.81	9.79	4.39	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.84	0.62	0.43	0.33	0.91	0.91	0.83	
d, Delay for Lane Group [s/veh]	41.30	11.05	17.18	16.59	43.86	43.84	37.74	
Lane Group LOS	D	B	B	B	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.28	7.54	4.88	3.22	8.55	8.54	6.42	
50th-Percentile Queue Length [ft/ln]	107.12	188.54	121.89	80.48	213.64	213.60	160.60	
95th-Percentile Queue Length [veh/ln]	7.68	12.05	8.50	5.79	13.34	13.34	10.58	
95th-Percentile Queue Length [ft/ln]	191.99	301.13	212.43	144.87	333.50	333.44	264.51	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.30	41.30	11.05	0.00	0.00	17.18	16.59	43.85	43.84	37.74	0.00	0.00	0.00
Movement LOS	D	D	B			B	B	D	D	D			
d_A, Approach Delay [s/veh]	14.71				17.03			42.07			0.00		
Approach LOS	B				B			D			A		
d_I, Intersection Delay [s/veh]	23.14												
Intersection LOS	C												
Intersection V/C	0.687												

Emissions

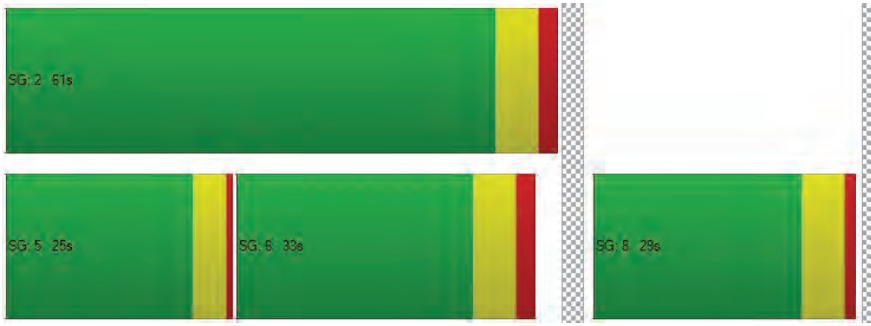
Vehicle Miles Traveled [mph]	34.20	248.09	96.95	32.68	12.47	12.47	10.22	
Stops [stops/h]	171.39	603.32	390.06	128.77	341.83	341.76	256.95	
Fuel consumption [US gal/h]	3.98	16.69	8.62	2.86	5.61	5.61	4.11	
CO [g/h]	277.99	1166.87	602.83	200.17	392.46	392.35	287.01	
NOx [g/h]	54.09	227.03	117.29	38.95	76.36	76.34	55.84	
VOC [g/h]	64.43	270.43	139.71	46.39	90.96	90.93	66.52	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1204	582	516	0
d_b, Bicycle Delay [s]	7.12	22.61	24.79	45.00
l_b,int, Bicycle LOS Score for Intersection	2.873	2.380	3.284	4.132
Bicycle LOS	C	B	C	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	413	549	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	120	152	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	10	-10	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	533	711	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	133	178	0	0	0
Total Analysis Volume [veh/h]	0	533	711	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	13.31
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		13.31	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.093

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	306	465	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	13	-5	9	6	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	319	460	29	33	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	80	115	7	8	0
Total Analysis Volume [veh/h]	1	319	460	29	33	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	8.35	0.00	0.00	0.00	16.12	12.10
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.30	0.30
95th-Percentile Queue Length [ft/ln]	0.04	0.04	0.00	0.00	7.61	7.61
d_A, Approach Delay [s/veh]	0.03		0.00		16.00	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.66					
Intersection LOS	C					

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Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	19.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	66	45	288	40	10	37	2	47	20	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-4	0	6	-16	6	9	0	0	0	0	9
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	181	66	51	272	46	19	37	2	47	20	93
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	47	17	13	70	12	5	10	1	12	5	24
Total Analysis Volume [veh/h]	0	187	68	53	280	47	20	38	2	48	21	96
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.07	0.10	0.00	0.15	0.06	0.12
d_M, Delay for Movement [s/veh]	7.92	0.00	0.00	7.81	0.00	0.00	19.90	17.24	12.18	19.35	18.11	12.70
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.09	0.09	0.09	0.64	0.64	0.64	1.38	1.38	1.38
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.34	2.34	2.34	15.92	15.92	15.92	34.51	34.51	34.51
d_A, Approach Delay [s/veh]	0.00			1.09			17.96			15.32		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.67											
Intersection LOS	C											

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Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	533	752	51	14
2	517	729	49	14
3	506	714	48	13
4	474	669	45	12
5	421	594	40	11
6	416	587	40	11
7	410	579	39	11
8	373	526	36	10
9	368	519	35	10
10	362	511	35	10
11	314	444	30	8
12	293	414	28	8
13	288	406	28	8
14	213	301	20	6
15	213	301	20	6
16	149	211	14	4
17	85	120	8	2
18	85	120	8	2
19	48	68	5	1
20	27	38	3	1
21	16	23	2	0
22	5	8	1	0
23	5	8	1	0
24	5	8	1	0

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1285	1	51	No	No	No	No	No	No	No	Yes	No	No
2	1	1246	1	49	No	No	No	No	No	No	No	Yes	No	No
3	1	1220	1	48	No	No	No	No	No	No	No	Yes	No	No
4	1	1143	1	45	No	No	No	No	No	No	No	Yes	No	No
5	1	1015	1	40	No	No	No	No	No	No	No	No	No	No
6	1	1003	1	40	No	No	No	No	No	No	No	No	No	No
7	1	989	1	39	No	No	No	No	No	No	No	No	No	No
8	1	899	1	36	No	No	No	No	No	No	No	No	No	No
9	1	887	1	35	No	No	No	No	No	No	No	No	No	No
10	1	873	1	35	No	No	No	No	No	No	No	No	No	No
11	1	758	1	30	No	No	No	No	No	No	No	No	No	No
12	1	707	1	28	No	No	No	No	No	No	No	No	No	No
13	1	694	1	28	No	No	No	No	No	No	No	No	No	No
14	1	514	1	20	No	No	No	No	No	No	No	No	No	No
15	1	514	1	20	No	No	No	No	No	No	No	No	No	No
16	1	360	1	14	No	No	No	No	No	No	No	No	No	No
17	1	205	1	8	No	No	No	No	No	No	No	No	No	No
18	1	205	1	8	No	No	No	No	No	No	No	No	No	No
19	1	116	1	5	No	No	No	No	No	No	No	No	No	No
20	1	65	1	3	No	No	No	No	No	No	No	No	No	No
21	1	39	1	2	No	No	No	No	No	No	No	No	No	No
22	1	13	1	1	No	No	No	No	No	No	No	No	No	No
23	1	13	1	1	No	No	No	No	No	No	No	No	No	No
24	1	13	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.7	46.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:11	0:10
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	51	14
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1350	1350
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	358	712	160	135
2	347	691	155	131
3	340	676	152	128
4	319	634	142	120
5	283	562	126	107
6	279	555	125	105
7	276	548	123	104
8	251	498	112	95
9	247	491	110	93
10	243	484	109	92
11	211	420	94	80
12	197	392	88	74
13	193	384	86	73
14	143	285	64	54
15	143	285	64	54
16	100	199	45	38
17	57	114	26	22
18	57	114	26	22
19	32	64	14	12
20	18	36	8	7
21	11	21	5	4
22	4	7	2	1
23	4	7	2	1
24	4	7	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1070	1	160	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	1038	1	155	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	1016	1	152	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	953	1	142	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2	845	1	126	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	2	834	1	125	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	2	824	1	123	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
8	2	749	1	112	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
9	2	738	1	110	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
10	2	727	1	109	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
11	2	631	1	94	No	No	No	Yes	No	No	Yes	Yes	No	No
12	2	589	1	88	No	No	No	Yes	No	No	No	Yes	No	No
13	2	577	1	86	No	No	No	Yes	No	No	No	Yes	No	No
14	2	428	1	64	No	No	No	No	No	No	No	No	No	No
15	2	428	1	64	No	No	No	No	No	No	No	No	No	No
16	2	299	1	45	No	No	No	No	No	No	No	No	No	No
17	2	171	1	26	No	No	No	No	No	No	No	No	No	No
18	2	171	1	26	No	No	No	No	No	No	No	No	No	No
19	2	96	1	14	No	No	No	No	No	No	No	No	No	No
20	2	54	1	8	No	No	No	No	No	No	No	No	No	No
21	2	32	1	5	No	No	No	No	No	No	No	No	No	No
22	2	11	1	2	No	No	No	No	No	No	No	No	No	No
23	2	11	1	2	No	No	No	No	No	No	No	No	No	No
24	2	11	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	4	10	11	13	10	4

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	39	229.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:44	8:36
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	160	135
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1365	1365
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

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Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	989	247	722
2	959	240	700
3	940	235	686
4	880	220	643
5	781	195	570
6	771	193	563
7	762	190	556
8	692	173	505
9	682	170	498
10	673	168	491
11	584	146	426
12	544	136	397
13	534	133	390
14	396	99	289
15	396	99	289
16	277	69	202
17	158	40	116
18	158	40	116
19	89	22	65
20	49	12	36
21	30	7	22
22	10	2	7
23	10	2	7
24	10	2	7

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1236	1	722	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1199	1	700	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1175	1	686	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1100	1	643	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	976	1	570	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	964	1	563	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	952	1	556	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	865	1	505	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	852	1	498	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	841	1	491	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	730	1	426	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
12	1	680	1	397	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	667	1	390	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	495	1	289	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
15	1	495	1	289	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
16	1	346	1	202	No	No	No	Yes	No	No	No	No	No	No
17	1	198	1	116	No	No	No	No	No	No	No	No	No	No
18	1	198	1	116	No	No	No	No	No	No	No	No	No	No
19	1	111	1	65	No	No	No	No	No	No	No	No	No	No
20	1	61	1	36	No	No	No	No	No	No	No	No	No	No
21	1	37	1	22	No	No	No	No	No	No	No	No	No	No
22	1	12	1	7	No	No	No	No	No	No	No	No	No	No
23	1	12	1	7	No	No	No	No	No	No	No	No	No	No
24	1	12	1	7	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	15	11

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	6289.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1261:23
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	722
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1958
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	324	440	222	42
2	314	427	215	41
3	308	418	211	40
4	288	392	198	37
5	256	348	175	33
6	253	343	173	33
7	249	339	171	32
8	227	308	155	29
9	224	304	153	29
10	220	299	151	29
11	191	260	131	25
12	178	242	122	23
13	175	238	120	23
14	130	176	89	17
15	130	176	89	17
16	91	123	62	12
17	52	70	36	7
18	52	70	36	7
19	29	40	20	4
20	16	22	11	2
21	10	13	7	1
22	3	4	2	0
23	3	4	2	0
24	3	4	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	764	1	222	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	741	1	215	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	726	1	211	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	680	1	198	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	1	604	1	175	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	596	1	173	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
7	1	588	1	171	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
8	1	535	1	155	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
9	1	528	1	153	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
10	1	519	1	151	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	451	1	131	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	420	1	122	No	Yes	Yes	Yes	No	No	No	Yes	No	No
13	1	413	1	120	No	Yes	Yes	Yes	No	No	No	No	No	No
14	1	306	1	89	No	No	No	Yes	No	No	No	No	No	No
15	1	306	1	89	No	No	No	Yes	No	No	No	No	No	No
16	1	214	1	62	No	No	No	No	No	No	No	No	No	No
17	1	122	1	36	No	No	No	No	No	No	No	No	No	No
18	1	122	1	36	No	No	No	No	No	No	No	No	No	No
19	1	69	1	20	No	No	No	No	No	No	No	No	No	No
20	1	38	1	11	No	No	No	No	No	No	No	No	No	No
21	1	23	1	7	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	1	5	9	12	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16	10.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:59	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	222	42
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1028	1028
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	251	321	192
2	243	311	186
3	238	305	182
4	223	286	171
5	198	254	152
6	196	250	150
7	193	247	148
8	176	225	134
9	173	221	132
10	171	218	131
11	148	189	113
12	138	177	106
13	136	173	104
14	100	128	77
15	100	128	77
16	70	90	54
17	40	51	31
18	40	51	31
19	23	29	17
20	13	16	10
21	8	10	6
22	3	3	2
23	3	3	2
24	3	3	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	572	2	192	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	554	2	186	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	543	2	182	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	509	2	171	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	452	2	152	No	No	Yes	Yes	No	No	No	No	No	No
6	2	446	2	150	No	No	Yes	Yes	No	No	No	No	No	No
7	2	440	2	148	No	No	Yes	Yes	No	No	No	No	No	No
8	2	401	2	134	No	No	No	Yes	No	No	No	No	No	No
9	2	394	2	132	No	No	No	Yes	No	No	No	No	No	No
10	2	389	2	131	No	No	No	Yes	No	No	No	No	No	No
11	2	337	2	113	No	No	No	Yes	No	No	No	No	No	No
12	2	315	2	106	No	No	No	No	No	No	No	No	No	No
13	2	309	2	104	No	No	No	No	No	No	No	No	No	No
14	2	228	2	77	No	No	No	No	No	No	No	No	No	No
15	2	228	2	77	No	No	No	No	No	No	No	No	No	No
16	2	160	2	54	No	No	No	No	No	No	No	No	No	No
17	2	91	2	31	No	No	No	No	No	No	No	No	No	No
18	2	91	2	31	No	No	No	No	No	No	No	No	No	No
19	2	52	2	17	No	No	No	No	No	No	No	No	No	No
20	2	29	2	10	No	No	No	No	No	No	No	No	No	No
21	2	18	2	6	No	No	No	No	No	No	No	No	No	No
22	2	6	2	2	No	No	No	No	No	No	No	No	No	No
23	2	6	2	2	No	No	No	No	No	No	No	No	No	No
24	2	6	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	0	0	4	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.6
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:46
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	192
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	764
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	294	242	265
2	285	235	257
3	279	230	252
4	262	215	236
5	232	191	209
6	229	189	207
7	226	186	204
8	206	169	186
9	203	167	183
10	200	165	180
11	173	143	156
12	162	133	146
13	159	131	143
14	118	97	106
15	118	97	106
16	82	68	74
17	47	39	42
18	47	39	42
19	26	22	24
20	15	12	13
21	9	7	8
22	3	2	3
23	3	2	3
24	3	2	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	536	1	265	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	520	1	257	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	509	1	252	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	477	1	236	No	No	Yes	Yes	No	No	No	No	No	No
5	2	423	1	209	No	No	Yes	Yes	No	No	No	No	No	No
6	2	418	1	207	No	No	No	Yes	No	No	No	No	No	No
7	2	412	1	204	No	No	No	Yes	No	No	No	No	No	No
8	2	375	1	186	No	No	No	Yes	No	No	No	No	No	No
9	2	370	1	183	No	No	No	Yes	No	No	No	No	No	No
10	2	365	1	180	No	No	No	Yes	No	No	No	No	No	No
11	2	316	1	156	No	No	No	No	No	No	No	No	No	No
12	2	295	1	146	No	No	No	No	No	No	No	No	No	No
13	2	290	1	143	No	No	No	No	No	No	No	No	No	No
14	2	215	1	106	No	No	No	No	No	No	No	No	No	No
15	2	215	1	106	No	No	No	No	No	No	No	No	No	No
16	2	150	1	74	No	No	No	No	No	No	No	No	No	No
17	2	86	1	42	No	No	No	No	No	No	No	No	No	No
18	2	86	1	42	No	No	No	No	No	No	No	No	No	No
19	2	48	1	24	No	No	No	No	No	No	No	No	No	No
20	2	27	1	13	No	No	No	No	No	No	No	No	No	No
21	2	16	1	8	No	No	No	No	No	No	No	No	No	No
22	2	5	1	3	No	No	No	No	No	No	No	No	No	No
23	2	5	1	3	No	No	No	No	No	No	No	No	No	No
24	2	5	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	3	5	10	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	265
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	801
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	161	201	3
2	156	195	3
3	153	191	3
4	143	179	3
5	127	159	2
6	126	157	2
7	124	155	2
8	113	141	2
9	111	139	2
10	109	137	2
11	95	119	2
12	89	111	2
13	87	109	2
14	64	80	1
15	64	80	1
16	45	56	1
17	26	32	0
18	26	32	0
19	14	18	0
20	8	10	0
21	5	6	0
22	2	2	0
23	2	2	0
24	2	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	362	1	3	No	No	No	No	No	No	No	No	No	No
2	3	351	1	3	No	No	No	No	No	No	No	No	No	No
3	3	344	1	3	No	No	No	No	No	No	No	No	No	No
4	3	322	1	3	No	No	No	No	No	No	No	No	No	No
5	3	286	1	2	No	No	No	No	No	No	No	No	No	No
6	3	283	1	2	No	No	No	No	No	No	No	No	No	No
7	3	279	1	2	No	No	No	No	No	No	No	No	No	No
8	3	254	1	2	No	No	No	No	No	No	No	No	No	No
9	3	250	1	2	No	No	No	No	No	No	No	No	No	No
10	3	246	1	2	No	No	No	No	No	No	No	No	No	No
11	3	214	1	2	No	No	No	No	No	No	No	No	No	No
12	3	200	1	2	No	No	No	No	No	No	No	No	No	No
13	3	196	1	2	No	No	No	No	No	No	No	No	No	No
14	3	144	1	1	No	No	No	No	No	No	No	No	No	No
15	3	144	1	1	No	No	No	No	No	No	No	No	No	No
16	3	101	1	1	No	No	No	No	No	No	No	No	No	No
17	3	58	1	0	No	No	No	No	No	No	No	No	No	No
18	3	58	1	0	No	No	No	No	No	No	No	No	No	No
19	3	32	1	0	No	No	No	No	No	No	No	No	No	No
20	3	18	1	0	No	No	No	No	No	No	No	No	No	No
21	3	11	1	0	No	No	No	No	No	No	No	No	No	No
22	3	4	1	0	No	No	No	No	No	No	No	No	No	No
23	3	4	1	0	No	No	No	No	No	No	No	No	No	No
24	3	4	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	365
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 18: White Rock Rd/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	628	701	151	29
2	609	680	146	28
3	597	666	143	28
4	559	624	134	26
5	496	554	119	23
6	490	547	118	23
7	484	540	116	22
8	440	491	106	20
9	433	484	104	20
10	427	477	103	20
11	371	414	89	17
12	345	386	83	16
13	339	379	82	16
14	251	280	60	12
15	251	280	60	12
16	176	196	42	8
17	100	112	24	5
18	100	112	24	5
19	57	63	14	3
20	31	35	8	1
21	19	21	5	1
22	6	7	2	0
23	6	7	2	0
24	6	7	2	0

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1329	2	151	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	2	1289	2	146	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	2	1263	2	143	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	2	1183	2	134	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
5	2	1050	2	119	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
6	2	1037	2	118	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
7	2	1024	2	116	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
8	2	931	2	106	No	No	No	No	Yes	Yes	Yes	Yes	No	No
9	2	917	2	104	No	No	No	No	Yes	Yes	Yes	Yes	No	No
10	2	904	2	103	No	No	No	No	Yes	Yes	Yes	Yes	No	No
11	2	785	2	89	No	No	No	No	No	Yes	Yes	Yes	No	No
12	2	731	2	83	No	No	No	No	No	Yes	Yes	Yes	No	No
13	2	718	2	82	No	No	No	No	No	No	Yes	Yes	No	No
14	2	531	2	60	No	No	No	No	No	No	No	Yes	No	No
15	2	531	2	60	No	No	No	No	No	No	No	Yes	No	No
16	2	372	2	42	No	No	No	No	No	No	No	No	No	No
17	2	212	2	24	No	No	No	No	No	No	No	No	No	No
18	2	212	2	24	No	No	No	No	No	No	No	No	No	No
19	2	120	2	14	No	No	No	No	No	No	No	No	No	No
20	2	66	2	8	No	No	No	No	No	No	No	No	No	No
21	2	40	2	5	No	No	No	No	No	No	No	No	No	No
22	2	13	2	2	No	No	No	No	No	No	No	No	No	No
23	2	13	2	2	No	No	No	No	No	No	No	No	No	No
24	2	13	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	7	10	12	13	15	3	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	212.1	21.5
Number of Lanes on Minor Street Approach	2	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	8:53	0:10
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	151	29
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1509	1509
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	No
Warrant Met for Intersection	**Yes**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	533	711	0
2	517	690	0
3	506	675	0
4	474	633	0
5	421	562	0
6	416	555	0
7	410	547	0
8	373	498	0
9	368	491	0
10	362	483	0
11	314	419	0
12	293	391	0
13	288	384	0
14	213	284	0
15	213	284	0
16	149	199	0
17	85	114	0
18	85	114	0
19	48	64	0
20	27	36	0
21	16	21	0
22	5	7	0
23	5	7	0
24	5	7	0

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1244	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1207	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1181	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1107	1	0	No	No	No	No	No	No	No	No	No	No
5	1	983	1	0	No	No	No	No	No	No	No	No	No	No
6	1	971	1	0	No	No	No	No	No	No	No	No	No	No
7	1	957	1	0	No	No	No	No	No	No	No	No	No	No
8	1	871	1	0	No	No	No	No	No	No	No	No	No	No
9	1	859	1	0	No	No	No	No	No	No	No	No	No	No
10	1	845	1	0	No	No	No	No	No	No	No	No	No	No
11	1	733	1	0	No	No	No	No	No	No	No	No	No	No
12	1	684	1	0	No	No	No	No	No	No	No	No	No	No
13	1	672	1	0	No	No	No	No	No	No	No	No	No	No
14	1	497	1	0	No	No	No	No	No	No	No	No	No	No
15	1	497	1	0	No	No	No	No	No	No	No	No	No	No
16	1	348	1	0	No	No	No	No	No	No	No	No	No	No
17	1	199	1	0	No	No	No	No	No	No	No	No	No	No
18	1	199	1	0	No	No	No	No	No	No	No	No	No	No
19	1	112	1	0	No	No	No	No	No	No	No	No	No	No
20	1	63	1	0	No	No	No	No	No	No	No	No	No	No
21	1	37	1	0	No	No	No	No	No	No	No	No	No	No
22	1	12	1	0	No	No	No	No	No	No	No	No	No	No
23	1	12	1	0	No	No	No	No	No	No	No	No	No	No
24	1	12	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1244
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	320	489	34
2	310	474	33
3	304	465	32
4	285	435	30
5	253	386	27
6	250	381	27
7	246	377	26
8	224	342	24
9	221	337	23
10	218	333	23
11	189	289	20
12	176	269	19
13	173	264	18
14	128	196	14
15	128	196	14
16	90	137	10
17	51	78	5
18	51	78	5
19	29	44	3
20	16	24	2
21	10	15	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	809	1	34	No	No	No	No	No	No	No	No	No	No
2	1	784	1	33	No	No	No	No	No	No	No	No	No	No
3	1	769	1	32	No	No	No	No	No	No	No	No	No	No
4	1	720	1	30	No	No	No	No	No	No	No	No	No	No
5	1	639	1	27	No	No	No	No	No	No	No	No	No	No
6	1	631	1	27	No	No	No	No	No	No	No	No	No	No
7	1	623	1	26	No	No	No	No	No	No	No	No	No	No
8	1	566	1	24	No	No	No	No	No	No	No	No	No	No
9	1	558	1	23	No	No	No	No	No	No	No	No	No	No
10	1	551	1	23	No	No	No	No	No	No	No	No	No	No
11	1	478	1	20	No	No	No	No	No	No	No	No	No	No
12	1	445	1	19	No	No	No	No	No	No	No	No	No	No
13	1	437	1	18	No	No	No	No	No	No	No	No	No	No
14	1	324	1	14	No	No	No	No	No	No	No	No	No	No
15	1	324	1	14	No	No	No	No	No	No	No	No	No	No
16	1	227	1	10	No	No	No	No	No	No	No	No	No	No
17	1	129	1	5	No	No	No	No	No	No	No	No	No	No
18	1	129	1	5	No	No	No	No	No	No	No	No	No	No
19	1	73	1	3	No	No	No	No	No	No	No	No	No	No
20	1	40	1	2	No	No	No	No	No	No	No	No	No	No
21	1	25	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	34
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	843
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	247	369	160	58
2	240	358	155	56
3	235	351	152	55
4	220	328	142	52
5	195	292	126	46
6	193	288	125	45
7	190	284	123	45
8	173	258	112	41
9	170	255	110	40
10	168	251	109	39
11	146	218	94	34
12	136	203	88	32
13	133	199	86	31
14	99	148	64	23
15	99	148	64	23
16	69	103	45	16
17	40	59	26	9
18	40	59	26	9
19	22	33	14	5
20	12	18	8	3
21	7	11	5	2
22	2	4	2	1
23	2	4	2	1
24	2	4	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	616	1	160	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	598	1	155	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	1	586	1	152	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	548	1	142	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	487	1	126	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	481	1	125	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	474	1	123	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	431	1	112	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	425	1	110	No	No	Yes	Yes	No	No	No	Yes	No	No
10	1	419	1	109	No	No	Yes	Yes	No	No	No	No	No	No
11	1	364	1	94	No	No	No	Yes	No	No	No	No	No	No
12	1	339	1	88	No	No	No	Yes	No	No	No	No	No	No
13	1	332	1	86	No	No	No	Yes	No	No	No	No	No	No
14	1	247	1	64	No	No	No	No	No	No	No	No	No	No
15	1	247	1	64	No	No	No	No	No	No	No	No	No	No
16	1	172	1	45	No	No	No	No	No	No	No	No	No	No
17	1	99	1	26	No	No	No	No	No	No	No	No	No	No
18	1	99	1	26	No	No	No	No	No	No	No	No	No	No
19	1	55	1	14	No	No	No	No	No	No	No	No	No	No
20	1	30	1	8	No	No	No	No	No	No	No	No	No	No
21	1	18	1	5	No	No	No	No	No	No	No	No	No	No
22	1	6	1	2	No	No	No	No	No	No	No	No	No	No
23	1	6	1	2	No	No	No	No	No	No	No	No	No	No
24	1	6	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	1	4	9	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.3	18
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:40	0:17
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	160	58
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	834	834
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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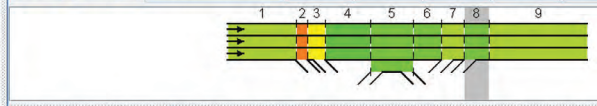
FREEVAL-2015e - Y:\Shared\Projects\P23160 Creekside Village II\Joint US50\FREEVAL\Eastbound\20 PM EB 2033 Plus-Proj.seed

Project Analyze Edit View Settings Toolbox Help

Edit Seed Facility: Global Input | Fill Data
Managed Lanes: Turn On | Generate | Delete | Summary
Reliability Analysis (RL): Generate | Delete | Summary
ATDM Analysis: Configure | Delete | Summary

Single Seed/Scenario I/O | Compare | Result Contours | Analysis Period Summary | Segment & Facility Summary

Table Display Options: In & Out | GP Only
Analysis Period (A.P.) Control: A.P. 1/1 7:00 - 7:15 | First | Last | Jump To



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9
General Purpose Segme...	*	*	*	*	*	*	*	*	*
General Purpose Segme...	EDC to...	Lat Slip	Lat Loop	between	Lat to SC	EB US ...	SV Loop	SV Slip	EB US ...
General Purpose Segme...	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Segment Length (ft)	3,000	500	800	2,000	1,900	1,260	1,000	1,100	4,300
Lane Width (ft)	12	12	12	12	12	12	12	12	12
Lateral Clearance (ft)	10	10	10	10	10	10	4	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: Mainline	3	3	3	3	4	3	3	3	3
Mainline Dem. (vph)	4,834	4834	3161	2300	3289	2700	3954	3954	3954
Mainline Single Unit Truc...	2.00	2.00	2.00	2.00	1.70	1.63	1.75	1.75	1.75
Mainline Tractor Trailer (...	0.00	0.00	0.00	0.00	0.30	0.37	0.25	0.25	0.25
Seed Capacity Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Entering Dem. Adj....	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit Dem. Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free Flow Speed ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec Lane Length (ft)		0	0				500	1,100	
ONR Side					Right		Right	Right	
# Lanes: ONR					1		1	1	
ONR Queue Capacity (v...					50		50	50	
ONR Free Flow Speed (...					45		45	45	
ONR/Entering Dem. (vph)					989		1,254	0	
ONR Single Unit Truck a...					1.00		2.00	2.00	
ONR Tractor Trailer (%)					1.00		0.00	0.00	
ONR Metering Type					None		Fixed	Fixed	
ONR Metering Fixed Rat...							2,100	2,100	
OFR Side		Right	Right		Right				
# Lanes: OFR		1	1		2				
OFR Free Flow Speed (...		45	45		45				
OFR/Exit Dem. (vph)		1,673	861		589				
OFR Single Unit Truck a...		2.00	2.00		2.00				
OFR Tractor Trailer (%)		0.00	0.00		0.00				
Weave Segment Ls (ft)					1,500				
Weave Segment LCRF					1				
Weave Segment LCFR					0				
Weave Segment LCRR					0				
Weave Segment NW					2				
Ramp to Ramp Dem. (vph)					0				
Processed Segment Type	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Speed (mph)	70.4	64.5	67.4	74.2	63.2	74.1	65.9	68.0	73.7
Total Density (veh/mi/ln)	22.9	25.0	15.6	10.2	13.0	12.0	20.0	19.4	17.9
Total Density (pc/mi/ln)	23.3	25.5	15.9	10.4	13.3	12.2	20.4	19.8	18.2
Influence Area Density (...		35.6	32.6				24.4	17.7	
Adjusted Capacity (vph)	7,059	7,059	7,059	7,059	4,904	7,059	7,059	7,059	7,059
Adjusted Mainline Dem. ...	4,834	4,834	3,161	2,300	3,289	2,700	3,954	3,954	3,954
D/C	0.68	0.68	0.45	0.33	0.67	0.38	0.56	0.56	0.56
Mainline Volume Served...	4,834	4,834	3,161	2,300	3,289	2,700	3,954	3,954	3,954
V/C	0.68	0.68	0.45	0.33	0.67	0.38	0.56	0.56	0.56
Adjusted ONR Dem. (vph)					989		1,254	0	
ONR Capacity (vph)					2,059		2,059	2,059	
ONR Volume Served (vph)					989		1,254	0	
ONR Avg RM Rate (vph)									
ONR Time RM Active (min)					0.00		0.00	0.00	
Adjusted OFR Dem. (vph)		1,673	861		589				
OFR Capacity (vph)		2,059	2,059		4,118				
OFR Volume Served (vph)		1,673	861		589				
Density Based LOS	C	E	D	A	B	B	C	B	C
Dem. Based LOS									
Mainline Queue Length (ft)									
Mainline Queue Length (...									
ONR Queue (veh)									
Actual Travel Time (min)	0.48	0.09	0.13	0.31	0.34	0.19	0.17	0.18	0.66
FFS Travel Time (min)	0.45	0.08	0.12	0.30	0.29	0.19	0.15	0.17	0.65
Mainline Delay (min)	0.03	0.01	0.01	0.00	0.05	0.00	0.02	0.02	0.01
VMTD (veh-miles / interval)	687	114	120	218	296	161	187	206	805
VMTV (veh-miles / interval)	687	114	120	218	296	161	187	206	805
PMTD (p-miles / interval)	687	114	120	218	296	161	187	206	805
PMTV (p-miles / interval)	687	114	120	218	296	161	187	206	805
VHT (travel / interval (hrs))	9.75	1.78	1.78	2.93	4.68	2.17	2.84	3.03	10.92
VHD-M (delay / interval (...	0.60	0.25	0.18	0.03	0.74	0.03	0.35	0.28	0.19
VHD-R (delay / interval (...					0.00		0.00	0.00	
VHD-Access (delay / int...									
VHD-MDE (delay / interv...	0.00								
VHD (delay / interval (hrs))	0.60	0.25	0.18	0.03	0.74	0.03	0.35	0.28	0.19
Space Mean Speed (mph)	70.4	64.5	67.4	74.2	63.2	74.1	65.9	68.0	73.7
Travel Time Index	1.07	1.16	1.11	1.01	1.19	1.01	1.14	1.10	1.02

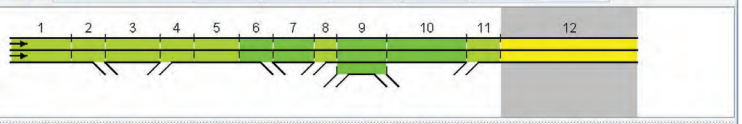
FREEVAL-2015e - Y:\Shared\Projects\P23160 Creekside Village II\Joint US50\FREEVAL\Existing 2023\8 PM WB 2033 plus Proj 20240216.seed

Project Analyze Edit View Settings Toolbox Help

Edit Seed Facility: Global Input | Fill Data
Managed Lanes: Turn On | Generate | Delete | Summary
Reliability Analysis (RL): Generate | Delete | Summary
ATDM Analysis: Configure | Delete | Summary

Single Seed/Scenario I/O | Compare | Result Contours | Analysis Period Summary | Segment & Facility Summary

Table Display Options: In & Out | GP Only
Analysis Period (A.P.) Control: A.P. 1/1 7:45 - 8:00 | First | Last | Jump To



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9	Seg. 10	Seg. 11	Seg. 12
General Pur...	*	*	*	*	*	*	*	*	*	*	*	*
General Pur...	Cam to ...	BL Off	between	BL On	BL to SV	SV Off	between	SV Loop	SV-Lat	between	Lat On	Lat to E...
General Pur...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Segment Le...	2,640	1,500	2,400	1,500	2,000	1,500	1,800	1,000	2,200	3,500	1,500	6,000
Lane Width ...	12	12	12	12	12	12	12	12	12	12	12	12
Lateral Clea...	10	10	10	10	10	10	10	10	10	10	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC E...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: ...	2	2	2	2	2	2	2	2	3	2	2	2
Mainline De...	2,952	2952	2726	3206	3206	3206	2328	2328	2717	1855	3654	3654
Mainline Sin...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Mainline Tra...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seed Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Enteri...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit D...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec La...		500		500		1,400		500			1,000	
ONR Side				Right				Right	Right		Right	
# Lanes: ONR				1				1	1		1	
ONR Queue ...				50				50	50		50	
ONR Free Fl...				45				45	45		45	
ONR/Enterin...				480				0	389		1,799	
ONR Single ...				2.00				2.00	2.00		2.00	
ONR Tractor...				0.00				0.00	0.00		0.00	
ONR Meteri...				Fixed				None	Fixed		Fixed	
ONR Meteri...				2,100					2,100		2,100	
OFR Side		Right				Right			Right			
# Lanes: OFR		1				2			2			
OFR Free Fl...		45				45			45			
OFR/Exit De...		226				878			862			
OFR Single ...		2.00				2.00			2.00			
OFR Tractor...		0.00				0.00			0.00			
Weave Seg...									1,500			
Weave Seg...									1			
Weave Seg...									0			
Weave Seg...									0			
Weave Seg...									0			
Ramp to Ra...									0			
Processed ...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Speed (mph)	72.2	64.5	73.3	62.5	70.5	62.5	74.1	64.5	66.8	74.9	62.0	66.8
Total Densit...	20.5	25.1	18.6	27.1	22.7	19.4	15.6	20.5	13.5	12.4	26.9	27.4
Total Densit...	20.9	25.6	19.0	27.6	23.2	19.8	15.9	20.9	13.8	12.6	27.4	27.9
Influence Ar...		25.6		27.6		19.8		20.9			27.4	
Adjusted Ca...	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	5,034	4,706	4,706	4,706
Adjusted Ma...	2,952	2,952	2,726	3,206	3,206	3,206	2,328	2,328	2,717	1,855	3,654	3,654
D/C	0.63	0.63	0.58	0.68	0.68	0.68	0.49	0.49	0.54	0.39	0.78	0.78
Mainline Vol...	2,952	2,952	2,726	3,206	3,206	3,206	2,328	2,328	2,717	1,855	3,654	3,654
V/C	0.63	0.63	0.58	0.68	0.68	0.68	0.49	0.49	0.54	0.39	0.78	0.78
Adjusted ON...				480				0	389		1,799	
ONR Capaci...				2,059				2,059	2,059		2,059	
ONR Volum...				480				0	389		1,799	
ONR Avg R...												
ONR Time R...				0.00				0.00	0.00		0.00	
Adjusted OF...		226				878			862			
OFR Capaci...		2,059				4,118			4,118			
OFR Volume...		226				878			862			
Density Bas...	C	C	C	C	C	B	B	C	B	B	C	D
Dem. Based...												
Mainline Qu...												
Mainline Qu...												
ONR Queue ...												
Actual Trave...	0.42	0.26	0.37	0.27	0.32	0.27	0.28	0.18	0.37	0.53	0.27	1.02
FFS Travel ...	0.40	0.23	0.36	0.23	0.30	0.23	0.27	0.15	0.33	0.53	0.23	0.91
Mainline Del...	0.02	0.04	0.01	0.05	0.02	0.05	0.00	0.02	0.04	0.00	0.05	0.11
VMTD (veh-...	369	210	310	228	304	228	198	110	283	307	260	1,038
VMTV (veh-...	369	210	310	228	304	228	198	110	283	307	260	1,038
PMTD (p-mil...	369	210	310	228	304	228	198	110	283	307	260	1,038
PMTV (p-mil...	369	210	310	228	304	228	198	110	283	307	260	1,038
VHT (travel /...	5.11	3.25	4.23	3.64	4.30	3.64	2.68	1.71	4.23	4.10	4.18	15.55
VHD-M (del...	0.19	0.46	0.09	0.61	0.26	0.61	0.03	0.24	0.46	0.00	0.72	1.71
VHD-R (dela...				0.00				0.00	0.00		0.00	
VHD-Acces...												
VHD-MDE (...	0.00											
VHD (delay ...	0.19	0.46	0.09	0.61	0.26	0.61	0.03	0.24	0.46	0.00	0.72	1.71
Space Mean...	72.2	64.5	73.3	62.5	70.5	62.5	74.1	64.5	66.8	74.9	62.0	66.8
Travel Time ...	1.04	1.16	1.02	1.20	1.06	1.20	1.01	1.16	1.12	1.00	1.21	1.12

EPAP AM plus abated Project

Generated with PTV VISTRO Report File: Y:\...\2033 AM Abated 3,6,7,9,10,12,21.pdf
Version 2024 (SP 0-5)

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	78.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1417	1188	141	3	69	1353	1044	256	92	816	171	99	105
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	14	4	0	0	-42	0	0	0	-22	-8	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	44	0	0	0	313	0	0	238	0	0	32
Total Hourly Volume [veh/h]	1	1437	1202	101	3	69	1311	731	256	92	556	163	99	73
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	359	301	25	1	17	328	183	64	23	139	41	25	18
Total Analysis Volume [veh/h]	1	1437	1202	101	3	69	1311	731	256	92	556	163	99	73
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	45	76	0	0	19	50	20	0	20	0	0	20	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	135	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	40	77	77	7	44	69	19	19	11	11	11
g / C, Green / Cycle	0.30	0.57	0.57	0.06	0.33	0.51	0.14	0.14	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.42	0.24	0.25	0.04	0.26	0.46	0.10	0.10	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1798	1781	5094	1589	1781	1826	1781	1830	1671
c, Capacity [veh/h]	1035	2037	1029	99	1674	809	254	261	143	147	134
d1, Uniform Delay [s]	33.83	1.40	1.40	62.73	40.98	30.10	54.89	54.88	60.93	60.88	61.04
k, delay calibration	0.18	0.50	0.50	0.04	0.50	0.50	0.10	0.10	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	177.42	0.64	1.33	3.75	3.74	15.34	2.79	2.68	3.56	3.30	4.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.39	0.42	0.43	0.73	0.78	0.90	0.68	0.67	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	211.26	2.04	2.73	66.48	44.72	45.44	57.68	57.56	64.49	64.19	65.30
Lane Group LOS	F	A	A	E	D	D	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	39.95	0.82	1.04	2.49	13.31	23.53	5.76	5.89	3.94	3.99	3.82
50th-Percentile Queue Length [ft/ln]	998.71	20.42	26.07	62.33	332.76	588.19	144.06	147.23	98.38	99.63	95.49
95th-Percentile Queue Length [veh/ln]	60.12	1.47	1.88	4.49	19.29	31.48	9.70	9.87	7.08	7.17	6.88
95th-Percentile Queue Length [ft/ln]	1503.01	36.76	46.93	112.20	482.34	787.06	242.48	246.73	177.09	179.34	171.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	211.2	211.2	2.24	2.73	66.48	66.48	44.72	45.44	57.64	57.56	0.00	64.39	64.58	65.30
Movement LOS	F	F	A	A	E	E	D	D	E	E		E	E	E
d_A, Approach Delay [s/veh]	111.91				45.71				22.18			64.65		
Approach LOS	F				D				C			E		
d_I, Intersection Delay [s/veh]	78.14													
Intersection LOS	E													
Intersection V/C	0.862													

Emissions

Vehicle Miles Traveled [mph]	246.28	146.77	76.39	13.55	246.72	137.57	7.95	8.14	3.58	3.63	3.44
Stops [stops/h]	2130.58	43.57	27.81	66.49	1064.82	627.40	153.67	157.05	104.94	106.27	101.86
Fuel consumption [US gal/h]	83.72	6.64	3.55	2.27	33.63	19.28	3.19	3.26	2.20	2.23	2.14
CO [g/h]	5851.86	464.03	247.90	158.33	2350.50	1347.34	223.32	228.18	153.96	155.76	149.84
NOx [g/h]	1138.56	90.28	48.23	30.80	457.32	262.14	43.45	44.40	29.96	30.31	29.15
VOC [g/h]	1356.23	107.54	57.45	36.69	544.75	312.26	51.76	52.88	35.68	36.10	34.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		56.95	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.360	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1040		655		221		228	
d_b, Bicycle Delay [s]	15.55		30.54		53.42		52.98	
I_b,int, Bicycle LOS Score for Intersection	3.091		2.857		2.134		1.862	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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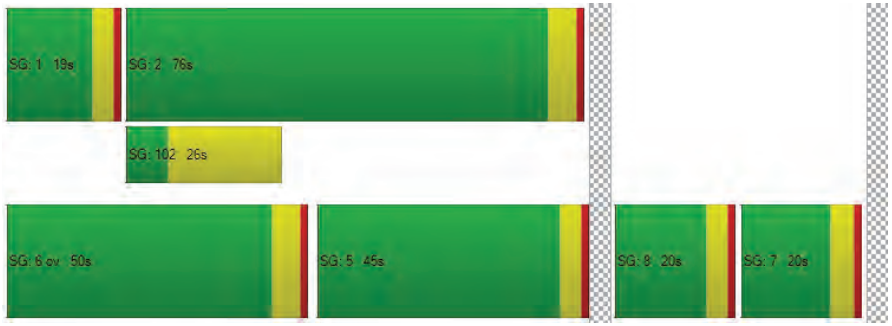


Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	121	1681	388	1	95	1737	444	2	355	391	78	425	318	248
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	49	11	0	0	-135	0	0	0	0	0	-33	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	120	0	0	0	133	0	0	0	23	0	0	74
Total Hourly Volume [veh/h]	2	121	1730	279	1	95	1602	311	2	355	391	55	392	318	174
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	460	74	0	25	426	83	1	94	104	15	104	85	46
Total Analysis Volume [veh/h]	2	129	1840	297	1	101	1704	331	2	378	416	59	417	338	185
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	157
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	15	45	0	0	25	45	0	0	30	25	0	20	35	0
Amber [s]	0.0	4.0	4.7	0.0	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.7	0.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	19	51	0	0	29	51	0	0	36	31	0	26	41	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	157	157	157	157	157	157	157	157	157	157	157	157
L, Total Lost Time per Cycle [s]	5.00	5.70	5.70	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	3.70	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	13	82	82	10	79	79	20	23	23	20	23	23
g / C, Green / Cycle	0.09	0.52	0.52	0.06	0.50	0.50	0.12	0.14	0.14	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.19	0.03	0.34	0.21	0.11	0.13	0.13	0.12	0.10	0.12
s, saturation flow rate [veh/h]	1767	6737	1577	3431	5053	1577	3431	1855	1775	3431	3532	1577
c, Capacity [veh/h]	151	3520	824	218	2529	789	427	267	255	437	518	231
d1, Uniform Delay [s]	70.87	24.62	22.05	70.93	29.56	24.80	67.65	66.21	66.22	68.04	63.22	64.77
k, delay calibration	0.17	0.50	0.50	0.04	0.50	0.50	0.04	0.23	0.23	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.03	0.56	1.23	0.58	1.46	1.64	2.57	20.82	21.61	5.43	0.52	2.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.52	0.36	0.47	0.67	0.42	0.89	0.91	0.91	0.95	0.65	0.80
d, Delay for Lane Group [s/veh]	90.91	25.18	23.28	71.51	31.02	26.43	70.22	87.03	87.83	73.47	63.74	67.21
Lane Group LOS	F	C	C	E	C	C	E	F	F	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.08	11.47	6.84	1.98	15.95	7.99	7.69	11.16	10.75	8.68	6.46	7.35
50th-Percentile Queue Length [ft/ln]	151.91	286.82	170.89	49.43	398.68	199.70	192.37	279.09	268.70	216.93	161.38	183.85
95th-Percentile Queue Length [veh/ln]	10.12	17.03	11.12	3.56	22.50	12.62	12.24	16.64	16.12	13.51	10.62	11.80
95th-Percentile Queue Length [ft/ln]	252.98	425.70	278.09	88.98	562.41	315.58	306.10	416.08	403.12	337.71	265.55	295.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.91	90.91	25.18	23.28	71.51	71.51	31.02	26.43	70.22	70.22	87.36	87.83	73.47	63.74	67.21
Movement LOS	F	F	C	C	E	E	C	C	E	E	F	F	E	E	E
d_A, Approach Delay [s/veh]	28.73				32.24				79.78				68.74		
Approach LOS	C				C				E				E		
d_I, Intersection Delay [s/veh]	43.04														
Intersection LOS	D														
Intersection V/C	0.739														

Emissions

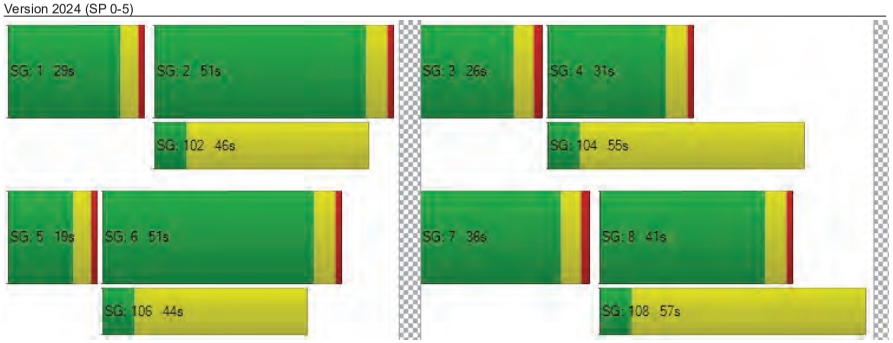
Vehicle Miles Traveled [mph]	52.16	732.56	118.24	22.76	380.29	73.87	94.70	60.47	57.91	43.72	35.44	19.40
Stops [stops/h]	139.33	1052.29	156.74	90.68	1097.00	183.17	352.88	255.98	246.45	397.94	296.03	168.62
Fuel consumption [US gal/h]	5.34	45.40	7.14	3.39	37.43	6.59	11.28	8.20	7.90	10.23	7.48	4.26
CO [g/h]	373.26	3173.40	499.13	237.09	2616.33	460.65	788.30	573.16	552.08	715.22	522.72	297.77
NOx [g/h]	72.62	617.43	97.11	46.13	509.04	89.62	153.37	111.52	107.41	139.16	101.70	57.94
VOC [g/h]	86.51	735.47	115.68	54.95	606.36	106.76	182.70	132.84	127.95	165.76	121.15	69.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.89	67.89	67.89	67.89
I_p,int, Pedestrian LOS Score for Intersectio	3.544	3.876	2.806	2.997
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	577	577	322	450
d_b, Bicycle Delay [s]	39.74	39.74	55.24	47.17
I_b,int, Bicycle LOS Score for Intersection	2.544	2.753	1.972	2.396
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.874

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	170.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	57	1777	2	2	18	1704	532	257	5	15	4	9	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	61	0	0	0	-168	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	160	0	0	5	0	0	5
Total Hourly Volume [veh/h]	1	57	1838	1	2	18	1536	372	257	5	10	4	9	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	16	528	0	1	5	441	107	74	1	3	1	3	3
Total Analysis Volume [veh/h]	1	66	2113	1	2	21	1766	428	295	6	11	5	10	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 4239 of 4853

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	73	73	73	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	42	42	1	40	40	9	9	2
g / C, Green / Cycle	0.05	0.58	0.58	0.02	0.55	0.55	0.12	0.12	0.03
(v / s)_i Volume / Saturation Flow Rate	0.04	0.57	0.57	0.01	0.50	0.27	0.09	0.09	0.02
s, saturation flow rate [veh/h]	1781	1870	1870	1781	3560	1589	1781	1769	1725
c, Capacity [veh/h]	93	1091	1091	29	1951	871	219	218	51
d1, Uniform Delay [s]	33.95	14.50	14.50	35.64	14.74	10.17	30.66	30.66	34.77
k, delay calibration	0.04	0.45	0.45	0.04	0.15	0.15	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.95	19.43	19.46	15.92	2.56	0.61	4.30	4.34	2.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.97	0.97	0.79	0.91	0.49	0.71	0.72	0.51
d, Delay for Lane Group [s/veh]	37.90	33.93	33.96	51.56	17.30	10.78	34.96	35.01	37.69
Lane Group LOS	D	C	C	D	B	B	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.23	19.22	19.23	0.50	9.57	3.11	2.80	2.79	0.48
50th-Percentile Queue Length [ft/ln]	30.77	480.42	480.72	12.43	239.17	77.87	70.00	69.65	12.04
95th-Percentile Queue Length [veh/ln]	2.22	26.41	26.42	0.89	14.64	5.61	5.04	5.01	0.87
95th-Percentile Queue Length [ft/ln]	55.39	660.15	660.51	22.37	365.99	140.17	126.00	125.37	21.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.90	37.90	33.95	33.96	51.56	51.56	17.30	10.78	34.98	35.01	35.01	37.69	37.69	37.69
Movement LOS	D	D	C	C	D	D	B	B	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	34.07				16.40				34.98			37.69		
Approach LOS	C				B				C			D		
d_I, Intersection Delay [s/veh]	25.88													
Intersection LOS	C													
Intersection V/C	0.874													

Emissions

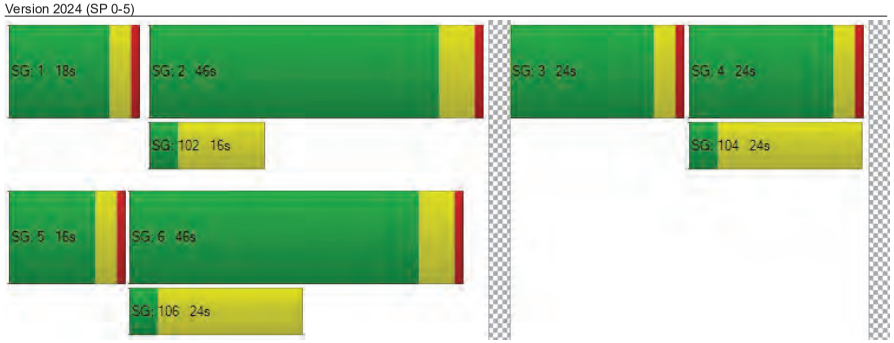
Vehicle Miles Traveled [mph]	23.71	374.03	374.03	9.16	703.10	170.40	37.68	37.46	0.49
Stops [stops/h]	61.10	953.88	954.48	24.68	949.77	154.62	138.98	138.29	23.91
Fuel consumption [US gal/h]	1.83	27.97	27.98	1.01	47.38	9.51	3.43	3.41	0.35
CO [g/h]	127.93	1954.78	1955.57	70.32	3311.74	664.83	239.91	238.65	24.60
NOx [g/h]	24.89	380.33	380.48	13.68	644.35	129.35	46.68	46.43	4.79
VOC [g/h]	29.65	453.04	453.22	16.30	767.53	154.08	55.60	55.31	5.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.70	0.00	28.70	28.70
l_p,int, Pedestrian LOS Score for Intersectio	3.067	0.000	2.258	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1103	1103	552	552
d_b, Bicycle Delay [s]	7.29	7.29	19.02	19.02
l_b,int, Bicycle LOS Score for Intersection	3.359	3.503	2.083	1.611
Bicycle LOS	C	D	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	68.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.960

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	53	773	21	249	386	750	514	69	78	136	241	520
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	4	0	100	0	0	0	0	17	0	0
Site-Generated Trips [veh/h]	26	99	10	0	-25	-145	-35	-6	-10	-8	-25	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	11	0	0	182	0	0	20	0	0	156
Total Hourly Volume [veh/h]	79	872	24	249	461	423	479	63	48	145	216	364
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	245	7	70	129	119	135	18	13	41	61	102
Total Analysis Volume [veh/h]	89	980	27	280	518	475	538	71	54	163	243	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	88	88	88	88	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	6	25	25	9	28	28	15	15	20	20
g / C, Green / Cycle	0.06	0.28	0.28	0.10	0.32	0.32	0.17	0.17	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.27	0.08	0.28	0.30	0.19	0.19	0.23	0.25
s, saturation flow rate [veh/h]	1781	1870	1852	3459	1870	1589	1781	1764	1822	1589
c, Capacity [veh/h]	117	532	527	357	602	511	304	301	415	362
d1, Uniform Delay [s]	40.35	30.83	30.83	38.45	27.95	28.82	36.44	36.44	33.94	33.94
k, delay calibration	0.04	0.35	0.35	0.04	0.37	0.43	0.44	0.44	0.40	0.45
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.71	22.75	22.92	1.44	11.60	23.11	76.51	77.22	44.71	68.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.95	0.95	0.78	0.86	0.93	1.09	1.10	1.02	1.08
d, Delay for Lane Group [s/veh]	44.05	53.58	53.75	39.89	39.55	51.94	112.95	113.66	78.65	102.68
Lane Group LOS	D	D	D	D	D	D	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.99	13.46	13.36	2.79	10.90	11.76	12.82	12.76	13.72	14.38
50th-Percentile Queue Length [ft/ln]	49.69	336.56	334.07	69.84	272.49	293.92	320.49	318.97	342.89	359.55
95th-Percentile Queue Length [veh/ln]	3.58	19.48	19.36	5.03	16.31	17.38	19.53	19.46	20.02	21.51
95th-Percentile Queue Length [ft/ln]	89.45	486.99	483.95	125.71	407.85	434.50	488.19	486.47	500.51	537.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.05	53.66	53.75	39.89	39.55	51.94	113.22	113.66	113.66	78.65	78.65	102.59
Movement LOS	D	D	D	D	D	D	F	F	F	E	E	F
d_A, Approach Delay [s/veh]	52.88			44.25			113.30			90.20		
Approach LOS	D			D			F			F		
d_I, Intersection Delay [s/veh]	68.34											
Intersection LOS	E											
Intersection V/C	0.960											

Emissions

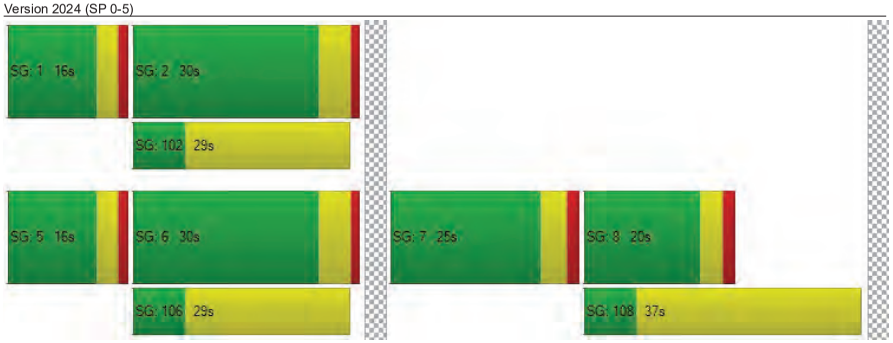
Vehicle Miles Traveled [mph]	51.40	292.14	289.43	195.36	361.41	331.41	25.04	24.84	46.81	43.33
Stops [stops/h]	81.48	551.85	547.77	229.02	446.79	481.93	525.50	523.01	562.22	589.53
Fuel consumption [US gal/h]	3.36	20.59	20.42	13.06	24.56	25.06	11.58	11.55	11.81	13.23
CO [g/h]	235.14	1439.25	1427.55	913.03	1716.58	1751.55	809.72	807.11	825.29	924.44
NOx [g/h]	45.75	280.03	277.75	177.64	333.98	340.79	157.54	157.03	160.57	179.86
VOC [g/h]	54.50	333.56	330.85	211.60	397.83	405.94	187.66	187.05	191.27	214.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.60	0.00	33.60	33.60
l_p,int, Pedestrian LOS Score for Intersectio	2.677	0.000	2.510	2.683
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	562	562	353	455
d_b, Bicycle Delay [s]	22.68	22.68	29.78	26.19
l_b,int, Bicycle LOS Score for Intersection	2.473	2.760	2.687	3.162
Bicycle LOS	B	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	160.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	575	254	291	262	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	27	0	1	130	0	0
Site-Generated Trips [veh/h]	-23	171	104	-148	-36	-6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	746	359	273	226	82
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	207	100	76	63	23
Total Analysis Volume [veh/h]	140	829	399	303	251	91
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	56	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	62	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Calculated Cycle Length [s]	36	36	36	36	36	36
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	20	12	12	6	6
g / C, Green / Cycle	0.11	0.56	0.34	0.34	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.44	0.21	0.19	0.10	0.10
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1671
c, Capacity [veh/h]	188	1040	635	540	297	278
d1, Uniform Delay [s]	15.66	6.38	10.00	9.72	13.90	13.91
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.20	2.05	1.46	1.31	1.89	2.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.80	0.63	0.56	0.59	0.60
d, Delay for Lane Group [s/veh]	17.85	8.43	11.46	11.02	15.79	15.94
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.86	1.22	1.57	1.16	1.22	1.16
50th-Percentile Queue Length [ft/ln]	21.54	30.38	39.19	29.06	30.47	29.02
95th-Percentile Queue Length [veh/ln]	1.55	2.19	2.82	2.09	2.19	2.09
95th-Percentile Queue Length [ft/ln]	38.77	54.68	70.55	52.31	54.85	52.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.85	8.43	11.46	11.02	15.83	15.94
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	9.80		11.27		15.86	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	11.34					
Intersection LOS	B					
Intersection V/C	0.814					

Emissions

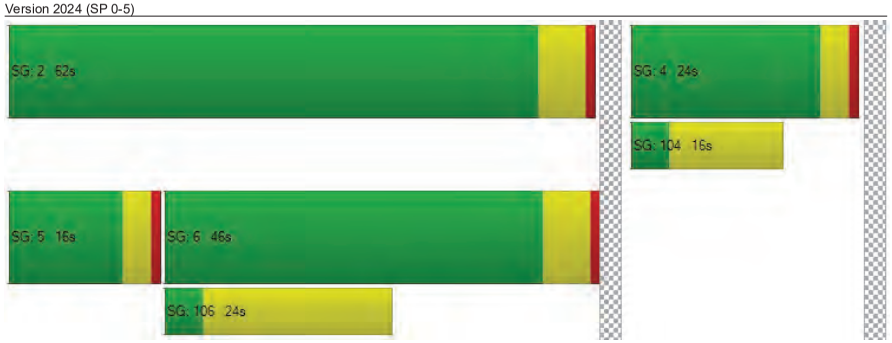
Vehicle Miles Traveled [mph]	17.27	102.29	230.43	174.99	41.34	38.98
Stops [stops/h]	86.26	121.65	156.95	116.37	122.03	116.21
Fuel consumption [US gal/h]	2.69	7.10	11.55	8.69	2.94	2.79
CO [g/h]	187.94	496.57	807.65	607.78	205.62	194.70
NOx [g/h]	36.57	96.61	157.14	118.25	40.01	37.88
VOC [g/h]	43.56	115.09	187.18	140.86	47.65	45.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	10.87	0.00	10.87
l_p,int, Pedestrian LOS Score for Intersectio	2.763	0.000	2.148
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3115	2225	1112
d_b, Bicycle Delay [s]	5.58	0.23	3.54
l_b,int, Bicycle LOS Score for Intersection	3.158	2.718	2.124
Bicycle LOS	C	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.810

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	408	41	74	254	0	0	0	0	11	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	-12	0	0	1	64	152	2	17	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	31	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	14	0	0	0	0	0	0	0	14
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	396	41	88	260	95	152	2	17	11	1	264
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	106	11	24	70	26	41	1	5	3	0	71
Total Analysis Volume [veh/h]	12	426	44	95	280	102	163	2	18	12	1	284
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Calculated Cycle Length [s]	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	21	5	25	9	16
g / C, Green / Cycle	0.02	0.31	0.07	0.37	0.14	0.24
(v / s)_i Volume / Saturation Flow Rate	0.01	0.28	0.06	0.24	0.12	0.21
s, saturation flow rate [veh/h]	1603	1656	1603	1607	1585	1438
c, Capacity [veh/h]	24	515	120	596	224	339
d1, Uniform Delay [s]	32.99	22.36	30.71	17.51	28.14	24.86
k, delay calibration	0.04	0.13	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.78	7.91	4.38	0.44	2.79	2.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.91	0.79	0.64	0.82	0.88
d, Delay for Lane Group [s/veh]	38.77	30.27	35.09	17.96	30.93	27.74
Lane Group LOS	D	C	D	B	C	C
Critical Lane Group	No	Yes	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.21	6.95	1.49	3.96	2.90	4.54
50th-Percentile Queue Length [ft/ln]	5.32	173.72	37.18	98.88	72.49	113.59
95th-Percentile Queue Length [veh/ln]	0.38	11.27	2.68	7.12	5.22	8.04
95th-Percentile Queue Length [ft/ln]	9.58	281.80	66.92	177.98	130.49	200.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.77	30.27	30.27	35.09	17.96	17.96	30.93	30.93	30.93	27.74	27.74	27.74
Movement LOS	D	C	C	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	30.48			21.37			30.93			27.74		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.95											
Intersection LOS	C											
Intersection V/C	0.810											

Emissions

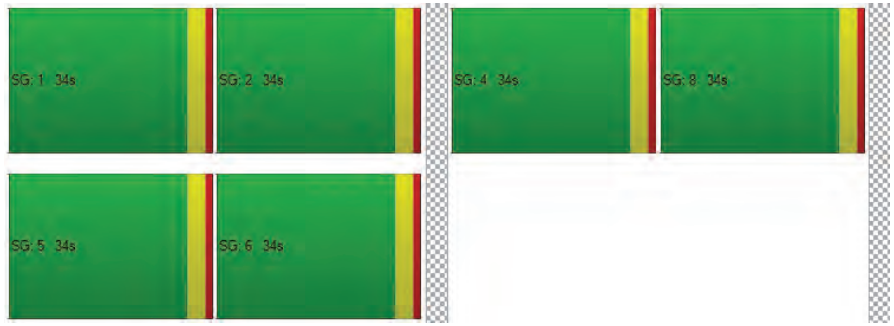
Vehicle Miles Traveled [mph]	4.07	159.43	9.63	38.72	9.95	250.73
Stops [stops/h]	11.38	371.62	79.52	211.51	155.07	242.99
Fuel consumption [US gal/h]	0.44	15.13	2.48	6.62	2.42	13.34
CO [g/h]	30.91	1057.66	173.18	462.76	169.06	932.52
NOx [g/h]	6.01	205.78	33.69	90.04	32.89	181.44
VOC [g/h]	7.16	245.12	40.14	107.25	39.18	216.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	891	891	891	891
d_b, Bicycle Delay [s]	10.34	10.34	10.34	10.34
l_b,int, Bicycle LOS Score for Intersection	2.355	2.347	1.862	2.050
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	145.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.130

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	410.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	115	53	383	193	45	46	218	278	224	320	839	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	8	0	-6	5	7	7	0	-9	-26	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	117	0	0	15	0	0	67	0	0	92
Total Hourly Volume [veh/h]	115	52	274	193	39	36	225	285	157	311	813	215
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	15	79	55	11	10	65	82	45	89	234	62
Total Analysis Volume [veh/h]	132	60	315	222	45	41	259	328	180	357	934	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	163
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	139	139	139	139	139	139	139	139	139
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	34	34	20	20	22	43	25	45	45
g / C, Green / Cycle	0.24	0.24	0.14	0.14	0.16	0.31	0.18	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.12	0.05	0.15	0.29	0.20	0.50	0.16
s, saturation flow rate [veh/h]	1781	1629	1781	1725	1781	1760	1781	1870	1589
c, Capacity [veh/h]	435	398	258	250	283	542	320	604	514
d1, Uniform Delay [s]	42.96	51.68	58.16	53.58	57.62	46.91	57.14	47.14	37.78
k, delay calibration	0.13	0.40	0.13	0.13	0.28	0.37	0.50	0.50	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	28.34	9.95	1.01	23.68	21.07	85.62	253.81	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.94	0.86	0.34	0.91	0.94	1.12	1.55	0.48
d, Delay for Lane Group [s/veh]	43.45	80.02	68.11	54.60	81.29	67.98	142.77	300.96	38.68
Lane Group LOS	D	F	E	D	F	E	F	F	D
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.81	15.96	8.36	2.80	10.84	20.21	18.83	63.35	6.93
50th-Percentile Queue Length [ft/ln]	95.28	398.88	209.06	70.00	270.96	505.25	470.64	1583.76	173.21
95th-Percentile Queue Length [veh/ln]	6.86	22.51	13.10	5.04	16.24	27.58	27.45	96.00	11.24
95th-Percentile Queue Length [ft/ln]	171.51	562.65	327.62	126.01	405.94	689.57	686.13	2399.99	281.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.45	80.02	80.02	68.11	54.60	54.60	81.29	67.98	67.98	142.77	300.96	38.68
Movement LOS	D	F	F	E	D	D	F	E	E	F	F	D
d_A, Approach Delay [s/veh]	70.50			64.34			72.48			222.12		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	145.12											
Intersection LOS	F											
Intersection V/C	1.130											

Emissions

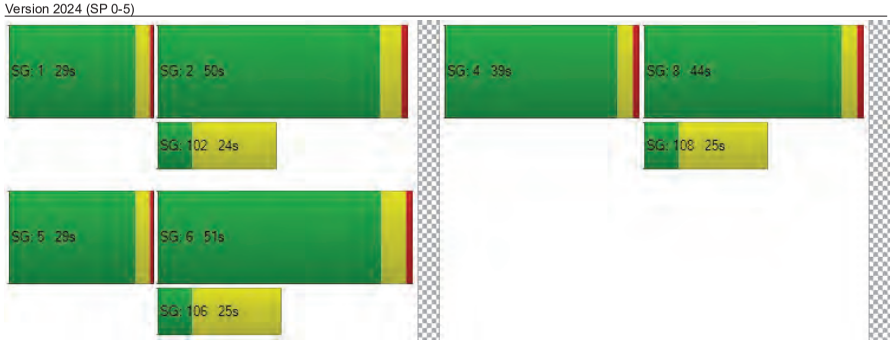
Vehicle Miles Traveled [mph]	227.13	645.24	45.01	17.44	90.69	177.88	161.09	421.44	111.45
Stops [stops/h]	98.65	412.97	216.44	72.48	280.53	523.10	487.26	1639.70	179.32
Fuel consumption [US gal/h]	11.06	34.95	6.13	2.07	9.57	17.24	19.69	83.60	7.52
CO [g/h]	773.23	2442.98	428.15	144.94	668.76	1205.05	1376.57	5843.50	525.86
NOx [g/h]	150.44	475.31	83.30	28.20	130.12	234.46	267.83	1136.93	102.31
VOC [g/h]	179.20	566.18	99.23	33.59	154.99	279.28	319.03	1354.29	121.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.98	58.98	58.98	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.541	2.301	2.692	0.000
Crosswalk LOS	B	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	500	572	643	647
d_b, Bicycle Delay [s]	39.10	35.44	32.03	31.82
l_b,int, Bicycle LOS Score for Intersection	2.589	2.093	2.936	4.249
Bicycle LOS	B	B	C	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



EPAP PM plus abated Project

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.975

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	500.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1224	1679	414	0	37	1252	493	306	130	404	236	88	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-44	-36	-8	0	0	6	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	122	0	0	0	148	0	0	121	0	0	75
Total Hourly Volume [veh/h]	1	1180	1643	284	0	37	1258	345	306	130	283	238	88	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	295	411	71	0	9	315	86	77	33	71	60	22	44
Total Analysis Volume [veh/h]	1	1180	1643	284	0	37	1258	345	306	130	283	238	88	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.34	0.36	0.38	0.02	0.25	0.22	0.12	0.12	0.09	0.09	0.11
s, saturation flow rate [veh/h]	3459	3532	1725	1781	5053	1589	1781	1832	1781	1827	1589
c, Capacity [veh/h]	1155	1914	935	81	1279	685	249	257	223	228	199
d1, Uniform Delay [s]	45.28	22.21	23.19	63.30	50.50	28.15	57.19	57.19	57.26	57.22	58.55
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.12	0.12	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.08	1.80	4.55	1.51	21.50	2.64	12.22	11.90	4.89	4.55	23.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.66	0.71	0.46	0.98	0.50	0.86	0.86	0.73	0.72	0.89
d, Delay for Lane Group [s/veh]	59.36	24.02	27.74	64.81	72.00	30.79	69.41	69.09	62.15	61.78	81.74
Lane Group LOS	F	C	C	E	E	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	21.58	14.64	16.71	1.26	16.30	8.41	8.08	8.29	5.66	5.75	7.25
50th-Percentile Queue Length [ft/ln]	539.60	365.97	417.71	31.57	407.59	210.15	202.10	207.29	141.42	143.70	181.27
95th-Percentile Queue Length [veh/ln]	29.64	20.91	23.41	2.27	22.93	13.16	12.75	13.01	9.56	9.68	11.67
95th-Percentile Queue Length [ft/ln]	741.10	522.84	585.30	56.82	573.14	329.02	318.67	325.34	238.93	241.99	291.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.36	59.36	24.88	27.74	64.81	64.81	72.00	30.79	69.32	69.09	0.00	62.03	61.78	81.74
Movement LOS	E	F	C	C	E	E	E	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	38.24				63.17				41.99			68.89		
Approach LOS	D				E				D			E		
d_I, Intersection Delay [s/veh]	48.43													
Intersection LOS	D													
Intersection V/C	0.975													

Emissions

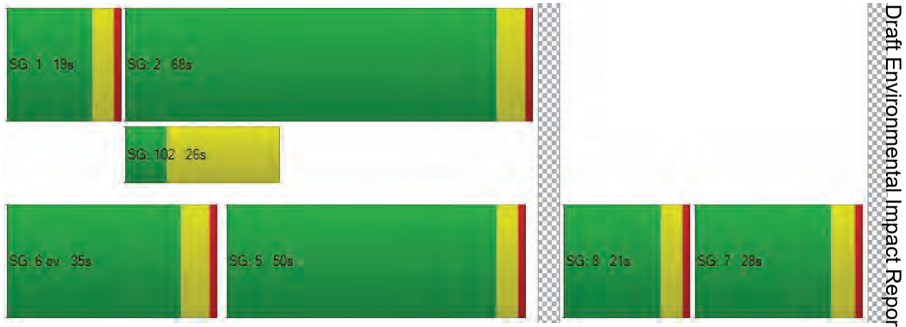
Vehicle Miles Traveled [mph]	203.14	217.32	114.14	6.94	235.91	64.70	9.94	10.23	5.13	5.23	5.60
Stops [stops/h]	1142.68	774.99	442.28	33.42	1294.71	222.51	213.99	219.48	149.74	152.15	191.94
Fuel consumption [US gal/h]	28.94	19.40	10.89	1.14	42.61	7.15	4.63	4.74	3.08	3.13	4.22
CO [g/h]	2022.93	1356.24	761.07	79.78	2978.76	499.48	323.44	331.40	215.23	218.47	294.83
NOx [g/h]	393.59	263.88	148.08	15.52	579.56	97.18	62.93	64.48	41.88	42.51	57.36
VOC [g/h]	468.83	314.32	176.39	18.49	690.36	115.76	74.96	76.80	49.88	50.63	68.33

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.538
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.336	2.523	2.279	2.036
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	51.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.789

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	3	2	0	0	1	2	0	0	0	3	0	0
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	100.0	160.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	125	1673	518	2	253	1422	436	2	376	472	124	516	223	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-116	-29	0	0	19	0	0	0	0	0	4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	147	0	0	0	131	0	0	0	37	0	0	58
Total Hourly Volume [veh/h]	6	125	1557	342	2	253	1441	305	2	376	472	87	520	223	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	34	419	92	1	68	387	82	1	101	127	23	140	60	37
Total Analysis Volume [veh/h]	6	134	1674	368	2	272	1549	328	2	404	508	94	559	240	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 4257 of 4853

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	0	20	50	0	0	23	15	0	36	25	0
Amber [s]	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0	0.0	4.5	5.0	0.0	4.5	5.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	39	0	0	0	37	0	0	0	48	0	0	50	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	4.0	0.0	0.0	3.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	100.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	56	0	0	25	56	0	0	29	37	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	7	0	0	10	7	0	0	10	10	0	10	10	0
Vehicle Extension [s]	0.0	1.5	3.0	0.0	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	Yes			No	Yes			No	No		No	No	
Maximum Recall		No	No			No	No			No	No		No	No	
Pedestrian Recall		No	No			No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	6.00	6.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	4.00	4.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	14	66	66	15	66	66	21	29	29	28	36	36
g / C, Green / Cycle	0.09	0.41	0.41	0.09	0.41	0.41	0.13	0.18	0.18	0.17	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.23	0.08	0.30	0.21	0.12	0.17	0.17	0.16	0.07	0.09
s, saturation flow rate [veh/h]	1781	6792	1589	3459	5094	1589	3459	1870	1770	3459	3560	1589
c, Capacity [veh/h]	161	2784	652	318	2095	654	448	335	317	605	801	358
d1, Uniform Delay [s]	71.81	36.96	36.24	71.65	39.84	34.93	68.70	64.56	64.56	64.94	51.53	52.91
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.04	0.15	0.15	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.40	0.97	3.52	2.71	2.39	2.74	2.94	13.51	14.11	2.66	0.08	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.60	0.56	0.86	0.74	0.50	0.91	0.92	0.92	0.92	0.30	0.41
d, Delay for Lane Group [s/veh]	82.22	37.93	39.76	74.36	42.22	37.67	71.64	78.06	78.67	67.60	51.60	53.19
Lane Group LOS	F	D	D	E	D	D	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.17	13.14	11.81	5.60	17.22	9.83	8.42	13.71	13.03	11.49	4.07	5.10
50th-Percentile Queue Length [ft/ln]	154.26	328.55	295.18	139.88	430.47	245.76	210.48	342.65	325.63	287.20	101.76	127.56
95th-Percentile Queue Length [veh/ln]	10.24	19.09	17.44	9.47	24.02	14.97	13.18	19.78	18.94	17.05	7.33	8.81
95th-Percentile Queue Length [ft/ln]	256.11	477.19	436.06	236.86	600.61	374.31	329.45	494.44	473.60	426.16	183.16	220.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	82.22	82.22	37.93	39.76	74.36	74.36	42.22	37.67	71.64	71.64	78.30	78.67	67.60	51.60	53.19
Movement LOS	F	F	D	D	E	E	D	D	E	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	41.08				45.62				75.65				61.31		
Approach LOS	D				D				E				E		
d_I, Intersection Delay [s/veh]	51.22														
Intersection LOS	D														
Intersection V/C	0.789														

Emissions

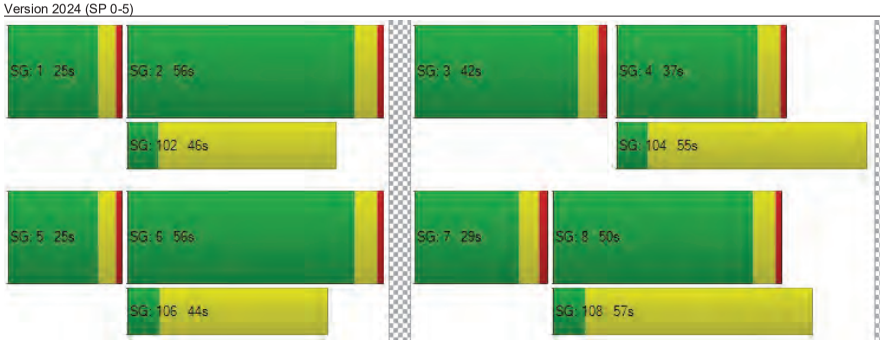
Vehicle Miles Traveled [mph]	55.73	666.40	146.50	61.17	345.79	73.22	101.33	77.19	73.05	58.41	25.08	15.25
Stops [stops/h]	138.84	1182.79	265.66	251.79	1162.28	221.19	378.86	308.38	293.06	516.96	183.16	114.80
Fuel consumption [US gal/h]	5.40	46.89	10.48	9.37	39.61	7.77	12.18	9.79	9.31	12.95	4.56	2.84
CO [g/h]	377.69	3277.48	732.27	655.15	2768.92	543.40	851.54	684.59	650.89	905.19	319.04	198.69
NOx [g/h]	73.48	637.68	142.47	127.47	538.73	105.73	165.68	133.20	126.64	176.12	62.07	38.66
VOC [g/h]	87.53	759.59	169.71	151.84	641.72	125.94	197.35	158.66	150.85	209.79	73.94	46.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersectio	3.581	3.848	2.838	3.024
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	625	625	388	550
d_b, Bicycle Delay [s]	37.81	37.81	52.00	42.05
l_b,int, Bicycle LOS Score for Intersection	2.518	2.665	2.088	2.387
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.947

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	100.0	200.0	100.0	100.0	170.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	11	1588	30	0	34	1590	454	703	9	27	1	6	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-144	0	0	0	23	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	9	0	0	0	136	0	0	8	0	0	6
Total Hourly Volume [veh/h]	1	11	1444	21	0	34	1613	318	703	9	19	1	6	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	406	6	0	10	453	89	197	3	5	0	2	4
Total Analysis Volume [veh/h]	1	12	1622	24	0	39	1812	357	790	10	21	1	7	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	12	40	0	0	15	40	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	12	0	0	0	20	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	0	0	18	46	0	0	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	39	39	2	40	40	20	20	2
g / C, Green / Cycle	0.02	0.48	0.48	0.03	0.49	0.49	0.25	0.25	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.44	0.44	0.02	0.51	0.22	0.23	0.23	0.01
s, saturation flow rate [veh/h]	1781	1870	1860	1781	3560	1589	1781	1772	1674
c, Capacity [veh/h]	30	896	892	52	1750	781	435	433	45
d1, Uniform Delay [s]	39.81	19.82	19.86	39.42	20.80	13.64	30.35	30.37	39.26
k, delay calibration	0.04	0.37	0.38	0.04	0.15	0.15	0.39	0.39	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.56	12.71	13.05	7.96	22.57	0.60	26.44	26.97	3.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.92	0.92	0.75	1.04	0.46	0.94	0.95	0.51
d, Delay for Lane Group [s/veh]	43.37	32.54	32.91	47.38	43.37	14.24	56.78	57.34	42.51
Lane Group LOS	D	C	C	D	F	B	E	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.28	16.28	16.34	0.83	18.38	3.58	10.79	10.83	0.49
50th-Percentile Queue Length [ft/ln]	7.10	406.98	408.49	20.80	459.43	89.50	269.85	270.67	12.20
95th-Percentile Queue Length [veh/ln]	0.51	22.90	22.97	1.50	26.08	6.44	16.18	16.22	0.88
95th-Percentile Queue Length [ft/ln]	12.78	572.41	574.22	37.43	652.07	161.10	404.55	405.58	21.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.37	43.37	32.72	32.91	47.38	47.38	43.37	14.24	57.05	57.34	57.34	42.51	42.51	42.51
Movement LOS	D	D	C	C	D	D	F	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	32.81				38.73				57.06			42.51		
Approach LOS	C				D				E			D		
d_I, Intersection Delay [s/veh]	39.86													
Intersection LOS	D													
Intersection V/C	0.947													

Emissions

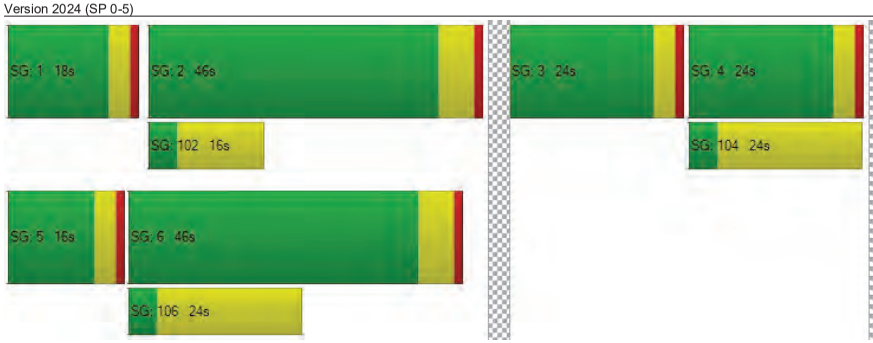
Vehicle Miles Traveled [mph]	4.60	291.61	290.85	15.53	721.33	142.12	98.99	98.73	0.44
Stops [stops/h]	12.53	718.59	721.25	36.72	1622.39	158.03	476.46	477.91	21.55
Fuel consumption [US gal/h]	0.37	21.43	21.46	1.58	70.26	8.72	11.46	11.49	0.34
CO [g/h]	26.10	1498.00	1500.30	110.26	4910.88	609.80	800.86	802.99	23.49
NOx [g/h]	5.08	291.46	291.90	21.45	955.48	118.64	155.82	156.23	4.57
VOC [g/h]	6.05	347.18	347.71	25.55	1138.14	141.33	185.61	186.10	5.44

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.17	0.00	33.17	33.17
l_p,int, Pedestrian LOS Score for Intersectio	2.995	0.000	2.385	1.775
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	981	981	490	490
d_b, Bicycle Delay [s]	10.59	10.59	23.23	23.23
l_b,int, Bicycle LOS Score for Intersection	2.935	3.461	2.927	1.607
Bicycle LOS	C	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3

Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	90.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.030

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	108	575	28	352	446	809	686	216	57	68	155	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	21	98	10	0	46	0	0	0	0	0	12	0
Site-Generated Trips [veh/h]	-4	-2	-3	0	93	-67	-142	-25	25	9	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	11	0	0	223	0	0	25	0	0	45
Total Hourly Volume [veh/h]	125	671	24	352	585	519	544	191	57	77	155	105
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	184	7	97	161	143	149	52	16	21	43	29
Total Analysis Volume [veh/h]	137	737	26	387	643	570	598	210	63	85	170	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	8	22	22	11	25	25	15	15	13	13
g / C, Green / Cycle	0.10	0.28	0.28	0.14	0.31	0.31	0.19	0.19	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.21	0.11	0.34	0.36	0.24	0.24	0.14	0.07
s, saturation flow rate [veh/h]	1781	1870	1848	3459	1870	1592	1781	1791	1839	1589
c, Capacity [veh/h]	174	516	509	470	588	500	336	338	301	260
d1, Uniform Delay [s]	35.10	26.25	26.25	33.43	27.27	27.27	32.27	32.27	32.32	30.01
k, delay calibration	0.04	0.11	0.11	0.04	0.46	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.02	2.21	2.24	1.40	59.83	89.71	153.32	151.42	2.59	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.74	0.74	0.82	1.08	1.15	1.30	1.29	0.85	0.44
d, Delay for Lane Group [s/veh]	38.12	28.46	28.49	34.83	87.10	116.99	185.60	183.69	34.91	30.45
Lane Group LOS	D	C	C	C	F	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.67	6.63	6.56	3.37	19.27	20.56	20.51	20.45	4.83	1.96
50th-Percentile Queue Length [ft/ln]	66.84	165.78	163.91	84.22	481.70	514.07	512.77	511.15	120.73	49.09
95th-Percentile Queue Length [veh/ln]	4.81	10.85	10.76	6.06	27.81	30.50	31.51	31.38	8.43	3.53
95th-Percentile Queue Length [ft/ln]	120.31	271.36	268.89	151.60	695.31	762.57	787.65	784.47	210.83	88.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.12	28.48	28.49	34.83	87.43	116.99	185.08	183.69	183.69	34.91	34.91	30.45
Movement LOS	D	C	C	C	F	F	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	29.94			85.24			184.64			33.52		
Approach LOS	C			F			F			C		
d_I, Intersection Delay [s/veh]	89.96											
Intersection LOS	F											
Intersection V/C	1.030											

Emissions

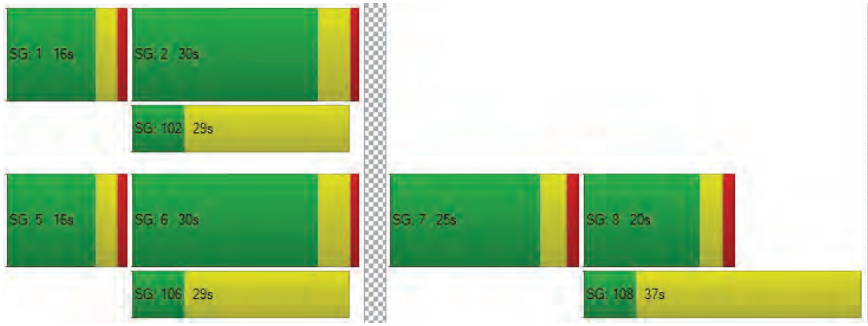
Vehicle Miles Traveled [mph]	79.12	221.64	219.01	269.18	442.31	401.40	32.73	32.80	28.20	12.72
Stops [stops/h]	121.24	300.71	297.31	305.54	873.77	932.48	930.13	927.18	218.99	89.04
Fuel consumption [US gal/h]	4.99	13.01	12.86	17.42	42.30	44.49	22.91	22.77	4.18	1.73
CO [g/h]	348.77	909.30	898.71	1217.83	2956.49	3109.51	1601.71	1591.40	292.33	120.80
NOx [g/h]	67.86	176.92	174.86	236.95	575.23	605.00	311.63	309.63	56.88	23.50
VOC [g/h]	80.83	210.74	208.28	282.24	685.19	720.66	371.21	368.82	67.75	28.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.46	0.00	29.46	29.46
l_p,int, Pedestrian LOS Score for Intersectio	2.645	0.000	2.617	2.444
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	622	622	390	504
d_b, Bicycle Delay [s]	18.84	18.84	25.71	22.21
l_b,int, Bicycle LOS Score for Intersection	2.311	3.064	3.038	2.244
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Creekside Village Specific Plan - Reduced Impact Alternative
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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	160.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Version 2024 (SP 0-5)

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	148	314	452	119	397	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	129	0
Site-Generated Trips [veh/h]	-9	136	195	-68	-146	-22
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	15	0	0
Total Hourly Volume [veh/h]	139	450	647	36	380	98
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	125	180	11	120	27
Total Analysis Volume [veh/h]	154	500	719	46	481	109
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	46	94	44	0	60	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	50	100	50	0	64	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Calculated Cycle Length [s]	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	7	39	28	28	14	14
g / C, Green / Cycle	0.11	0.62	0.44	0.44	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.09	0.27	0.38	0.03	0.17	0.17
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1703
c, Capacity [veh/h]	198	1158	830	706	393	376
d1, Uniform Delay [s]	26.98	6.17	15.67	9.93	22.82	22.83
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	0.36	4.05	0.05	3.17	3.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.43	0.87	0.07	0.77	0.77
d, Delay for Lane Group [s/veh]	29.47	6.54	19.72	9.99	25.99	26.16
Lane Group LOS	C	A	B	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.05	1.87	7.48	0.28	4.19	4.03
50th-Percentile Queue Length [ft/ln]	51.30	46.77	186.96	6.90	104.79	100.87
95th-Percentile Queue Length [veh/ln]	3.69	3.37	11.96	0.50	7.54	7.26
95th-Percentile Queue Length [ft/ln]	92.34	84.19	299.08	12.43	188.62	181.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.47	6.54	19.72	9.99	26.05	26.16
Movement LOS	C	A	B	A	C	C
d_A, Approach Delay [s/veh]	11.94		19.13		26.07	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.83					
Intersection LOS	B					
Intersection V/C	0.793					

Emissions

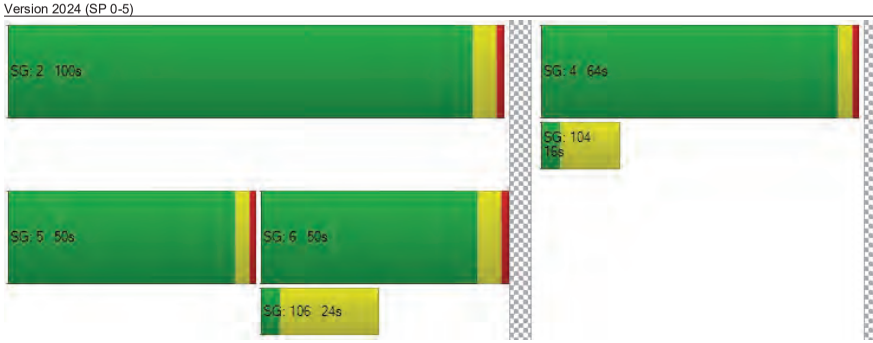
Vehicle Miles Traveled [mph]	19.00	61.69	415.24	26.57	70.76	67.81
Stops [stops/h]	118.59	108.12	432.20	15.96	242.25	233.19
Fuel consumption [US gal/h]	3.76	4.74	24.80	1.28	5.84	5.62
CO [g/h]	262.96	331.13	1733.76	89.38	408.55	392.63
NOx [g/h]	51.16	64.43	337.33	17.39	79.49	76.39
VOC [g/h]	60.94	76.74	401.82	20.71	94.68	91.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	
d_p, Pedestrian Delay [s]	23.66	0.00	23.66	
l_p,int, Pedestrian LOS Score for Intersectio	2.807	0.000	2.186	
Crosswalk LOS	C	F	B	
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	
c_b, Capacity of the bicycle lane [bicycles/h]	3018	1413	1926	
d_b, Bicycle Delay [s]	8.07	2.69	0.04	
l_b,int, Bicycle LOS Score for Intersection	2.639	2.847	2.533	
Bicycle LOS	B	C	B	

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	314	19	123	426	0	0	0	0	59	0	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	6	0	0	1	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	-1	0	0	-9	161	121	0	14	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	10	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	319	19	123	418	171	121	0	14	59	2	99
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	86	5	33	112	46	33	0	4	16	1	27
Total Analysis Volume [veh/h]	22	343	20	132	449	184	130	0	15	63	2	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Calculated Cycle Length [s]	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	19	6	23	6	8
g / C, Green / Cycle	0.03	0.35	0.10	0.43	0.12	0.14
(v / s)_i Volume / Saturation Flow Rate	0.01	0.22	0.08	0.40	0.09	0.11
s, saturation flow rate [veh/h]	1603	1667	1603	1601	1583	1492
c, Capacity [veh/h]	42	580	167	682	183	211
d1, Uniform Delay [s]	26.47	14.97	24.07	15.00	23.71	22.91
k, delay calibration	0.04	0.04	0.04	0.21	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.73	0.42	3.15	10.59	2.92	2.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.63	0.79	0.93	0.79	0.81
d, Delay for Lane Group [s/veh]	30.20	15.38	27.22	25.59	26.63	25.71
Lane Group LOS	C	B	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.29	2.82	1.53	6.97	1.84	2.14
50th-Percentile Queue Length [ft/ln]	7.13	70.43	38.34	174.19	46.04	53.42
95th-Percentile Queue Length [veh/ln]	0.51	5.07	2.76	11.30	3.32	3.85
95th-Percentile Queue Length [ft/ln]	12.83	126.78	69.01	282.41	82.88	96.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.20	15.38	15.38	27.22	25.59	25.59	26.63	26.63	26.63	25.71	25.71	25.71
Movement LOS	C	B	B	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.23			25.87			26.63			25.71		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.40											
Intersection LOS	C											
Intersection V/C	0.787											

Emissions

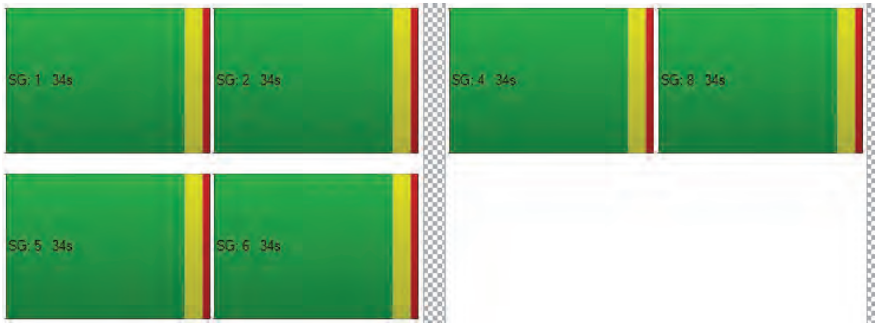
Vehicle Miles Traveled [mph]	7.46	123.10	13.39	64.22	7.89	144.36
Stops [stops/h]	18.69	184.72	100.54	456.83	120.75	140.09
Fuel consumption [US gal/h]	0.73	8.69	3.05	13.93	1.78	7.61
CO [g/h]	51.16	607.10	212.97	973.75	124.25	532.05
NOx [g/h]	9.95	118.12	41.44	189.46	24.17	103.52
VOC [g/h]	11.86	140.70	49.36	225.68	28.80	123.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00	
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00	
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000	
Crosswalk LOS	F	F	F	F	
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1093	1093	1093	1093	
d_b, Bicycle Delay [s]	5.65	5.65	5.65	5.65	
l_b,int, Bicycle LOS Score for Intersection	2.195	2.822	1.799	1.842	
Bicycle LOS	B	C	A	A	

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	232.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.363

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	855.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	102	74	453	315	125	60	66	907	231	350	734	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	-7	0	-3	8	6	-23	0	6	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	134	0	0	20	0	0	69	0	0	56
Total Hourly Volume [veh/h]	102	68	312	315	122	48	72	884	162	356	736	131
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	18	80	81	31	12	19	228	42	92	190	34
Total Analysis Volume [veh/h]	105	70	322	325	126	49	74	911	167	367	759	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	0	0	40	0	25	45	0	25	45	0
Amber [s]	0.0	3.2	0.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	17	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	0.0	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	100.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	44	0	29	50	0	29	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	0.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	153	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.20	4.20	4.20	4.20	3.50	5.30	3.50	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	2.20	2.20	1.50	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	35	35	31	31	8	45	25	61	61
g / C, Green / Cycle	0.23	0.23	0.20	0.20	0.05	0.29	0.16	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.18	0.10	0.04	0.59	0.21	0.41	0.08
s, saturation flow rate [veh/h]	1781	1633	1781	1782	1781	1820	1781	1870	1589
c, Capacity [veh/h]	407	373	359	359	94	535	291	748	635
d1, Uniform Delay [s]	48.40	59.04	59.66	54.09	71.63	54.04	64.04	45.95	30.14
k, delay calibration	0.13	0.49	0.25	0.13	0.04	0.50	0.50	0.50	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	59.81	17.18	1.27	5.28	463.12	142.51	36.81	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	1.05	0.90	0.49	0.78	2.01	1.26	1.02	0.21
d, Delay for Lane Group [s/veh]	48.81	118.85	76.84	55.36	76.91	517.16	206.55	82.76	30.35
Lane Group LOS	D	F	E	E	E	F	F	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.38	20.68	14.06	6.15	3.03	89.40	22.87	35.80	3.37
50th-Percentile Queue Length [ft/ln]	84.59	517.01	351.57	153.87	75.64	2235.01	571.85	895.09	84.34
95th-Percentile Queue Length [veh/ln]	6.09	28.95	20.21	10.22	5.45	139.94	34.18	46.16	6.07
95th-Percentile Queue Length [ft/ln]	152.27	723.82	505.32	255.59	136.14	3498.39	854.57	1153.96	151.82

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.81	118.85	118.85	76.84	55.36	55.36	76.91	517.16	517.16	206.55	82.76	30.35
Movement LOS	D	F	F	E	E	E	E	F	F	F	F	C
d_A, Approach Delay [s/veh]	104.06			69.32			488.88			113.18		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	232.34											
Intersection LOS	F											
Intersection V/C	1.363											

Emissions

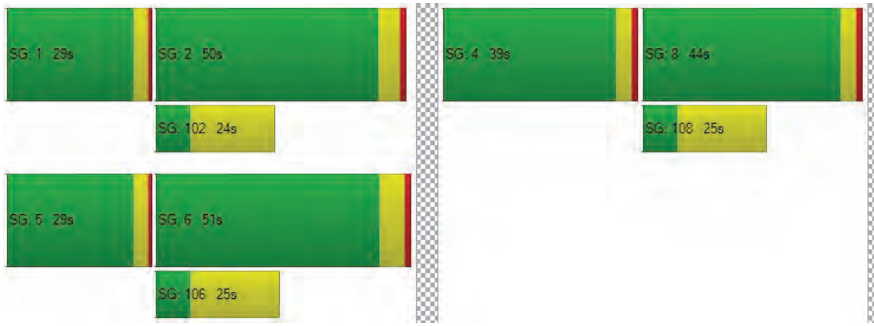
Vehicle Miles Traveled [mph]	180.67	674.49	65.89	35.48	25.91	377.47	165.60	342.48	60.92
Stops [stops/h]	79.59	486.45	330.79	144.78	71.17	2102.91	538.05	842.19	79.36
Fuel consumption [US gal/h]	8.92	39.93	9.62	4.23	2.62	140.58	25.21	31.53	3.78
CO [g/h]	623.51	2791.36	672.54	295.80	182.98	9826.57	1762.38	2204.09	264.21
NOx [g/h]	121.31	543.10	130.85	57.55	35.60	1911.89	342.90	428.84	51.41
VOC [g/h]	144.50	646.92	155.87	68.55	42.41	2277.40	408.45	510.82	61.23

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.92	65.92	65.92	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.598	2.272	2.764	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	455	520	584	588
d_b, Bicycle Delay [s]	45.68	41.90	38.35	38.14
l_b,int, Bicycle LOS Score for Intersection	2.601	2.418	3.574	3.733
Bicycle LOS	B	B	D	D

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Cumulative AM no Project

Vistro File: C:\...\AM 918 DU 20240213.vistro Scenario 5 2040 AM with CCSP, No Project
Report File: C:\...\13 2040 AM no Proj.pdf 2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.186	196.7	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	0.981	55.5	E
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.179	120.8	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	1.013	37.3	D
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.929	36.2	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.797	41.5	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.708	15.4	B
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	SB Right	0.930	28.5	C
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Thru	1.207	143.8	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.783	12.1	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Right	0.090	14.1	B
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.058	27.6	D
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Right	0.800	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	2.305	372.9	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.389	17.4	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.508	33.8	D
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.126	8.1	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 7th Edition	EB Left	0.443	16.6	B
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.656	35.0	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	NB Left	0.629	44.8	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	NB Left	0.770	26.9	C
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.948	43.1	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.575	11.1	B
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	1.026	52.2	D
25	New Intersection	Two-way stop	HCM 7th Edition	NB Thru	0.007	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.010	14.4	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.146	20.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	196.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.186

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	242	863	301	72	1684	51	27	16	270	494	70	114
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	-13	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	15	0	0	81	0	0	34
Total Hourly Volume [veh/h]	5	242	864	301	72	1671	36	27	16	189	494	70	80
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	70	248	86	21	480	10	8	5	54	142	20	23
Total Analysis Volume [veh/h]	5	278	993	346	83	1921	41	31	18	217	568	80	92
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	134	134	134	134	134	134	134	134	134	134
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	55	55	8	40	40	22	22	31	31
g / C, Green / Cycle	0.17	0.41	0.41	0.06	0.30	0.30	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.16	0.28	0.22	0.05	0.52	0.53	0.02	0.15	0.21	0.21
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1856	1781	1608	1781	1746
c, Capacity [veh/h]	308	1467	655	106	558	554	289	261	417	409
d1, Uniform Delay [s]	54.51	32.16	29.64	62.22	47.06	47.06	47.90	55.12	49.70	49.77
k, delay calibration	0.31	0.04	0.19	0.04	0.50	0.50	0.04	0.07	0.33	0.34
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.16	0.21	1.19	4.72	348.86	354.68	0.06	7.28	17.52	18.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.68	0.53	0.78	1.76	1.77	0.11	0.90	0.89	0.90
d, Delay for Lane Group [s/veh]	78.67	32.37	30.84	66.94	395.92	401.74	47.96	62.40	67.22	68.19
Lane Group LOS	E	C	C	E	F	F	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.22	12.62	8.30	2.87	71.93	72.30	0.90	8.31	14.09	14.00
50th-Percentile Queue Length [ft/ln]	280.41	315.61	207.48	71.84	1798.17	1807.40	22.42	207.73	352.26	349.91
95th-Percentile Queue Length [veh/ln]	16.71	18.45	13.02	5.17	111.31	112.03	1.61	13.04	20.25	20.13
95th-Percentile Queue Length [ft/ln]	417.72	461.28	325.59	129.31	2782.72	2800.70	40.36	325.92	506.16	503.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.67	78.67	32.37	30.84	66.94	398.77	401.74	47.96	62.40	62.40	67.56	68.19	68.19
Movement LOS	E	E	C	C	E	F	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	40.12				385.36			60.72			67.70		
Approach LOS	D				F			E			E		
d_I, Intersection Delay [s/veh]	196.74												
Intersection LOS	F												
Intersection V/C	1.186												

Emissions

Vehicle Miles Traveled [mph]	67.59	237.16	82.64	12.20	144.23	144.23	1.32	10.04	19.50	19.22
Stops [stops/h]	301.70	679.15	223.24	77.29	1934.75	1944.68	24.12	223.51	379.02	376.49
Fuel consumption [US gal/h]	10.60	23.11	7.78	2.51	108.02	109.31	0.49	4.63	7.99	7.97
CO [g/h]	740.79	1615.64	543.77	175.44	7550.55	7640.43	34.27	323.78	558.80	556.96
NOx [g/h]	144.13	314.35	105.80	34.13	1469.06	1486.55	6.67	63.00	108.72	108.36
VOC [g/h]	171.69	374.44	126.02	40.66	1749.91	1770.74	7.94	75.04	129.51	129.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	56.37	56.37	56.37
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.279	2.322	2.404
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	602	602	523	523
d_b, Bicycle Delay [s]	32.68	32.68	36.49	36.49
l_b,int, Bicycle LOS Score for Intersection	2.894	3.259	2.132	2.837
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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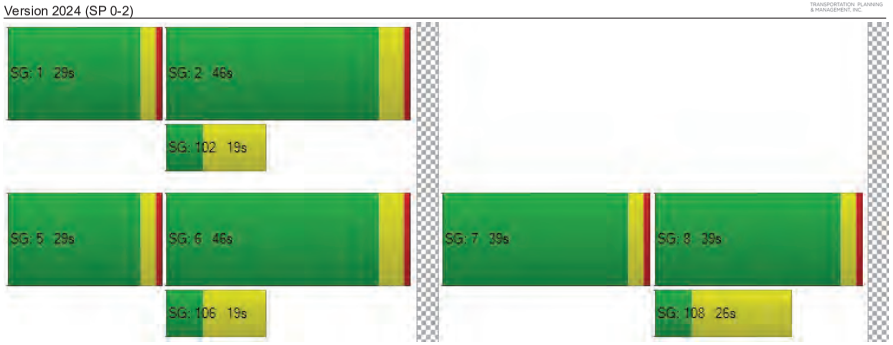

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	55.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.981

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	420	988	150	1	218	1793	441	150	61	724	68	52	272
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	0	-13	0	0	0	-7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	132	0	0	215	0	0	82
Total Hourly Volume [veh/h]	1	420	989	105	1	218	1780	309	150	61	502	68	52	190
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	113	266	28	0	59	478	83	40	16	135	18	14	51
Total Analysis Volume [veh/h]	1	452	1063	113	1	234	1914	332	161	66	540	73	56	204
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	0	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	0	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	24	0	0	0	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	0	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	50	50	18	50	50	20	20	20	20	20
g / C, Green / Cycle	0.15	0.40	0.40	0.15	0.40	0.40	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.22	0.13	0.38	0.21	0.06	0.06	0.19	0.04	0.16
s, saturation flow rate [veh/h]	3459	3560	1779	1781	5094	1589	1781	1831	2813	1781	1643
c, Capacity [veh/h]	508	1410	705	261	2017	629	282	290	446	282	260
d1, Uniform Delay [s]	52.85	29.52	29.53	52.91	36.88	29.10	47.68	47.65	53.09	46.58	53.07
k, delay calibration	0.04	0.13	0.14	0.28	0.13	0.13	0.04	0.04	0.09	0.04	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.25	0.42	0.92	22.63	3.73	0.83	0.34	0.32	98.76	0.18	50.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.56	0.56	0.90	0.95	0.53	0.40	0.39	1.21	0.26	1.00
d, Delay for Lane Group [s/veh]	55.10	29.94	30.44	75.54	40.61	29.93	48.02	47.98	151.85	46.76	103.56
Lane Group LOS	E	C	C	E	D	C	D	D	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.02	8.92	9.03	8.77	18.68	7.53	3.22	3.28	13.16	2.04	11.87
50th-Percentile Queue Length [ft/ln]	175.59	223.10	225.64	219.33	466.91	188.20	80.45	81.90	329.09	50.96	296.64
95th-Percentile Queue Length [veh/ln]	11.37	13.82	13.95	13.63	25.76	12.03	5.79	5.90	20.78	3.67	17.52
95th-Percentile Queue Length [ft/ln]	284.25	345.58	348.81	340.77	644.10	300.69	144.81	147.43	519.51	91.72	437.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.10	55.10	30.07	30.44	75.54	75.54	40.61	29.93	48.02	47.98	151.85	46.76	103.56	103.56
Movement LOS	E	E	C	C	E	E	D	C	D	D	F	D	F	F
d_A, Approach Delay [s/veh]	37.06				42.49				121.11			91.11		
Approach LOS	D				D				F			F		
d_I, Intersection Delay [s/veh]	55.47													
Intersection LOS	E													
Intersection V/C	0.981													

Emissions

Vehicle Miles Traveled [mph]	85.25	147.53	73.78	56.13	457.13	79.29	7.01	7.14	33.68	3.56	12.68
Stops [stops/h]	400.97	509.46	257.63	250.43	1599.32	214.88	91.86	93.52	751.49	58.18	338.70
Fuel consumption [US gal/h]	12.99	16.17	8.16	8.65	51.37	7.41	1.89	1.93	22.22	1.16	7.87
CO [g/h]	907.79	1130.08	570.45	604.60	3590.75	518.07	132.45	134.85	1553.29	81.26	550.23
NOx [g/h]	176.62	219.87	110.99	117.63	698.63	100.80	25.77	26.24	302.21	15.81	107.06
VOC [g/h]	210.39	261.91	132.21	140.12	832.19	120.07	30.70	31.25	359.99	18.83	127.52

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	52.54	52.54	52.54
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.683	3.092	2.357
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	798	798	317	317
d_b, Bicycle Delay [s]	22.79	22.79	44.65	44.65
l_b,int, Bicycle LOS Score for Intersection	2.480	2.868	3.180	2.244
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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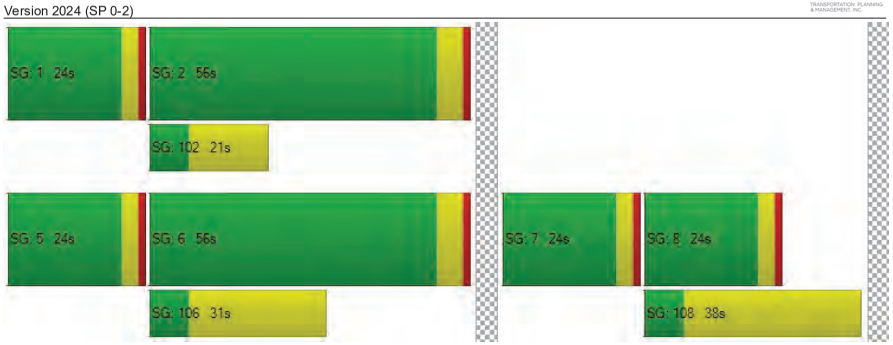

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	120.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.179

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1588	1190	150	3	70	1406	1107	260	92	837	171	104	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	1	1	0	0	-20	0	0	0	-9	-4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	332	0	0	248	0	0	32
Total Hourly Volume [veh/h]	1	1587	1191	106	3	70	1386	775	260	92	580	167	104	74
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	397	298	27	1	18	347	194	65	23	145	42	26	19
Total Analysis Volume [veh/h]	1	1587	1191	106	3	70	1386	775	260	92	580	167	104	74
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7						
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	69	69	8	39	72	28	28	11	11	11
g / C, Green / Cycle	0.28	0.51	0.51	0.06	0.29	0.53	0.21	0.21	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.46	0.24	0.25	0.04	0.27	0.49	0.10	0.10	0.07	0.06	0.07
s, saturation flow rate [veh/h]	3459	3560	1795	1781	5094	1589	1781	1826	1781	1830	1674
c, Capacity [veh/h]	951	1813	914	99	1475	846	366	375	147	151	138
d1, Uniform Delay [s]	36.83	5.68	5.72	63.26	47.14	29.02	47.60	47.59	61.25	61.20	61.36
k, delay calibration	0.30	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	304.12	0.88	1.86	4.00	12.87	16.21	0.71	0.69	3.57	3.31	4.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.67	0.47	0.49	0.74	0.94	0.92	0.48	0.47	0.79	0.78	0.81
d, Delay for Lane Group [s/veh]	340.96	6.55	7.58	67.25	60.01	45.22	48.31	48.28	64.82	64.51	65.60
Lane Group LOS	F	A	A	E	E	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	53.92	2.45	2.82	2.55	16.54	25.13	5.30	5.42	4.08	4.14	3.96
50th-Percentile Queue Length [ft/ln]	1347.98	61.28	70.49	63.87	413.58	628.21	132.49	135.51	102.05	103.40	99.04
95th-Percentile Queue Length [veh/ln]	83.52	4.41	5.08	4.60	23.21	33.35	9.08	9.24	7.35	7.44	7.13
95th-Percentile Queue Length [ft/ln]	2087.99	110.31	126.88	114.97	580.35	833.74	226.88	230.96	183.69	186.12	178.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	340.9	340.9	6.85	7.58	67.25	67.25	60.01	45.22	48.30	48.28	0.00	64.72	64.91	65.60
Movement LOS	F	F	A	A	E	E	E	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	190.78				55.12				18.24			64.97		
Approach LOS	F				E				B			E		
d_I, Intersection Delay [s/veh]	120.76													
Intersection LOS	F													
Intersection V/C	1.179													

Emissions

Vehicle Miles Traveled [mph]	271.98	145.74	76.40	13.74	260.84	145.85	8.05	8.23	3.68	3.74	3.55
Stops [stops/h]	2854.54	129.77	74.63	67.63	1313.74	665.17	140.28	143.48	108.05	109.48	104.86
Fuel consumption [US gal/h]	137.12	7.85	4.25	2.31	42.20	20.40	2.82	2.88	2.28	2.30	2.21
CO [g/h]	9585.00	548.78	296.76	161.52	2949.80	1426.05	196.87	201.36	159.06	161.02	154.78
NOx [g/h]	1864.89	106.77	57.74	31.43	573.92	277.46	38.30	39.18	30.95	31.33	30.11
VOC [g/h]	2221.42	127.18	68.78	37.43	683.64	330.50	45.63	46.67	36.86	37.32	35.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.365	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
I_b,int, Bicycle LOS Score for Intersection	3.171		2.932		2.140		1.871	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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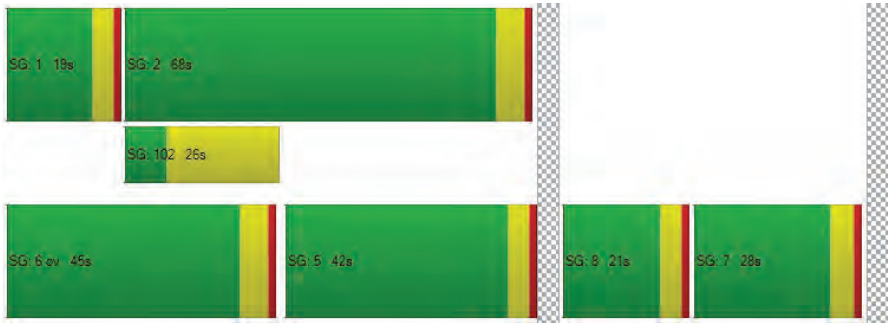

Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.013

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

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Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2400	463	0	529	1886	0	0	0	1410	0	0	529
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	1	0	0	-33	0	0	0	-25	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	139	0	0	0	0	0	0	416	0	0	159
Total Hourly Volume [veh/h]	0	2401	325	0	529	1853	0	0	0	969	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	715	97	0	157	551	0	0	0	288	0	0	110
Total Analysis Volume [veh/h]	0	2858	387	0	630	2206	0	0	0	1154	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	26	35	22	
g / C, Green / Cycle	0.47	0.47	0.38	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.42	0.24	0.35	0.32	0.41	
s, saturation flow rate [veh/h]	6792	1589	1781	6792	2813	
c, Capacity [veh/h]	3159	739	670	3476	927	
d1, Uniform Delay [s]	16.79	12.85	20.49	12.00	22.80	
k, delay calibration	0.50	0.50	0.15	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.85	2.64	9.26	0.89	111.12	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.90	0.52	0.94	0.63	1.25	
d, Delay for Lane Group [s/veh]	21.64	15.49	29.74	12.90	133.92	
Lane Group LOS	C	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	9.11	3.88	9.75	4.84	21.06	
50th-Percentile Queue Length [ft/ln]	227.79	96.98	243.76	120.92	526.57	
95th-Percentile Queue Length [veh/ln]	14.06	6.98	14.87	8.44	32.41	
95th-Percentile Queue Length [ft/ln]	351.54	174.56	371.78	211.09	810.33	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	21.64	15.49	29.74	29.74	12.90	0.00	0.00	0.00	133.92	0.00	0.00	0.00
Movement LOS		C	B	C	C	B				F			
d_A, Approach Delay [s/veh]	20.91			16.64			133.92				0.00		
Approach LOS	C			B			F				A		
d_I, Intersection Delay [s/veh]	37.26												
Intersection LOS	D												
Intersection V/C	1.013												

Emissions

Vehicle Miles Traveled [mph]	413.54	56.00	107.90	377.82	82.58	
Stops [stops/h]	1929.48	205.37	516.19	1024.25	2230.20	
Fuel consumption [US gal/h]	50.75	5.69	13.93	31.48	47.17	
CO [g/h]	3547.65	397.96	973.70	2200.22	3296.97	
NOx [g/h]	690.24	77.43	189.45	428.08	641.47	
VOC [g/h]	822.20	92.23	225.66	509.92	764.10	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.263
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.956	2.470	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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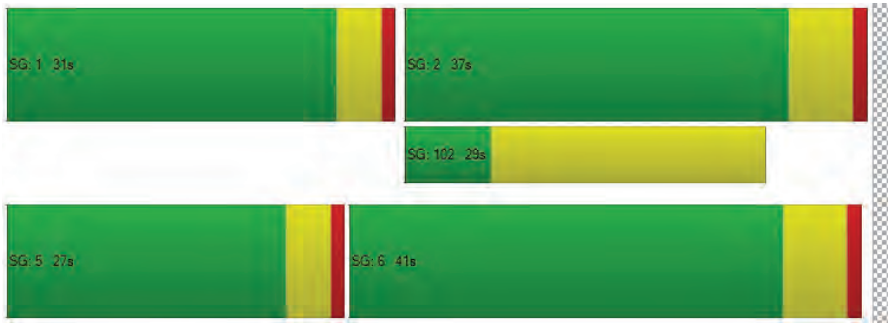

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.929

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

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Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	73	2071	262	4	570	2319	403	184	10	32	1	74	33	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	2	0	0	0	-58	0	0	0	-1	0	-4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	79	0	0	0	121	0	0	9	0	0	0	181
Total Hourly Volume [veh/h]	1	73	2073	183	4	570	2261	282	184	10	22	1	70	33	423
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	19	529	47	1	145	577	72	47	3	6	0	18	8	108
Total Analysis Volume [veh/h]	1	74	2115	187	4	582	2307	288	188	10	22	1	71	34	432
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	103	103	103	103	103	103	103	103	103	103	103	103
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	49	49	15	60	60	8	8	8	15	15	15
g / C, Green / Cycle	0.04	0.48	0.48	0.15	0.58	0.58	0.08	0.08	0.08	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.12	0.17	0.45	0.18	0.05	0.01	0.01	0.04	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1625	1589
c, Capacity [veh/h]	132	2420	755	505	2970	927	268	145	123	260	237	232
d1, Uniform Delay [s]	48.61	24.21	16.05	43.89	16.34	10.92	46.26	43.98	44.36	39.07	43.84	43.84
k, delay calibration	0.04	0.04	0.04	0.07	0.04	0.04	0.08	0.08	0.08	0.08	0.42	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	0.41	0.06	75.69	0.17	0.07	2.50	0.15	0.51	0.42	51.83	52.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.87	0.25	1.16	0.78	0.31	0.70	0.07	0.18	0.28	0.99	0.99
d, Delay for Lane Group [s/veh]	50.05	24.63	16.11	119.58	16.51	10.99	48.76	44.13	44.87	39.49	95.68	96.33
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.97	14.66	2.57	11.65	12.68	3.18	2.42	0.24	0.54	1.64	9.33	9.17
50th-Percentile Queue Length [ft/ln]	24.20	366.55	64.36	291.21	316.91	79.46	60.57	6.04	13.51	41.03	233.16	229.19
95th-Percentile Queue Length [veh/ln]	1.74	20.94	4.63	18.39	18.52	5.72	4.36	0.43	0.97	2.95	14.33	14.13
95th-Percentile Queue Length [ft/ln]	43.56	523.54	115.86	459.86	462.89	143.04	109.03	10.87	24.32	73.86	358.37	353.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.05	50.05	24.63	16.11	119.5	119.5	16.51	10.99	48.76	44.13	44.87	39.49	39.49	95.68	96.02
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	24.76				35.00				48.16			88.44			
Approach LOS	C				C				D			F			
d_I, Intersection Delay [s/veh]	36.15														
Intersection LOS	D														
Intersection V/C	0.929														

Emissions

Vehicle Miles Traveled [mph]	16.74	472.02	41.73	84.79	333.82	41.67	23.98	1.28	2.81	25.27	82.66	80.89
Stops [stops/h]	67.89	1542.54	90.29	817.00	1333.66	111.47	169.93	8.47	18.95	57.56	327.07	321.50
Fuel consumption [US gal/h]	1.83	38.55	2.83	22.26	28.86	2.98	3.79	0.19	0.42	1.94	9.80	9.62
CO [g/h]	127.78	2694.83	197.82	1556.15	2017.32	207.97	265.01	13.22	29.43	135.38	684.67	672.68
NOx [g/h]	24.86	524.32	38.49	302.77	392.50	40.46	51.56	2.57	5.73	26.34	133.21	130.88
VOC [g/h]	29.61	624.55	45.85	360.65	467.53	48.20	61.42	3.06	6.82	31.38	158.68	155.90

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.92	0.00	40.92	40.92
I_p,int, Pedestrian LOS Score for Intersectio	3.495	0.000	2.593	2.871
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	984	984	399	302
d_b, Bicycle Delay [s]	13.25	13.25	32.87	37.00
I_b,int, Bicycle LOS Score for Intersection	2.910	3.056	1.749	2.629
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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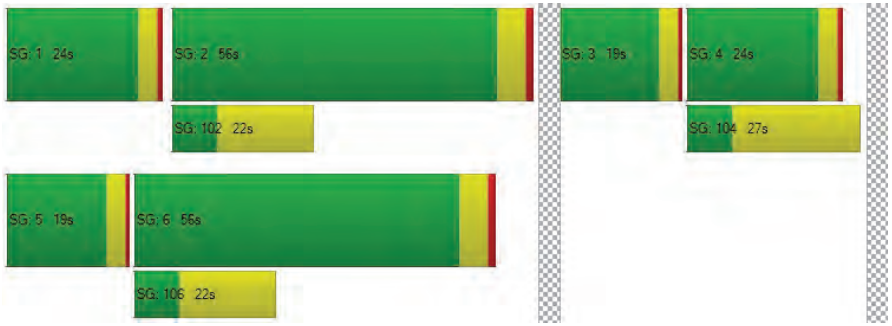

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	41.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	2	0	0	1	2	0	0	1	1	0	2
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	260.0	100.0	100.0	260.0	360.0	100.0	100.0	300.0	400.00	100.00	300.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	157	1794	426	1	98	1858	469	2	355	447	90	517	381	257
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	2	2	0	0	-63	0	0	0	0	0	-15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	128	0	0	0	141	0	0	0	27	0	0	77
Total Hourly Volume [veh/h]	2	157	1796	300	1	98	1795	328	2	355	447	63	502	381	180
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	42	478	80	0	26	477	87	1	94	119	17	134	101	48
Total Analysis Volume [veh/h]	2	167	1911	319	1	104	1910	349	2	378	476	67	534	405	191
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Overl	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups				2,3											
Maximum Green [s]	0	15	45	36	0	25	45	0	0	21	25	0	36	35	0
Amber [s]	0.0	4.0	4.7	4.5	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	1.5	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	5	0	0	0	5	0	0	0	4	0	0	5	0
Pedestrian Clearance [s]	0	0	28	0	0	0	24	0	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.7	4.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	58	42	0	25	58	0	0	27	35	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	9	9	0	9	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	1.0	1.5	1.0	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No	Yes	No		No	Yes			No	No		No	No	
Maximum Recall		No	No	No		No	No			No	No		No	No	
Pedestrian Recall		No	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.70	6.00	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.70	0.00	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	78	111	9	77	77	20	24	24	27	31	31
g / C, Green / Cycle	0.06	0.49	0.69	0.06	0.48	0.48	0.12	0.15	0.15	0.17	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.20	0.03	0.38	0.22	0.11	0.13	0.04	0.16	0.11	0.12
s, saturation flow rate [veh/h]	3431	6737	1577	3431	5053	1577	3431	3532	1577	3431	3532	1577
c, Capacity [veh/h]	212	3298	1091	193	2445	763	419	521	232	572	678	303
d1, Uniform Delay [s]	74.05	29.10	9.51	73.50	34.25	27.36	69.31	67.22	60.74	52.45	44.34	44.68
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.58	0.75	0.68	0.89	2.56	1.97	3.09	2.76	0.25	3.17	0.31	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.58	0.29	0.54	0.78	0.46	0.91	0.91	0.29	0.93	0.60	0.63
d, Delay for Lane Group [s/veh]	76.63	29.85	10.20	74.39	36.81	29.33	72.40	69.98	60.99	55.62	44.66	45.49
Lane Group LOS	E	C	B	E	D	C	E	E	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.53	13.37	4.52	2.10	20.40	9.10	7.90	9.83	2.47	9.50	5.71	5.52
50th-Percentile Queue Length [ft/ln]	88.15	334.22	113.04	52.57	509.92	227.39	197.48	245.76	61.65	237.45	142.74	137.92
95th-Percentile Queue Length [veh/ln]	6.35	19.37	8.01	3.79	27.80	14.04	12.51	14.97	4.44	14.55	9.63	9.37
95th-Percentile Queue Length [ft/ln]	158.67	484.13	200.22	94.63	695.09	351.05	312.71	374.31	110.98	363.81	240.71	234.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.63	76.63	29.85	10.20	74.39	74.39	36.81	29.33	72.40	72.40	69.98	60.99	55.62	44.66	45.49
Movement LOS	E	E	C	B	E	E	D	C	E	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	30.53				37.38				70.32				49.98		
Approach LOS	C				D				E				D		
d_I, Intersection Delay [s/veh]	41.52														
Intersection LOS	D														
Intersection V/C	0.797														

Emissions

Vehicle Miles Traveled [mph]	67.35	761.60	127.13	23.43	426.27	77.89	94.70	118.62	16.70	55.98	42.46	20.02
Stops [stops/h]	158.67	1203.18	101.74	94.63	1376.78	204.65	355.46	442.37	55.49	427.41	256.93	124.13
Fuel consumption [US gal/h]	6.28	49.61	6.46	3.57	46.04	7.30	11.46	14.10	1.83	10.71	6.85	3.28
CO [g/h]	439.27	3467.47	451.38	249.48	3218.02	510.11	801.08	985.91	127.59	748.58	478.65	229.13
NOx [g/h]	85.47	674.64	87.82	48.54	626.11	99.25	155.86	191.82	24.82	145.65	93.13	44.58
VOC [g/h]	101.81	803.62	104.61	57.82	745.81	118.22	185.66	228.49	29.57	173.49	110.93	53.10

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	71.25	71.25	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.671	3.936	2.941	3.043
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	654	654	366	554
d_b, Bicycle Delay [s]	36.25	36.25	53.38	41.83
l_b,int, Bicycle LOS Score for Intersection	2.601	2.880	2.032	2.555
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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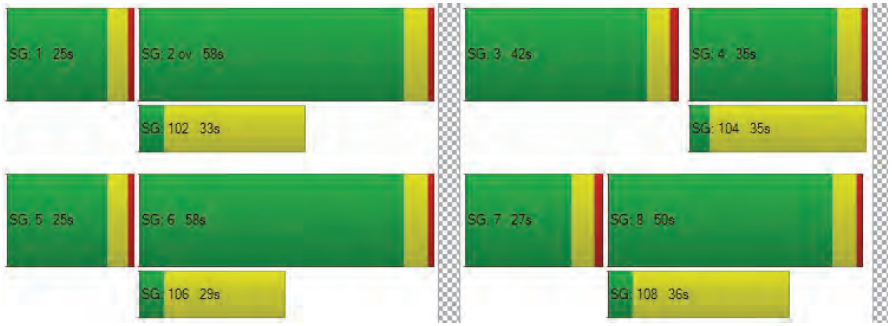

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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	300.0	200.0	100.0	100.0	100.0	320.00	100.00	320.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	74	1954	3	2	19	1885	577	279	6	21	5	11	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	0	0	0	-78	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	173	0	0	6	0	0	5
Total Hourly Volume [veh/h]	1	74	1958	2	2	19	1807	404	279	6	15	5	11	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	21	563	1	1	5	519	116	80	2	4	1	3	3
Total Analysis Volume [veh/h]	1	85	2251	2	2	22	2077	464	321	7	17	6	13	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	ProtP	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	5	34	0	0	15	34	0	0	36	0	0	16	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	11	0	0	0	18	0	0	24	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	20	40	0	0	20	40	0	0	40	0	0	20	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		Yes	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	C
C, Cycle Length [s]	67	67	67	67	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	42	37	37	1	34	34	9	9	9	2
g / C, Green / Cycle	0.63	0.55	0.55	0.02	0.51	0.51	0.13	0.13	0.13	0.03
(v / s)_i Volume / Saturation Flow Rate	0.24	0.41	0.41	0.01	0.41	0.29	0.09	0.09	0.01	0.02
s, saturation flow rate [veh/h]	364	3560	1869	1781	5094	1589	1781	1785	1589	1740
c, Capacity [veh/h]	342	1951	1024	31	2574	803	239	239	213	58
d1, Uniform Delay [s]	13.01	11.75	11.75	32.95	13.91	11.63	27.81	27.80	25.52	32.01
k, delay calibration	0.15	0.15	0.32	0.04	0.15	0.17	0.11	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.88	3.37	14.47	0.89	1.01	3.49	3.48	0.16	2.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.76	0.76	0.78	0.81	0.58	0.69	0.69	0.08	0.52
d, Delay for Lane Group [s/veh]	13.55	12.63	15.12	47.42	14.80	12.65	31.29	31.28	25.68	34.65
Lane Group LOS	B	B	B	D	B	B	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	7.20	8.27	0.47	6.27	3.62	2.63	2.63	0.24	0.51
50th-Percentile Queue Length [ft/ln]	10.54	180.06	206.82	11.80	156.82	90.57	65.71	65.82	5.94	12.63
95th-Percentile Queue Length [veh/ln]	0.76	11.60	12.99	0.85	10.38	6.52	4.73	4.74	0.43	0.91
95th-Percentile Queue Length [ft/ln]	18.96	290.10	324.75	21.24	259.51	163.03	118.29	118.48	10.70	22.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.55	13.55	13.49	15.12	47.42	47.42	14.80	12.65	31.29	31.28	25.68	34.65	34.65	34.65
Movement LOS	B	B	B	B	D	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	13.49				14.72				31.01			34.65		
Approach LOS	B				B				C			C		
d_I, Intersection Delay [s/veh]	15.35													
Intersection LOS	B													
Intersection V/C	0.708													

Emissions

Vehicle Miles Traveled [mph]	30.40	522.18	274.18	9.56	827.75	184.92	39.45	39.52	4.09	0.57
Stops [stops/h]	22.60	772.40	443.59	25.31	1009.05	194.27	140.95	141.18	12.74	27.09
Fuel consumption [US gal/h]	1.61	29.56	16.12	1.02	52.69	10.99	3.45	3.45	0.33	0.38
CO [g/h]	112.78	2066.35	1127.13	71.42	3682.95	768.10	240.87	241.29	22.91	26.89
NOx [g/h]	21.94	402.04	219.30	13.90	716.57	149.44	46.87	46.95	4.46	5.23
VOC [g/h]	26.14	478.90	261.22	16.55	853.56	178.01	55.82	55.92	5.31	6.23

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.05	0.00	26.05	26.05
l_p,int, Pedestrian LOS Score for Intersectio	3.268	0.000	2.458	1.743
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1013	1013	1072	477
d_b, Bicycle Delay [s]	8.18	8.18	7.22	19.48
l_b,int, Bicycle LOS Score for Intersection	2.846	3.053	2.139	1.617
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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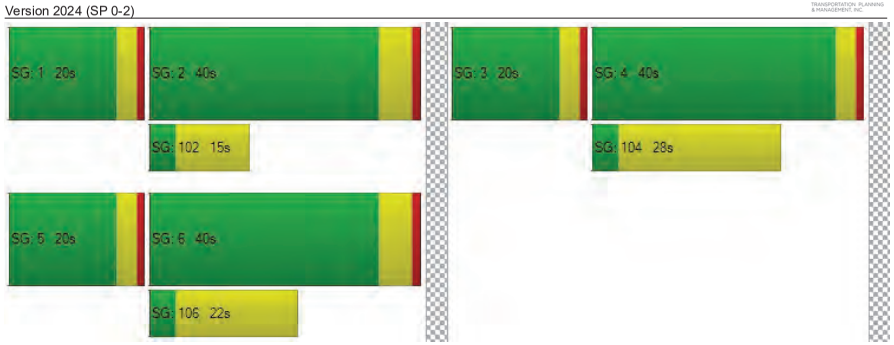

Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.930

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	155	1839	1449	463	193	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	-78	0	0	-1
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	139	0	31
Total Hourly Volume [veh/h]	1	155	1843	1371	324	193	72
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	45	530	394	93	55	21
Total Analysis Volume [veh/h]	1	178	2118	1576	372	222	83
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	9	53	40	40	12	12
g / C, Green / Cycle	0.12	0.71	0.53	0.53	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.59	0.52	0.56	0.12	0.05
s, saturation flow rate [veh/h]	1781	3560	1870	1752	1781	1589
c, Capacity [veh/h]	221	2528	996	933	279	249
d1, Uniform Delay [s]	32.02	7.79	17.11	17.54	30.50	28.17
k, delay calibration	0.08	0.16	0.42	0.46	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.99	1.15	21.39	40.42	5.13	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.84	0.98	1.04	0.80	0.33
d, Delay for Lane Group [s/veh]	37.01	8.94	38.50	57.96	35.63	28.95
Lane Group LOS	D	A	D	F	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.36	8.60	19.78	24.10	4.12	1.34
50th-Percentile Queue Length [ft/ln]	84.07	215.08	494.43	602.41	103.05	33.50
95th-Percentile Queue Length [veh/ln]	6.05	13.41	27.07	33.25	7.42	2.41
95th-Percentile Queue Length [ft/ln]	151.32	335.33	676.77	831.29	185.50	60.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.01	37.01	8.94	45.93	57.96	35.63	28.95
Movement LOS	D	D	A	D	E	D	C
d_A, Approach Delay [s/veh]	11.13			48.23		33.81	
Approach LOS	B			D		C	
d_I, Intersection Delay [s/veh]	28.53						
Intersection LOS	C						
Intersection V/C	0.930						

Emissions

Vehicle Miles Traveled [mph]	124.50	1473.18	344.28	344.28	74.90	28.00
Stops [stops/h]	161.58	826.74	950.29	1157.81	198.07	64.38
Fuel consumption [US gal/h]	7.37	69.07	27.05	32.06	5.79	2.00
CO [g/h]	514.90	4827.77	1891.04	2240.82	404.54	139.62
NOx [g/h]	100.18	939.31	367.93	435.98	78.71	27.16
VOC [g/h]	119.33	1118.88	438.27	519.33	93.76	32.36

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0		0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00	0.00
d_p, Pedestrian Delay [s]	29.89		0.00	29.89
l_p,int, Pedestrian LOS Score for Intersectio	3.071		0.000	2.311
Crosswalk LOS	C		F	B
s_b, Saturation Flow Rate of the bicycle lane	2000		2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1068		1068	534
d_b, Bicycle Delay [s]	8.14		8.14	20.13
l_b,int, Bicycle LOS Score for Intersection	3.454		3.281	1.560
Bicycle LOS	C		C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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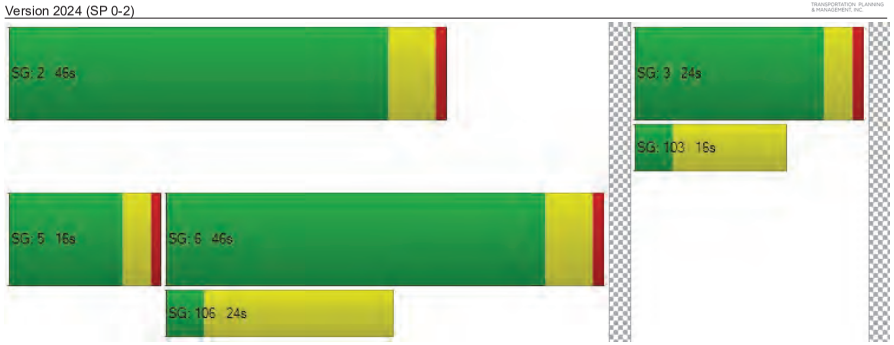

Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	143.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.207

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

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Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	60	778	21	276	401	877	613	90	86	136	351	604
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	2	0	0	-32	-47	3	0	-10	-6	-8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	249	0	0	23	0	0	181
Total Hourly Volume [veh/h]	61	780	15	276	369	581	616	90	53	130	343	423
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	219	4	78	104	163	173	25	15	37	96	119
Total Analysis Volume [veh/h]	69	876	17	310	415	653	692	101	60	146	385	475
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	89	89	89	89	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	4	23	23	12	30	30	15	15	20	20
g / C, Green / Cycle	0.05	0.26	0.26	0.14	0.34	0.34	0.17	0.17	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.24	0.17	0.22	0.41	0.24	0.24	0.29	0.30
s, saturation flow rate [veh/h]	1781	1870	1857	1781	1870	1589	1781	1771	1845	1589
c, Capacity [veh/h]	91	483	480	241	640	544	301	299	416	358
d1, Uniform Delay [s]	41.56	32.09	32.09	38.35	24.64	29.16	36.85	36.85	34.35	34.35
k, delay calibration	0.04	0.27	0.27	0.50	0.22	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.80	17.02	17.10	156.65	2.24	106.50	206.58	208.57	142.06	164.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.93	0.93	1.29	0.65	1.20	1.42	1.42	1.28	1.33
d, Delay for Lane Group [s/veh]	46.36	49.11	49.20	195.01	26.89	135.66	243.43	245.43	176.41	199.01
Lane Group LOS	D	D	D	F	C	F	F	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.59	11.35	11.29	15.30	6.89	26.18	23.65	23.69	25.11	23.88
50th-Percentile Queue Length [ft/ln]	39.83	283.79	282.18	382.46	172.19	654.48	591.36	592.16	627.70	597.11
95th-Percentile Queue Length [veh/ln]	2.87	16.88	16.80	24.04	11.19	38.66	36.67	36.75	37.74	36.62
95th-Percentile Queue Length [ft/ln]	71.70	421.93	419.92	601.11	279.80	966.44	916.70	918.67	943.42	915.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.36	49.15	49.20	195.01	26.89	135.66	244.20	245.43	245.43	176.41	176.41	199.01
Movement LOS	D	D	D	F	C	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	48.95			116.25			244.43			187.08		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]	143.84											
Intersection LOS	F											
Intersection V/C	1.207											

Emissions

Vehicle Miles Traveled [mph]	39.85	258.73	257.00	215.62	288.65	454.19	32.13	32.04	58.73	52.53
Stops [stops/h]	64.68	460.78	458.15	620.97	279.58	1062.64	960.15	961.46	1019.15	969.49
Fuel consumption [US gal/h]	2.65	17.67	17.57	31.05	17.12	52.96	27.78	27.90	27.11	26.75
CO [g/h]	185.14	1235.39	1227.84	2170.20	1196.66	3701.66	1941.69	1950.31	1894.85	1869.98
NOx [g/h]	36.02	240.36	238.89	422.24	232.83	720.21	377.78	379.46	368.67	363.83
VOC [g/h]	42.91	286.31	284.56	502.96	277.34	857.89	450.01	452.00	439.15	433.39

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.03	0.00	34.03	34.03
l_p,int, Pedestrian LOS Score for Intersectio	2.621	0.000	2.697	2.723
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	557	557	350	451
d_b, Bicycle Delay [s]	23.08	23.08	30.20	26.60
l_b,int, Bicycle LOS Score for Intersection	2.358	2.902	3.005	3.518
Bicycle LOS	B	C	C	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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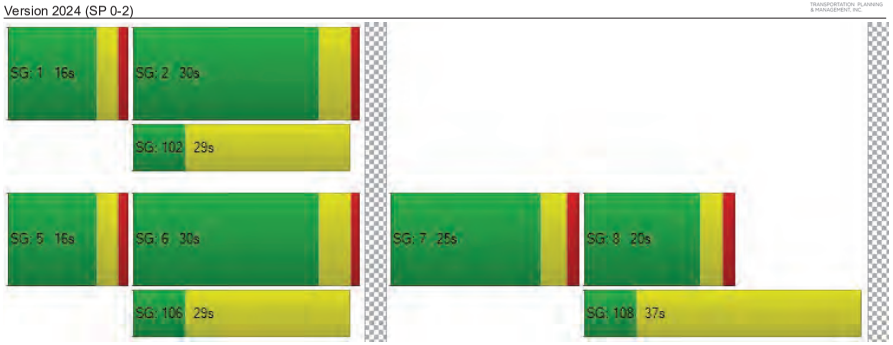

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	582	265	358	277	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-7	0	0	-48	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	93	0	33
Total Hourly Volume [veh/h]	115	582	265	217	280	76
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	162	74	60	78	21
Total Analysis Volume [veh/h]	128	647	294	241	311	84
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	36	36	36	36	36	36
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	17	10	10	9	9
g / C, Green / Cycle	0.10	0.48	0.27	0.27	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.07	0.35	0.16	0.15	0.17	0.05
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	182	898	500	425	430	384
d1, Uniform Delay [s]	15.62	7.42	11.46	11.38	12.53	10.92
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.87	1.57	1.57	1.70	2.32	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.72	0.59	0.57	0.72	0.22
d, Delay for Lane Group [s/veh]	17.50	8.99	13.03	13.08	14.85	11.20
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.77	1.53	1.36	1.13	2.03	0.44
50th-Percentile Queue Length [ft/ln]	19.29	38.19	33.97	28.23	50.86	11.10
95th-Percentile Queue Length [veh/ln]	1.39	2.75	2.45	2.03	3.66	0.80
95th-Percentile Queue Length [ft/ln]	34.72	68.75	61.15	50.81	91.55	19.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.50	8.99	13.03	13.08	14.85	11.20
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	10.40		13.05		14.07	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	12.08					
Intersection LOS	B					
Intersection V/C	0.783					

Emissions

Vehicle Miles Traveled [mph]	15.79	79.83	169.79	139.18	73.04	19.73
Stops [stops/h]	77.62	153.69	136.71	113.59	204.68	44.66
Fuel consumption [US gal/h]	2.43	6.71	9.00	7.41	5.08	1.25
CO [g/h]	169.57	468.96	629.02	517.77	354.93	87.41
NOx [g/h]	32.99	91.24	122.38	100.74	69.06	17.01
VOC [g/h]	39.30	108.69	145.78	120.00	82.26	20.26

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	10.79	0.00	10.79
l_p,int, Pedestrian LOS Score for Intersectio	2.600	0.000	2.229
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2236	2236	1118
d_b, Bicycle Delay [s]	0.25	0.25	3.48
l_b,int, Bicycle LOS Score for Intersection	2.838	2.596	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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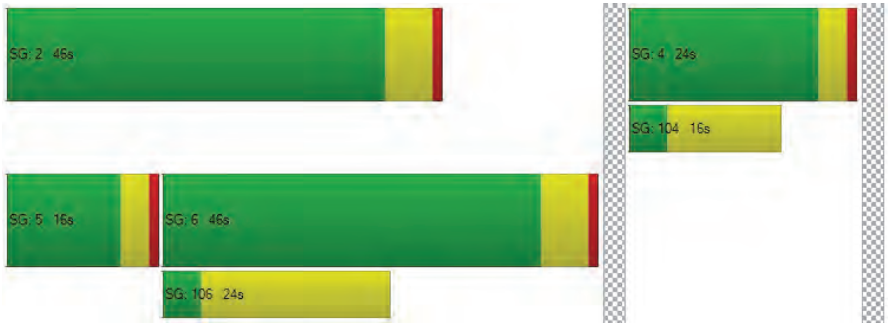

Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.090

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	360	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	651	0	14	360	0	0	0	0	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	177	0	4	98	0	0	0	0	0	0	10
Total Analysis Volume [veh/h]	0	708	0	14	391	0	0	0	0	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	8.08	0.00	0.00	9.06	0.00	0.00	27.90	22.96	10.47	26.03	23.78	14.10
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.29	0.29	0.29
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.59	0.59	0.59	0.00	0.00	0.00	7.35	7.35	7.35
d_A, Approach Delay [s/veh]	0.00			0.31			20.45			14.10		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.59											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	27.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.058

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	422	48	74	286	0	0	0	0	12	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	415	48	74	286	0	0	0	0	12	0	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	112	13	20	77	0	0	0	0	3	0	67
Total Analysis Volume [veh/h]	0	446	52	80	308	0	0	0	0	13	0	269
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.45
d_M, Delay for Movement [s/veh]	7.87	0.00	0.00	8.65	0.00	0.00	41.14	20.29	9.92	27.63	26.42	17.74
Movement LOS	A	A	A	A	A	A	E	C	A	D	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	2.90	2.90	2.90
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.07	0.00	0.00	0.00	0.00	0.00	72.46	72.46	72.46
d_A, Approach Delay [s/veh]	0.00			1.78			23.78			18.20		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.99											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	560	229	53	0	1106	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	3	-10	-17	0	-55	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	15	563	219	36	0	1051	183
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	155	60	10	0	290	50
Total Analysis Volume [veh/h]	0	17	621	242	40	0	1160	202
Pedestrian Volume [ped/h]	0			0		0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.80	0.00	0.00	0.00	0.91	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	36.54	15.61	0.00
Movement LOS	F	F	F	A	A	E	C	A
95th-Percentile Queue Length [veh/ln]	82.64	82.64	82.64	0.00	0.00	8.66	8.66	8.66
95th-Percentile Queue Length [ft/ln]	2066.12	2066.12	2066.12	0.00	0.00	216.40	216.40	216.40
d_A, Approach Delay [s/veh]	10000.00			0.00		13.30		
Approach LOS	F			A		B		
d_I, Intersection Delay [s/veh]	2803.73							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	372.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.305

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	16	229	88	2	30	1009	55	19	21	0	258	55	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	-75	6	3	0	0	-55	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	229	88	2	30	1009	0	25	24	0	258	0	70
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	69	27	1	9	304	0	8	7	0	78	0	21
Total Analysis Volume [veh/h]	19	276	106	2	36	1216	0	30	29	0	311	0	84
Pedestrian Volume [ped/h]	0			0				0			0		

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	538	1254	422	512
Degree of Utilization, x	0.75	2.31	0.14	0.77

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.41	93.77	0.48	6.90
95th-Percentile Queue Length [ft]	160.28	2344.34	12.05	172.50
Approach Delay [s/veh]	26.83	608.53	12.90	30.00
Approach LOS	D	F	B	D
Intersection Delay [s/veh]	372.91			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	17.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.389

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	175	151	1	131	225	0	67	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-25	0	-2	0	0	2	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	126	1	129	225	0	69	129
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	33	0	34	59	0	18	34
Total Analysis Volume [veh/h]	184	133	1	136	237	0	73	136
Pedestrian Volume [ped/h]	0		0			0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.39	0.17	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	17.36	10.53	8.82	0.00	0.00	11.77	8.24	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.82	0.61	0.00	0.00	0.00	0.20	0.20	0.00
95th-Percentile Queue Length [ft/ln]	45.41	15.21	0.05	0.05	0.05	4.91	4.91	0.00
d_A, Approach Delay [s/veh]	14.49		0.02			2.88		
Approach LOS	B		A			A		
d_I, Intersection Delay [s/veh]	5.78							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	33.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	134	128	233	92	194	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-25	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	128	208	92	194	154
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	35	57	25	53	42
Total Analysis Volume [veh/h]	146	139	226	100	211	167
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.51	0.17	0.00	0.00	0.17	0.00
d_M, Delay for Movement [s/veh]	33.77	25.68	0.00	0.00	8.52	0.00
Movement LOS	D	D	A	A	A	A
95th-Percentile Queue Length [veh/ln]	4.91	4.91	0.00	0.00	0.62	0.00
95th-Percentile Queue Length [ft/ln]	122.63	122.63	0.00	0.00	15.40	0.00
d_A, Approach Delay [s/veh]	29.83		0.00		4.76	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	10.41					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.126

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	12	202	20	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	-25	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	10	12	177	20	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	3	3	48	5	5
Total Analysis Volume [veh/h]	75	11	13	192	22	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	715	741	690	763	763	724
Degree of Utilization, x	0.06	0.06	0.02	0.13	0.13	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.19	0.18	0.06	0.43	0.43	0.18
95th-Percentile Queue Length [ft]	4.79	4.61	1.44	10.73	10.73	4.61
Approach Delay [s/veh]	7.96		8.09			8.28
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.08					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.443

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

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Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	343	152	60	603	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	0	0	0	0	0	-25	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	0	18	66	1	8	4	343	127	60	603	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	5	17	0	2	1	88	33	15	155	4
Total Analysis Volume [veh/h]	69	0	19	68	1	8	4	354	131	62	622	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	25	0	15	45	0	15	45	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	21	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	0	0	30	0	20	40	0	20	40	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	0	0	9	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	46	46	46	46	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	6	6	6	0	9	9	5	14	14
g / C, Green / Cycle	0.13	0.13	0.13	0.12	0.01	0.20	0.20	0.11	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.00	0.01	0.05	0.00	0.11	0.09	0.04	0.19	0.01
s, saturation flow rate [veh/h]	1603	1683	1431	1584	1603	3204	1431	1603	3204	1431
c, Capacity [veh/h]	216	227	193	198	17	629	281	175	947	423
d1, Uniform Delay [s]	18.01	0.00	17.47	18.52	22.60	16.71	16.37	18.99	14.18	11.55
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	0.00	0.22	1.24	7.24	0.79	1.20	1.21	0.78	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.00	0.10	0.39	0.24	0.56	0.47	0.35	0.66	0.04
d, Delay for Lane Group [s/veh]	18.86	0.00	17.69	19.76	29.84	17.50	17.57	20.20	14.96	11.58
Lane Group LOS	B	A	B	B	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.64	0.00	0.17	0.74	0.07	1.53	1.15	0.60	2.45	0.10
50th-Percentile Queue Length [ft/ln]	15.94	0.00	4.21	18.43	1.81	38.26	28.82	15.11	61.31	2.41
95th-Percentile Queue Length [veh/ln]	1.15	0.00	0.30	1.33	0.13	2.75	2.08	1.09	4.41	0.17
95th-Percentile Queue Length [ft/ln]	28.70	0.00	7.59	33.17	3.26	68.87	51.88	27.21	110.36	4.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.86	0.00	17.69	19.76	19.76	19.76	29.84	17.50	17.57	20.20	14.96	11.58
Movement LOS	B	A	B	B	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	18.61			19.76			17.62			15.35		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.64											
Intersection LOS	B											
Intersection V/C	0.443											

Emissions

Vehicle Miles Traveled [mph]	20.48	0.00	5.64	1.72	0.57	50.69	18.76	52.17	523.43	12.62
Stops [stops/h]	50.09	0.00	13.24	57.90	5.69	240.43	90.56	47.49	385.28	7.56
Fuel consumption [US gal/h]	1.38	0.00	0.37	0.70	0.08	4.68	1.74	2.67	25.57	0.60
CO [g/h]	96.80	0.00	26.13	48.94	5.54	326.86	121.69	186.29	1787.38	41.71
NOx [g/h]	18.83	0.00	5.08	9.52	1.08	63.60	23.68	36.24	347.76	8.12
VOC [g/h]	22.43	0.00	6.05	11.34	1.28	75.75	28.20	43.17	414.24	9.67

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.24	13.24	13.24	13.24
l_p,int, Pedestrian LOS Score for Intersectio	2.316	1.723	2.607	2.599
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1091	1091	1527	1527
d_b, Bicycle Delay [s]	4.73	4.73	1.28	1.28
l_b,int, Bicycle LOS Score for Intersection	1.705	1.687	1.963	2.136
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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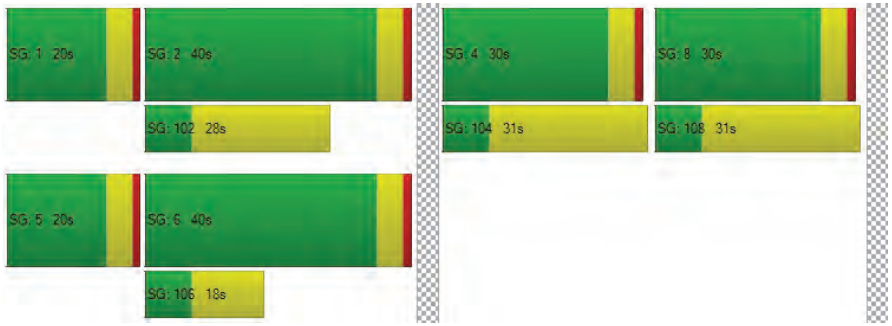

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	Windfield Way				White Rock Rd				White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	72	5	243	5	5	0	5	644	184	0	499	505	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	73	0	0	0	0	0	55	0	0	0	2
Total Hourly Volume [veh/h]	72	5	170	5	5	0	5	644	129	0	499	505	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	1	44	1	1	0	1	166	33	0	129	130	1
Total Analysis Volume [veh/h]	74	5	175	5	5	0	5	664	133	0	514	521	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	6	15	1	10	1	46	46	36	81	81
g / C, Green / Cycle	0.05	0.13	0.01	0.08	0.01	0.38	0.38	0.30	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.00	0.00	0.00	0.19	0.08	0.29	0.14	0.14
s, saturation flow rate [veh/h]	1781	1596	1781	1870	1781	3560	1589	1781	1870	1866
c, Capacity [veh/h]	96	204	12	152	12	1354	604	537	1262	1259
d1, Uniform Delay [s]	56.04	51.41	59.33	50.78	59.34	28.34	25.16	41.16	7.39	7.39
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.24	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	4.76	19.50	0.03	19.95	1.27	0.84	18.67	0.37	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.88	0.40	0.03	0.40	0.49	0.22	0.96	0.21	0.21
d, Delay for Lane Group [s/veh]	60.89	56.16	78.83	50.81	79.29	29.61	26.00	59.83	7.76	7.76
Lane Group LOS	E	E	E	D	E	C	C	E	A	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	5.58	0.22	0.14	0.22	7.49	2.72	17.53	2.55	2.55
50th-Percentile Queue Length [ft/ln]	58.57	139.55	5.48	3.51	5.50	187.21	67.97	438.14	63.82	63.70
95th-Percentile Queue Length [veh/ln]	4.22	9.46	0.39	0.25	0.40	11.98	4.89	24.39	4.59	4.59
95th-Percentile Queue Length [ft/ln]	105.43	236.42	9.86	6.32	9.90	299.40	122.35	609.78	114.87	114.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.89	56.16	56.16	78.83	50.81	0.00	79.29	29.61	26.00	59.83	59.83	7.76	7.76
Movement LOS	E	E	E	E	D		E	C	C	E	E	A	A
d_A, Approach Delay [s/veh]	57.54			64.82			29.32			33.55			
Approach LOS	E			E			C			C			
d_I, Intersection Delay [s/veh]	34.98												
Intersection LOS	C												
Intersection V/C	0.656												

Emissions

Vehicle Miles Traveled [mph]	28.51	69.36	0.17	0.17	4.21	558.77	111.92	128.09	65.36	65.23
Stops [stops/h]	70.28	167.46	6.57	4.21	6.60	449.30	81.57	525.77	76.58	76.43
Fuel consumption [US gal/h]	2.48	5.84	0.12	0.08	0.29	29.49	5.76	14.44	3.53	3.52
CO [g/h]	173.28	408.03	8.65	5.74	20.30	2061.06	402.74	1009.07	246.61	246.12
NOx [g/h]	33.71	79.39	1.68	1.12	3.95	401.01	78.36	196.33	47.98	47.89
VOC [g/h]	40.16	94.57	2.00	1.33	4.70	477.67	93.34	233.86	57.15	57.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.394	1.962	2.781	0.000
Crosswalk LOS	B	A	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
I_b,int, Bicycle LOS Score for Intersection	2.099	1.576	2.267	1.994
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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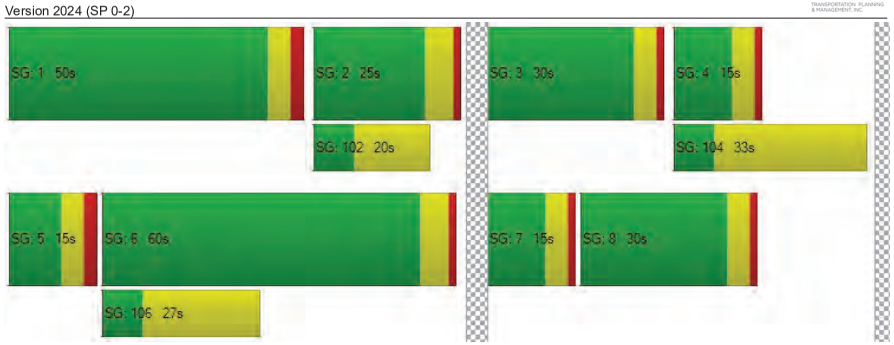

Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	44.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.629

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.0	100.0	100.0	100.0	200.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			No				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	60	7	28	115	11	210	0	243	666	62	56	885	214
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-4	0	0	2	0	0	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	62	0	0	0	19	0	0	64
Total Hourly Volume [veh/h]	60	7	20	115	11	144	0	243	668	43	56	873	150
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	5	32	3	40	0	67	184	12	15	240	41
Total Analysis Volume [veh/h]	66	8	22	126	12	158	0	267	734	47	62	959	165
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	7	23	0	7	25	0	0	14	31	0	15	34	0
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	2.0	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	4.0	0.0	2.5	4.0	0.0	0.0	3.5	2.5	0.0	3.0	2.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	29	0	13	31	0	0	28	80	0	20	72	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	9	0	3	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No			No			No	Yes		No	No	
Maximum Recall		No			No			No	No		No	No	
Pedestrian Recall		No			No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	5.50	4.50	4.50	5.00	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	3.50	2.50	2.50	3.00	2.50	2.50
g_i, Effective Green Time [s]	9	9	19	19	65	102	102	8	45	45
g / C, Green / Cycle	0.06	0.06	0.12	0.12	0.41	0.64	0.64	0.05	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.11	0.15	0.21	0.03	0.03	0.27	0.10
s, saturation flow rate [veh/h]	1790	1589	1781	1606	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	101	89	211	190	723	2272	1014	94	1005	449
d1, Uniform Delay [s]	74.34	72.27	66.91	69.53	33.23	13.20	10.80	74.33	56.42	46.00
k, delay calibration	0.04	0.04	0.04	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.87	0.53	1.01	5.68	1.45	0.38	0.09	2.87	2.66	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.25	0.60	0.89	0.37	0.32	0.05	0.66	0.95	0.37
d, Delay for Lane Group [s/veh]	78.21	72.80	67.91	75.21	34.69	13.58	10.89	77.20	59.08	46.18
Lane Group LOS	E	E	E	E	C	B	B	E	E	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.12	0.88	4.98	7.20	7.68	6.21	0.66	2.59	19.42	5.37
50th-Percentile Queue Length [ft/ln]	78.12	22.12	124.52	180.03	191.88	155.28	16.56	64.85	485.42	134.16
95th-Percentile Queue Length [veh/ln]	5.62	1.59	8.64	11.60	12.22	10.30	1.19	4.67	26.64	9.17
95th-Percentile Queue Length [ft/ln]	140.61	39.82	216.03	290.05	305.46	257.46	29.81	116.73	666.08	229.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.21	78.21	72.80	67.91	75.21	75.21	34.69	34.69	13.58	10.89	77.20	59.08	46.18
Movement LOS	E	E	E	E	E	E	C	C	B	B	E	E	D
d_A, Approach Delay [s/veh]	76.97			72.10			18.84				58.23		
Approach LOS	E			E			B				E		
d_I, Intersection Delay [s/veh]	44.76												
Intersection LOS	D												
Intersection V/C	0.629												

Emissions

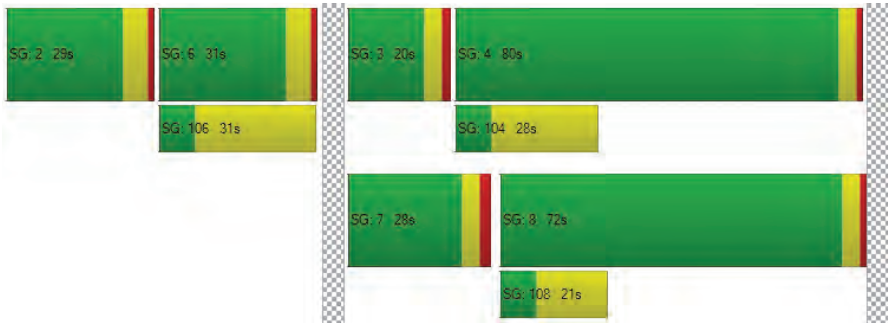
Vehicle Miles Traveled [mph]	3.70	1.10	5.86	7.90	27.99	76.95	4.93	21.71	335.80	57.78
Stops [stops/h]	70.31	19.91	112.07	162.03	172.69	279.50	14.91	58.37	873.75	120.74
Fuel consumption [US gal/h]	1.72	0.48	2.60	3.82	3.99	6.74	0.39	2.19	30.18	4.60
CO [g/h]	120.12	33.63	181.84	267.15	278.97	471.17	27.21	153.09	2109.56	321.26
NOx [g/h]	23.37	6.54	35.38	51.98	54.28	91.67	5.29	29.78	410.44	62.51
VOC [g/h]	27.84	7.80	42.14	61.91	64.65	109.20	6.31	35.48	488.91	74.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.058	2.336	2.883	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	288	313	944	844
d_b, Bicycle Delay [s]	58.65	56.95	22.31	26.74
l_b,int, Bicycle LOS Score for Intersection	1.731	2.150	2.220	2.591
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	2	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	300.00	100.00	300.00	200.00	100.00	200.00	300.00	100.00	200.00	500.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	300.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

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Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	129	55	474	219	51	48	223	336	271	414	989	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	-2	0	0	2	0	-5	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	143	0	0	14	0	0	81	0	0	101
Total Hourly Volume [veh/h]	129	55	332	219	49	34	223	338	190	409	977	234
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	16	95	63	14	10	64	97	55	118	281	67
Total Analysis Volume [veh/h]	148	63	382	252	56	39	256	389	218	470	1123	269
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	153
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Overlap	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	1	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,4									
Maximum Green [s]	0	35	25	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	3.0	0.0	3.2	0.0	3.0	5.0	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.5	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	28	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	1.5	0.0	2.2	0.0	1.5	4.0	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	150.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	29	0	45	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	2.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No	No		No		No	No		No	No	
Maximum Recall		No	No		No		No	No		No	No	
Pedestrian Recall		No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	87	87	87	87	87	87	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	4.20	4.20	3.50	4.20	4.20	4.20	3.50	6.00	6.00	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	0.00	2.20	2.20	2.20	1.50	4.00	4.00	1.50	4.00	4.00
g_i, Effective Green Time [s]	10	10	50	16	16	16	9	28	28	15	34	34
g / C, Green / Cycle	0.12	0.12	0.57	0.18	0.18	0.18	0.10	0.32	0.32	0.17	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.08	0.03	0.14	0.13	0.03	0.02	0.07	0.11	0.14	0.14	0.32	0.17
s, saturation flow rate [veh/h]	1781	1870	2813	1944	1870	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	211	221	1594	393	342	291	345	1156	516	585	1404	627
d1, Uniform Delay [s]	37.08	35.19	9.51	35.49	30.10	29.93	38.29	22.39	23.11	34.95	23.45	19.32
k, delay calibration	0.13	0.13	0.04	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.22	0.87	0.03	2.18	0.28	0.26	1.19	0.17	0.55	1.00	1.41	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.28	0.24	0.64	0.16	0.13	0.74	0.34	0.42	0.80	0.80	0.43
d, Delay for Lane Group [s/veh]	42.30	36.06	9.54	37.68	30.37	30.19	39.49	22.56	23.66	35.95	24.86	19.92
Lane Group LOS	D	D	A	D	C	C	D	C	C	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.30	1.26	1.69	2.65	1.00	0.70	2.68	2.98	3.49	4.79	9.98	3.94
50th-Percentile Queue Length [ft/ln]	82.40	31.53	42.34	66.32	25.10	17.45	67.02	74.46	87.33	119.63	249.47	98.39
95th-Percentile Queue Length [veh/ln]	5.93	2.27	3.05	4.78	1.81	1.26	4.83	5.36	6.29	8.37	15.16	7.08
95th-Percentile Queue Length [ft/ln]	148.31	56.76	76.22	119.38	45.18	31.41	120.64	134.02	157.20	209.32	378.98	177.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.30	36.06	9.54	37.68	30.37	30.19	39.49	22.56	23.66	35.95	24.86	19.92
Movement LOS	D	D	A	D	C	C	D	C	C	D	C	B
d_A, Approach Delay [s/veh]	20.53			35.66			27.86			26.94		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	26.95											
Intersection LOS	C											
Intersection V/C	0.770											

Emissions

Vehicle Miles Traveled [mph]	253.80	108.03	655.07	51.09	11.35	7.91	89.64	136.21	76.33	212.08	506.72	121.38
Stops [stops/h]	135.75	51.95	139.52	218.54	41.35	28.75	220.84	245.34	143.88	394.18	822.01	162.10
Fuel consumption [US gal/h]	12.47	5.20	28.48	5.24	1.04	0.72	6.97	8.75	4.99	14.35	31.08	6.98
CO [g/h]	871.77	363.25	1990.68	366.46	72.83	50.60	487.01	611.53	348.60	1002.81	2172.65	488.11
NOx [g/h]	169.62	70.67	387.31	71.30	14.17	9.84	94.76	118.98	67.82	195.11	422.72	94.97
VOC [g/h]	202.04	84.19	461.36	84.93	16.88	11.73	112.87	141.73	80.79	232.41	503.53	113.13

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	33.39			33.39			33.39			0.00		
l_p,int, Pedestrian LOS Score for Intersectio	2.908			2.641			3.023			0.000		
Crosswalk LOS	C			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	796			934			1007			1007		
d_b, Bicycle Delay [s]	15.83			12.42			10.78			10.78		
l_b,int, Bicycle LOS Score for Intersection	2.774			2.155			2.338			3.179		
Bicycle LOS	C			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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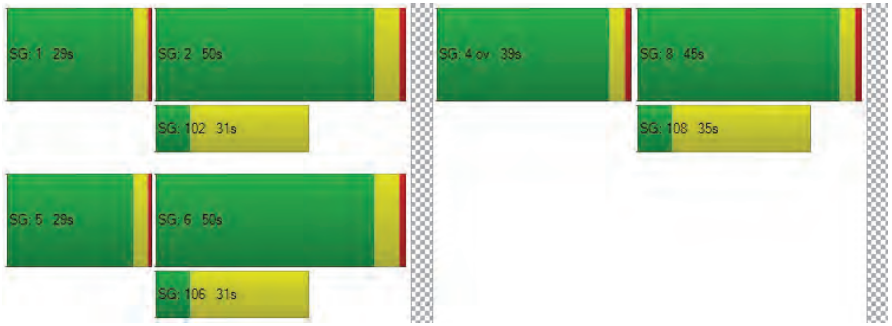

Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	5	4	0	354	3	1026	0	4	1384	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	2	0	0	-17	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	5	4	0	354	3	1028	0	4	1367	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	1	0	113	1	329	0	1	438	10
Total Analysis Volume [veh/h]	0	0	6	5	0	454	4	1318	0	5	1753	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	93	93	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	1	1	20	20	1	49	49	1	49	49
g / C, Green / Cycle	0.01	0.01	0.22	0.22	0.01	0.53	0.53	0.01	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.35	0.35	0.00	0.49	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	16	14	384	343	11	993	993	13	1894	846
d1, Uniform Delay [s]	0.00	45.72	28.58	36.34	45.88	15.75	15.75	45.79	19.99	10.41
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.18	0.18	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	20.35	0.01	164.65	18.97	1.29	1.29	16.88	2.38	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.44	0.01	1.32	0.36	0.66	0.66	0.38	0.93	0.05
d, Delay for Lane Group [s/veh]	0.00	66.07	28.59	200.99	64.84	17.04	17.04	62.67	22.37	10.43
Lane Group LOS	A	E	C	F	E	B	B	E	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.21	0.09	23.24	0.15	9.69	9.69	0.18	16.41	0.38
50th-Percentile Queue Length [ft/ln]	0.00	5.34	2.20	580.91	3.72	242.25	242.25	4.39	410.19	9.51
95th-Percentile Queue Length [veh/ln]	0.00	0.38	0.16	35.66	0.27	14.79	14.79	0.32	23.05	0.68
95th-Percentile Queue Length [ft/ln]	0.00	9.62	3.96	891.38	6.70	369.87	369.87	7.90	576.27	17.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	66.07	28.59	28.59	200.99	64.84	17.04	17.04	62.67	22.37	10.43
Movement LOS	A	A	E	C	C	F	E	B	B	E	C	B
d_A, Approach Delay [s/veh]	66.07			199.11			17.19			22.22		
Approach LOS	E			F			B			C		
d_I, Intersection Delay [s/veh]	43.08											
Intersection LOS	D											
Intersection V/C	0.948											

Emissions

Vehicle Miles Traveled [mph]	0.00	0.30	2.37	215.36	1.80	297.36	297.36	0.87	305.80	6.98
Stops [stops/h]	0.00	8.32	3.42	904.02	5.79	376.99	376.99	6.83	1276.69	14.80
Fuel consumption [US gal/h]	0.00	0.14	0.15	32.43	0.16	16.61	16.61	0.14	27.62	0.45
CO [g/h]	0.00	9.71	10.18	2266.58	11.12	1161.03	1161.03	9.60	1930.81	31.73
NOx [g/h]	0.00	1.89	1.98	440.99	2.16	225.89	225.89	1.87	375.67	6.17
VOC [g/h]	0.00	2.25	2.36	525.30	2.58	269.08	269.08	2.23	447.48	7.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	432	432	1081	1081
d_b, Bicycle Delay [s]	28.43	28.43	9.78	9.78
l_b,int, Bicycle LOS Score for Intersection	1.570	2.317	2.650	3.043
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	White Rock Rd			White Rock Rd			US 50 EB					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

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Volumes

Name	White Rock Rd			White Rock Rd			US 50 EB					
Base Volume Input [veh/h]	0	425	610	0	1303	320	243	0	116	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	1	-1	0	-17	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	3	426	609	0	1286	320	243	0	104	0	0	0
Peak Hour Factor	0.8300	0.8300	1.0000	1.0000	0.8300	0.8300	0.8300	1.0000	0.8300	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	128	152	0	387	96	73	0	31	0	0	0
Total Analysis Volume [veh/h]	4	513	609	0	1549	386	293	0	125	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	62	0	0	62	0	45	0	0	0	0	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	5.0	0.0	0.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	69	0	0	69	0	51	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	8	0	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	6.00	6.00	6.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00	
g_i, Effective Green Time [s]	95	95	95	95	12	12	12	
g / C, Green / Cycle	0.79	0.79	0.79	0.79	0.10	0.10	0.10	
(v / s)_i Volume / Saturation Flow Rate	0.14	0.38	0.44	0.24	0.08	0.08	0.08	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2808	1254	2808	1254	183	183	164	
d1, Uniform Delay [s]	3.13	4.34	4.74	3.54	52.62	52.62	52.41	
k, delay calibration	0.50	0.50	0.50	0.50	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.14	1.35	0.79	0.64	3.04	3.04	2.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.18	0.49	0.55	0.31	0.80	0.80	0.76	
d, Delay for Lane Group [s/veh]	3.27	5.69	5.52	4.17	55.66	55.66	55.20	
Lane Group LOS	A	A	A	A	E	E	E	
Critical Lane Group	No	No	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	1.30	4.55	5.98	2.33	4.47	4.47	3.80	
50th-Percentile Queue Length [ft/ln]	32.39	113.83	149.43	58.27	111.78	111.78	94.88	
95th-Percentile Queue Length [veh/ln]	2.33	8.05	9.99	4.20	7.94	7.94	6.83	
95th-Percentile Queue Length [ft/ln]	58.29	201.32	249.66	104.88	198.47	198.47	170.79	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	3.27	5.69	0.00	5.52	4.17	55.66	0.00	55.20	0.00	0.00	0.00
Movement LOS		A	A		A	A	E		E			
d_A, Approach Delay [s/veh]	4.58			5.25			55.52			0.00		
Approach LOS	A			A			E			A		
d_I, Intersection Delay [s/veh]	11.08											
Intersection LOS	B											
Intersection V/C	0.575											

Emissions

Vehicle Miles Traveled [mph]	89.49	106.24	274.50	68.40	8.87	8.87	7.57	
Stops [stops/h]	77.73	136.60	358.62	69.92	134.13	134.13	113.86	
Fuel consumption [US gal/h]	4.45	5.83	15.02	3.53	2.77	2.77	2.34	
CO [g/h]	311.40	407.73	1050.09	246.75	193.30	193.30	163.89	
NOx [g/h]	60.59	79.33	204.31	48.01	37.61	37.61	31.89	
VOC [g/h]	72.17	94.49	243.37	57.19	44.80	44.80	37.98	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	1033	750	0
d_b, Bicycle Delay [s]	14.02	14.02	23.44	60.00
l_b,int, Bicycle LOS Score for Intersection	2.485	3.156	2.269	4.132
Bicycle LOS	B	C	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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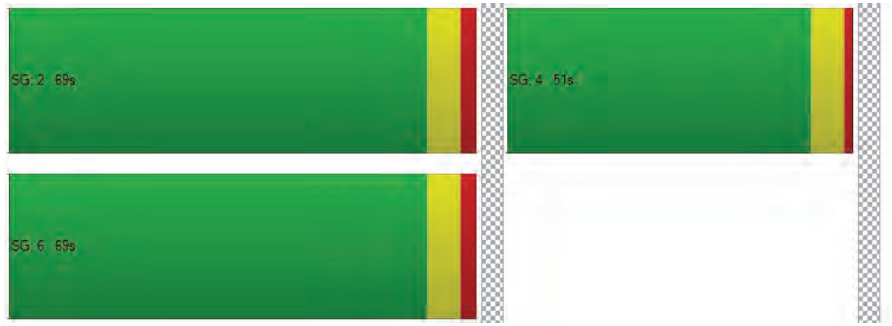

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	52.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.026

Intersection Setup

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

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Volumes

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	590	78	0	518	719	1105	0	398	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-3	0	-14	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	591	78	0	515	672	1091	0	368	0	0	0
Peak Hour Factor	0.7900	0.7900	1.0000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	187	20	0	163	213	345	0	116	0	0	0
Total Analysis Volume [veh/h]	0	748	78	0	652	851	1381	0	466	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
l2, Clearance Lost Time [s]	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	125	70	0	0	70	0	0	50	0	0	0	0
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	6.80	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.80	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	63	63	63	63	44	44	44	
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.37	0.37	0.37	
(v / s)_i Volume / Saturation Flow Rate	0.21	0.05	0.18	0.54	0.39	0.39	0.29	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	1875	837	1875	837	656	656	585	
d1, Uniform Delay [s]	17.02	14.14	16.46	28.40	37.90	37.90	33.87	
k, delay calibration	0.50	0.50	0.50	0.50	0.47	0.47	0.25	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.64	0.22	0.51	35.31	48.81	48.81	5.74	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.40	0.09	0.35	1.02	1.05	1.05	0.80	
d, Delay for Lane Group [s/veh]	17.65	14.36	16.97	63.71	86.71	86.71	39.61	
Lane Group LOS	B	B	B	F	F	F	D	
Critical Lane Group	No	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	6.27	1.11	5.28	31.01	27.76	27.76	12.91	
50th-Percentile Queue Length [ft/ln]	156.76	27.72	131.97	775.37	694.11	694.11	322.85	
95th-Percentile Queue Length [veh/ln]	10.38	2.00	9.05	40.70	37.75	37.75	18.81	
95th-Percentile Queue Length [ft/ln]	259.42	49.90	226.16	1017.52	943.84	943.84	470.18	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	17.65	14.36	0.00	16.97	63.71	86.71	86.71	39.61	0.00	0.00	0.00
Movement LOS		B	B		B	F	F	F	D			
d_A, Approach Delay [s/veh]		17.34			43.43			74.83			0.00	
Approach LOS		B			D			E			A	
d_I, Intersection Delay [s/veh]	52.16											
Intersection LOS	D											
Intersection V/C	1.026											

Emissions

Vehicle Miles Traveled [mph]	132.55	13.82	89.15	116.36	45.34	45.34	30.60	
Stops [stops/h]	376.21	33.27	316.72	930.44	832.93	832.93	387.41	
Fuel consumption [US gal/h]	10.22	0.98	7.67	20.96	18.65	18.65	7.16	
CO [g/h]	714.55	68.55	536.22	1465.33	1303.69	1303.69	500.22	
NOx [g/h]	139.02	13.34	104.33	285.10	253.65	253.65	97.33	
VOC [g/h]	165.60	15.89	124.27	339.61	302.14	302.14	115.93	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1053	1053	737	0
d_b, Bicycle Delay [s]	13.44	13.44	23.94	60.00
l_b,int, Bicycle LOS Score for Intersection	2.241	2.838	4.657	4.132
Bicycle LOS	B	C	E	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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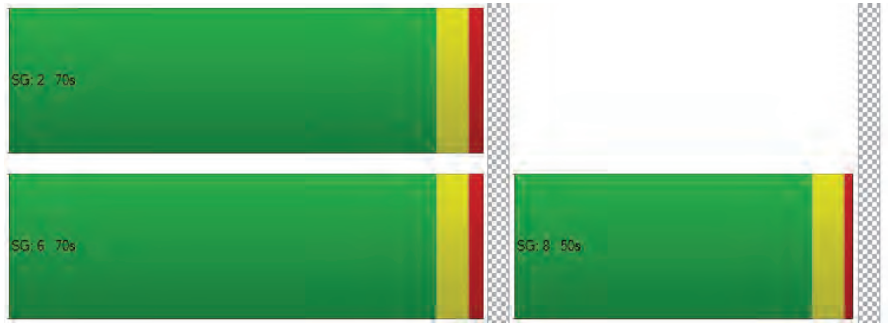

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	658	360	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	651	360	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	163	90	0	0	0
Total Analysis Volume [veh/h]	0	651	360	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.26
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.26	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	466	260	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	459	260	38	4	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	115	65	10	1	0
Total Analysis Volume [veh/h]	0	459	260	38	4	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	7.85	0.00	0.00	0.00	14.44	9.84
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.79	0.79
d_A, Approach Delay [s/veh]	0.00		0.00		14.44	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	20.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.146

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	241	41	52	127	9	48	87	0	37	75	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-7	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	234	41	52	127	9	48	87	0	37	75	47
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	59	10	13	32	2	12	22	0	9	19	12
Total Analysis Volume [veh/h]	6	234	41	52	127	9	48	87	0	37	75	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.15	0.20	0.00	0.11	0.17	0.06
d_M, Delay for Movement [s/veh]	7.49	0.00	0.00	7.86	0.00	0.00	20.77	18.03	13.71	19.20	16.85	13.37
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.09	0.09	0.09	1.51	1.51	1.51	1.46	1.46	1.46
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.26	2.26	2.26	37.82	37.82	37.82	36.47	36.47	36.47
d_A, Approach Delay [s/veh]	0.16			2.17			19.01			16.37		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.37											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	651	374	39	0
2	631	363	38	0
3	618	355	37	0
4	579	333	35	0
5	514	295	31	0
6	508	292	30	0
7	501	288	30	0
8	456	262	27	0
9	449	258	27	0
10	443	254	27	0
11	384	221	23	0
12	358	206	21	0
13	352	202	21	0
14	260	150	16	0
15	260	150	16	0
16	182	105	11	0
17	104	60	6	0
18	104	60	6	0
19	59	34	4	0
20	33	19	2	0
21	20	11	1	0
22	7	4	0	0
23	7	4	0	0
24	7	4	0	0

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Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1025	1	39	No	No	No	No	No	No	No	No	No	No
2	1	994	1	38	No	No	No	No	No	No	No	No	No	No
3	1	973	1	37	No	No	No	No	No	No	No	No	No	No
4	1	912	1	35	No	No	No	No	No	No	No	No	No	No
5	1	809	1	31	No	No	No	No	No	No	No	No	No	No
6	1	800	1	30	No	No	No	No	No	No	No	No	No	No
7	1	789	1	30	No	No	No	No	No	No	No	No	No	No
8	1	718	1	27	No	No	No	No	No	No	No	No	No	No
9	1	707	1	27	No	No	No	No	No	No	No	No	No	No
10	1	697	1	27	No	No	No	No	No	No	No	No	No	No
11	1	605	1	23	No	No	No	No	No	No	No	No	No	No
12	1	564	1	21	No	No	No	No	No	No	No	No	No	No
13	1	554	1	21	No	No	No	No	No	No	No	No	No	No
14	1	410	1	16	No	No	No	No	No	No	No	No	No	No
15	1	410	1	16	No	No	No	No	No	No	No	No	No	No
16	1	287	1	11	No	No	No	No	No	No	No	No	No	No
17	1	164	1	6	No	No	No	No	No	No	No	No	No	No
18	1	164	1	6	No	No	No	No	No	No	No	No	No	No
19	1	93	1	4	No	No	No	No	No	No	No	No	No	No
20	1	52	1	2	No	No	No	No	No	No	No	No	No	No
21	1	31	1	1	No	No	No	No	No	No	No	No	No	No
22	1	11	1	0	No	No	No	No	No	No	No	No	No	No
23	1	11	1	0	No	No	No	No	No	No	No	No	No	No
24	1	11	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.1	20.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1064	1064
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	463	360	262	0
2	449	349	254	0
3	440	342	249	0
4	412	320	233	0
5	366	284	207	0
6	361	281	204	0
7	357	277	202	0
8	324	252	183	0
9	319	248	181	0
10	315	245	178	0
11	273	212	155	0
12	255	198	144	0
13	250	194	141	0
14	185	144	105	0
15	185	144	105	0
16	130	101	73	0
17	74	58	42	0
18	74	58	42	0
19	42	32	24	0
20	23	18	13	0
21	14	11	8	0
22	5	4	3	0
23	5	4	3	0
24	5	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	823	1	262	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	798	1	254	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	782	1	249	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	732	1	233	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
5	2	650	1	207	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
6	2	642	1	204	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
7	2	634	1	202	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
8	2	576	1	183	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
9	2	567	1	181	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
10	2	560	1	178	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
11	2	485	1	155	No	Yes	Yes	Yes	No	No	No	No	No	No
12	2	453	1	144	No	No	Yes	Yes	No	No	No	No	No	No
13	2	444	1	141	No	No	Yes	Yes	No	No	No	No	No	No
14	2	329	1	105	No	No	No	No	No	No	No	No	No	No
15	2	329	1	105	No	No	No	No	No	No	No	No	No	No
16	2	231	1	73	No	No	No	No	No	No	No	No	No	No
17	2	132	1	42	No	No	No	No	No	No	No	No	No	No
18	2	132	1	42	No	No	No	No	No	No	No	No	No	No
19	2	74	1	24	No	No	No	No	No	No	No	No	No	No
20	2	41	1	13	No	No	No	No	No	No	No	No	No	No
21	2	25	1	8	No	No	No	No	No	No	No	No	No	No
22	2	9	1	3	No	No	No	No	No	No	No	No	No	No
23	2	9	1	3	No	No	No	No	No	No	No	No	No	No
24	2	9	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	0	4	7	10	10	4

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.2	23.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:19	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	262	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1085	1085
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1234	255	578
2	1197	247	561
3	1172	242	549
4	1098	227	514
5	975	201	457
6	963	199	451
7	950	196	445
8	864	179	405
9	851	176	399
10	839	173	393
11	728	150	341
12	679	140	318
13	666	138	312
14	494	102	231
15	494	102	231
16	346	71	162
17	197	41	92
18	197	41	92
19	111	23	52
20	62	13	29
21	37	8	17
22	12	3	6
23	12	3	6
24	12	3	6

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1489	1	578	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1444	1	561	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1414	1	549	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1325	1	514	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1176	1	457	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1162	1	451	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1146	1	445	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	1043	1	405	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	1027	1	399	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	1012	1	393	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	878	1	341	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	819	1	318	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	1	804	1	312	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
14	1	596	1	231	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
15	1	596	1	231	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
16	1	417	1	162	No	Yes	Yes	Yes	No	No	No	No	No	No
17	1	238	1	92	No	No	No	No	No	No	No	No	No	No
18	1	238	1	92	No	No	No	No	No	No	No	No	No	No
19	1	134	1	52	No	No	No	No	No	No	No	No	No	No
20	1	75	1	29	No	No	No	No	No	No	No	No	No	No
21	1	45	1	17	No	No	No	No	No	No	No	No	No	No
22	1	15	1	6	No	No	No	No	No	No	No	No	No	No
23	1	15	1	6	No	No	No	No	No	No	No	No	No	No
24	1	15	1	6	No	No	No	No	No	No	No	No	No	No
Hours Met					15	16	16	16	13	13	15	15	15	11

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1605:33
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	578
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2067
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	333	1041	328	49
2	323	1010	318	48
3	316	989	312	47
4	296	926	292	44
5	263	822	259	39
6	260	812	256	38
7	256	802	253	38
8	233	729	230	34
9	230	718	226	34
10	226	708	223	33
11	196	614	194	29
12	183	573	180	27
13	180	562	177	26
14	133	416	131	20
15	133	416	131	20
16	93	291	92	14
17	53	167	52	8
18	53	167	52	8
19	30	94	30	4
20	17	52	16	2
21	10	31	10	1
22	3	10	3	0
23	3	10	3	0
24	3	10	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1374	1	328	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1333	1	318	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1305	1	312	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1222	1	292	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1085	1	259	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1072	1	256	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	1058	1	253	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	962	1	230	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	948	1	226	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	934	1	223	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	810	1	194	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	1	756	1	180	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	1	742	1	177	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	549	1	131	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
15	1	549	1	131	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
16	1	384	1	92	No	No	No	Yes	No	No	No	No	No	No
17	1	220	1	52	No	No	No	No	No	No	No	No	No	No
18	1	220	1	52	No	No	No	No	No	No	No	No	No	No
19	1	124	1	30	No	No	No	No	No	No	No	No	No	No
20	1	69	1	16	No	No	No	No	No	No	No	No	No	No
21	1	41	1	10	No	No	No	No	No	No	No	No	No	No
22	1	13	1	3	No	No	No	No	No	No	No	No	No	No
23	1	13	1	3	No	No	No	No	No	No	No	No	No	No
24	1	13	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	12	13	15	15	13	5

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	30	12.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:44	0:10
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	328	49
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1751	1751
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	198	355	301
2	192	344	292
3	188	337	286
4	176	316	268
5	156	280	238
6	154	277	235
7	152	273	232
8	139	248	211
9	137	245	208
10	135	241	205
11	117	209	178
12	109	195	166
13	107	192	163
14	79	142	120
15	79	142	120
16	55	99	84
17	32	57	48
18	32	57	48
19	18	32	27
20	10	18	15
21	6	11	9
22	2	4	3
23	2	4	3
24	2	4	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	553	2	301	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	536	2	292	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	525	2	286	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	492	2	268	No	Yes	Yes	Yes	No	No	No	No	No	No
5	2	436	2	238	No	No	Yes	Yes	No	No	No	No	No	No
6	2	431	2	235	No	No	Yes	Yes	No	No	No	No	No	No
7	2	425	2	232	No	No	Yes	Yes	No	No	No	No	No	No
8	2	387	2	211	No	No	No	Yes	No	No	No	No	No	No
9	2	382	2	208	No	No	No	Yes	No	No	No	No	No	No
10	2	376	2	205	No	No	No	Yes	No	No	No	No	No	No
11	2	326	2	178	No	No	No	No	No	No	No	No	No	No
12	2	304	2	166	No	No	No	No	No	No	No	No	No	No
13	2	299	2	163	No	No	No	No	No	No	No	No	No	No
14	2	221	2	120	No	No	No	No	No	No	No	No	No	No
15	2	221	2	120	No	No	No	No	No	No	No	No	No	No
16	2	154	2	84	No	No	No	No	No	No	No	No	No	No
17	2	89	2	48	No	No	No	No	No	No	No	No	No	No
18	2	89	2	48	No	No	No	No	No	No	No	No	No	No
19	2	50	2	27	No	No	No	No	No	No	No	No	No	No
20	2	28	2	15	No	No	No	No	No	No	No	No	No	No
21	2	17	2	9	No	No	No	No	No	No	No	No	No	No
22	2	6	2	3	No	No	No	No	No	No	No	No	No	No
23	2	6	2	3	No	No	No	No	No	No	No	No	No	No
24	2	6	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.5
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:12
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	301
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	854
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	348	300	262
2	338	291	254
3	331	285	249
4	310	267	233
5	275	237	207
6	271	234	204
7	268	231	202
8	244	210	183
9	240	207	181
10	237	204	178
11	205	177	155
12	191	165	144
13	188	162	141
14	139	120	105
15	139	120	105
16	97	84	73
17	56	48	42
18	56	48	42
19	31	27	24
20	17	15	13
21	10	9	8
22	3	3	3
23	3	3	3
24	3	3	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	648	1	262	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	2	629	1	254	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	616	1	249	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	577	1	233	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	512	1	207	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	505	1	204	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	499	1	202	No	Yes	Yes	Yes	No	No	No	No	No	No
8	2	454	1	183	No	No	Yes	Yes	No	No	No	No	No	No
9	2	447	1	181	No	No	Yes	Yes	No	No	No	No	No	No
10	2	441	1	178	No	No	Yes	Yes	No	No	No	No	No	No
11	2	382	1	155	No	No	No	Yes	No	No	No	No	No	No
12	2	356	1	144	No	No	No	Yes	No	No	No	No	No	No
13	2	350	1	141	No	No	No	Yes	No	No	No	No	No	No
14	2	259	1	105	No	No	No	No	No	No	No	No	No	No
15	2	259	1	105	No	No	No	No	No	No	No	No	No	No
16	2	181	1	73	No	No	No	No	No	No	No	No	No	No
17	2	104	1	42	No	No	No	No	No	No	No	No	No	No
18	2	104	1	42	No	No	No	No	No	No	No	No	No	No
19	2	58	1	24	No	No	No	No	No	No	No	No	No	No
20	2	32	1	13	No	No	No	No	No	No	No	No	No	No
21	2	19	1	8	No	No	No	No	No	No	No	No	No	No
22	2	6	1	3	No	No	No	No	No	No	No	No	No	No
23	2	6	1	3	No	No	No	No	No	No	No	No	No	No
24	2	6	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	0	1	6	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	29.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:10
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	262
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	910
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	79	189	38
2	77	183	37
3	75	180	36
4	70	168	34
5	62	149	30
6	62	147	30
7	61	146	29
8	55	132	27
9	55	130	26
10	54	129	26
11	47	112	22
12	43	104	21
13	43	102	21
14	32	76	15
15	32	76	15
16	22	53	11
17	13	30	6
18	13	30	6
19	7	17	3
20	4	9	2
21	2	6	1
22	1	2	0
23	1	2	0
24	1	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	268	1	38	No	No	No	No	No	No	No	No	No	No
2	3	260	1	37	No	No	No	No	No	No	No	No	No	No
3	3	255	1	36	No	No	No	No	No	No	No	No	No	No
4	3	238	1	34	No	No	No	No	No	No	No	No	No	No
5	3	211	1	30	No	No	No	No	No	No	No	No	No	No
6	3	209	1	30	No	No	No	No	No	No	No	No	No	No
7	3	207	1	29	No	No	No	No	No	No	No	No	No	No
8	3	187	1	27	No	No	No	No	No	No	No	No	No	No
9	3	185	1	26	No	No	No	No	No	No	No	No	No	No
10	3	183	1	26	No	No	No	No	No	No	No	No	No	No
11	3	159	1	22	No	No	No	No	No	No	No	No	No	No
12	3	147	1	21	No	No	No	No	No	No	No	No	No	No
13	3	145	1	21	No	No	No	No	No	No	No	No	No	No
14	3	108	1	15	No	No	No	No	No	No	No	No	No	No
15	3	108	1	15	No	No	No	No	No	No	No	No	No	No
16	3	75	1	11	No	No	No	No	No	No	No	No	No	No
17	3	43	1	6	No	No	No	No	No	No	No	No	No	No
18	3	43	1	6	No	No	No	No	No	No	No	No	No	No
19	3	24	1	3	No	No	No	No	No	No	No	No	No	No
20	3	13	1	2	No	No	No	No	No	No	No	No	No	No
21	3	8	1	1	No	No	No	No	No	No	No	No	No	No
22	3	3	1	0	No	No	No	No	No	No	No	No	No	No
23	3	3	1	0	No	No	No	No	No	No	No	No	No	No
24	3	3	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	306
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	651	360	0
2	631	349	0
3	618	342	0
4	579	320	0
5	514	284	0
6	508	281	0
7	501	277	0
8	456	252	0
9	449	248	0
10	443	245	0
11	384	212	0
12	358	198	0
13	352	194	0
14	260	144	0
15	260	144	0
16	182	101	0
17	104	58	0
18	104	58	0
19	59	32	0
20	33	18	0
21	20	11	0
22	7	4	0
23	7	4	0
24	7	4	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1011	1	0	No	No	No	No	No	No	No	No	No	No
2	1	980	1	0	No	No	No	No	No	No	No	No	No	No
3	1	960	1	0	No	No	No	No	No	No	No	No	No	No
4	1	899	1	0	No	No	No	No	No	No	No	No	No	No
5	1	798	1	0	No	No	No	No	No	No	No	No	No	No
6	1	789	1	0	No	No	No	No	No	No	No	No	No	No
7	1	778	1	0	No	No	No	No	No	No	No	No	No	No
8	1	708	1	0	No	No	No	No	No	No	No	No	No	No
9	1	697	1	0	No	No	No	No	No	No	No	No	No	No
10	1	688	1	0	No	No	No	No	No	No	No	No	No	No
11	1	596	1	0	No	No	No	No	No	No	No	No	No	No
12	1	556	1	0	No	No	No	No	No	No	No	No	No	No
13	1	546	1	0	No	No	No	No	No	No	No	No	No	No
14	1	404	1	0	No	No	No	No	No	No	No	No	No	No
15	1	404	1	0	No	No	No	No	No	No	No	No	No	No
16	1	283	1	0	No	No	No	No	No	No	No	No	No	No
17	1	162	1	0	No	No	No	No	No	No	No	No	No	No
18	1	162	1	0	No	No	No	No	No	No	No	No	No	No
19	1	91	1	0	No	No	No	No	No	No	No	No	No	No
20	1	51	1	0	No	No	No	No	No	No	No	No	No	No
21	1	31	1	0	No	No	No	No	No	No	No	No	No	No
22	1	11	1	0	No	No	No	No	No	No	No	No	No	No
23	1	11	1	0	No	No	No	No	No	No	No	No	No	No
24	1	11	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1011
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	459	298	4
2	445	289	4
3	436	283	4
4	409	265	4
5	363	235	3
6	358	232	3
7	353	229	3
8	321	209	3
9	317	206	3
10	312	203	3
11	271	176	2
12	252	164	2
13	248	161	2
14	184	119	2
15	184	119	2
16	129	83	1
17	73	48	1
18	73	48	1
19	41	27	0
20	23	15	0
21	14	9	0
22	5	3	0
23	5	3	0
24	5	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	757	1	4	No	No	No	No	No	No	No	No	No	No
2	1	734	1	4	No	No	No	No	No	No	No	No	No	No
3	1	719	1	4	No	No	No	No	No	No	No	No	No	No
4	1	674	1	4	No	No	No	No	No	No	No	No	No	No
5	1	598	1	3	No	No	No	No	No	No	No	No	No	No
6	1	590	1	3	No	No	No	No	No	No	No	No	No	No
7	1	582	1	3	No	No	No	No	No	No	No	No	No	No
8	1	530	1	3	No	No	No	No	No	No	No	No	No	No
9	1	523	1	3	No	No	No	No	No	No	No	No	No	No
10	1	515	1	3	No	No	No	No	No	No	No	No	No	No
11	1	447	1	2	No	No	No	No	No	No	No	No	No	No
12	1	416	1	2	No	No	No	No	No	No	No	No	No	No
13	1	409	1	2	No	No	No	No	No	No	No	No	No	No
14	1	303	1	2	No	No	No	No	No	No	No	No	No	No
15	1	303	1	2	No	No	No	No	No	No	No	No	No	No
16	1	212	1	1	No	No	No	No	No	No	No	No	No	No
17	1	121	1	1	No	No	No	No	No	No	No	No	No	No
18	1	121	1	1	No	No	No	No	No	No	No	No	No	No
19	1	68	1	0	No	No	No	No	No	No	No	No	No	No
20	1	38	1	0	No	No	No	No	No	No	No	No	No	No
21	1	23	1	0	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	4
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	761
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	281	188	159	135
2	273	182	154	131
3	267	179	151	128
4	250	167	142	120
5	222	149	126	107
6	219	147	124	105
7	216	145	122	104
8	197	132	111	95
9	194	130	110	93
10	191	128	108	92
11	166	111	94	80
12	155	103	87	74
13	152	102	86	73
14	112	75	64	54
15	112	75	64	54
16	79	53	45	38
17	45	30	25	22
18	45	30	25	22
19	25	17	14	12
20	14	9	8	7
21	8	6	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1

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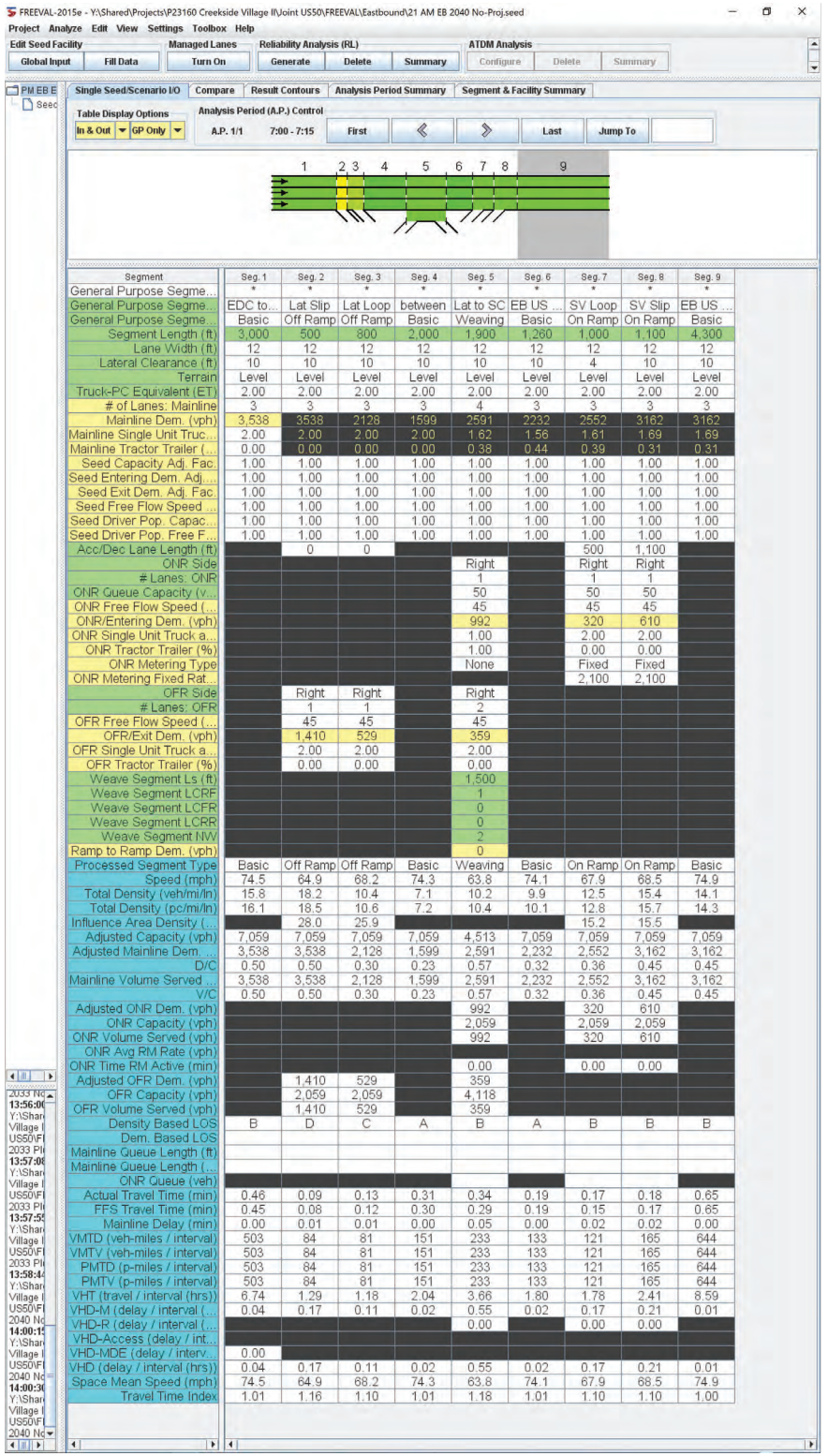
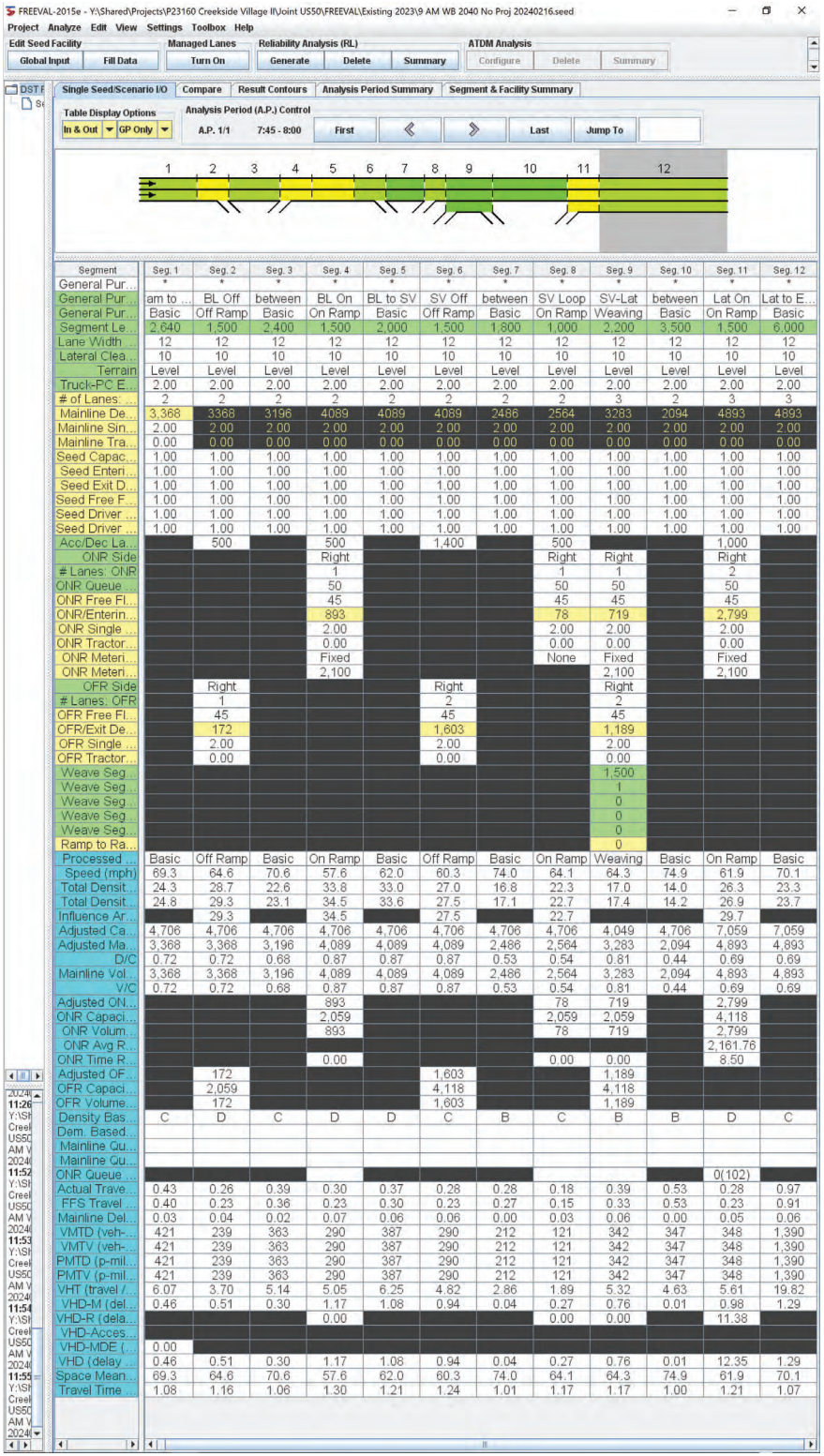
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	469	1	159	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	455	1	154	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	446	1	151	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	417	1	142	No	Yes	Yes	Yes	No	No	No	No	No	No
5	1	371	1	126	No	No	Yes	Yes	No	No	No	No	No	No
6	1	366	1	124	No	No	Yes	Yes	No	No	No	No	No	No
7	1	361	1	122	No	No	Yes	Yes	No	No	No	No	No	No
8	1	329	1	111	No	No	No	Yes	No	No	No	No	No	No
9	1	324	1	110	No	No	No	Yes	No	No	No	No	No	No
10	1	319	1	108	No	No	No	Yes	No	No	No	No	No	No
11	1	277	1	94	No	No	No	No	No	No	No	No	No	No
12	1	258	1	87	No	No	No	No	No	No	No	No	No	No
13	1	254	1	86	No	No	No	No	No	No	No	No	No	No
14	1	187	1	64	No	No	No	No	No	No	No	No	No	No
15	1	187	1	64	No	No	No	No	No	No	No	No	No	No
16	1	132	1	45	No	No	No	No	No	No	No	No	No	No
17	1	75	1	25	No	No	No	No	No	No	No	No	No	No
18	1	75	1	25	No	No	No	No	No	No	No	No	No	No
19	1	42	1	14	No	No	No	No	No	No	No	No	No	No
20	1	23	1	8	No	No	No	No	No	No	No	No	No	No
21	1	14	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	3	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.4	19
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43	0:42
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	159	135
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	763	763
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	





Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9	Seg. 10	Seg. 11	Seg. 12
General Pur...	*	*	*	*	*	*	*	*	*	*	*	*
General Pur...	am to ...	BL Off	between	BL On	BL to SV	SV Off	between	SV Loop	SV-Lat	between	Lat On	Lat to E...
General Pur...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Segment Le...	2,640	1,500	2,400	1,500	2,000	1,500	1,800	1,000	2,200	3,500	1,500	6,000
Lane Width ...	12	12	12	12	12	12	12	12	12	12	12	12
Lateral Clea...	10	10	10	10	10	10	10	10	10	10	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC E...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: ...	2	2	2	2	2	2	2	2	3	2	3	3
Mainline De...	3,368	3368	3196	4089	4089	4089	2486	2564	3283	2094	4893	4893
Mainline Sin...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Mainline Tra...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seed Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Enteri...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit D...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec La...		500		500		1,400		500			1,000	
ONR Side				Right				Right	Right		Right	
# Lanes: ONR				1				1	1		2	
ONR Queue ...				50				50	50		50	
ONR Free Fl...				45				45	45		45	
ONR/Enterin...				893				78	719		2,799	
ONR Single ...				2.00				2.00	2.00		2.00	
ONR Tractor...				0.00				0.00	0.00		0.00	
ONR Meteri...				Fixed				None	Fixed		Fixed	
ONR Meteri...				2,100					2,100		2,100	
OFR Side		Right				Right			Right			
# Lanes: OFR		1				2			2			
OFR Free Fl...		45				45			45			
OFR/Exit De...		172				1,603			1,189			
OFR Single ...		2.00				2.00			2.00			
OFR Tractor...		0.00				0.00			0.00			
Weave Seg...									1,500			
Weave Seg...									1			
Weave Seg...									0			
Weave Seg...									0			
Weave Seg...									0			
Ramp to Ra...									0			
Processed ...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Speed (mph)	69.3	64.6	70.6	57.6	62.0	60.3	74.0	64.1	64.3	74.9	61.9	70.1
Total Densit...	24.3	28.7	22.6	33.8	33.0	27.0	16.8	22.3	17.0	14.0	26.3	23.3
Total Densit...	24.8	29.3	23.1	34.5	33.6	27.5	17.1	22.7	17.4	14.2	26.9	23.7
Influence Ar...		29.3		34.5		27.5		22.7			29.7	
Adjusted Ca...	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,049	4,706	7,059	7,059
Adjusted Ma...	3,368	3,368	3,196	4,089	4,089	4,089	2,486	2,564	3,283	2,094	4,893	4,893
D/C	0.72	0.72	0.68	0.87	0.87	0.87	0.53	0.54	0.81	0.44	0.69	0.69
Mainline Vol...	3,368	3,368	3,196	4,089	4,089	4,089	2,486	2,564	3,283	2,094	4,893	4,893
V/C	0.72	0.72	0.68	0.87	0.87	0.87	0.53	0.54	0.81	0.44	0.69	0.69
Adjusted ON...				893				78	719		2,799	
ONR Capaci...				2,059				2,059	2,059		4,118	
ONR Volum...				893				78	719		2,799	
ONR Avg R...											2,161.76	
ONR Time R...				0.00				0.00	0.00		8.50	
Adjusted OF...		172				1,603			1,189			
OFR Capaci...		2,059				4,118			4,118			
OFR Volume...		172				1,603			1,189			
Density Bas...	C	D	C	D	D	C	B	C	B	B	D	C
Dem. Based...												
Mainline Qu...												
Mainline Qu...												
ONR Queue ...											0(102)	
Actual Trave...	0.43	0.26	0.39	0.30	0.37	0.28	0.28	0.18	0.39	0.53	0.28	0.97
FFS Travel ...	0.40	0.23	0.36	0.23	0.30	0.23	0.27	0.15	0.33	0.53	0.23	0.91
Mainline Del...	0.03	0.04	0.02	0.07	0.06	0.06	0.00	0.03	0.06	0.00	0.05	0.06
VMTD (veh-...	421	239	363	290	387	290	212	121	342	347	348	1,390
VMTV (veh-...	421	239	363	290	387	290	212	121	342	347	348	1,390
PMTD (p-mil...	421	239	363	290	387	290	212	121	342	347	348	1,390
PMTV (p-mil...	421	239	363	290	387	290	212	121	342	347	348	1,390
VHT (travel /...	6.07	3.70	5.14	5.05	6.25	4.82	2.86	1.89	5.32	4.63	5.61	19.82
VHD-M (del...	0.46	0.51	0.30	1.17	1.08	0.94	0.04	0.27	0.76	0.01	0.98	1.29
VHD-R (dela...				0.00				0.00	0.00		11.38	
VHD-Acces...												
VHD-MDE (...	0.00											
VHD (delay ...	0.46	0.51	0.30	1.17	1.08	0.94	0.04	0.27	0.76	0.01	12.35	1.29
Space Mean...	69.3	64.6	70.6	57.6	62.0	60.3	74.0	64.1	64.3	74.9	61.9	70.1
Travel Time	1.08	1.16	1.06	1.30	1.21	1.24	1.01	1.17	1.17	1.00	1.21	1.07

Creekside Village
Traffic Impact Analysis

El Dorado Hills, California

Cumulative PM no Project

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Report File: C:\...\14 2040 PM no Proj.pdf

Scenario 5 2040 PM with CCSP, No Project
2/14/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.989	63.1	E
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	NB Left	0.978	69.6	E
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.074	71.5	E
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.962	61.7	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	1.068	70.5	E
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.798	48.9	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.813	23.9	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	SB Right	0.999	45.6	D
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	EB Left	1.244	217.0	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.789	19.6	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	WB Left	0.012	27.2	D
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	WB Left	0.416	44.1	E
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	229.236	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	NB Thru	1.845	273.2	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.630	35.4	E
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.971	152.3	F
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.222	8.7	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 7th Edition	EB Left	0.574	17.4	B
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.640	34.8	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	NB Left	0.668	44.9	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	EB Left	0.893	33.5	C
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	1.007	57.5	E
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	NB Right	1.068	38.0	D
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Right	0.753	27.5	C
25	New Intersection	Two-way stop	HCM 7th Edition	SB Thru	0.006	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.078	16.3	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	WB Left	0.159	20.0	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	63.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.989

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	131	1772	406	35	1147	74	62	29	110	339	66	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-14	0	0	-4	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	22	0	0	33	0	0	7
Total Hourly Volume [veh/h]	3	131	1758	406	35	1143	52	62	29	77	339	66	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	38	505	117	10	328	15	18	8	22	97	19	4
Total Analysis Volume [veh/h]	3	151	2021	467	40	1314	60	71	33	89	390	76	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Cycle Length [s]	83	83	83	83	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	40	40	2	33	33	8	8	15	15
g / C, Green / Cycle	0.11	0.48	0.48	0.03	0.40	0.40	0.10	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.09	0.57	0.29	0.02	0.37	0.37	0.04	0.07	0.14	0.14
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1841	1781	1657	1781	1793
c, Capacity [veh/h]	193	1711	764	51	750	739	175	163	321	324
d1, Uniform Delay [s]	36.37	21.70	15.96	40.32	23.77	23.82	35.36	36.65	32.44	32.44
k, delay calibration	0.04	0.08	0.10	0.04	0.23	0.23	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.90	82.54	0.72	9.47	10.10	10.58	0.56	2.57	4.92	4.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	1.18	0.61	0.79	0.92	0.92	0.41	0.75	0.75	0.75
d, Delay for Lane Group [s/veh]	39.27	104.24	16.67	49.80	33.88	34.40	35.92	39.23	37.36	37.33
Lane Group LOS	D	F	B	D	C	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.04	33.54	5.74	0.91	13.39	13.34	1.36	2.49	4.92	4.95
50th-Percentile Queue Length [ft/ln]	75.90	838.61	143.56	22.71	334.75	333.46	33.95	62.16	123.00	123.73
95th-Percentile Queue Length [veh/ln]	5.47	48.45	9.67	1.64	19.39	19.33	2.44	4.48	8.56	8.60
95th-Percentile Queue Length [ft/ln]	136.63	1211.25	241.81	40.88	484.78	483.20	61.11	111.89	213.94	214.95

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.27	39.27	104.2	16.67	49.80	34.12	34.40	35.92	39.23	39.23	37.35	37.33	37.33
Movement LOS	D	D	F	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	84.97				34.58			38.01			37.35		
Approach LOS	F				C			D			D		
d_I, Intersection Delay [s/veh]	63.14												
Intersection LOS	E												
Intersection V/C	0.989												

Emissions

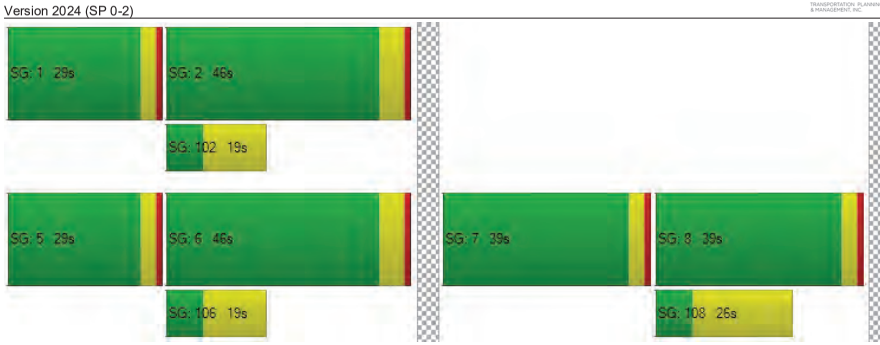
Vehicle Miles Traveled [mph]	36.78	482.68	111.53	5.88	101.62	100.39	3.03	5.21	12.60	12.68
Stops [stops/h]	131.14	2897.82	248.03	39.24	578.36	576.13	58.65	107.39	212.51	213.78
Fuel consumption [US gal/h]	4.12	95.44	8.49	1.09	15.44	15.38	0.97	1.78	3.52	3.54
CO [g/h]	288.12	6671.30	593.56	76.53	1079.22	1075.30	67.66	124.54	246.24	247.69
NOx [g/h]	56.06	1297.99	115.49	14.89	209.98	209.21	13.16	24.23	47.91	48.19
VOC [g/h]	66.78	1546.14	137.56	17.74	250.12	249.21	15.68	28.86	57.07	57.41

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.40	31.40	31.40
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.366	2.157	2.280
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	967	840	840
d_b, Bicycle Delay [s]	11.12	11.12	14.02	14.02
l_b,int, Bicycle LOS Score for Intersection	3.737	2.744	1.933	2.368
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	69.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.978

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	445	1623	173	4	218	1176	198	390	53	619	69	107	295
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	-14	0	0	0	-4	0	0	0	-1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	52	0	0	0	59	0	0	185	0	0	89
Total Hourly Volume [veh/h]	5	439	1609	121	4	218	1172	139	390	53	433	69	107	206
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	118	433	33	1	59	315	37	105	14	116	19	29	55
Total Analysis Volume [veh/h]	5	472	1730	130	4	234	1260	149	419	57	466	74	115	222
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Overlap	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	5	3	8	0
Auxiliary Signal Groups											5,7			
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	20	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	24	0	0	0	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	24	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	4	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No	No		No	
Maximum Recall		No	No			No	No			No	No		No	
Pedestrian Recall		No	No			No	No			No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	122	122	122	122	122	122	122	122	122	122	122
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	20	48	48	18	46	46	18	18	66	20	20
g / C, Green / Cycle	0.16	0.39	0.39	0.15	0.37	0.37	0.15	0.15	0.55	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.27	0.35	0.35	0.13	0.25	0.09	0.13	0.13	0.17	0.08	0.20
s, saturation flow rate [veh/h]	1799	3560	1804	1781	5094	1589	1781	1801	2813	927	1675
c, Capacity [veh/h]	325	1390	704	265	1910	596	270	273	1534	196	275
d1, Uniform Delay [s]	53.59	34.60	34.84	50.97	31.63	26.27	50.63	50.55	15.10	48.12	50.95
k, delay calibration	0.26	0.13	0.35	0.26	0.13	0.13	0.26	0.25	0.04	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	219.51	2.47	12.14	21.34	0.47	0.26	18.98	17.50	0.04	0.45	129.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.47	0.88	0.90	0.90	0.66	0.25	0.88	0.87	0.30	0.38	1.23
d, Delay for Lane Group [s/veh]	273.09	37.07	46.97	72.31	32.10	26.53	69.61	68.05	15.14	48.57	180.57
Lane Group LOS	F	D	D	E	C	C	E	E	B	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	14.81	16.49	18.92	8.50	9.90	2.93	8.51	8.41	3.50	2.11	18.24
50th-Percentile Queue Length [ft/ln]	370.36	412.22	473.10	212.57	247.46	73.37	212.75	210.34	87.38	52.77	456.10
95th-Percentile Queue Length [veh/ln]	24.48	23.15	26.06	13.28	15.06	5.28	13.29	13.17	6.29	3.80	27.72
95th-Percentile Queue Length [ft/ln]	612.05	578.70	651.46	332.12	376.45	132.07	332.35	329.27	157.29	94.98	692.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	273.0	273.0	39.94	46.97	72.31	72.31	32.10	26.53	68.93	68.05	15.14	48.57	180.57	180.57
Movement LOS	F	F	D	D	E	E	C	C	E	E	B	D	F	F
d_A, Approach Delay [s/veh]	87.92				37.41				42.27			156.80		
Approach LOS	F				D				D			F		
d_I, Intersection Delay [s/veh]	69.58													
Intersection LOS	E													
Intersection V/C	0.978													

Emissions

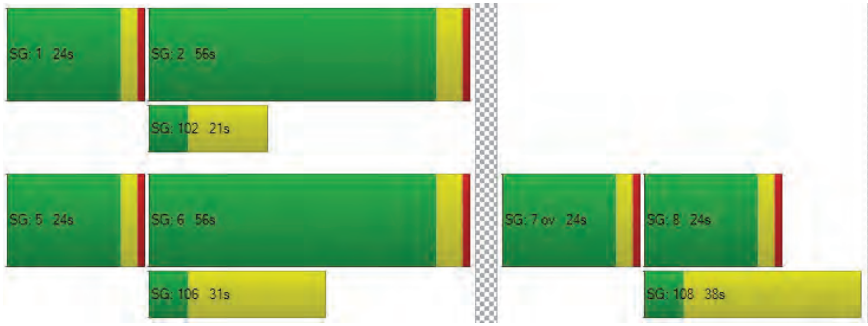
Vehicle Miles Traveled [mph]	89.77	231.31	118.73	56.84	300.93	35.59	14.83	14.85	29.06	3.61	16.43
Stops [stops/h]	875.89	974.87	559.43	251.36	877.84	86.76	251.57	248.73	206.65	62.40	539.32
Fuel consumption [US gal/h]	40.47	29.32	17.06	8.58	29.46	3.10	5.37	5.28	3.77	1.22	16.04
CO [g/h]	2828.91	2049.60	1192.21	599.41	2059.32	216.90	375.28	369.32	263.79	85.60	1121.00
NOx [g/h]	550.40	398.78	231.96	116.62	400.67	42.20	73.02	71.86	51.32	16.65	218.11
VOC [g/h]	655.63	475.01	276.31	138.92	477.27	50.27	86.97	85.59	61.13	19.84	259.80

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	50.39	50.39	50.39
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.585	3.721	2.398
Crosswalk LOS	F	D	D	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	826	826	328	328
d_b, Bicycle Delay [s]	20.98	20.98	42.53	42.53
l_b,int, Bicycle LOS Score for Intersection	2.871	2.369	3.419	2.385
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	71.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.074

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1441	1689	425	0	37	1298	534	306	130	409	257	92	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-27	-20	-4	0	0	-5	0	0	0	-2	-1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	126	0	0	0	160	0	0	122	0	0	75
Total Hourly Volume [veh/h]	1	1414	1669	295	0	37	1293	374	306	130	285	256	92	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	354	417	74	0	9	323	94	77	33	71	64	23	44
Total Analysis Volume [veh/h]	1	1414	1669	295	0	37	1293	374	306	130	285	256	92	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.41	0.36	0.39	0.02	0.26	0.24	0.12	0.12	0.10	0.10	0.11
s, saturation flow rate [veh/h]	3459	3532	1722	1781	5053	1589	1781	1832	1781	1826	1589
c, Capacity [veh/h]	1155	1913	933	81	1278	684	250	257	223	228	199
d1, Uniform Delay [s]	45.28	22.48	23.52	63.30	50.81	28.83	57.16	57.15	57.64	57.60	58.54
k, delay calibration	0.11	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.16	0.15	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	103.02	1.91	4.89	1.51	28.19	3.12	12.10	11.78	7.97	7.49	23.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.22	0.67	0.72	0.46	1.01	0.55	0.86	0.86	0.77	0.77	0.89
d, Delay for Lane Group [s/veh]	148.31	24.40	28.41	64.81	78.99	31.95	69.25	68.93	65.60	65.09	81.66
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	35.86	15.11	17.31	1.26	17.39	9.37	8.07	8.28	6.25	6.34	7.25
50th-Percentile Queue Length [ft/ln]	896.41	377.68	432.78	31.57	434.63	234.18	201.87	207.05	156.16	158.54	181.18
95th-Percentile Queue Length [veh/ln]	51.78	21.48	24.13	2.27	24.40	14.39	12.73	13.00	10.35	10.47	11.66
95th-Percentile Queue Length [ft/ln]	1294.60	537.04	603.37	56.82	610.02	359.66	318.37	325.04	258.63	261.79	291.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	148.3	148.3	25.31	28.41	64.81	64.81	78.99	31.95	69.16	68.93	0.00	65.44	65.09	81.66
Movement LOS	F	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	77.09				68.36				41.78			70.82		
Approach LOS	E				E				D			E		
d_I, Intersection Delay [s/veh]	71.54													
Intersection LOS	E													
Intersection V/C	1.074													

Emissions

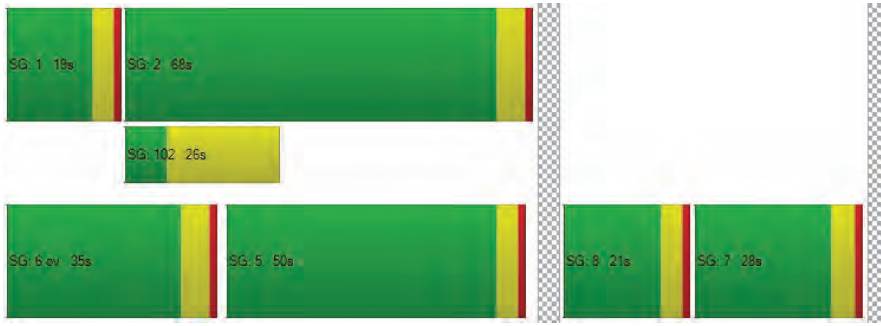
Vehicle Miles Traveled [mph]	242.35	220.54	115.83	6.96	243.34	70.39	9.94	10.23	5.48	5.59	5.60
Stops [stops/h]	1898.29	799.79	458.24	33.42	1380.58	247.95	213.74	219.23	165.35	167.87	191.84
Fuel consumption [US gal/h]	63.16	19.89	11.21	1.14	46.29	7.93	4.62	4.73	3.44	3.48	4.21
CO [g/h]	4414.97	1390.33	783.61	79.84	3235.58	554.08	322.86	330.82	240.33	243.60	294.59
NOx [g/h]	858.99	270.51	152.46	15.53	629.53	107.80	62.82	64.36	46.76	47.40	57.32
VOC [g/h]	1023.21	322.22	181.61	18.50	749.88	128.41	74.83	76.67	55.70	56.46	68.28

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.547
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.487	2.564	2.279	2.054
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	61.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.962

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2691	613	1	388	1576	0	0	0	1667	0	0	864
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-51	-10	0	0	-8	0	0	0	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	181	0	0	0	0	0	0	498	0	0	259
Total Hourly Volume [veh/h]	0	2640	422	1	388	1568	0	0	0	1163	0	0	605
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	695	126	0	115	413	0	0	0	346	0	0	180
Total Analysis Volume [veh/h]	0	2779	502	1	462	1651	0	0	0	1385	0	0	720
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		Yes			No	Yes				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.41	0.32	0.26	0.24	0.49	
s, saturation flow rate [veh/h]	6792	1589	1781	6792	2813	
c, Capacity [veh/h]	3745	876	516	3476	927	
d1, Uniform Delay [s]	11.58	10.00	23.17	10.71	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.20	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.37	2.72	8.80	0.47	224.78	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.74	0.57	0.90	0.48	1.49	
d, Delay for Lane Group [s/veh]	12.95	12.72	31.97	11.18	247.58	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	No	No	No	Yes	Yes	
50th-Percentile Queue Length [veh/ln]	6.11	4.25	7.43	3.20	35.69	
50th-Percentile Queue Length [ft/ln]	152.75	106.29	185.84	79.94	892.32	
95th-Percentile Queue Length [veh/ln]	10.16	7.63	11.90	5.76	55.99	
95th-Percentile Queue Length [ft/ln]	254.09	190.83	297.62	143.90	1399.72	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.95	12.72	31.97	31.97	11.18	0.00	0.00	0.00	247.58	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]	12.91			15.73				247.58			0.00		
Approach LOS	B			B				F			A		
d_I, Intersection Delay [s/veh]	61.73												
Intersection LOS	E												
Intersection V/C	0.962												

Emissions

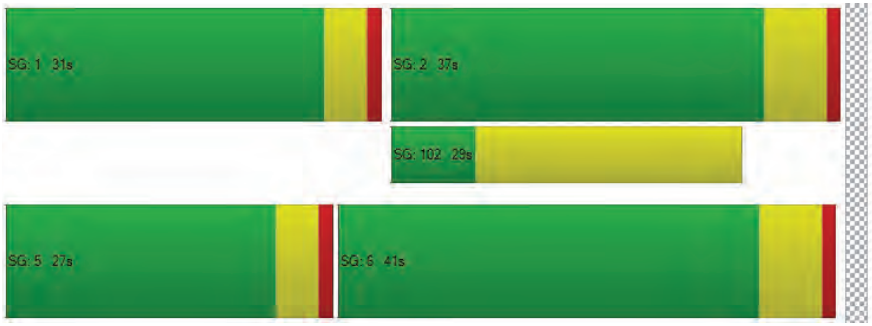
Vehicle Miles Traveled [mph]	402.11	72.64	79.30	282.77	99.11	
Stops [stops/h]	1293.87	225.09	393.53	677.17	3779.23	
Fuel consumption [US gal/h]	37.19	6.59	10.62	21.87	94.73	
CO [g/h]	2599.90	460.49	742.59	1528.52	6621.47	
NOx [g/h]	505.85	89.59	144.48	297.39	1288.30	
VOC [g/h]	602.55	106.72	172.10	354.25	1534.59	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.258
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.988	2.241	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	70.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.068

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	2098	245	3	606	2038	596	508	40	83	1	94	6	695
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-61	-4	0	0	-14	0	0	0	0	0	-1	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	72	0	0	0	179	0	0	25	0	0	0	209
Total Hourly Volume [veh/h]	1	23	2037	169	3	606	2024	417	508	40	58	1	93	6	486
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	6	530	44	1	158	527	109	132	10	15	0	24	2	127
Total Analysis Volume [veh/h]	1	24	2122	176	3	631	2108	434	529	42	60	1	97	6	506
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	49	49	12	58	58	19	19	19	15	15	15
g / C, Green / Cycle	0.02	0.44	0.44	0.11	0.53	0.53	0.17	0.17	0.17	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.01	0.42	0.11	0.18	0.41	0.27	0.15	0.02	0.04	0.06	0.16	0.16
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1595	1589
c, Capacity [veh/h]	69	2241	699	375	2692	840	593	321	273	241	216	215
d1, Uniform Delay [s]	53.55	29.75	19.52	49.33	20.98	16.92	44.83	38.85	39.47	43.75	47.83	47.83
k, delay calibration	0.04	0.04	0.04	0.27	0.04	0.04	0.08	0.08	0.08	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.21	1.10	0.07	316.95	0.19	0.18	3.72	0.14	0.30	0.81	120.55	120.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.95	0.25	1.69	0.78	0.52	0.89	0.13	0.22	0.41	1.19	1.19
d, Delay for Lane Group [s/veh]	54.75	30.86	19.59	366.28	21.18	17.10	48.55	38.98	39.76	44.57	168.38	168.56
Lane Group LOS	D	C	B	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	17.59	2.85	21.66	13.94	6.96	7.35	0.98	1.43	2.51	13.15	13.12
50th-Percentile Queue Length [ft/ln]	8.85	439.71	71.18	541.45	348.48	174.02	183.71	24.52	35.72	62.66	328.84	327.96
95th-Percentile Queue Length [veh/ln]	0.64	24.47	5.13	34.56	20.06	11.29	11.79	1.77	2.57	4.51	20.53	20.48
95th-Percentile Queue Length [ft/ln]	15.93	611.66	128.13	863.90	501.55	282.20	294.85	44.14	64.29	112.80	513.24	512.11

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.75	54.75	30.86	19.59	366.2	366.2	21.18	17.10	48.55	38.98	39.76	44.57	44.57	168.3	168.4
Movement LOS	D	D	C	B	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	30.26				89.51				47.08			148.56			
Approach LOS	C				F				D			F			
d_I, Intersection Delay [s/veh]	70.46														
Intersection LOS	E														
Intersection V/C	1.068														

Emissions

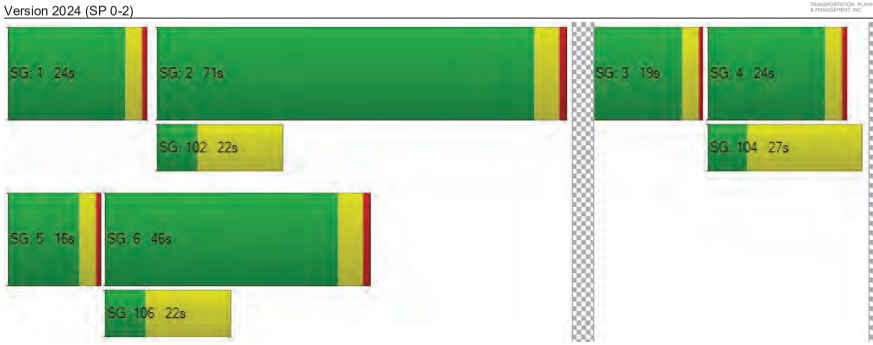
Vehicle Miles Traveled [mph]	5.58	473.71	39.29	91.74	305.02	62.80	67.47	5.36	7.65	34.39	90.00	89.70
Stops [stops/h]	23.07	1719.08	92.77	1411.23	1362.39	226.78	478.81	31.96	46.55	81.66	428.54	427.39
Fuel consumption [US gal/h]	0.64	42.32	2.83	58.82	29.17	5.35	10.65	0.73	1.06	2.76	14.86	14.82
CO [g/h]	44.44	2958.34	197.93	4111.51	2038.88	373.88	744.38	51.05	73.93	192.63	1038.52	1035.85
NOx [g/h]	8.65	575.59	38.51	799.95	396.69	72.74	144.83	9.93	14.38	37.48	202.06	201.54
VOC [g/h]	10.30	685.62	45.87	952.88	472.53	86.65	172.52	11.83	17.13	44.64	240.69	240.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.80	0.00	44.80	44.80
l_p,int, Pedestrian LOS Score for Intersectio	3.469	0.000	2.709	2.946
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	1186	371	281
d_b, Bicycle Delay [s]	22.17	9.16	36.65	40.84
l_b,int, Bicycle LOS Score for Intersection	2.876	3.058	2.101	2.751
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	48.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	2	0	0	1	2	0	0	1	1	0	2
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	400.0	100.0	100.0	400.0	360.0	100.0	100.0	300.0	400.00	100.00	300.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	155	1777	629	2	259	1490	465	2	395	566	152	600	264	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-66	-16	0	0	-15	0	0	0	0	0	-4	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	184	0	0	0	140	0	0	0	46	0	0	58
Total Hourly Volume [veh/h]	6	155	1711	429	2	259	1475	325	2	395	566	106	596	264	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	42	460	115	1	70	397	87	1	106	152	28	160	71	37
Total Analysis Volume [veh/h]	6	167	1840	461	2	278	1586	349	2	425	609	114	641	284	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Overl	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups				2,3											
Maximum Green [s]	0	20	50	36	0	20	50	0	0	21	15	0	36	25	0
Amber [s]	0.0	4.0	4.7	4.5	0.0	4.0	4.7	0.0	0.0	4.5	4.7	0.0	4.5	4.7	0.0
All red [s]	0.0	1.0	1.0	1.5	0.0	1.0	1.0	0.0	0.0	1.5	1.0	0.0	1.5	1.0	0.0
Walk [s]	0	0	5	0	0	0	5	0	0	0	4	0	0	5	0
Pedestrian Clearance [s]	0	0	28	0	0	0	24	0	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.7	4.0	0.0	3.0	3.7	0.0	0.0	4.0	3.7	0.0	4.0	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	58	42	0	25	58	0	0	27	35	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	9	9	0	9	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	1.5	3.0	1.5	0.0	1.5	3.0	0.0	0.0	1.5	2.0	0.0	1.5	2.0	0.0
Minimum Recall		No	No	No		No	No			No	No		No	No	
Maximum Recall		No	No	No		No	No			No	No		No	No	
Pedestrian Recall		No	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.70	6.00	5.00	5.70	5.70	6.00	5.70	5.70	6.00	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.70	0.00	3.00	3.70	3.70	4.00	3.70	3.70	4.00	3.70	3.70
g_i, Effective Green Time [s]	10	54	99	15	59	59	22	29	29	39	47	47
g / C, Green / Cycle	0.06	0.34	0.62	0.09	0.37	0.37	0.14	0.18	0.18	0.24	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.29	0.08	0.31	0.22	0.12	0.17	0.07	0.19	0.08	0.09
s, saturation flow rate [veh/h]	3459	6792	1589	3459	5094	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	218	2310	986	323	1888	589	468	647	289	847	1036	463
d1, Uniform Delay [s]	73.94	47.79	16.23	71.54	46.03	40.61	68.23	64.63	57.71	36.97	25.02	25.27
k, delay calibration	0.04	0.11	0.31	0.04	0.11	0.13	0.04	0.04	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	0.65	1.00	2.76	1.07	1.18	2.96	3.20	0.33	6.27	0.65	1.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.80	0.47	0.87	0.84	0.59	0.91	0.94	0.39	0.76	0.27	0.32
d, Delay for Lane Group [s/veh]	76.44	48.44	17.22	74.30	47.09	41.80	71.19	67.83	58.04	43.24	25.67	27.05
Lane Group LOS	E	D	B	E	D	D	E	E	E	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.61	16.78	9.35	5.72	18.91	11.10	8.85	12.59	4.14	9.36	2.61	2.84
50th-Percentile Queue Length [ft/ln]	90.14	419.52	233.75	142.98	472.75	277.51	221.25	314.70	103.46	234.11	65.28	70.91
95th-Percentile Queue Length [veh/ln]	6.49	23.50	14.36	9.64	26.04	16.56	13.73	18.41	7.45	14.38	4.70	5.11
95th-Percentile Queue Length [ft/ln]	162.25	587.47	359.12	241.03	651.04	414.11	343.23	460.16	186.23	359.58	117.50	127.64

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.44	76.44	48.44	17.22	74.30	74.30	47.09	41.80	71.19	71.19	67.83	58.04	43.24	25.67	27.05
Movement LOS	E	E	D	B	E	E	D	D	E	E	E	E	D	C	C
d_A, Approach Delay [s/veh]	44.58				49.70				68.11				36.37		
Approach LOS	D				D				E				D		
d_I, Intersection Delay [s/veh]	48.86														
Intersection LOS	D														
Intersection V/C	0.798														

Emissions

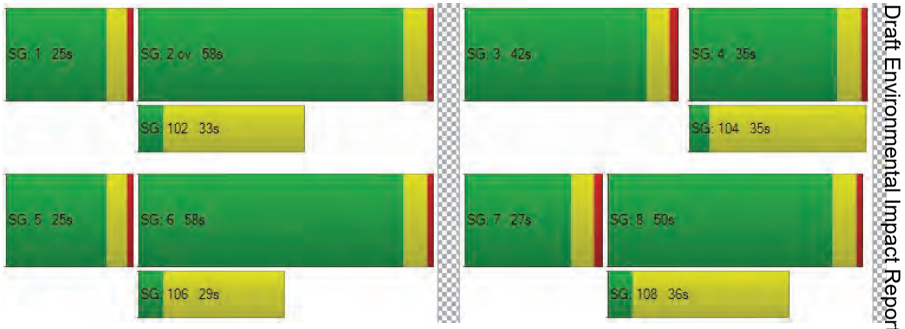
Vehicle Miles Traveled [mph]	68.89	732.65	183.56	62.51	354.05	77.91	106.57	151.99	28.45	67.22	29.78	15.31
Stops [stops/h]	162.25	1510.26	210.38	257.36	1276.43	249.76	398.26	566.46	93.11	421.40	117.50	63.82
Fuel consumption [US gal/h]	6.42	56.64	10.33	9.58	43.20	8.74	12.77	17.79	3.03	10.74	3.36	1.79
CO [g/h]	448.95	3959.23	722.40	669.32	3019.98	611.21	892.80	1243.60	211.93	750.39	234.79	124.88
NOx [g/h]	87.35	770.32	140.55	130.23	587.58	118.92	173.71	241.96	41.23	146.00	45.68	24.30
VOC [g/h]	104.05	917.59	167.42	155.12	699.91	141.65	206.91	288.22	49.12	173.91	54.41	28.94

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	71.25	71.25	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.749	3.899	2.985	3.075
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	654	654	366	554
d_b, Bicycle Delay [s]	36.25	36.25	53.38	41.83
l_b,int, Bicycle LOS Score for Intersection	2.654	2.702	2.196	2.491
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	300.0	200.0	100.0	100.0	100.0	320.00	100.00	320.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	18	1787	36	0	34	1740	490	751	10	41	2	8	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-82	0	0	0	-19	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	0	0	147	0	0	12	0	0	6
Total Hourly Volume [veh/h]	1	18	1705	25	0	34	1721	343	751	10	29	2	8	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	479	7	0	10	483	96	211	3	8	1	2	4
Total Analysis Volume [veh/h]	1	20	1916	29	0	39	1934	385	844	11	33	2	9	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	16	34	0	0	15	34	0	0	36	0	0	16	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	11	0	0	0	18	0	0	24	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	20	40	0	0	20	40	0	0	40	0	0	20	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	C
C, Cycle Length [s]	78	78	78	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	34	34	2	34	34	22	22	22	2
g / C, Green / Cycle	0.02	0.43	0.43	0.03	0.43	0.43	0.28	0.28	0.28	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.36	0.36	0.02	0.38	0.24	0.24	0.24	0.02	0.02
s, saturation flow rate [veh/h]	1781	3560	1856	1781	5094	1589	1781	1783	1589	1691
c, Capacity [veh/h]	42	1529	797	49	2206	688	508	509	453	47
d1, Uniform Delay [s]	37.77	19.90	19.91	37.86	20.29	16.61	26.32	26.32	20.43	37.58
k, delay calibration	0.04	0.15	0.32	0.04	0.15	0.15	0.11	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.30	1.81	6.80	10.15	1.73	1.02	3.85	3.83	0.07	3.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.84	0.84	0.79	0.88	0.56	0.84	0.84	0.07	0.55
d, Delay for Lane Group [s/veh]	41.07	21.70	26.71	48.01	22.02	17.62	30.17	30.14	20.50	41.24
Lane Group LOS	D	C	C	D	C	B	C	C	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.43	9.86	11.40	0.82	8.96	4.40	7.66	7.66	0.43	0.53
50th-Percentile Queue Length [ft/ln]	10.71	246.49	284.95	20.52	224.10	110.10	191.51	191.48	10.87	13.24
95th-Percentile Queue Length [veh/ln]	0.77	15.01	16.93	1.48	13.87	7.85	12.20	12.20	0.78	0.95
95th-Percentile Queue Length [ft/ln]	19.28	375.23	423.37	36.94	346.86	196.14	304.99	304.94	19.57	23.84

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.07	41.07	23.37	26.71	48.01	48.01	22.02	17.62	30.16	30.14	20.50	41.24	41.24	41.24
Movement LOS	D	D	C	C	D	D	C	B	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	23.61				21.73				29.80			41.24		
Approach LOS	C				C				C			D		
d_I, Intersection Delay [s/veh]	23.90													
Intersection LOS	C													
Intersection V/C	0.813													

Emissions

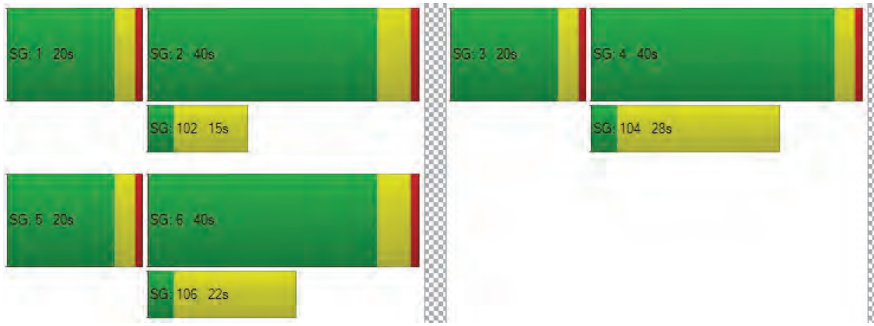
Vehicle Miles Traveled [mph]	7.43	452.19	235.90	15.53	770.08	153.30	102.97	103.01	7.95	0.49
Stops [stops/h]	19.72	907.55	524.56	37.78	1237.67	202.68	352.56	352.49	20.02	24.38
Fuel consumption [US gal/h]	0.59	29.27	16.23	1.60	57.41	10.27	8.81	8.81	0.58	0.37
CO [g/h]	41.26	2046.30	1134.75	112.00	4013.27	718.12	615.89	615.88	40.23	26.09
NOx [g/h]	8.03	398.14	220.78	21.79	780.84	139.72	119.83	119.83	7.83	5.08
VOC [g/h]	9.56	474.25	262.99	25.96	930.12	166.43	142.74	142.74	9.32	6.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.52	0.00	31.52	31.52
l_p,int, Pedestrian LOS Score for Intersectio	3.157	0.000	2.500	1.779
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	869	869	920	409
d_b, Bicycle Delay [s]	12.50	12.50	11.40	24.75
l_b,int, Bicycle LOS Score for Intersection	2.646	2.916	3.045	1.612
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	45.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.999

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	131	1454	1541	243	388	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-82	-19	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	73	0	66
Total Hourly Volume [veh/h]	0	130	1372	1522	170	388	153
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	385	428	48	109	43
Total Analysis Volume [veh/h]	0	146	1542	1710	191	436	172
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	52	40	40	20	20
g / C, Green / Cycle	0.10	0.64	0.49	0.49	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.43	0.51	0.53	0.24	0.11
s, saturation flow rate [veh/h]	1781	3560	1870	1806	1781	1589
c, Capacity [veh/h]	182	2264	908	877	432	386
d1, Uniform Delay [s]	36.19	9.63	21.21	21.21	31.21	26.50
k, delay calibration	0.04	0.15	0.47	0.49	0.44	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.13	0.52	42.03	55.64	42.59	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.68	1.05	1.08	1.01	0.45
d, Delay for Lane Group [s/veh]	39.31	10.15	63.24	76.85	73.80	27.31
Lane Group LOS	D	B	F	F	F	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.97	7.57	26.27	28.69	13.36	2.87
50th-Percentile Queue Length [ft/ln]	74.21	189.37	656.84	717.18	333.92	71.82
95th-Percentile Queue Length [veh/ln]	5.34	12.09	35.94	39.84	19.45	5.17
95th-Percentile Queue Length [ft/ln]	133.57	302.21	898.54	996.08	486.23	129.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.31	39.31	10.15	69.29	76.85	73.80	27.31
Movement LOS	D	D	B	E	E	F	C
d_A, Approach Delay [s/veh]	12.67			70.05		60.65	
Approach LOS	B			E		E	
d_I, Intersection Delay [s/veh]	45.61						
Intersection LOS	D						
Intersection V/C	0.999						

Emissions

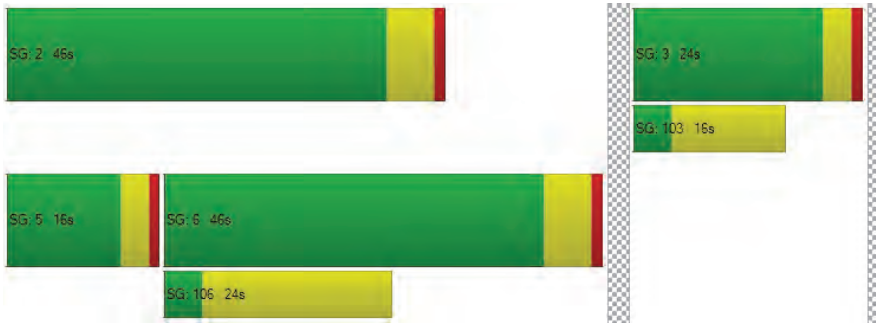
Vehicle Miles Traveled [mph]	101.55	1072.54	336.26	336.26	147.11	58.04
Stops [stops/h]	129.71	661.98	1148.09	1253.56	583.65	125.53
Fuel consumption [US gal/h]	6.07	51.00	32.42	35.63	15.83	4.04
CO [g/h]	423.95	3564.63	2265.98	2490.66	1106.38	282.30
NOx [g/h]	82.49	693.55	440.88	484.59	215.26	54.92
VOC [g/h]	98.25	826.14	525.16	577.23	256.41	65.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.58	0.00	33.58
l_p,int, Pedestrian LOS Score for Intersectio	3.007	0.000	2.385
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	971	971	486
d_b, Bicycle Delay [s]	10.90	10.90	23.62
l_b,int, Bicycle LOS Score for Intersection	2.952	3.188	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	217.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.244

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	114	590	31	419	446	895	817	306	63	76	201	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-11	-34	-5	0	-8	-12	-49	-8	-2	-1	-2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	265	0	0	18	0	0	53
Total Hourly Volume [veh/h]	103	556	18	419	438	618	768	298	43	75	199	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	153	5	115	120	170	211	82	12	21	55	34
Total Analysis Volume [veh/h]	113	611	20	460	481	679	844	327	47	82	219	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	7	20	20	12	25	25	15	15	15	15
g / C, Green / Cycle	0.08	0.24	0.24	0.15	0.31	0.31	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.17	0.26	0.26	0.43	0.34	0.34	0.16	0.09
s, saturation flow rate [veh/h]	1781	1870	1849	1781	1870	1589	1781	1810	1845	1589
c, Capacity [veh/h]	146	456	451	266	581	494	332	338	345	297
d1, Uniform Delay [s]	36.19	27.71	27.71	34.22	25.72	27.72	32.72	32.72	31.77	29.09
k, delay calibration	0.04	0.04	0.04	0.50	0.25	0.50	0.50	0.50	0.10	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.27	0.72	0.73	344.42	6.90	180.95	386.73	373.33	6.72	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.70	0.70	1.73	0.83	1.37	1.83	1.80	0.87	0.46
d, Delay for Lane Group [s/veh]	39.46	28.43	28.44	378.64	32.62	208.67	419.45	406.05	38.48	29.51
Lane Group LOS	D	C	C	F	C	F	F	F	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.26	5.43	5.38	30.09	8.45	32.96	41.90	41.34	6.13	2.32
50th-Percentile Queue Length [ft/ln]	56.41	135.87	134.49	752.16	211.32	823.88	1047.56	1033.47	153.32	58.06
95th-Percentile Queue Length [veh/ln]	4.06	9.26	9.18	47.42	13.22	50.36	65.72	64.72	10.19	4.18
95th-Percentile Queue Length [ft/ln]	101.53	231.46	229.59	1185.60	330.52	1258.90	1643.06	1618.09	254.86	104.50

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.46	28.44	28.44	378.64	32.62	208.67	415.72	406.05	406.05	38.48	38.48	29.51
Movement LOS	D	C	C	F	C	F	F	F	F	D	D	C
d_A, Approach Delay [s/veh]	30.11			204.66			412.75			35.67		
Approach LOS	C			F			F			D		
d_I, Intersection Delay [s/veh]	216.99											
Intersection LOS	F											
Intersection V/C	1.244											

Emissions

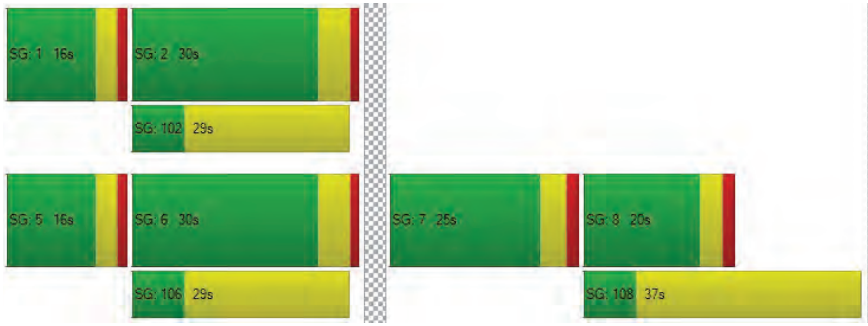
Vehicle Miles Traveled [mph]	65.26	183.17	181.25	319.95	334.56	472.28	45.81	45.81	33.29	15.15
Stops [stops/h]	101.18	243.73	241.25	1349.24	379.07	1477.90	1879.13	1853.86	275.03	104.14
Fuel consumption [US gal/h]	4.15	10.72	10.61	71.20	21.43	72.08	64.24	62.44	5.25	2.02
CO [g/h]	290.28	749.47	741.68	4977.01	1497.62	5038.24	4490.36	4364.55	366.77	141.32
NOx [g/h]	56.48	145.82	144.30	968.35	291.38	980.26	873.66	849.18	71.36	27.50
VOC [g/h]	67.28	173.70	171.89	1153.47	347.09	1167.66	1040.68	1011.53	85.00	32.75

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.89	0.00	29.89	29.89
l_p,int, Pedestrian LOS Score for Intersectio	2.574	0.000	2.776	2.434
Crosswalk LOS	B	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	615	615	386	498
d_b, Bicycle Delay [s]	19.24	19.24	26.13	22.63
l_b,int, Bicycle LOS Score for Intersection	2.180	3.115	3.599	2.370
Bicycle LOS	B	C	D	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.789

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	171	325	456	129	410	157
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-1	0	0	-12	-50	-6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	35	0	45
Total Hourly Volume [veh/h]	170	325	456	82	360	106
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	90	127	26	114	29
Total Analysis Volume [veh/h]	189	361	507	104	456	118
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	32	20	20	18	18
g / C, Green / Cycle	0.13	0.53	0.33	0.33	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.11	0.19	0.27	0.07	0.26	0.07
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	239	996	623	529	541	482
d1, Uniform Delay [s]	25.60	8.26	18.64	14.54	19.91	16.00
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.22	0.32	3.74	0.26	3.69	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.36	0.81	0.20	0.84	0.24
d, Delay for Lane Group [s/veh]	27.82	8.58	22.38	14.79	23.60	16.26
Lane Group LOS	C	A	C	B	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.40	1.83	5.70	0.85	6.01	1.17
50th-Percentile Queue Length [ft/ln]	59.88	45.67	142.56	21.16	150.29	29.25
95th-Percentile Queue Length [veh/ln]	4.31	3.29	9.62	1.52	10.03	2.11
95th-Percentile Queue Length [ft/ln]	107.78	82.21	240.47	38.09	250.82	52.65

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.82	8.58	22.38	14.79	23.60	16.26
Movement LOS	C	A	C	B	C	B
d_A, Approach Delay [s/veh]	15.19		21.09		22.09	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	19.55					
Intersection LOS	B					
Intersection V/C	0.789					

Emissions

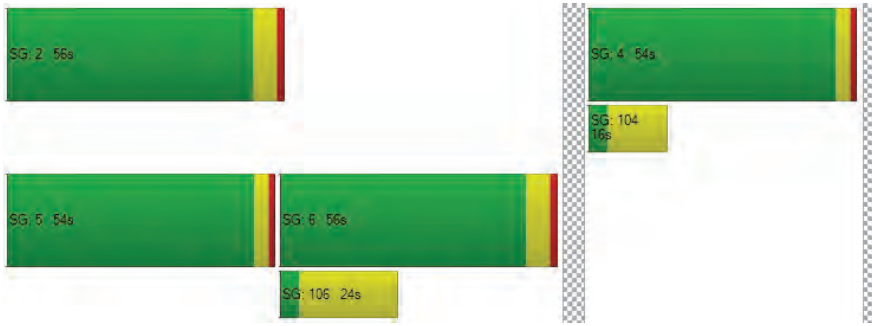
Vehicle Miles Traveled [mph]	23.32	44.54	292.80	60.06	107.10	27.71
Stops [stops/h]	141.56	107.98	337.03	50.03	355.30	69.14
Fuel consumption [US gal/h]	4.48	4.13	18.36	3.25	8.56	1.91
CO [g/h]	313.12	288.39	1283.63	227.29	598.49	133.75
NOx [g/h]	60.92	56.11	249.75	44.22	116.44	26.02
VOC [g/h]	72.57	66.84	297.49	52.68	138.70	31.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.98	0.00	22.98
l_p,int, Pedestrian LOS Score for Intersectio	2.650	0.000	2.295
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1642	1642	1642
d_b, Bicycle Delay [s]	0.98	0.98	0.98
l_b,int, Bicycle LOS Score for Intersection	2.467	2.626	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	27.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	438	0	25	588	0	0	0	0	2	0	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	0	0	-6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	437	0	25	582	0	0	0	0	2	0	58
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	119	0	6	158	0	0	0	0	1	0	15
Total Analysis Volume [veh/h]	0	475	0	25	633	0	0	0	0	2	0	58
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.10
d_M, Delay for Movement [s/veh]	8.79	0.00	0.00	8.34	0.00	0.00	30.04	24.04	12.50	27.22	24.69	11.76
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.33	0.33	0.33
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1.06	1.06	1.06	0.00	0.00	0.00	8.21	8.21	8.21
d_A, Approach Delay [s/veh]	0.00			0.32			22.20			12.27		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.79											
Intersection LOS	D											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	44.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.416

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	334	21	144	446	0	0	0	0	59	0	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	0	0	-6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	333	21	144	440	0	0	0	0	59	0	104
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	90	6	39	118	0	0	0	0	16	0	28
Total Analysis Volume [veh/h]	0	358	23	155	473	0	0	0	0	63	0	112
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.42	0.00	0.17
d_M, Delay for Movement [s/veh]	8.31	0.00	0.00	8.52	0.00	0.00	36.10	26.32	11.09	44.10	41.34	25.67
Movement LOS	A	A	A	A	A	A	E	D	B	E	E	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	3.42	3.42	3.42
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	11.33	0.00	0.00	0.00	0.00	0.00	85.54	85.54	85.54
d_A, Approach Delay [s/veh]	0.00			2.10			24.51			32.31		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	5.89											
Intersection LOS	E											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	229.236

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	127	1017	168	55	1	1019	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-18	-58	-2	-4	0	-13	-11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	109	959	166	51	1	1006	179
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	31	272	47	14	0	286	51
Total Analysis Volume [veh/h]	0	124	1090	189	58	1	1143	203
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	229.24	1.33	0.00	0.00	0.00	0.87	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	10000.00	18.89	0.00
Movement LOS	F	F	F	A	A	F	C	A
95th-Percentile Queue Length [veh/ln]	154.05	154.05	154.05	0.00	0.00	10.74	10.74	10.74
95th-Percentile Queue Length [ft/ln]	3851.18	3851.18	3851.18	0.00	0.00	268.41	268.41	268.41
d_A, Approach Delay [s/veh]	10000.00			0.00		23.45		
Approach LOS	F			A		C		
d_I, Intersection Delay [s/veh]	4334.61							
Intersection LOS	F							

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Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	273.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.845

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	60	657	105	0	40	585	40	56	49	40	225	17	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	-18	-79	-56	0	0	-13	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	657	105	0	40	585	22	0	0	40	225	4	79
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	198	32	0	13	176	7	0	0	12	68	1	25
Total Analysis Volume [veh/h]	72	792	127	0	51	705	27	0	0	48	271	5	100
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	991	783	430	494
Degree of Utilization, x	1.84	1.47	0.11	0.76

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	62.66	38.84	0.37	6.61
95th-Percentile Queue Length [ft]	1566.60	970.96	9.37	165.27
Approach Delay [s/veh]	404.06	240.47	12.44	29.97
Approach LOS	F	F	B	D
Intersection Delay [s/veh]	273.24			
Intersection LOS	F			

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Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	35.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	159	80	0	143	294	2	132	196
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-6	0	-1	0	0	-27	-2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	74	0	142	294	2	105	194
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	22	0	42	88	1	31	58
Total Analysis Volume [veh/h]	189	88	0	169	350	2	125	231
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.63	0.13	0.00	0.00	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	35.37	10.89	9.41	0.00	0.00	13.29	8.93	0.00
Movement LOS	E	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.97	0.43	0.00	0.00	0.00	0.42	0.42	0.00
95th-Percentile Queue Length [ft/ln]	99.21	10.75	0.00	0.00	0.00	10.55	10.55	0.00
d_A, Approach Delay [s/veh]	27.59			0.00			3.19	
Approach LOS	D			A			A	
d_I, Intersection Delay [s/veh]	7.61							
Intersection LOS	E							

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Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	152.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.971

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	205	208	87	201	294	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-6	0	0	-27
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	205	208	81	201	294	160
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	57	22	55	80	43
Total Analysis Volume [veh/h]	223	226	88	218	320	174
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.97	0.23	0.00	0.00	0.26	0.00
d_M, Delay for Movement [s/veh]	152.30	140.33	0.00	0.00	8.85	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	18.58	18.58	0.00	0.00	1.02	0.00
95th-Percentile Queue Length [ft/ln]	464.46	464.46	0.00	0.00	25.45	0.00
d_A, Approach Delay [s/veh]	146.27		0.00		5.73	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	54.85					
Intersection LOS	F					

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Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.222

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	310	12	28	203	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-27	0	0	-6	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	283	12	28	197	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	3	8	54	0	1
Total Analysis Volume [veh/h]	308	13	30	214	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	723	730	680	751	751	706
Degree of Utilization, x	0.22	0.22	0.04	0.14	0.14	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.85	0.83	0.14	0.50	0.50	0.01
95th-Percentile Queue Length [ft]	21.16	20.86	3.46	12.39	12.39	0.32
Approach Delay [s/veh]	9.05		8.28			8.13
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.72					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	253	10	50	7	1	21	5	697	138	90	634	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-27	0	0	0	0	0	0	0	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	6	0	0	40	0	0	3
Total Hourly Volume [veh/h]	226	10	35	7	1	15	5	697	92	90	634	8
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	3	9	2	0	4	1	180	24	24	163	2
Total Analysis Volume [veh/h]	233	10	38	7	1	15	5	719	95	97	654	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	25	0	15	35	0	15	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	21	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	0	0	30	0	20	40	0	20	40	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	0	0	9	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	53	53	53	53	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	9	3	1	14	14	7	21	21
g / C, Green / Cycle	0.17	0.17	0.17	0.05	0.01	0.27	0.27	0.13	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.01	0.02	0.01	0.00	0.20	0.06	0.05	0.18	0.01
s, saturation flow rate [veh/h]	1781	1870	1589	1654	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	309	325	276	82	22	966	431	231	1384	618
d1, Uniform Delay [s]	20.89	18.25	18.60	24.36	26.01	17.69	15.02	21.30	12.17	9.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.72	0.04	0.22	1.86	5.23	1.16	0.25	1.22	0.25	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.03	0.14	0.28	0.23	0.74	0.22	0.42	0.47	0.01
d, Delay for Lane Group [s/veh]	24.61	18.29	18.82	26.22	31.24	18.85	15.27	22.51	12.42	9.99
Lane Group LOS	C	B	B	C	C	B	B	C	B	A
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.81	0.10	0.38	0.30	0.09	3.70	0.82	1.10	2.50	0.05
50th-Percentile Queue Length [ft/ln]	70.28	2.42	9.48	7.54	2.25	92.38	20.61	27.44	62.57	1.27
95th-Percentile Queue Length [veh/ln]	5.06	0.17	0.68	0.54	0.16	6.65	1.48	1.98	4.51	0.09
95th-Percentile Queue Length [ft/ln]	126.51	4.36	17.06	13.57	4.06	166.28	37.10	49.39	112.63	2.28

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.61	18.29	18.82	26.22	26.22	26.22	31.24	18.85	15.27	22.51	12.42	9.99
Movement LOS	C	B	B	C	C	C	C	B	B	C	B	A
d_A, Approach Delay [s/veh]	23.60			26.22			18.51			13.69		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	17.42											
Intersection LOS	B											
Intersection V/C	0.574											

Emissions

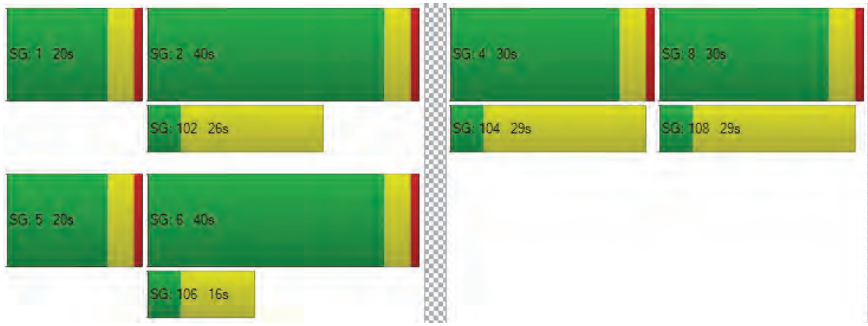
Vehicle Miles Traveled [mph]	69.17	2.97	11.28	0.51	0.72	102.95	13.60	81.63	550.36	6.73
Stops [stops/h]	190.84	6.58	25.73	20.47	6.12	501.67	55.96	74.50	339.81	3.44
Fuel consumption [US gal/h]	5.07	0.20	0.75	0.26	0.10	9.77	1.16	4.22	26.19	0.31
CO [g/h]	354.30	13.68	52.57	17.96	6.65	682.82	81.39	294.72	1830.49	21.84
NOx [g/h]	68.93	2.66	10.23	3.49	1.29	132.85	15.84	57.34	356.15	4.25
VOC [g/h]	82.11	3.17	12.18	4.16	1.54	158.25	18.86	68.30	424.23	5.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.28	18.28	18.28	18.28
l_p,int, Pedestrian LOS Score for Intersectio	2.398	1.724	2.771	2.681
Crosswalk LOS	B	A	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	943	943	1320	1320
d_b, Bicycle Delay [s]	7.41	7.41	3.07	3.07
l_b,int, Bicycle LOS Score for Intersection	2.048	1.607	2.268	2.188
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	305	5	361	5	5	5	5	754	92	14	260	607	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	108	0	0	0	0	0	28	0	0	0	0
Total Hourly Volume [veh/h]	305	5	253	5	5	5	5	754	64	14	260	607	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	1	67	1	1	1	1	201	17	4	69	161	1
Total Analysis Volume [veh/h]	324	5	269	5	5	5	5	802	68	14	277	646	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	24	1	1	1	52	52	21	73	73
g / C, Green / Cycle	0.20	0.20	0.01	0.01	0.01	0.44	0.44	0.18	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.18	0.17	0.00	0.01	0.00	0.23	0.04	0.16	0.17	0.17
s, saturation flow rate [veh/h]	1781	1594	1781	1718	1781	3560	1589	1781	1870	1865
c, Capacity [veh/h]	349	313	12	13	12	1548	691	318	1134	1131
d1, Uniform Delay [s]	47.44	46.78	59.33	59.43	59.34	24.73	20.02	48.42	11.26	11.26
k, delay calibration	0.30	0.09	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.29	6.61	19.50	27.26	19.95	1.24	0.28	4.44	0.64	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.88	0.40	0.76	0.40	0.52	0.10	0.92	0.29	0.29
d, Delay for Lane Group [s/veh]	70.72	53.39	78.83	86.69	79.29	25.97	20.30	52.87	11.90	11.91
Lane Group LOS	E	D	E	F	E	C	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.73	8.48	0.22	0.40	0.22	8.52	1.19	8.92	4.24	4.23
50th-Percentile Queue Length [ft/ln]	293.26	212.08	5.48	10.09	5.50	212.88	29.66	222.95	105.90	105.63
95th-Percentile Queue Length [veh/ln]	17.35	13.26	0.39	0.73	0.40	13.30	2.14	13.82	7.61	7.60
95th-Percentile Queue Length [ft/ln]	433.68	331.49	9.86	18.17	9.90	332.52	53.40	345.39	190.28	189.90

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.72	53.39	53.39	78.83	86.69	86.69	79.29	25.97	20.30	52.87	52.87	11.90	11.91
Movement LOS	E	D	D	E	F	F	E	C	C	D	D	B	B
d_A, Approach Delay [s/veh]	62.78			84.07			25.84			24.56			
Approach LOS	E			F			C			C			
d_I, Intersection Delay [s/veh]	34.79												
Intersection LOS	C												
Intersection V/C	0.640												

Emissions

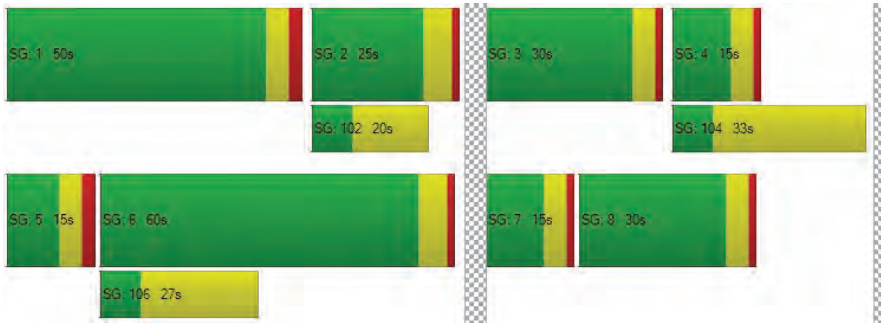
Vehicle Miles Traveled [mph]	124.84	105.58	0.23	0.46	4.21	674.90	57.22	72.63	81.35	81.13
Stops [stops/h]	351.91	254.49	6.57	12.11	6.60	510.92	35.60	267.54	127.08	126.75
Fuel consumption [US gal/h]	11.75	8.73	0.13	0.26	0.29	34.84	2.83	7.60	4.84	4.83
CO [g/h]	821.04	610.15	8.80	18.32	20.29	2435.66	198.05	531.12	338.35	337.45
NOx [g/h]	159.75	118.71	1.71	3.56	3.95	473.89	38.53	103.34	65.83	65.65
VOC [g/h]	190.29	141.41	2.04	4.25	4.70	564.49	45.90	123.09	78.41	78.21

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.460	1.964	2.812	0.000
Crosswalk LOS	B	A	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.725	1.584	2.305	2.108
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.0	100.0	100.0	100.0	200.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			No				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	71	16	42	191	15	246	3	227	1167	57	86	738	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-1	0	-4	-12	0	0	-3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	13	0	0	74	0	0	0	17	0	0	54
Total Hourly Volume [veh/h]	71	16	29	191	15	171	3	223	1155	40	86	735	127
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	4	8	52	4	47	1	61	336	11	24	202	35
Total Analysis Volume [veh/h]	78	18	32	210	16	188	3	245	1343	44	95	808	140
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	21	24	0	8	26	0	0	23	31	0	15	34	0
Amber [s]	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	3.0	0.0	2.5	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	29	0	13	31	0	0	28	80	0	20	72	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	7	0	3	7	0	0	3	3	0	3	3	0
Vehicle Extension [s]	1.0	3.6	0.0	1.0	3.6	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Minimum Recall		No			No			No	No		No	No	
Maximum Recall		No			No			No	No		No	No	
Pedestrian Recall		No			No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	23	23	69	97	97	10	38	38
g / C, Green / Cycle	0.06	0.06	0.15	0.15	0.43	0.61	0.61	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.12	0.13	0.14	0.38	0.03	0.05	0.23	0.09
s, saturation flow rate [veh/h]	1781	1680	1781	1608	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	103	98	261	235	771	2158	963	115	847	378
d1, Uniform Delay [s]	74.22	73.15	66.09	66.77	29.91	19.94	12.77	73.95	60.12	50.96
k, delay calibration	0.13	0.13	0.13	0.13	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.87	5.10	7.14	11.29	1.10	1.36	0.09	5.55	3.09	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.51	0.81	0.87	0.32	0.62	0.05	0.83	0.95	0.37
d, Delay for Lane Group [s/veh]	87.09	78.25	73.23	78.05	31.01	21.31	12.86	79.50	63.20	51.19
Lane Group LOS	F	E	E	E	C	C	B	E	E	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.55	2.15	8.86	8.93	6.66	16.16	0.69	4.06	16.56	4.78
50th-Percentile Queue Length [ft/ln]	88.76	53.69	221.57	223.20	166.62	404.11	17.13	101.51	414.02	119.55
95th-Percentile Queue Length [veh/ln]	6.39	3.87	13.75	13.83	10.90	22.76	1.23	7.31	23.23	8.37
95th-Percentile Queue Length [ft/ln]	159.76	96.64	343.63	345.71	272.47	568.95	30.83	182.72	580.86	209.20

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	87.09	78.25	78.25	73.23	78.05	78.05	31.01	31.01	21.31	12.86	79.50	63.20	51.19
Movement LOS	F	E	E	E	E	E	C	C	C	B	E	E	D
d_A, Approach Delay [s/veh]	83.64			75.61			22.55				63.08		
Approach LOS	F			E			C				E		
d_I, Intersection Delay [s/veh]	44.93												
Intersection LOS	D												
Intersection V/C	0.668												

Emissions

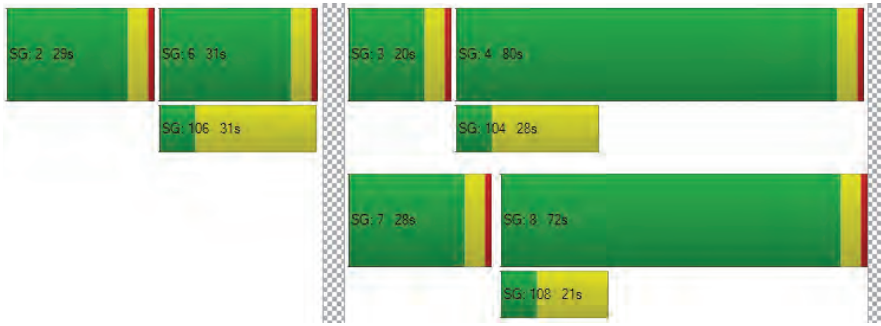
Vehicle Miles Traveled [mph]	3.90	2.50	9.76	9.48	26.01	140.84	4.61	33.23	282.60	48.97
Stops [stops/h]	79.88	48.32	199.41	200.88	149.96	727.39	15.42	91.36	745.23	107.59
Fuel consumption [US gal/h]	1.98	1.17	4.63	4.74	3.46	15.64	0.39	3.41	26.14	4.07
CO [g/h]	138.70	81.51	323.84	331.33	242.14	1093.23	27.28	238.30	1827.32	284.37
NOx [g/h]	26.99	15.86	63.01	64.46	47.11	212.70	5.31	46.36	355.53	55.33
VOC [g/h]	32.14	18.89	75.05	76.79	56.12	253.37	6.32	55.23	423.50	65.91

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.088	2.380	2.959	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	325	938	838
d_b, Bicycle Delay [s]	57.80	56.11	22.58	27.03
l_b,int, Bicycle LOS Score for Intersection	1.792	2.365	2.720	2.465
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	2	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	300.00	100.00	300.00	200.00	100.00	100.00	300.00	100.00	200.00	500.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	117	83	587	373	142	63	67	1081	264	432	840	207
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-2	-6	0	0	0	0	-12	0	-1	-3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	174	0	0	19	0	0	79	0	0	62
Total Hourly Volume [veh/h]	117	81	407	373	142	44	67	1069	185	431	837	145
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	21	105	96	37	11	17	276	48	111	216	37
Total Analysis Volume [veh/h]	121	84	420	385	146	45	69	1102	191	444	863	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	153
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Overlap	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	1	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,4									
Maximum Green [s]	0	35	25	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	3.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.5	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	28	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	1.5	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	150.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	29	0	45	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	2.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No	No		No		No	No		No	No	
Maximum Recall		No	No		No		No	No		No	No	
Pedestrian Recall		No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	113	113	113	113	113	113	113	113	113	113	113	113
L, Total Lost Time per Cycle [s]	4.20	4.20	3.50	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	0.00	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	12	12	65	28	28	28	4	39	39	17	51	51
g / C, Green / Cycle	0.10	0.10	0.58	0.25	0.25	0.25	0.04	0.34	0.34	0.15	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.07	0.04	0.15	0.21	0.08	0.03	0.02	0.31	0.12	0.13	0.24	0.09
s, saturation flow rate [veh/h]	1781	1870	2813	1877	1870	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	185	194	1629	496	464	394	136	1222	546	528	1604	716
d1, Uniform Delay [s]	48.71	47.54	11.78	42.10	34.67	32.90	53.24	35.31	27.71	46.55	22.52	18.83
k, delay calibration	0.13	0.13	0.04	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.82	1.89	0.03	3.27	0.48	0.16	1.10	2.75	0.38	1.41	0.36	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.43	0.26	0.78	0.31	0.11	0.51	0.90	0.35	0.84	0.54	0.21
d, Delay for Lane Group [s/veh]	53.53	49.43	11.82	45.37	35.15	33.06	54.34	38.05	28.09	47.97	22.88	19.01
Lane Group LOS	D	D	B	D	D	C	D	D	C	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.52	2.32	2.56	5.37	3.34	0.98	0.98	14.60	3.90	6.14	8.26	2.40
50th-Percentile Queue Length [ft/ln]	88.07	58.02	63.90	134.29	83.51	24.40	24.50	365.08	97.60	153.45	206.38	59.91
95th-Percentile Queue Length [veh/ln]	6.34	4.18	4.60	9.17	6.01	1.76	1.76	20.87	7.03	10.20	12.97	4.31
95th-Percentile Queue Length [ft/ln]	158.52	104.44	115.02	229.32	150.32	43.93	44.10	521.75	175.68	255.03	324.18	107.83

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.53	49.43	11.82	45.37	35.15	33.06	54.34	38.05	28.09	47.97	22.88	19.01
Movement LOS	D	D	B	D	D	C	D	D	C	D	C	B
d_A, Approach Delay [s/veh]	24.95			41.82			37.48			30.14		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	33.49											
Intersection LOS	C											
Intersection V/C	0.893											

Emissions

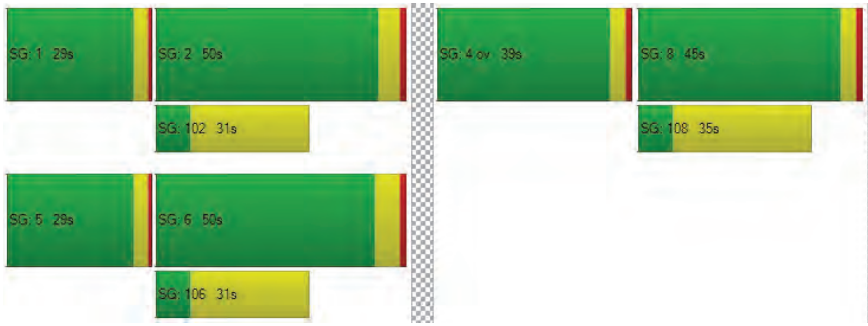
Vehicle Miles Traveled [mph]	206.98	143.69	718.44	78.05	29.60	9.12	24.13	385.43	66.80	200.34	389.41	67.23
Stops [stops/h]	112.31	73.99	162.98	342.52	106.50	31.12	62.49	931.15	124.47	391.38	526.38	76.40
Fuel consumption [US gal/h]	10.46	7.17	31.49	8.66	2.85	0.85	2.10	29.54	4.53	14.74	22.96	3.77
CO [g/h]	731.09	501.10	2200.87	605.33	199.30	59.43	146.90	2065.12	316.61	1030.55	1604.71	263.26
NOx [g/h]	142.24	97.49	428.21	117.78	38.78	11.56	28.58	401.80	61.60	200.51	312.22	51.22
VOC [g/h]	169.44	116.13	510.07	140.29	46.19	13.77	34.05	478.61	73.38	238.84	371.91	61.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.99	45.99	45.99	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.981	2.647	3.064	0.000
Crosswalk LOS	C	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	616	723	792	779
d_b, Bicycle Delay [s]	27.02	23.03	20.61	21.03
l_b,int, Bicycle LOS Score for Intersection	2.878	2.541	2.748	2.812
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	57.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.007

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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TKEAR TRANSPORTATION, PLANNING & MANAGEMENT, INC.

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	2032	1	0	1145	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-18	0	0	-5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	2014	1	0	1140	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	524	0	0	297	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	2098	1	0	1188	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Cycle Length [s]	93	93	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	50	50	0	49	49
g / C, Green / Cycle	0.00	0.00	0.22	0.22	0.01	0.54	0.54	0.00	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.56	0.56	0.00	0.33	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	11	9	384	343	25	1009	1009	3	1877	838
d1, Uniform Delay [s]	0.00	45.90	30.25	36.34	45.31	21.34	21.34	0.00	15.56	10.38
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.46	0.46	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	19.59	0.37	133.62	9.98	38.20	38.25	0.00	0.36	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.33	0.27	1.25	0.40	1.04	1.04	0.00	0.63	0.00
d, Delay for Lane Group [s/veh]	0.00	65.49	30.62	169.96	55.29	59.54	59.60	0.00	15.91	10.39
Lane Group LOS	A	E	C	F	E	F	F	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.12	1.93	20.28	0.30	30.26	30.27	0.00	8.34	0.03
50th-Percentile Queue Length [ft/ln]	0.00	2.95	48.17	506.99	7.39	756.52	756.82	0.00	208.39	0.70
95th-Percentile Queue Length [veh/ln]	0.00	0.21	3.47	30.90	0.53	40.58	40.60	0.00	13.07	0.05
95th-Percentile Queue Length [ft/ln]	0.00	5.30	86.70	772.40	13.29	1014.45	1014.93	0.00	326.77	1.27

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	65.49	30.62	30.62	169.96	55.29	59.57	59.60	0.00	15.91	10.39
Movement LOS	A	A	E	C	C	F	E	F	E	A	B	B
d_A, Approach Delay [s/veh]	65.49			142.93			59.55			15.90		
Approach LOS	E			F			E			B		
d_I, Intersection Delay [s/veh]	57.54											
Intersection LOS	E											
Intersection V/C	1.007											

Emissions

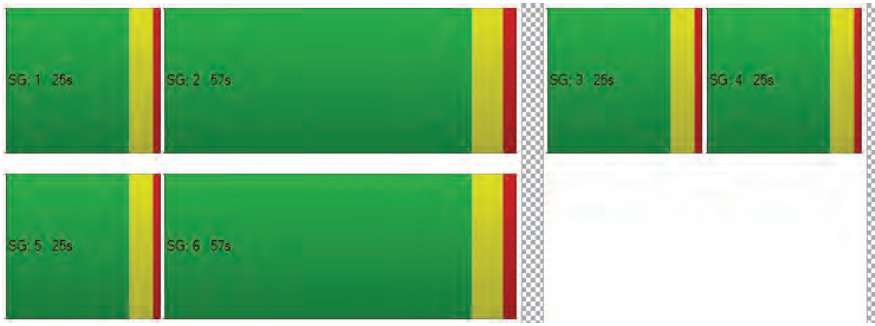
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	473.56	473.56	0.00	207.25	0.52
Stops [stops/h]	0.00	4.59	74.96	789.00	11.49	1177.34	1177.80	0.00	648.62	1.10
Fuel consumption [US gal/h]	0.00	0.07	3.07	27.52	0.36	38.71	38.73	0.00	15.96	0.03
CO [g/h]	0.00	5.00	214.41	1923.50	25.29	2706.13	2707.19	0.00	1115.77	2.37
NOx [g/h]	0.00	0.97	41.72	374.24	4.92	526.51	526.72	0.00	217.09	0.46
VOC [g/h]	0.00	1.16	49.69	445.79	5.86	627.17	627.42	0.00	258.59	0.55

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	432	432	1081	1081
d_b, Bicycle Delay [s]	28.43	28.43	9.77	9.77
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	3.300	2.542
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.068

Intersection Setup

Name	White Rock Rd			White Rock Rd			US 50 EB					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			White Rock Rd			US 50 EB					
Base Volume Input [veh/h]	0	855	1259	0	1056	301	512	0	91	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-9	-3	-6	0	-5	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	0	852	1253	0	1051	301	512	0	79	0	0	0
Peak Hour Factor	0.8300	0.9100	1.0000	1.0000	0.9100	0.8300	0.8300	1.0000	0.8300	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	234	313	0	289	91	154	0	24	0	0	0
Total Analysis Volume [veh/h]	0	936	1253	0	1155	363	617	0	95	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	0	0	73	0	34	0	0	0	0	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	5.0	0.0	0.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	80	0	0	80	0	40	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	8	0	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	6.00	6.00	6.00	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00	
g_i, Effective Green Time [s]	84	84	84	84	23	23	23	
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.19	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.79	0.32	0.23	0.17	0.17	0.06	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2485	1109	2485	1109	345	345	308	
d1, Uniform Delay [s]	7.43	18.13	8.11	7.10	47.16	47.16	41.47	
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.08	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.44	70.12	0.63	0.79	6.43	6.43	0.21	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.38	1.13	0.46	0.33	0.89	0.89	0.31	
d, Delay for Lane Group [s/veh]	7.87	88.25	8.74	7.89	53.60	53.60	41.68	
Lane Group LOS	A	F	A	A	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.70	47.92	6.35	3.62	9.57	9.57	2.44	
50th-Percentile Queue Length [ft/ln]	117.59	1198.12	158.66	90.40	239.36	239.36	61.08	
95th-Percentile Queue Length [veh/ln]	8.26	65.85	10.48	6.51	14.65	14.65	4.40	
95th-Percentile Queue Length [ft/ln]	206.51	1646.23	261.94	162.72	366.22	366.22	109.95	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.87	88.25	0.00	8.74	7.89	53.60	0.00	41.68	0.00	0.00	0.00
Movement LOS		A	F		A	A	D		D			
d_A, Approach Delay [s/veh]	53.88			8.53			52.01			0.00		
Approach LOS	D			A			D			A		
d_I, Intersection Delay [s/veh]	38.00											
Intersection LOS	D											
Intersection V/C	1.068											

Emissions

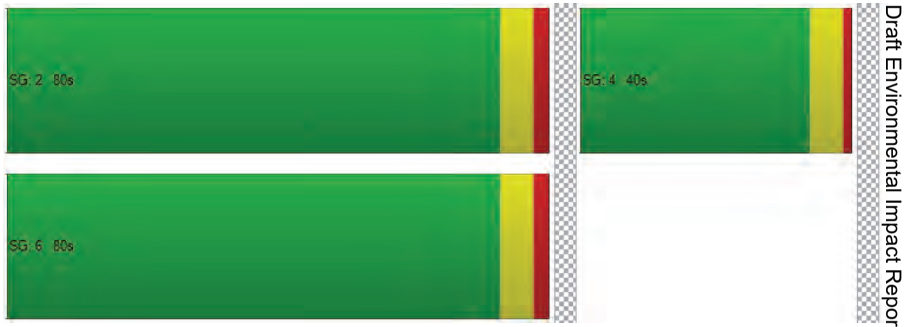
Vehicle Miles Traveled [mph]	163.28	218.59	204.68	64.33	18.68	18.68	5.75	
Stops [stops/h]	282.22	1437.75	380.77	108.48	287.23	287.23	73.30	
Fuel consumption [US gal/h]	9.78	39.44	12.58	3.83	5.72	5.72	1.45	
CO [g/h]	683.65	2756.99	879.58	267.73	399.85	399.85	101.18	
NOx [g/h]	133.01	536.41	171.13	52.09	77.80	77.80	19.69	
VOC [g/h]	158.44	638.96	203.85	62.05	92.67	92.67	23.45	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1217	1217	567	0
d_b, Bicycle Delay [s]	9.20	9.20	30.82	60.00
l_b,int, Bicycle LOS Score for Intersection	3.366	2.812	2.754	4.132
Bicycle LOS	C	C	C	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	1215	152	0	686	254	671	1	310	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	0	-1	0	-4	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1212	152	0	685	254	667	1	310	0	0	0
Peak Hour Factor	0.7900	0.7900	1.0000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	384	38	0	217	80	211	0	98	0	0	0
Total Analysis Volume [veh/h]	0	1534	152	0	867	322	844	1	392	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	0	0	73	0	0	34	0	0	0	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	80	0	0	80	0	0	40	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	6.80	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.80	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	76	76	76	76	31	31	31	
g / C, Green / Cycle	0.63	0.63	0.63	0.63	0.26	0.26	0.26	
(v / s)_i Volume / Saturation Flow Rate	0.43	0.10	0.24	0.20	0.24	0.24	0.25	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2253	1006	2253	1006	467	467	417	
d1, Uniform Delay [s]	14.22	8.95	10.70	10.15	42.81	42.81	43.35	
k, delay calibration	0.50	0.50	0.50	0.50	0.27	0.27	0.30	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.69	0.32	0.50	0.84	14.67	14.65	22.13	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.68	0.15	0.38	0.32	0.90	0.90	0.94	
d, Delay for Lane Group [s/veh]	15.90	9.27	11.20	10.99	57.48	57.46	65.48	
Lane Group LOS	B	A	B	B	E	E	E	
Critical Lane Group	Yes	No	No	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	13.11	1.66	5.51	4.00	13.94	13.94	13.87	
50th-Percentile Queue Length [ft/ln]	327.73	41.45	137.66	100.12	348.45	348.40	346.71	
95th-Percentile Queue Length [veh/ln]	19.05	2.98	9.35	7.21	20.06	20.06	19.98	
95th-Percentile Queue Length [ft/ln]	476.18	74.62	233.87	180.22	501.52	501.46	499.40	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.90	9.27	0.00	11.20	10.99	57.47	57.46	65.48	0.00	0.00	0.00
Movement LOS		B	A		B	B	E	E	E			
d_A, Approach Delay [s/veh]		15.31			11.14			60.01			0.00	
Approach LOS		B			B			E			A	
d_I, Intersection Delay [s/veh]	27.55											
Intersection LOS	C											
Intersection V/C	0.753											

Emissions

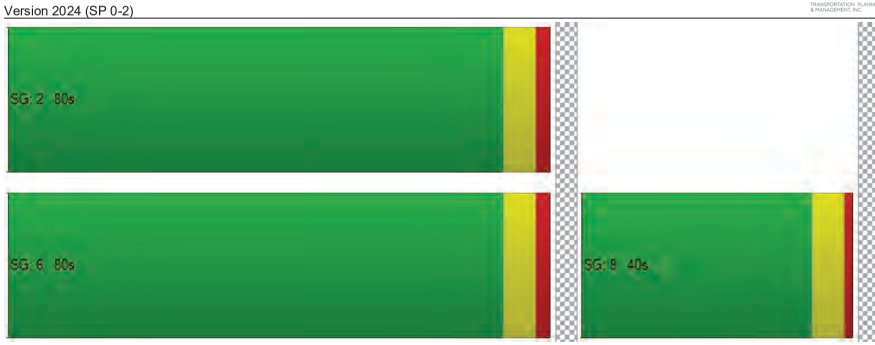
Vehicle Miles Traveled [mph]	271.84	26.94	118.55	44.03	14.64	14.64	13.58	
Stops [stops/h]	786.56	49.74	330.38	120.15	418.15	418.08	416.05	
Fuel consumption [US gal/h]	20.50	1.67	8.68	3.20	7.85	7.85	8.08	
CO [g/h]	1433.03	116.76	606.82	223.43	549.00	548.87	564.81	
NOx [g/h]	278.82	22.72	118.07	43.47	106.82	106.79	109.89	
VOC [g/h]	332.12	27.06	140.64	51.78	127.24	127.21	130.90	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1220	1220	570	0
d_b, Bicycle Delay [s]	9.13	9.13	30.67	60.00
l_b,int, Bicycle LOS Score for Intersection	2.951	2.541	3.601	4.132
Bicycle LOS	C	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	438	590	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	437	584	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	109	146	0	0	0
Total Analysis Volume [veh/h]	0	437	584	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	12.04
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		12.04	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.078

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	328	485	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	327	479	20	27	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	82	120	5	7	0
Total Analysis Volume [veh/h]	0	327	479	20	27	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	8.38	0.00	0.00	0.00	16.26	12.09
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.25	0.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	6.30	6.30
d_A, Approach Delay [s/veh]	0.00		0.00		16.26	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.51					
Intersection LOS	C					

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Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	20.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.159

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	67	47	288	46	10	41	2	49	25	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	0	0	-6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	184	67	47	282	46	10	41	2	49	25	87
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	47	17	12	73	12	3	11	1	13	6	22
Total Analysis Volume [veh/h]	0	190	69	48	291	47	10	42	2	51	26	90
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.04	0.12	0.00	0.16	0.07	0.11
d_M, Delay for Movement [s/veh]	7.95	0.00	0.00	7.82	0.00	0.00	19.59	16.84	11.83	20.01	18.58	13.17
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.08	0.08	0.08	0.54	0.54	0.54	1.50	1.50	1.50
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.11	2.11	2.11	13.50	13.50	13.50	37.40	37.40	37.40
d_A, Approach Delay [s/veh]	0.00			0.97			17.16			16.10		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.61											
Intersection LOS	C											

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Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	437	607	60	0
2	424	589	58	0
3	415	577	57	0
4	389	540	53	0
5	345	480	47	0
6	341	473	47	0
7	336	467	46	0
8	306	425	42	0
9	302	419	41	0
10	297	413	41	0
11	258	358	35	0
12	240	334	33	0
13	236	328	32	0
14	175	243	24	0
15	175	243	24	0
16	122	170	17	0
17	70	97	10	0
18	70	97	10	0
19	39	55	5	0
20	22	30	3	0
21	13	18	2	0
22	4	6	1	0
23	4	6	1	0
24	4	6	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1044	1	60	No	No	No	No	No	Yes	Yes	Yes	No	No
2	1	1013	1	58	No	No	No	No	No	No	Yes	Yes	No	No
3	1	992	1	57	No	No	No	No	No	No	Yes	Yes	No	No
4	1	929	1	53	No	No	No	No	No	No	Yes	Yes	No	No
5	1	825	1	47	No	No	No	No	No	No	No	Yes	No	No
6	1	814	1	47	No	No	No	No	No	No	No	Yes	No	No
7	1	803	1	46	No	No	No	No	No	No	No	Yes	No	No
8	1	731	1	42	No	No	No	No	No	No	No	Yes	No	No
9	1	721	1	41	No	No	No	No	No	No	No	No	No	No
10	1	710	1	41	No	No	No	No	No	No	No	No	No	No
11	1	616	1	35	No	No	No	No	No	No	No	No	No	No
12	1	574	1	33	No	No	No	No	No	No	No	No	No	No
13	1	564	1	32	No	No	No	No	No	No	No	No	No	No
14	1	418	1	24	No	No	No	No	No	No	No	No	No	No
15	1	418	1	24	No	No	No	No	No	No	No	No	No	No
16	1	292	1	17	No	No	No	No	No	No	No	No	No	No
17	1	167	1	10	No	No	No	No	No	No	No	No	No	No
18	1	167	1	10	No	No	No	No	No	No	No	No	No	No
19	1	94	1	5	No	No	No	No	No	No	No	No	No	No
20	1	52	1	3	No	No	No	No	No	No	No	No	No	No
21	1	31	1	2	No	No	No	No	No	No	No	No	No	No
22	1	10	1	1	No	No	No	No	No	No	No	No	No	No
23	1	10	1	1	No	No	No	No	No	No	No	No	No	No
24	1	10	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	1	4	8	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.3	22.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:12	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	60	0
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1104	1104
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	354	584	163	0
2	343	566	158	0
3	336	555	155	0
4	315	520	145	0
5	280	461	129	0
6	276	456	127	0
7	273	450	126	0
8	248	409	114	0
9	244	403	112	0
10	241	397	111	0
11	209	345	96	0
12	195	321	90	0
13	191	315	88	0
14	142	234	65	0
15	142	234	65	0
16	99	164	46	0
17	57	93	26	0
18	57	93	26	0
19	32	53	15	0
20	18	29	8	0
21	11	18	5	0
22	4	6	2	0
23	4	6	2	0
24	4	6	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	938	1	163	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	909	1	158	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	891	1	155	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	835	1	145	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	2	741	1	129	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	2	732	1	127	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	2	723	1	126	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
8	2	657	1	114	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No
9	2	647	1	112	No	No	Yes	Yes	No	No	Yes	Yes	No	No
10	2	638	1	111	No	No	Yes	Yes	No	No	Yes	Yes	No	No
11	2	554	1	96	No	No	No	Yes	No	No	No	Yes	No	No
12	2	516	1	90	No	No	No	Yes	No	No	No	Yes	No	No
13	2	506	1	88	No	No	No	Yes	No	No	No	Yes	No	No
14	2	376	1	65	No	No	No	No	No	No	No	No	No	No
15	2	376	1	65	No	No	No	No	No	No	No	No	No	No
16	2	263	1	46	No	No	No	No	No	No	No	No	No	No
17	2	150	1	26	No	No	No	No	No	No	No	No	No	No
18	2	150	1	26	No	No	No	No	No	No	No	No	No	No
19	2	85	1	15	No	No	No	No	No	No	No	No	No	No
20	2	47	1	8	No	No	No	No	No	No	No	No	No	No
21	2	29	1	5	No	No	No	No	No	No	No	No	No	No
22	2	10	1	2	No	No	No	No	No	No	No	No	No	No
23	2	10	1	2	No	No	No	No	No	No	No	No	No	No
24	2	10	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	2	7	10	13	8	3

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	32.3	24.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:27	0:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	163	0
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1101	1101
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1186	217	1068
2	1150	210	1036
3	1127	206	1015
4	1056	193	951
5	937	171	844
6	925	169	833
7	913	167	822
8	830	152	748
9	818	150	737
10	806	148	726
11	700	128	630
12	652	119	587
13	640	117	577
14	474	87	427
15	474	87	427
16	332	61	299
17	190	35	171
18	190	35	171
19	107	20	96
20	59	11	53
21	36	7	32
22	12	2	11
23	12	2	11
24	12	2	11

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1403	1	1068	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1360	1	1036	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1333	1	1015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1249	1	951	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1108	1	844	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1094	1	833	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1080	1	822	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	982	1	748	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	968	1	737	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	954	1	726	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	828	1	630	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	771	1	587	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	1	757	1	577	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	1	561	1	427	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
15	1	561	1	427	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
16	1	393	1	299	No	No	Yes	Yes	No	No	No	No	No	No
17	1	225	1	171	No	No	No	No	No	No	No	No	No	No
18	1	225	1	171	No	No	No	No	No	No	No	No	No	No
19	1	127	1	96	No	No	No	No	No	No	No	No	No	No
20	1	70	1	53	No	No	No	No	No	No	No	No	No	No
21	1	43	1	32	No	No	No	No	No	No	No	No	No	No
22	1	14	1	11	No	No	No	No	No	No	No	No	No	No
23	1	14	1	11	No	No	No	No	No	No	No	No	No	No
24	1	14	1	11	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	13	13	15	15	15	13

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2966:40
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	1068
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2471
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

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Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	822	647	308	40
2	797	628	299	39
3	781	615	293	38
4	732	576	274	36
5	649	511	243	32
6	641	505	240	31
7	633	498	237	31
8	575	453	216	28
9	567	446	213	28
10	559	440	209	27
11	485	382	182	24
12	452	356	169	22
13	444	349	166	22
14	329	259	123	16
15	329	259	123	16
16	230	181	86	11
17	132	104	49	6
18	132	104	49	6
19	74	58	28	4
20	41	32	15	2
21	25	19	9	1
22	8	6	3	0
23	8	6	3	0
24	8	6	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1469	1	308	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1425	1	299	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1396	1	293	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1308	1	274	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1160	1	243	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1146	1	240	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1131	1	237	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	1028	1	216	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	1013	1	213	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	999	1	209	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	867	1	182	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	1	808	1	169	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	1	793	1	166	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
14	1	588	1	123	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
15	1	588	1	123	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
16	1	411	1	86	No	No	No	Yes	No	No	No	No	No	No
17	1	236	1	49	No	No	No	No	No	No	No	No	No	No
18	1	236	1	49	No	No	No	No	No	No	No	No	No	No
19	1	132	1	28	No	No	No	No	No	No	No	No	No	No
20	1	73	1	15	No	No	No	No	No	No	No	No	No	No
21	1	44	1	9	No	No	No	No	No	No	No	No	No	No
22	1	14	1	3	No	No	No	No	No	No	No	No	No	No
23	1	14	1	3	No	No	No	No	No	No	No	No	No	No
24	1	14	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	13	13	15	15	13	6

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	30	12.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:33	0:08
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	308	40
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1817	1817
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	301	436	233
2	292	423	226
3	286	414	221
4	268	388	207
5	238	344	184
6	235	340	182
7	232	336	179
8	211	305	163
9	208	301	161
10	205	296	158
11	178	257	137
12	166	240	128
13	163	235	126
14	120	174	93
15	120	174	93
16	84	122	65
17	48	70	37
18	48	70	37
19	27	39	21
20	15	22	12
21	9	13	7
22	3	4	2
23	3	4	2
24	3	4	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	737	2	233	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	2	715	2	226	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	2	700	2	221	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	2	656	2	207	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	2	582	2	184	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	575	2	182	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	568	2	179	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	516	2	163	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	2	509	2	161	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	2	501	2	158	No	No	Yes	Yes	No	No	No	No	No	No
11	2	435	2	137	No	No	No	Yes	No	No	No	No	No	No
12	2	406	2	128	No	No	No	Yes	No	No	No	No	No	No
13	2	398	2	126	No	No	No	Yes	No	No	No	No	No	No
14	2	294	2	93	No	No	No	No	No	No	No	No	No	No
15	2	294	2	93	No	No	No	No	No	No	No	No	No	No
16	2	206	2	65	No	No	No	No	No	No	No	No	No	No
17	2	118	2	37	No	No	No	No	No	No	No	No	No	No
18	2	118	2	37	No	No	No	No	No	No	No	No	No	No
19	2	66	2	21	No	No	No	No	No	No	No	No	No	No
20	2	37	2	12	No	No	No	No	No	No	No	No	No	No
21	2	22	2	7	No	No	No	No	No	No	No	No	No	No
22	2	7	2	2	No	No	No	No	No	No	No	No	No	No
23	2	7	2	2	No	No	No	No	No	No	No	No	No	No
24	2	7	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	9	10	13	0	1	4	9	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	27.6
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:47
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	233
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	970
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	454	282	413
2	440	274	401
3	431	268	392
4	404	251	368
5	359	223	326
6	354	220	322
7	350	217	318
8	318	197	289
9	313	195	285
10	309	192	281
11	268	166	244
12	250	155	227
13	245	152	223
14	182	113	165
15	182	113	165
16	127	79	116
17	73	45	66
18	73	45	66
19	41	25	37
20	23	14	21
21	14	8	12
22	5	3	4
23	5	3	4
24	5	3	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	736	1	413	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	2	714	1	401	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	2	699	1	392	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	2	655	1	368	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	2	582	1	326	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	2	574	1	322	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	2	567	1	318	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	2	515	1	289	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	2	508	1	285	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	2	501	1	281	No	Yes	Yes	Yes	No	No	No	No	No	No
11	2	434	1	244	No	No	Yes	Yes	No	No	No	No	No	No
12	2	405	1	227	No	No	No	Yes	No	No	No	No	No	No
13	2	397	1	223	No	No	No	Yes	No	No	No	No	No	No
14	2	295	1	165	No	No	No	No	No	No	No	No	No	No
15	2	295	1	165	No	No	No	No	No	No	No	No	No	No
16	2	206	1	116	No	No	No	No	No	No	No	No	No	No
17	2	118	1	66	No	No	No	No	No	No	No	No	No	No
18	2	118	1	66	No	No	No	No	No	No	No	No	No	No
19	2	66	1	37	No	No	No	No	No	No	No	No	No	No
20	2	37	1	21	No	No	No	No	No	No	No	No	No	No
21	2	22	1	12	No	No	No	No	No	No	No	No	No	No
22	2	8	1	4	No	No	No	No	No	No	No	No	No	No
23	2	8	1	4	No	No	No	No	No	No	No	No	No	No
24	2	8	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	0	1	4	9	7	1

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	146.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	16:46
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	413
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1149
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	295	225	3
2	286	218	3
3	280	214	3
4	263	200	3
5	233	178	2
6	230	176	2
7	227	173	2
8	207	158	2
9	204	155	2
10	201	153	2
11	174	133	2
12	162	124	2
13	159	122	2
14	118	90	1
15	118	90	1
16	83	63	1
17	47	36	0
18	47	36	0
19	27	20	0
20	15	11	0
21	9	7	0
22	3	2	0
23	3	2	0
24	3	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	520	1	3	No	No	No	No	No	No	No	No	No	No
2	3	504	1	3	No	No	No	No	No	No	No	No	No	No
3	3	494	1	3	No	No	No	No	No	No	No	No	No	No
4	3	463	1	3	No	No	No	No	No	No	No	No	No	No
5	3	411	1	2	No	No	No	No	No	No	No	No	No	No
6	3	406	1	2	No	No	No	No	No	No	No	No	No	No
7	3	400	1	2	No	No	No	No	No	No	No	No	No	No
8	3	365	1	2	No	No	No	No	No	No	No	No	No	No
9	3	359	1	2	No	No	No	No	No	No	No	No	No	No
10	3	354	1	2	No	No	No	No	No	No	No	No	No	No
11	3	307	1	2	No	No	No	No	No	No	No	No	No	No
12	3	286	1	2	No	No	No	No	No	No	No	No	No	No
13	3	281	1	2	No	No	No	No	No	No	No	No	No	No
14	3	208	1	1	No	No	No	No	No	No	No	No	No	No
15	3	208	1	1	No	No	No	No	No	No	No	No	No	No
16	3	146	1	1	No	No	No	No	No	No	No	No	No	No
17	3	83	1	0	No	No	No	No	No	No	No	No	No	No
18	3	83	1	0	No	No	No	No	No	No	No	No	No	No
19	3	47	1	0	No	No	No	No	No	No	No	No	No	No
20	3	26	1	0	No	No	No	No	No	No	No	No	No	No
21	3	16	1	0	No	No	No	No	No	No	No	No	No	No
22	3	5	1	0	No	No	No	No	No	No	No	No	No	No
23	3	5	1	0	No	No	No	No	No	No	No	No	No	No
24	3	5	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	523
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	437	584	0
2	424	566	0
3	415	555	0
4	389	520	0
5	345	461	0
6	341	456	0
7	336	450	0
8	306	409	0
9	302	403	0
10	297	397	0
11	258	345	0
12	240	321	0
13	236	315	0
14	175	234	0
15	175	234	0
16	122	164	0
17	70	93	0
18	70	93	0
19	39	53	0
20	22	29	0
21	13	18	0
22	4	6	0
23	4	6	0
24	4	6	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1021	1	0	No	No	No	No	No	No	No	No	No	No
2	1	990	1	0	No	No	No	No	No	No	No	No	No	No
3	1	970	1	0	No	No	No	No	No	No	No	No	No	No
4	1	909	1	0	No	No	No	No	No	No	No	No	No	No
5	1	806	1	0	No	No	No	No	No	No	No	No	No	No
6	1	797	1	0	No	No	No	No	No	No	No	No	No	No
7	1	786	1	0	No	No	No	No	No	No	No	No	No	No
8	1	715	1	0	No	No	No	No	No	No	No	No	No	No
9	1	705	1	0	No	No	No	No	No	No	No	No	No	No
10	1	694	1	0	No	No	No	No	No	No	No	No	No	No
11	1	603	1	0	No	No	No	No	No	No	No	No	No	No
12	1	561	1	0	No	No	No	No	No	No	No	No	No	No
13	1	551	1	0	No	No	No	No	No	No	No	No	No	No
14	1	409	1	0	No	No	No	No	No	No	No	No	No	No
15	1	409	1	0	No	No	No	No	No	No	No	No	No	No
16	1	286	1	0	No	No	No	No	No	No	No	No	No	No
17	1	163	1	0	No	No	No	No	No	No	No	No	No	No
18	1	163	1	0	No	No	No	No	No	No	No	No	No	No
19	1	92	1	0	No	No	No	No	No	No	No	No	No	No
20	1	51	1	0	No	No	No	No	No	No	No	No	No	No
21	1	31	1	0	No	No	No	No	No	No	No	No	No	No
22	1	10	1	0	No	No	No	No	No	No	No	No	No	No
23	1	10	1	0	No	No	No	No	No	No	No	No	No	No
24	1	10	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1021
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	327	499	27
2	317	484	26
3	311	474	26
4	291	444	24
5	258	394	21
6	255	389	21
7	252	384	21
8	229	349	19
9	226	344	19
10	222	339	18
11	193	294	16
12	180	274	15
13	177	269	15
14	131	200	11
15	131	200	11
16	92	140	8
17	52	80	4
18	52	80	4
19	29	45	2
20	16	25	1
21	10	15	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	826	1	27	No	No	No	No	No	No	No	No	No	No
2	1	801	1	26	No	No	No	No	No	No	No	No	No	No
3	1	785	1	26	No	No	No	No	No	No	No	No	No	No
4	1	735	1	24	No	No	No	No	No	No	No	No	No	No
5	1	652	1	21	No	No	No	No	No	No	No	No	No	No
6	1	644	1	21	No	No	No	No	No	No	No	No	No	No
7	1	636	1	21	No	No	No	No	No	No	No	No	No	No
8	1	578	1	19	No	No	No	No	No	No	No	No	No	No
9	1	570	1	19	No	No	No	No	No	No	No	No	No	No
10	1	561	1	18	No	No	No	No	No	No	No	No	No	No
11	1	487	1	16	No	No	No	No	No	No	No	No	No	No
12	1	454	1	15	No	No	No	No	No	No	No	No	No	No
13	1	446	1	15	No	No	No	No	No	No	No	No	No	No
14	1	331	1	11	No	No	No	No	No	No	No	No	No	No
15	1	331	1	11	No	No	No	No	No	No	No	No	No	No
16	1	232	1	8	No	No	No	No	No	No	No	No	No	No
17	1	132	1	4	No	No	No	No	No	No	No	No	No	No
18	1	132	1	4	No	No	No	No	No	No	No	No	No	No
19	1	74	1	2	No	No	No	No	No	No	No	No	No	No
20	1	41	1	1	No	No	No	No	No	No	No	No	No	No
21	1	25	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	27
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	853
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	251	375	161	53
2	243	364	156	51
3	238	356	153	50
4	223	334	143	47
5	198	296	127	42
6	196	293	126	41
7	193	289	124	41
8	176	263	113	37
9	173	259	111	37
10	171	255	109	36
11	148	221	95	31
12	138	206	89	29
13	136	203	87	29
14	100	150	64	21
15	100	150	64	21
16	70	105	45	15
17	40	60	26	8
18	40	60	26	8
19	23	34	14	5
20	13	19	8	3
21	8	11	5	2
22	3	4	2	1
23	3	4	2	1
24	3	4	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	626	1	161	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	607	1	156	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	594	1	153	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	557	1	143	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	494	1	127	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	1	489	1	126	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	1	482	1	124	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	439	1	113	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	432	1	111	No	No	Yes	Yes	No	No	No	Yes	No	No
10	1	426	1	109	No	No	Yes	Yes	No	No	No	Yes	No	No
11	1	369	1	95	No	No	No	Yes	No	No	No	No	No	No
12	1	344	1	89	No	No	No	Yes	No	No	No	No	No	No
13	1	339	1	87	No	No	No	Yes	No	No	No	No	No	No
14	1	250	1	64	No	No	No	No	No	No	No	No	No	No
15	1	250	1	64	No	No	No	No	No	No	No	No	No	No
16	1	175	1	45	No	No	No	No	No	No	No	No	No	No
17	1	100	1	26	No	No	No	No	No	No	No	No	No	No
18	1	100	1	26	No	No	No	No	No	No	No	No	No	No
19	1	57	1	14	No	No	No	No	No	No	No	No	No	No
20	1	32	1	8	No	No	No	No	No	No	No	No	No	No
21	1	19	1	5	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	2	4	10	6	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.1	17.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43	0:15
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	161	53
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	840	840
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
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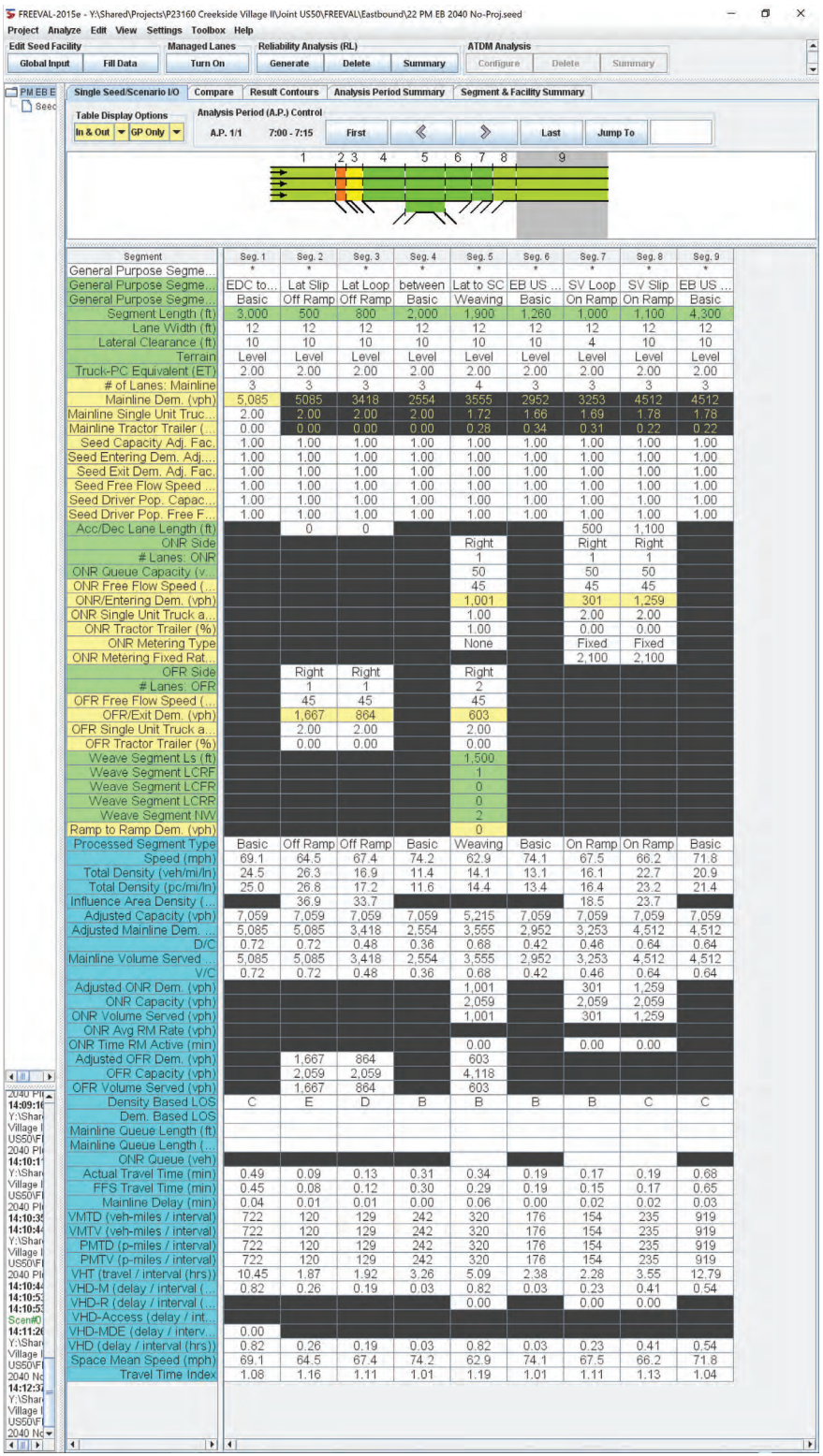
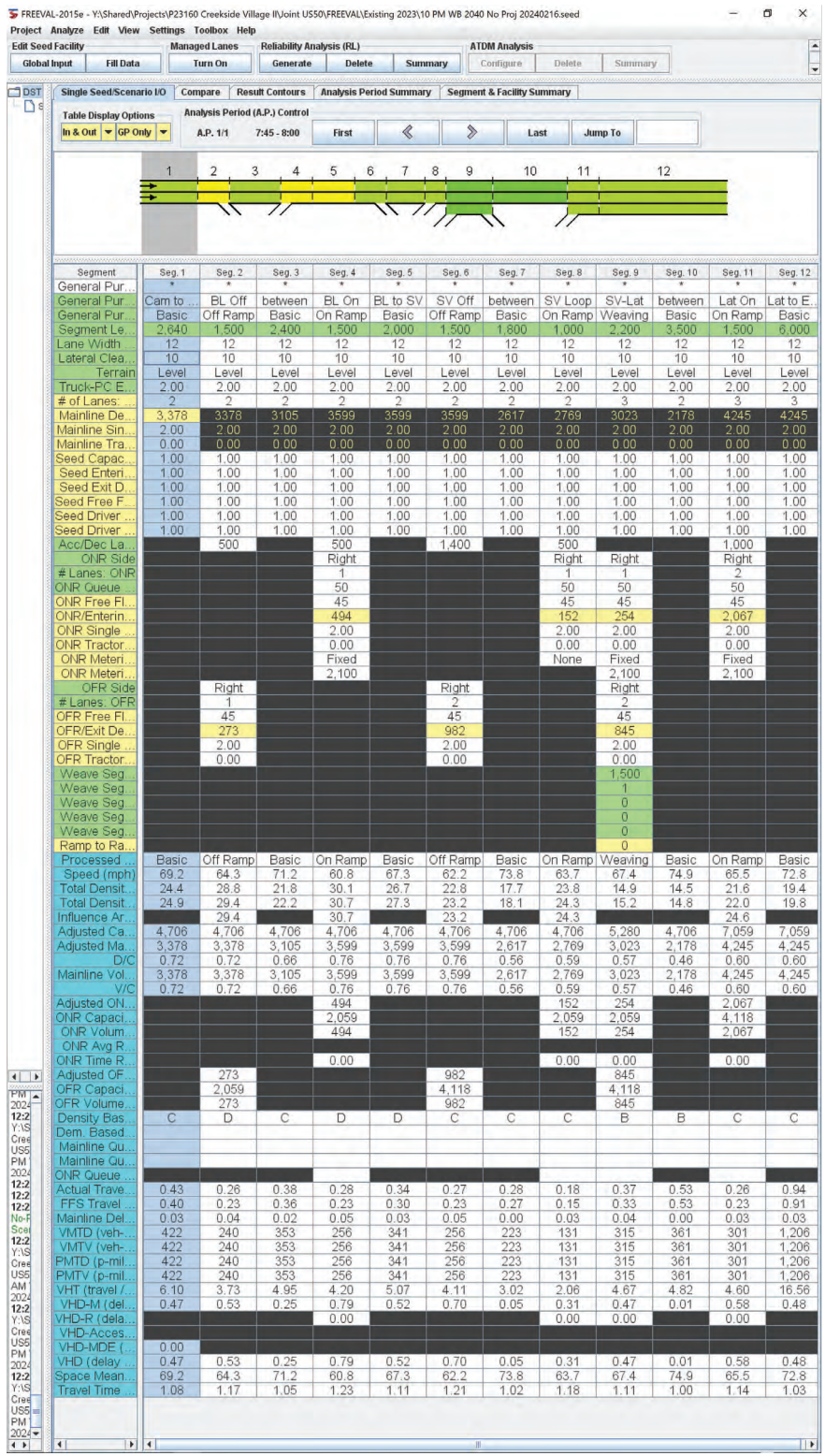


Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9
General Purpose Segme...	*	*	*	*	*	*	*	*	*
General Purpose Segme...	EDC to...	Lat Slip	Lat Loop	between	Lat to SC	EB US ...	SV Loop	SV Slip	EB US ...
General Purpose Segme...	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Segment Length (ft)	3,000	500	800	2,000	1,900	1,260	1,000	1,100	4,300
Lane Width (ft)	12	12	12	12	12	12	12	12	12
Lateral Clearance (ft)	10	10	10	10	10	10	4	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: Mainline	3	3	3	3	4	3	3	3	3
Mainline Dem. (vph)	5,085	5085	3418	2554	3555	2952	3253	4512	4512
Mainline Single Unit Truc...	2.00	2.00	2.00	2.00	1.72	1.66	1.69	1.78	1.78
Mainline Tractor Trailer (...	0.00	0.00	0.00	0.00	0.28	0.34	0.31	0.22	0.22
Seed Capacity Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Entering Dem. Adj....	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit Dem. Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free Flow Speed ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec Lane Length (ft)		0	0				500	1,100	
ONR Side					Right		Right	Right	
# Lanes: ONR					1		1	1	
ONR Queue Capacity (v...					50		50	50	
ONR Free Flow Speed (...					45		45	45	
ONR/Entering Dem. (vph)					1,001		301	1,259	
ONR Single Unit Truck a...					1.00		2.00	2.00	
ONR Tractor Trailer (%)					1.00		0.00	0.00	
ONR Metering Type					None		Fixed	Fixed	
ONR Metering Fixed Rat...							2,100	2,100	
OFR Side		Right	Right		Right				
# Lanes: OFR		1	1		2				
OFR Free Flow Speed (...		45	45		45				
OFR/Exit Dem. (vph)		1,667	864		603				
OFR Single Unit Truck a...		2.00	2.00		2.00				
OFR Tractor Trailer (%)		0.00	0.00		0.00				
Weave Segment Ls (ft)					1,500				
Weave Segment LCRF					1				
Weave Segment LCFR					0				
Weave Segment LCRR					0				
Weave Segment NW					2				
Ramp to Ramp Dem. (vph)					0				
Processed Segment Type	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Speed (mph)	69.1	64.5	67.4	74.2	62.9	74.1	67.5	66.2	71.8
Total Density (veh/mi/ln)	24.5	26.3	16.9	11.4	14.1	13.1	16.1	22.7	20.9
Total Density (pc/mi/ln)	25.0	26.8	17.2	11.6	14.4	13.4	16.4	23.2	21.4
Influence Area Density (...		36.9	33.7				18.5	23.7	
Adjusted Capacity (vph)	7,059	7,059	7,059	7,059	5,215	7,059	7,059	7,059	7,059
Adjusted Mainline Dem. ...	5,085	5,085	3,418	2,554	3,555	2,952	3,253	4,512	4,512
D/C	0.72	0.72	0.48	0.36	0.68	0.42	0.46	0.64	0.64
Mainline Volume Served...	5,085	5,085	3,418	2,554	3,555	2,952	3,253	4,512	4,512
V/C	0.72	0.72	0.48	0.36	0.68	0.42	0.46	0.64	0.64
Adjusted ONR Dem. (vph)					1,001		301	1,259	
ONR Capacity (vph)					2,059		2,059	2,059	
ONR Volume Served (vph)					1,001		301	1,259	
ONR Avg RM Rate (vph)									
ONR Time RM Active (min)					0.00		0.00	0.00	
Adjusted OFR Dem. (vph)		1,667	864		603				
OFR Capacity (vph)		2,059	2,059		4,118				
OFR Volume Served (vph)		1,667	864		603				
Density Based LOS	C	E	D	B	B	B	B	C	C
Dem. Based LOS									
Mainline Queue Length (ft)									
Mainline Queue Length (...									
ONR Queue (veh)									
Actual Travel Time (min)	0.49	0.09	0.13	0.31	0.34	0.19	0.17	0.19	0.68
FFS Travel Time (min)	0.45	0.08	0.12	0.30	0.29	0.19	0.15	0.17	0.65
Mainline Delay (min)	0.04	0.01	0.01	0.00	0.06	0.00	0.02	0.02	0.03
VMTD (veh-miles / interval)	722	120	129	242	320	176	154	235	919
VMTV (veh-miles / interval)	722	120	129	242	320	176	154	235	919
PMTD (p-miles / interval)	722	120	129	242	320	176	154	235	919
PMTV (p-miles / interval)	722	120	129	242	320	176	154	235	919
VHT (travel / interval (hrs))	10.45	1.87	1.92	3.26	5.09	2.38	2.28	3.55	12.79
VHD-M (delay / interval (...	0.82	0.26	0.19	0.03	0.82	0.03	0.23	0.41	0.54
VHD-R (delay / interval (...					0.00		0.00	0.00	
VHD-Access (delay / int...									
VHD-MDE (delay / interv...	0.00								
VHD (delay / interval (hrs))	0.82	0.26	0.19	0.03	0.82	0.03	0.23	0.41	0.54
Space Mean Speed (mph)	69.1	64.5	67.4	74.2	62.9	74.1	67.5	66.2	71.8
Travel Time Index	1.08	1.16	1.11	1.01	1.19	1.01	1.11	1.13	1.04



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9	Seg. 10	Seg. 11	Seg. 12
General Pur...	*	*	*	*	*	*	*	*	*	*	*	*
General Pur...	Cam to ...	BL Off	between	BL On	BL to SV	SV Off	between	SV Loop	SV-Lat	between	Lat On	Lat to E...
General Pur...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Segment Le...	2,640	1,500	2,400	1,500	2,000	1,500	1,800	1,000	2,200	3,500	1,500	6,000
Lane Width ...	12	12	12	12	12	12	12	12	12	12	12	12
Lateral Clea...	10	10	10	10	10	10	10	10	10	10	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC E...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: ...	2	2	2	2	2	2	2	2	3	2	3	3
Mainline De...	3,378	3378	3105	3599	3599	3599	2617	2769	3023	2178	4245	4245
Mainline Sin...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Mainline Tra...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seed Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Enteri...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit D...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec La...		500		500		1,400		500			1,000	
ONR Side				Right				Right	Right		Right	
# Lanes: ONR				1				1	1		2	
ONR Queue ...				50				50	50		50	
ONR Free Fl...				45				45	45		45	
ONR/Enterin...				494				152	254		2,067	
ONR Single ...				2.00				2.00	2.00		2.00	
ONR Tractor...				0.00				0.00	0.00		0.00	
ONR Meteri...				Fixed				None	Fixed		Fixed	
ONR Meteri...				2,100					2,100		2,100	
OFR Side		Right				Right			Right			
# Lanes: OFR		1				2			2			
OFR Free Fl...		45				45			45			
OFR/Exit De...		273				982			845			
OFR Single ...		2.00				2.00			2.00			
OFR Tractor...		0.00				0.00			0.00			
Weave Seg...									1,500			
Weave Seg...									1			
Weave Seg...									0			
Weave Seg...									0			
Weave Seg...									0			
Ramp to Ra...									0			
Processed ...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Speed (mph)	69.2	64.3	71.2	60.8	67.3	62.2	73.8	63.7	67.4	74.9	65.5	72.8
Total Densit...	24.4	28.8	21.8	30.1	26.7	22.8	17.7	23.8	14.9	14.5	21.6	19.4
Total Densit...	24.9	29.4	22.2	30.7	27.3	23.2	18.1	24.3	15.2	14.8	22.0	19.8
Influence Ar...		29.4		30.7		23.2		24.3			24.6	
Adjusted Ca...	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	5,280	4,706	7,059	7,059
Adjusted Ma...	3,378	3,378	3,105	3,599	3,599	3,599	2,617	2,769	3,023	2,178	4,245	4,245
D/C	0.72	0.72	0.66	0.76	0.76	0.76	0.56	0.59	0.57	0.46	0.60	0.60
Mainline Vol...	3,378	3,378	3,105	3,599	3,599	3,599	2,617	2,769	3,023	2,178	4,245	4,245
V/C	0.72	0.72	0.66	0.76	0.76	0.76	0.56	0.59	0.57	0.46	0.60	0.60
Adjusted ON...				494				152	254		2,067	
ONR Capaci...				2,059				2,059	2,059		4,118	
ONR Volum...				494				152	254		2,067	
ONR Avg R...												
ONR Time R...				0.00				0.00	0.00		0.00	
Adjusted OF...		273				982			845			
OFR Capaci...		2,059				4,118			4,118			
OFR Volume...		273				982			845			
Density Bas...	C	D	C	D	D	C	C	C	B	B	C	C
Dem. Based...												
Mainline Qu...												
Mainline Qu...												
ONR Queue ...												
Actual Trave...	0.43	0.26	0.38	0.28	0.34	0.27	0.28	0.18	0.37	0.53	0.26	0.94
FFS Travel ...	0.40	0.23	0.36	0.23	0.30	0.23	0.27	0.15	0.33	0.53	0.23	0.91
Mainline Del...	0.03	0.04	0.02	0.05	0.03	0.05	0.00	0.03	0.04	0.00	0.03	0.03
VMTD (veh-...	422	240	353	256	341	256	223	131	315	361	301	1,206
VMTV (veh-...	422	240	353	256	341	256	223	131	315	361	301	1,206
PMTD (p-mil...	422	240	353	256	341	256	223	131	315	361	301	1,206
PMTV (p-mil...	422	240	353	256	341	256	223	131	315	361	301	1,206
VHT (travel /...	6.10	3.73	4.95	4.20	5.07	4.11	3.02	2.06	4.67	4.82	4.60	16.56
VHD-M (del...	0.47	0.53	0.25	0.79	0.52	0.70	0.05	0.31	0.47	0.01	0.58	0.48
VHD-R (dela...				0.00				0.00	0.00		0.00	
VHD-Acces...												
VHD-MDE (...	0.00											
VHD (delay ...	0.47	0.53	0.25	0.79	0.52	0.70	0.05	0.31	0.47	0.01	0.58	0.48
Space Mean...	69.2	64.3	71.2	60.8	67.3	62.2	73.8	63.7	67.4	74.9	65.5	72.8
Travel Time ...	1.08	1.17	1.05	1.23	1.11	1.21	1.02	1.18	1.11	1.00	1.14	1.03

Cumulative AM plus Project

Vistro File: C:\...\AM 918 DU 20241003.vistro Scenario 6 2040 AM with CCSP, + Project
Report File: C:\...\15 2040 AM plus Proj.pdf 9/30/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	SB Right	1.171	187.0	F
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	EB Right	0.966	53.2	D
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.166	120.1	F
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	1.012	31.9	C
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	0.928	36.3	D
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	SB Thru	0.735	54.9	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.707	15.2	B
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	NB Left	0.879	20.7	C
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	WB Right	1.159	121.7	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.850	12.2	B
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.159	46.7	E
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	1.785	479.5	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	0.339	465.3	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	1.182	85.4	F
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.375	16.7	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.442	26.4	D
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	WB Left	0.070	7.8	A
	White Rock Rd/Carson		HCM 7th				

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 7th Edition	EB Left	0.440	16.4	B
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	EB Left	0.656	35.0	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	NB Left	0.607	44.2	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	NB Left	0.767	26.1	C
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.928	41.9	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	EB Left	0.556	11.1	B
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	1.009	47.6	D
25	New Intersection	Two-way stop	HCM 6th Edition	NB Thru	0.008	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.028	14.6	B
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.161	21.0	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	187.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.171

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	5	242	863	301	72	1684	51	27	16	270	494	70	114
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-54	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	15	0	0	81	0	0	34
Total Hourly Volume [veh/h]	5	242	863	301	72	1630	36	27	16	189	494	70	80
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	70	248	86	21	468	10	8	5	54	142	20	23
Total Analysis Volume [veh/h]	5	278	992	346	83	1874	41	31	18	217	568	80	92
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Calculated Cycle Length [s]	134	134	134	134	134	134	134	134	134	134
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	55	55	8	40	40	22	22	31	31
g / C, Green / Cycle	0.17	0.41	0.41	0.06	0.30	0.30	0.16	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.16	0.28	0.22	0.05	0.51	0.52	0.02	0.15	0.21	0.21
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1856	1781	1608	1781	1746
c, Capacity [veh/h]	308	1467	655	106	558	554	289	261	417	409
d1, Uniform Delay [s]	54.51	32.15	29.64	62.22	47.06	47.06	47.90	55.12	49.70	49.77
k, delay calibration	0.31	0.04	0.19	0.04	0.50	0.50	0.04	0.07	0.33	0.34
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.16	0.21	1.19	4.72	330.13	335.95	0.06	7.28	17.52	18.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.68	0.53	0.78	1.72	1.73	0.11	0.90	0.89	0.90
d, Delay for Lane Group [s/veh]	78.67	32.35	30.84	66.94	377.18	383.00	47.96	62.40	67.22	68.19
Lane Group LOS	E	C	C	E	F	F	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.22	12.61	8.30	2.87	69.03	69.40	0.90	8.31	14.09	14.00
50th-Percentile Queue Length [ft/ln]	280.41	315.16	207.48	71.84	1725.63	1735.06	22.42	207.73	352.26	349.91
95th-Percentile Queue Length [veh/ln]	16.71	18.43	13.02	5.17	106.49	107.23	1.61	13.04	20.25	20.13
95th-Percentile Queue Length [ft/ln]	417.72	460.74	325.59	129.31	2662.31	2680.73	40.36	325.92	506.16	503.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.67	78.67	32.35	30.84	66.94	380.03	383.00	47.96	62.40	62.40	67.56	68.19	68.19
Movement LOS	E	E	C	C	E	F	F	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	40.11				367.09			60.72			67.70		
Approach LOS	D				F			E			E		
d_I, Intersection Delay [s/veh]	186.97												
Intersection LOS	F												
Intersection V/C	1.171												

Emissions

Vehicle Miles Traveled [mph]	67.59	236.92	82.64	12.20	140.78	140.78	1.32	10.04	19.50	19.22
Stops [stops/h]	301.70	678.20	223.24	77.29	1856.70	1866.84	24.12	223.51	379.02	376.49
Fuel consumption [US gal/h]	10.60	23.08	7.78	2.51	101.39	102.65	0.49	4.63	7.99	7.97
CO [g/h]	740.79	1613.60	543.77	175.44	7087.06	7175.12	34.27	323.78	558.80	556.96
NOx [g/h]	144.13	313.95	105.80	34.13	1378.89	1396.02	6.67	63.00	108.72	108.36
VOC [g/h]	171.69	373.97	126.02	40.66	1642.50	1662.90	7.94	75.04	129.51	129.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	56.37	56.37	56.37
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.265	2.322	2.404
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	602	602	523	523
d_b, Bicycle Delay [s]	32.68	32.68	36.49	36.49
l_b,int, Bicycle LOS Score for Intersection	2.893	3.220	2.132	2.837
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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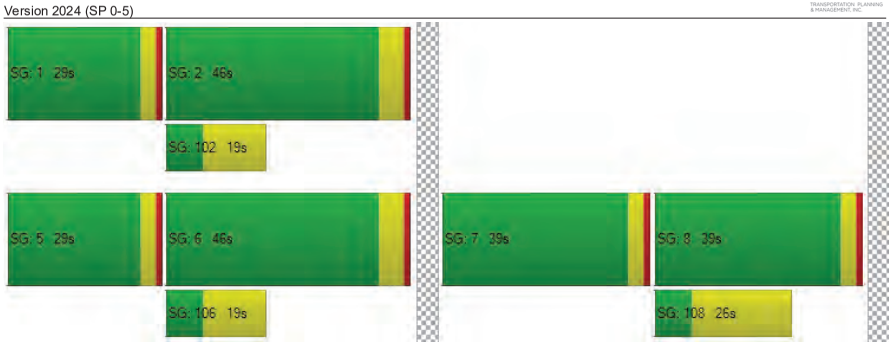

Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	53.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

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Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	1	420	988	150	1	218	1793	441	150	61	724	68	52	272
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	-54	0	0	0	-27	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	132	0	0	209	0	0	82
Total Hourly Volume [veh/h]	1	420	988	105	1	218	1739	309	150	61	488	68	52	190
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	113	266	28	0	59	467	83	40	16	131	18	14	51
Total Analysis Volume [veh/h]	1	452	1062	113	1	234	1870	332	161	66	525	73	56	204
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	5	3	8	0
Auxiliary Signal Groups														
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	20	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	24	0	0	0	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	24	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	4	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Calculated Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	50	50	18	50	50	20	20	20	20	20
g / C, Green / Cycle	0.15	0.40	0.40	0.15	0.40	0.40	0.16	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.22	0.13	0.37	0.21	0.06	0.06	0.19	0.04	0.16
s, saturation flow rate [veh/h]	3459	3560	1779	1781	5094	1589	1781	1831	2813	1781	1643
c, Capacity [veh/h]	508	1408	704	261	2015	629	283	290	446	283	261
d1, Uniform Delay [s]	52.80	29.53	29.54	52.86	36.40	29.12	47.63	47.60	53.04	46.53	53.01
k, delay calibration	0.04	0.13	0.14	0.28	0.13	0.13	0.04	0.04	0.07	0.04	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.25	0.42	0.91	22.55	2.78	0.83	0.34	0.32	83.03	0.18	50.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.56	0.56	0.90	0.93	0.53	0.40	0.39	1.18	0.26	1.00
d, Delay for Lane Group [s/veh]	55.05	29.95	30.45	75.41	39.17	29.95	47.96	47.93	136.07	46.71	103.23
Lane Group LOS	E	C	C	E	D	C	D	D	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.02	8.91	9.01	8.76	17.84	7.53	3.21	3.27	12.19	2.04	11.84
50th-Percentile Queue Length [ft/ln]	175.40	222.83	225.33	219.02	446.04	188.17	80.31	81.85	304.81	50.90	295.99
95th-Percentile Queue Length [veh/ln]	11.36	13.81	13.94	13.61	24.77	12.03	5.78	5.89	19.25	3.66	17.48
95th-Percentile Queue Length [ft/ln]	283.99	345.23	348.42	340.37	619.23	300.66	144.57	147.33	481.31	91.61	437.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.05	55.05	30.08	30.45	75.41	75.41	39.17	29.95	47.96	47.93	136.07	46.71	103.23	103.23
Movement LOS	E	E	C	C	E	E	D	C	D	D	F	D	F	F
d_A, Approach Delay [s/veh]	37.05				41.41				109.47			90.84		
Approach LOS	D				D				F			F		
d_I, Intersection Delay [s/veh]	53.17													
Intersection LOS	D													
Intersection V/C	0.966													

Emissions

Vehicle Miles Traveled [mph]	85.30	147.49	73.76	56.13	446.62	79.29	7.01	7.15	32.74	3.56	12.68
Stops [stops/h]	400.88	509.29	257.51	250.29	1529.21	215.04	91.78	93.54	696.67	58.16	338.26
Fuel consumption [US gal/h]	12.98	16.16	8.16	8.64	49.23	7.42	1.89	1.93	19.73	1.16	7.85
CO [g/h]	907.44	1129.65	570.17	604.05	3441.06	518.31	132.28	134.82	1379.24	81.20	548.84
NOx [g/h]	176.55	219.79	110.93	117.53	669.51	100.84	25.74	26.23	268.35	15.80	106.78
VOC [g/h]	210.31	261.81	132.14	140.00	797.50	120.12	30.66	31.25	319.65	18.82	127.20

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	52.48	52.48	52.48
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.675	3.080	2.357
Crosswalk LOS	F	D	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	798	798	317	317
d_b, Bicycle Delay [s]	22.74	22.74	44.59	44.59
l_b,int, Bicycle LOS Score for Intersection	2.479	2.844	3.145	2.244
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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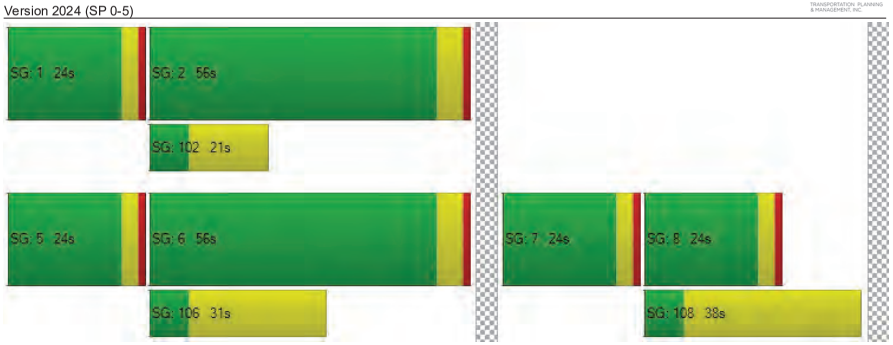

Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	120.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.166

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1588	1190	150	3	70	1406	1107	260	92	837	171	104	106
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	0	1	0	0	-81	0	0	0	-40	-16	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	45	0	0	0	332	0	0	239	0	0	32
Total Hourly Volume [veh/h]	1	1585	1190	106	3	70	1325	775	260	92	558	155	104	74
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	396	298	27	1	18	331	194	65	23	140	39	26	19
Total Analysis Volume [veh/h]	1	1585	1190	106	3	70	1325	775	260	92	558	155	104	74
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	134
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	0	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	37	62	0	0	14	39	22	0	22	0	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	0.0	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	0.0	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	42	68	0	0	19	45	28	0	28	0	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	0	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	0.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	37	69	69	8	39	73	28	28	11	11	11
g / C, Green / Cycle	0.28	0.51	0.51	0.06	0.29	0.53	0.21	0.21	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.46	0.24	0.25	0.04	0.26	0.49	0.10	0.10	0.06	0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	1795	1781	5094	1589	1781	1826	1781	1835	1667
c, Capacity [veh/h]	951	1811	913	98	1472	850	371	380	143	147	134
d1, Uniform Delay [s]	36.83	5.70	5.75	63.28	46.45	28.74	47.26	47.25	61.40	61.35	61.51
k, delay calibration	0.30	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	303.17	0.88	1.86	4.06	9.14	15.71	0.69	0.67	3.54	3.26	4.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.67	0.47	0.49	0.74	0.90	0.91	0.47	0.47	0.78	0.77	0.81
d, Delay for Lane Group [s/veh]	340.01	6.58	7.61	67.34	55.59	44.45	47.95	47.92	64.94	64.61	65.78
Lane Group LOS	F	A	A	E	E	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	53.79	2.46	2.82	2.56	15.16	24.90	5.28	5.40	3.94	4.00	3.82
50th-Percentile Queue Length [ft/ln]	1344.84	61.38	70.58	63.92	378.97	622.59	131.99	135.00	98.52	99.91	95.54
95th-Percentile Queue Length [veh/ln]	83.31	4.42	5.08	4.60	21.54	33.09	9.05	9.21	7.09	7.19	6.88
95th-Percentile Queue Length [ft/ln]	2082.82	110.49	127.04	115.05	538.60	827.19	226.20	230.27	177.34	179.84	171.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	340.0	340.0	6.87	7.61	67.34	67.34	55.59	44.45	47.94	47.92	0.00	64.85	64.99	65.78
Movement LOS	F	F	A	A	E	E	E	D	D	D		E	E	E
d_A, Approach Delay [s/veh]	190.23				52.01				18.54			65.10		
Approach LOS	F				D				B			E		
d_I, Intersection Delay [s/veh]	120.12													
Intersection LOS	F													
Intersection V/C	1.166													

Emissions

Vehicle Miles Traveled [mph]	271.38	145.50	76.26	13.75	249.48	145.92	8.05	8.23	3.55	3.61	3.42
Stops [stops/h]	2847.90	129.99	74.73	67.68	1203.78	659.21	139.75	142.94	104.32	105.79	101.16
Fuel consumption [US gal/h]	136.62	7.85	4.24	2.31	38.51	20.21	2.80	2.86	2.20	2.23	2.14
CO [g/h]	9549.60	548.46	296.54	161.67	2691.64	1412.57	195.77	200.24	153.74	155.74	149.50
NOx [g/h]	1858.01	106.71	57.70	31.46	523.70	274.83	38.09	38.96	29.91	30.30	29.09
VOC [g/h]	2213.21	127.11	68.73	37.47	623.81	327.38	45.37	46.41	35.63	36.09	34.65

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		0.00		57.44	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		0.000		2.362	
Crosswalk LOS	F		F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	915		576		337		241	
d_b, Bicycle Delay [s]	20.02		34.45		47.03		52.59	
I_b,int, Bicycle LOS Score for Intersection	3.169		2.899		2.140		1.861	
Bicycle LOS	C		C		B		A	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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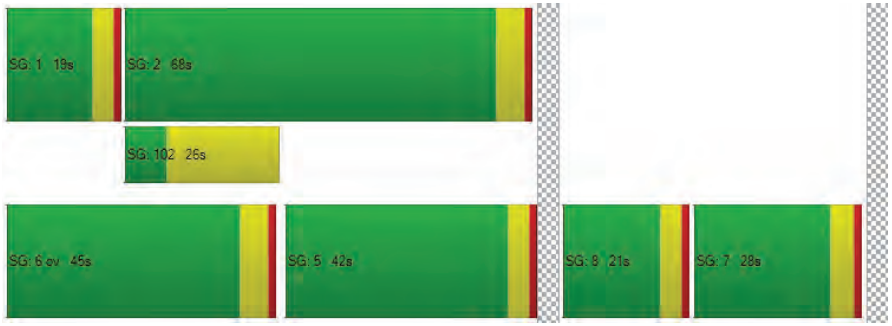

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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.012

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2400	463	0	529	1886	0	0	0	1410	0	0	529
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-2	-2	0	0	-137	0	0	0	-101	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	138	0	0	0	0	0	0	393	0	0	159
Total Hourly Volume [veh/h]	0	2398	323	0	529	1749	0	0	0	916	0	0	370
Peak Hour Factor	1.0000	0.8400	0.8400	1.000	0.840	0.840	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	714	96	0	157	521	0	0	0	273	0	0	110
Total Analysis Volume [veh/h]	0	2855	385	0	630	2082	0	0	0	1090	0	0	440
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	74.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	50	0	0	39	50	0	0	0	45	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
l2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Calculated Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	32	32	26	35	22	
g / C, Green / Cycle	0.47	0.47	0.38	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.42	0.24	0.35	0.31	0.39	
s, saturation flow rate [veh/h]	6792	1589	1781	6792	2813	
c, Capacity [veh/h]	3159	739	670	3476	927	
d1, Uniform Delay [s]	16.78	12.83	20.49	11.69	22.80	
k, delay calibration	0.50	0.50	0.15	0.50	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.81	2.61	9.26	0.77	80.29	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.90	0.52	0.94	0.60	1.18	
d, Delay for Lane Group [s/veh]	21.59	15.45	29.74	12.46	103.09	
Lane Group LOS	C	B	C	B	F	
Critical Lane Group	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	9.09	3.85	9.75	4.43	17.09	
50th-Percentile Queue Length [ft/ln]	227.18	96.27	243.76	110.80	427.35	
95th-Percentile Queue Length [veh/ln]	14.03	6.93	14.87	7.88	26.25	
95th-Percentile Queue Length [ft/ln]	350.78	173.28	371.78	197.12	656.29	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	21.59	15.45	29.74	29.74	12.46	0.00	0.00	0.00	103.09	0.00	0.00	0.00
Movement LOS		C	B	C	C	B				F			
d_A, Approach Delay [s/veh]	20.86			16.47			103.09				0.00		
Approach LOS	C			B			F				A		
d_I, Intersection Delay [s/veh]	31.90												
Intersection LOS	C												
Intersection V/C	1.012												

Emissions

Vehicle Miles Traveled [mph]	413.11	55.71	107.80	356.25	78.00	
Stops [stops/h]	1924.36	203.86	516.19	938.57	1809.95	
Fuel consumption [US gal/h]	50.63	5.65	13.93	29.16	36.07	
CO [g/h]	3538.94	395.25	973.46	2038.27	2521.59	
NOx [g/h]	688.55	76.90	189.40	396.57	490.61	
VOC [g/h]	820.18	91.60	225.61	472.39	584.40	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.262
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
I_b,int, Bicycle LOS Score for Intersection	2.953	2.418	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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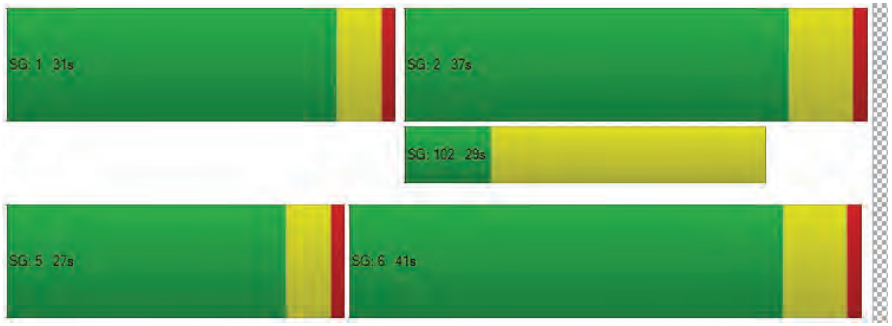

Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.928

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	73	2071	262	4	570	2319	403	184	10	32	1	74	33	604
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-4	2	0	0	-238	0	0	0	-5	0	-14	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	79	0	0	0	121	0	0	8	0	0	0	181
Total Hourly Volume [veh/h]	1	73	2067	185	4	570	2081	282	184	10	19	1	60	33	423
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.9800	0.9800	0.9800	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	19	527	47	1	145	531	72	47	3	5	0	15	8	108
Total Analysis Volume [veh/h]	1	74	2109	189	4	582	2123	288	188	10	19	1	61	34	432
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	123
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	5	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	50	0	15	15	50	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	3.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.5	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	1.5	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	19	19	56	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	Lead	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	4	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	No			No	No			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	103	103	103	103	103	103	103	103	103	103	103	103
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	4	49	49	15	60	60	8	8	8	15	15	15
g / C, Green / Cycle	0.04	0.47	0.47	0.15	0.58	0.58	0.08	0.08	0.08	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.41	0.12	0.17	0.42	0.18	0.05	0.01	0.01	0.03	0.14	0.14
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1625	1589
c, Capacity [veh/h]	132	2418	754	505	2968	926	268	145	123	260	237	232
d1, Uniform Delay [s]	48.55	24.18	16.08	43.83	15.33	10.92	46.21	43.93	44.23	38.78	43.77	43.78
k, delay calibration	0.04	0.04	0.04	0.07	0.04	0.04	0.08	0.08	0.08	0.08	0.42	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	0.41	0.06	75.07	0.12	0.07	2.50	0.15	0.43	0.35	51.47	52.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.87	0.25	1.16	0.72	0.31	0.70	0.07	0.15	0.24	0.99	0.99
d, Delay for Lane Group [s/veh]	49.99	24.59	16.15	118.90	15.45	10.99	48.72	44.08	44.66	39.12	95.25	95.87
Lane Group LOS	D	C	B	F	B	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.97	14.59	2.61	11.61	10.93	3.18	2.42	0.24	0.46	1.40	9.30	9.14
50th-Percentile Queue Length [ft/ln]	24.17	364.65	65.13	290.24	273.27	79.42	60.50	6.03	11.62	35.04	232.43	228.43
95th-Percentile Queue Length [veh/ln]	1.74	20.85	4.69	18.33	16.35	5.72	4.36	0.43	0.84	2.52	14.30	14.09
95th-Percentile Queue Length [ft/ln]	43.50	521.23	117.23	458.37	408.83	142.96	108.90	10.86	20.91	63.07	357.45	352.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.99	49.99	24.59	16.15	118.9	118.9	15.45	10.99	48.72	44.08	44.66	39.12	39.12	95.25	95.58
Movement LOS	D	D	C	B	F	F	B	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	24.72				35.25				48.15			88.93			
Approach LOS	C				D				D			F			
d_I, Intersection Delay [s/veh]	36.26														
Intersection LOS	D														
Intersection V/C	0.928														

Emissions

Vehicle Miles Traveled [mph]	16.76	471.21	42.23	84.79	307.19	41.67	23.98	1.28	2.42	21.76	82.66	80.89
Stops [stops/h]	67.88	1536.38	91.47	815.26	1151.40	111.55	169.93	8.47	16.32	49.21	326.44	320.82
Fuel consumption [US gal/h]	1.83	38.44	2.86	22.17	25.68	2.98	3.79	0.19	0.36	1.66	9.77	9.60
CO [g/h]	127.76	2686.92	200.25	1549.81	1795.35	208.02	264.89	13.21	25.34	116.12	683.01	670.91
NOx [g/h]	24.86	522.78	38.96	301.54	349.31	40.47	51.54	2.57	4.93	22.59	132.89	130.53
VOC [g/h]	29.61	622.72	46.41	359.18	416.09	48.21	61.39	3.06	5.87	26.91	158.29	155.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.86	0.00	40.86	40.86
l_p,int, Pedestrian LOS Score for Intersectio	3.473	0.000	2.591	2.869
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	985	985	400	302
d_b, Bicycle Delay [s]	13.20	13.20	32.81	36.94
l_b,int, Bicycle LOS Score for Intersection	2.908	2.954	1.745	2.629
Bicycle LOS	C	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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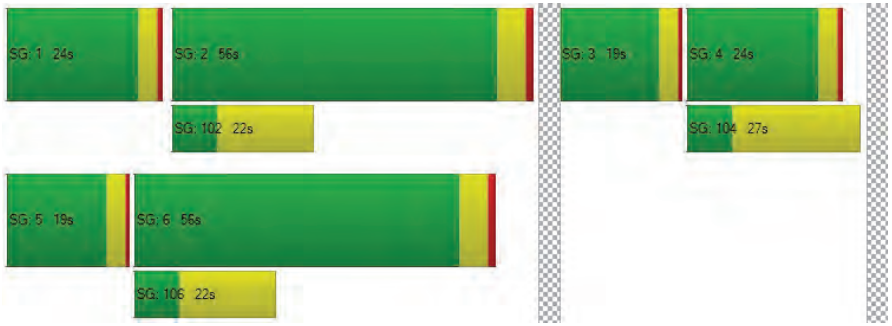

Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	54.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	2	0	0	1	2	0	0	1	1	0	2
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	400.0	100.0	100.0	400.0	360.0	100.0	100.0	300.0	400.00	100.00	300.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	2	157	1794	426	1	98	1858	469	2	355	447	90	517	381	257
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-3	1	0	0	-257	0	0	0	0	0	-63	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	128	0	0	0	141	0	0	0	27	0	0	77
Total Hourly Volume [veh/h]	2	157	1791	299	1	98	1601	328	2	355	447	63	454	381	180
Peak Hour Factor	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	0.940	0.940	0.940	0.9400	0.9400	0.9400
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	42	476	80	0	26	426	87	1	94	119	17	121	101	48
Total Analysis Volume [veh/h]	2	167	1905	318	1	104	1703	349	2	378	476	67	483	405	191
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Overl	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups				2,3											
Maximum Green [s]	0	20	53	37	0	20	53	0	0	30	30	0	37	45	0
Amber [s]	0.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	5	0	0	0	5	0	0	0	4	0	0	5	0
Pedestrian Clearance [s]	0	0	28	0	0	0	24	0	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	58	42	0	25	58	0	0	27	35	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	9	9	0	9	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	1.0	1.5	1.0	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No	Yes	No		No	Yes			No	No		No	No	
Maximum Recall		No	No	No		No	No			No	No		No	No	
Pedestrian Recall		No	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Calculated Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	54	113	9	53	53	20	24	24	53	57	57
g / C, Green / Cycle	0.06	0.34	0.70	0.06	0.33	0.33	0.12	0.15	0.15	0.33	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.20	0.03	0.34	0.22	0.11	0.13	0.04	0.14	0.11	0.12
s, saturation flow rate [veh/h]	3431	6737	1577	3431	5053	1577	3431	3532	1577	3431	3532	1577
c, Capacity [veh/h]	212	2284	1108	193	1685	526	420	520	232	1141	1262	563
d1, Uniform Delay [s]	74.06	48.73	8.85	73.50	53.33	45.65	69.28	67.26	60.78	19.63	15.64	15.71
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.59	3.77	0.65	0.89	24.61	6.48	3.04	2.82	0.25	1.15	0.67	1.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.83	0.29	0.54	1.01	0.66	0.90	0.92	0.29	0.42	0.32	0.34
d, Delay for Lane Group [s/veh]	76.65	52.51	9.50	74.39	77.94	52.13	72.32	70.08	61.03	20.78	16.31	17.34
Lane Group LOS	E	D	A	E	F	D	E	E	E	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.47	17.74	4.03	2.10	25.80	12.63	7.89	9.84	2.47	3.67	2.55	2.55
50th-Percentile Queue Length [ft/ln]	86.65	443.44	100.87	52.57	644.96	315.72	197.37	245.95	61.68	91.63	63.64	63.79
95th-Percentile Queue Length [veh/ln]	6.24	24.64	7.26	3.79	34.39	18.46	12.50	14.98	4.44	6.60	4.58	4.59
95th-Percentile Queue Length [ft/ln]	155.97	616.12	181.57	94.63	859.69	461.42	312.57	374.55	111.02	164.93	114.55	114.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.65	76.65	52.51	9.50	74.39	74.39	77.94	52.13	72.32	72.32	70.08	61.03	20.78	16.31	17.34
Movement LOS	E	E	D	A	E	E	F	D	E	E	E	E	C	B	B
d_A, Approach Delay [s/veh]	48.49				73.59				70.35				18.49		
Approach LOS	D				E				E				B		
d_I, Intersection Delay [s/veh]	54.89														
Intersection LOS	D														
Intersection V/C	0.735														

Emissions

Vehicle Miles Traveled [mph]	67.24	757.96	126.53	23.46	380.50	77.98	94.69	118.61	16.69	50.66	42.48	20.03
Stops [stops/h]	155.97	1596.40	90.79	94.63	1741.38	284.15	355.27	442.71	55.51	164.93	114.55	57.41
Fuel consumption [US gal/h]	6.88	66.18	6.08	3.57	61.70	9.91	11.45	14.12	1.83	5.04	3.73	1.82
CO [g/h]	480.90	4626.18	425.03	249.54	4312.80	692.57	800.54	986.70	127.63	352.20	260.44	126.93
NOx [g/h]	93.56	900.09	82.69	48.55	839.11	134.75	155.76	191.98	24.83	68.53	50.67	24.70
VOC [g/h]	111.45	1072.16	98.50	57.83	999.53	160.51	185.53	228.68	29.58	81.63	60.36	29.42

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	71.25	71.25	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.879	3.905	2.941	3.036
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	663	663	375	563
d_b, Bicycle Delay [s]	35.78	35.78	52.81	41.33
l_b,int, Bicycle LOS Score for Intersection	2.598	2.766	2.032	2.513
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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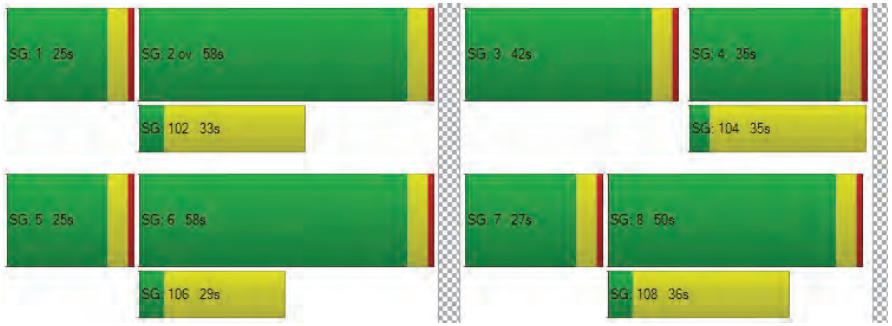

Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	300.0	200.0	100.0	100.0	100.0	320.00	100.00	320.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

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Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	74	1954	3	2	19	1885	577	279	6	21	5	11	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-1	0	0	0	-320	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	173	0	0	6	0	0	5
Total Hourly Volume [veh/h]	1	74	1953	2	2	19	1565	404	279	6	15	5	11	10
Peak Hour Factor	1.000	0.870	0.870	0.870	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	21	561	1	1	5	450	116	80	2	4	1	3	3
Total Analysis Volume [veh/h]	1	85	2245	2	2	22	1799	464	321	7	17	6	13	11
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	16	34	0	0	15	34	0	0	36	0	0	16	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	11	0	0	0	18	0	0	24	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	20	40	0	0	20	40	0	0	40	0	0	20	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	C
C, Calculated Cycle Length [s]	66	66	66	66	66	66	66	66	66	66
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	36	36	1	33	33	9	9	9	2
g / C, Green / Cycle	0.06	0.55	0.55	0.02	0.50	0.50	0.13	0.13	0.13	0.03
(v / s)_i Volume / Saturation Flow Rate	0.05	0.41	0.41	0.01	0.35	0.29	0.09	0.09	0.01	0.02
s, saturation flow rate [veh/h]	1781	3560	1869	1781	5094	1589	1781	1785	1589	1740
c, Capacity [veh/h]	114	1943	1020	30	2539	792	238	239	213	57
d1, Uniform Delay [s]	30.59	11.70	11.71	32.55	12.92	11.80	27.46	27.46	25.20	31.62
k, delay calibration	0.04	0.15	0.31	0.04	0.15	0.16	0.11	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.78	0.89	3.32	16.23	0.53	1.03	3.51	3.50	0.16	2.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.76	0.76	0.80	0.71	0.59	0.69	0.69	0.08	0.52
d, Delay for Lane Group [s/veh]	34.37	12.59	15.03	48.79	13.45	12.83	30.97	30.96	25.36	34.36
Lane Group LOS	C	B	B	D	B	B	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.42	7.11	8.16	0.48	4.94	3.63	2.59	2.60	0.23	0.50
50th-Percentile Queue Length [ft/ln]	35.42	177.83	204.02	11.95	123.49	90.76	64.78	64.89	5.85	12.48
95th-Percentile Queue Length [veh/ln]	2.55	11.49	12.85	0.86	8.58	6.53	4.66	4.67	0.42	0.90
95th-Percentile Queue Length [ft/ln]	63.76	287.19	321.14	21.51	214.62	163.37	116.61	116.80	10.53	22.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.37	34.37	13.43	15.03	48.79	48.79	13.45	12.83	30.96	30.96	25.36	34.36	34.36	34.36
Movement LOS	C	C	B	B	D	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	14.20				13.69				30.69			34.36		
Approach LOS	B				B				C			C		
d_I, Intersection Delay [s/veh]	15.23													
Intersection LOS	B													
Intersection V/C	0.707													

Emissions

Vehicle Miles Traveled [mph]	30.43	521.38	273.75	9.55	715.79	184.62	39.46	39.53	4.09	0.57
Stops [stops/h]	76.97	772.89	443.33	25.97	805.07	197.22	140.78	141.01	12.71	27.12
Fuel consumption [US gal/h]	2.28	29.51	16.09	1.04	43.82	11.05	3.43	3.44	0.33	0.38
CO [g/h]	159.34	2062.72	1124.35	72.70	3063.14	772.44	240.09	240.50	22.82	26.78
NOx [g/h]	31.00	401.33	218.76	14.14	595.97	150.29	46.71	46.79	4.44	5.21
VOC [g/h]	36.93	478.05	260.58	16.85	709.91	179.02	55.64	55.74	5.29	6.21

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.62	0.00	25.62	25.62
l_p,int, Pedestrian LOS Score for Intersectio	3.162	0.000	2.392	1.742
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1026	1026	1087	483
d_b, Bicycle Delay [s]	7.86	7.86	6.91	19.06
l_b,int, Bicycle LOS Score for Intersection	2.843	2.901	2.139	1.617
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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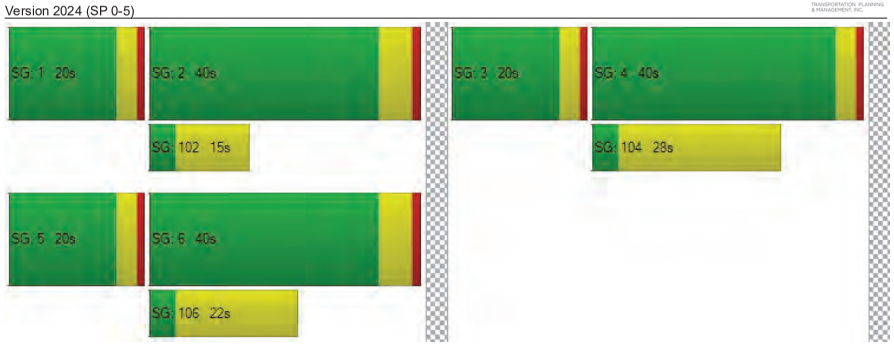

Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.879

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	1	155	1839	1449	463	193	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	96	0	0	0
Site-Generated Trips [veh/h]	0	3	-1	-320	0	0	-4
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	139	0	30
Total Hourly Volume [veh/h]	1	158	1838	1225	324	193	70
Peak Hour Factor	1.0000	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	45	528	352	93	55	20
Total Analysis Volume [veh/h]	1	182	2113	1408	372	222	80
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Calculated Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	9	53	40	40	12	12
g / C, Green / Cycle	0.13	0.71	0.53	0.53	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.59	0.48	0.51	0.12	0.05
s, saturation flow rate [veh/h]	1781	3560	1870	1742	1781	1589
c, Capacity [veh/h]	225	2529	993	924	279	249
d1, Uniform Delay [s]	31.99	7.76	15.80	16.93	30.56	28.17
k, delay calibration	0.09	0.16	0.37	0.41	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.72	1.13	9.66	19.30	5.15	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.84	0.90	0.96	0.80	0.32
d, Delay for Lane Group [s/veh]	37.71	8.89	25.46	36.23	35.71	28.91
Lane Group LOS	D	A	C	D	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.48	8.56	14.34	17.47	4.13	1.29
50th-Percentile Queue Length [ft/ln]	87.10	213.92	358.44	436.69	103.21	32.25
95th-Percentile Queue Length [veh/ln]	6.27	13.35	20.55	24.32	7.43	2.32
95th-Percentile Queue Length [ft/ln]	156.78	333.85	513.69	608.05	185.78	58.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.71	37.71	8.89	29.42	36.23	35.71	28.91
Movement LOS	D	D	A	C	D	D	C
d_A, Approach Delay [s/veh]	11.18			30.85		33.91	
Approach LOS	B			C		C	
d_I, Intersection Delay [s/veh]	20.75						
Intersection LOS	C						
Intersection V/C	0.879						

Emissions

Vehicle Miles Traveled [mph]	127.71	1474.65	314.94	314.94	74.90	26.99
Stops [stops/h]	167.22	821.35	688.13	838.35	198.14	61.90
Fuel consumption [US gal/h]	7.59	69.07	21.38	24.16	5.79	1.92
CO [g/h]	530.23	4827.72	1494.34	1688.71	404.82	134.47
NOx [g/h]	103.16	939.30	290.74	328.56	78.76	26.16
VOC [g/h]	122.88	1118.87	346.33	391.37	93.82	31.17

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0			0.0		8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00		0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00		0.00
d_p, Pedestrian Delay [s]	29.93			0.00		29.93
l_p,int, Pedestrian LOS Score for Intersectio	3.037			0.000		2.310
Crosswalk LOS	C			F		B
s_b, Saturation Flow Rate of the bicycle lane	2000			2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067			1067		533
d_b, Bicycle Delay [s]	8.17			8.17		20.17
l_b,int, Bicycle LOS Score for Intersection	3.453			3.143		1.560
Bicycle LOS	C			C		A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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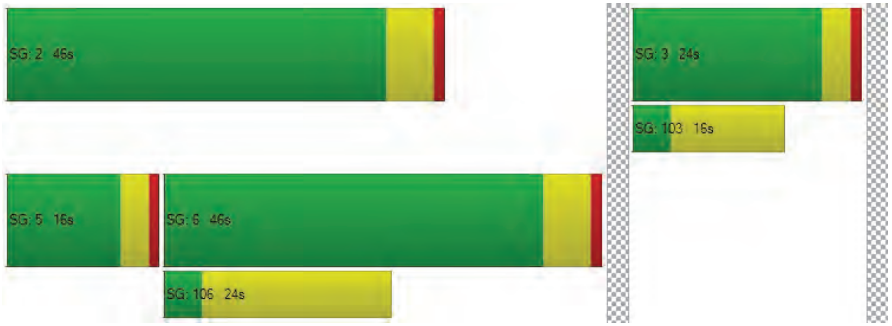

Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	121.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.159

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	60	778	21	276	401	877	613	90	86	136	351	604
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	20	8	0	148	0	0	0	11	28	0	0
Site-Generated Trips [veh/h]	19	74	6	0	-88	-235	-72	-12	-29	-19	-41	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	11	0	0	193	0	0	20	0	0	181
Total Hourly Volume [veh/h]	79	872	24	276	461	449	541	78	48	145	310	423
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	245	7	78	129	126	152	22	13	41	87	119
Total Analysis Volume [veh/h]	89	980	27	310	518	504	608	88	54	163	348	475
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	91	91	91	91	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	6	25	25	12	31	31	15	15	20	20
g / C, Green / Cycle	0.06	0.28	0.28	0.13	0.34	0.34	0.17	0.17	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.27	0.17	0.28	0.32	0.21	0.21	0.28	0.30
s, saturation flow rate [veh/h]	1781	1870	1852	1781	1870	1589	1781	1770	1841	1589
c, Capacity [veh/h]	117	515	510	235	639	544	294	292	405	350
d1, Uniform Delay [s]	41.73	32.68	32.68	39.40	27.19	28.79	37.90	37.90	35.40	35.40
k, delay calibration	0.04	0.38	0.38	0.50	0.40	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.83	30.49	30.69	169.45	8.67	24.24	148.52	149.55	135.74	178.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.98	0.98	1.32	0.81	0.93	1.28	1.28	1.26	1.36
d, Delay for Lane Group [s/veh]	45.56	63.17	63.37	208.85	35.86	53.03	186.42	187.45	171.14	213.55
Lane Group LOS	D	E	E	F	D	D	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.06	15.03	14.92	15.92	10.53	12.93	18.54	18.51	24.01	24.86
50th-Percentile Queue Length [ft/ln]	51.60	375.87	373.09	398.11	263.35	323.13	463.55	462.79	600.31	621.52
95th-Percentile Queue Length [veh/ln]	3.72	21.39	21.26	25.06	15.86	18.82	28.55	28.53	36.05	38.24
95th-Percentile Queue Length [ft/ln]	92.89	534.85	531.48	626.50	396.42	470.53	713.72	713.13	901.16	955.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.56	63.27	63.37	208.85	35.86	53.03	186.82	187.45	187.45	171.14	171.14	213.55
Movement LOS	D	E	E	F	D	D	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	61.84			82.61			186.94			191.57		
Approach LOS	E			F			F			F		
d_I, Intersection Delay [s/veh]	121.73											
Intersection LOS	F											
Intersection V/C	1.159											

Emissions

Vehicle Miles Traveled [mph]	51.40	292.14	289.43	216.35	361.51	351.74	28.27	28.15	56.52	52.53
Stops [stops/h]	81.84	596.10	591.69	631.36	417.65	512.45	735.15	733.94	952.03	985.67
Fuel consumption [US gal/h]	3.39	21.82	21.65	32.14	23.63	26.72	19.48	19.48	25.38	28.25
CO [g/h]	237.19	1525.36	1513.08	2246.37	1651.75	1867.94	1361.71	1361.95	1774.03	1974.44
NOx [g/h]	46.15	296.78	294.39	437.06	321.37	363.43	264.94	264.99	345.16	384.15
VOC [g/h]	54.97	353.52	350.67	520.62	382.81	432.91	315.59	315.65	411.15	457.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.07	0.00	35.07	35.07
l_p,int, Pedestrian LOS Score for Intersectio	2.679	0.000	2.587	2.719
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	544	544	341	441
d_b, Bicycle Delay [s]	24.06	24.06	31.22	27.60
l_b,int, Bicycle LOS Score for Intersection	2.473	2.818	2.830	3.485
Bicycle LOS	B	C	C	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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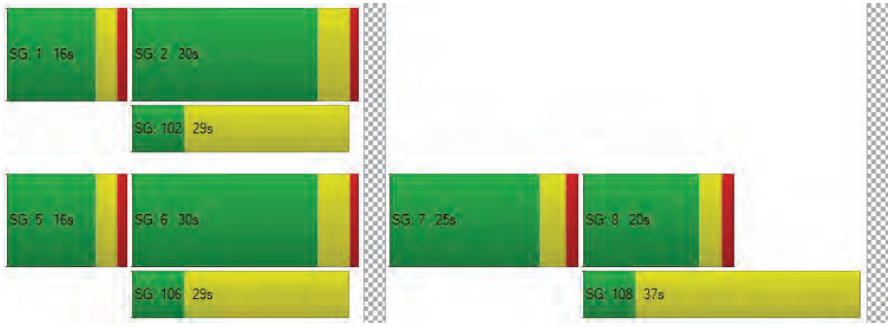

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	582	265	358	277	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	44	0	0	155	21	0
Site-Generated Trips [veh/h]	-40	171	104	-240	-72	-12
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	82	0	29
Total Hourly Volume [veh/h]	126	753	369	191	226	68
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	209	103	53	63	19
Total Analysis Volume [veh/h]	140	837	410	212	251	76
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	40	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	46	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Calculated Cycle Length [s]	39	39	39	39	39	39
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	21	13	13	8	8
g / C, Green / Cycle	0.10	0.55	0.34	0.34	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.08	0.45	0.22	0.13	0.14	0.05
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	183	1021	637	542	353	315
d1, Uniform Delay [s]	17.08	7.29	10.87	9.80	14.63	13.20
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.51	2.40	1.55	0.66	2.66	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.82	0.64	0.39	0.71	0.24
d, Delay for Lane Group [s/veh]	19.59	9.69	12.43	10.45	17.28	13.59
Lane Group LOS	B	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	2.04	1.91	0.86	1.96	0.50
50th-Percentile Queue Length [ft/ln]	24.83	51.05	47.80	21.53	48.88	12.43
95th-Percentile Queue Length [veh/ln]	1.79	3.68	3.44	1.55	3.52	0.90
95th-Percentile Queue Length [ft/ln]	44.70	91.88	86.03	38.76	87.99	22.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.59	9.69	12.43	10.45	17.28	13.59
Movement LOS	B	A	B	B	B	B
d_A, Approach Delay [s/veh]	11.11		11.75		16.42	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	12.22					
Intersection LOS	B					
Intersection V/C	0.850					

Emissions

Vehicle Miles Traveled [mph]	17.27	103.27	236.78	122.44	58.95	17.85
Stops [stops/h]	91.76	188.60	176.60	79.56	180.62	45.93
Fuel consumption [US gal/h]	2.84	8.61	12.24	6.02	4.31	1.20
CO [g/h]	198.54	601.75	855.44	421.11	301.11	83.79
NOx [g/h]	38.63	117.08	166.44	81.93	58.58	16.30
VOC [g/h]	46.01	139.46	198.26	97.60	69.78	19.42

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.31	0.00	12.31
l_p,int, Pedestrian LOS Score for Intersectio	2.787	0.000	2.196
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2053	2053	1026
d_b, Bicycle Delay [s]	0.01	0.01	4.62
l_b,int, Bicycle LOS Score for Intersection	3.172	2.721	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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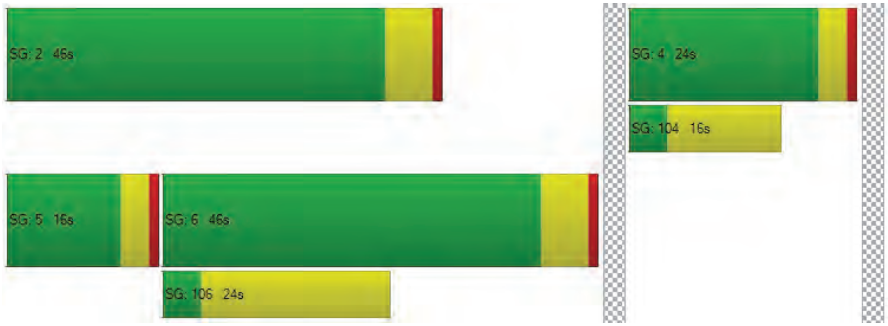

Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	46.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.159

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	658	0	14	360	0	0	0	0	0	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	13	0	0	0	4	11	0	0	0	0	0
Site-Generated Trips [veh/h]	1	127	0	0	89	3	4	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	798	0	14	449	7	15	0	2	0	0	39
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	217	0	4	122	2	4	0	1	0	0	10
Total Analysis Volume [veh/h]	1	867	0	14	488	8	16	0	2	0	0	39
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	Yes
Storage Area [veh]	0	0	1	1
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	8.37	0.00	0.00	9.65	0.00	0.00	46.71	36.88	17.17	37.27	32.37	16.49
Movement LOS	A	A	A	A	A	A	E	E	C	E	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.54	0.54	0.54	0.37	0.37	0.37
95th-Percentile Queue Length [ft/ln]	0.04	0.04	0.04	0.59	0.59	0.59	13.57	13.57	13.57	9.25	9.25	9.25
d_A, Approach Delay [s/veh]	0.01			0.26			43.43			16.49		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	1.09											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	479.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.785

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	422	48	74	286	0	0	0	0	12	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	-25	0	0	-4	64	153	2	17	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	31	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	397	48	74	282	95	153	2	17	12	1	250
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	107	13	20	76	26	41	1	5	3	0	67
Total Analysis Volume [veh/h]	12	427	52	80	303	102	165	2	18	13	1	269
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.07	0.00	0.00	1.78	0.01	0.03	0.07	0.00	0.44
d_M, Delay for Movement [s/veh]	8.15	0.00	0.00	8.59	0.00	0.00	479.49	457.09	445.78	30.08	28.83	17.66
Movement LOS	A	A	A	A	A	A	F	F	F	D	D	C
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.24	0.00	0.00	15.03	15.03	15.03	2.92	2.92	2.92
95th-Percentile Queue Length [ft/ln]	0.79	0.00	0.00	5.97	0.00	0.00	375.83	375.83	375.83	73.05	73.05	73.05
d_A, Approach Delay [s/veh]	0.20			1.42			475.97			18.27		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	65.10											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	465.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.339

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	13	560	229	53	0	1106	182
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-24	-85	-29	-83	0	-277	19
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	14	0	0	59	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	3	475	200	29	0	829	201
Peak Hour Factor	1.0000	0.9060	0.9060	0.9060	0.9060	1.0000	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	131	55	8	0	229	55
Total Analysis Volume [veh/h]	0	3	524	221	32	0	915	222
Pedestrian Volume [ped/h]	0			0		0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.34	0.65	0.00	0.00	0.00	0.70	0.00
d_M, Delay for Movement [s/veh]	465.29	465.29	62.85	0.00	0.00	20.46	10.06	0.00
Movement LOS	F	F	F	A	A	C	B	A
95th-Percentile Queue Length [veh/ln]	13.81	13.81	13.81	0.00	0.00	3.27	3.27	3.27
95th-Percentile Queue Length [ft/ln]	345.27	345.27	345.27	0.00	0.00	81.78	81.78	81.78
d_A, Approach Delay [s/veh]	65.14			0.00		8.10		
Approach LOS	F			A		A		
d_I, Intersection Delay [s/veh]	22.71							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	85.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.182

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	16	229	88	2	30	1009	55	19	21	0	258	55	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-117	-90	0	2	-299	-75	6	3	0	-229	-55	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	112	0	2	32	710	0	25	24	0	29	0	74
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.830	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	34	0	1	10	214	0	8	7	0	9	0	22
Total Analysis Volume [veh/h]	19	135	0	2	39	855	0	30	29	0	35	0	89
Pedestrian Volume [ped/h]	0			0				0			0		

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Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	660	896	555	613
Degree of Utilization, x	0.23	1.18	0.11	0.20

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.90	28.90	0.36	0.75
95th-Percentile Queue Length [ft]	22.53	722.57	8.88	18.79
Approach Delay [s/veh]	10.11	113.69	10.26	10.36
Approach LOS	B	F	B	B
Intersection Delay [s/veh]	85.41			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.375

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	175	151	1	131	225	0	67	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-104	0	-8	0	0	-3	-2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	47	1	123	225	0	64	126
Peak Hour Factor	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	12	0	32	59	0	17	33
Total Analysis Volume [veh/h]	184	49	1	129	237	0	67	133
Pedestrian Volume [ped/h]	0		0			0		

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Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.06	0.00	0.00	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	16.69	9.85	8.80	0.00	0.00	10.94	8.20	0.00
Movement LOS	C	A	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.72	0.20	0.00	0.00	0.00	0.18	0.18	0.00
95th-Percentile Queue Length [ft/ln]	43.12	4.94	0.05	0.05	0.05	4.46	4.46	0.00
d_A, Approach Delay [s/veh]	15.25		0.02			2.75		
Approach LOS	C		A			A		
d_I, Intersection Delay [s/veh]	5.14							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	26.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.442

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	134	128	233	92	194	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-104	0	0	-3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	128	129	92	194	149
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	35	35	25	53	40
Total Analysis Volume [veh/h]	146	139	140	100	211	162
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.44	0.15	0.00	0.00	0.16	0.00
d_M, Delay for Movement [s/veh]	26.37	19.43	0.00	0.00	8.23	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.81	3.81	0.00	0.00	0.57	0.00
95th-Percentile Queue Length [ft/ln]	95.33	95.33	0.00	0.00	14.13	0.00
d_A, Approach Delay [s/veh]	22.98		0.00		4.65	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	9.23					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	7.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	67	10	12	202	20	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-3	0	0	-104	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	10	12	98	20	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	3	3	27	5	5
Total Analysis Volume [veh/h]	70	11	13	107	22	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	737	767	692	765	765	752
Degree of Utilization, x	0.05	0.05	0.02	0.07	0.07	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.17	0.17	0.06	0.22	0.22	0.18
95th-Percentile Queue Length [ft]	4.35	4.17	1.44	5.62	5.62	4.43
Approach Delay [s/veh]	7.76		7.79			8.07
Approach LOS	A		A			A
Intersection Delay [s/veh]	7.83					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.440

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	65	0	18	66	1	8	4	343	152	60	603	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-3	0	0	0	0	0	0	0	-104	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	0	18	66	1	8	4	343	48	60	603	15
Peak Hour Factor	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	5	17	0	2	1	88	12	15	155	4
Total Analysis Volume [veh/h]	64	0	19	68	1	8	4	354	49	62	622	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	7	25	0	0	25	0	15	35	0	15	35	0
Amber [s]	3.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	21	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	150.0	150.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	0	30	0	20	40	0	20	40	0
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	9	0	0	9	0	9	9	0	9	9	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	46	46	46	46	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	6	6	6	0	9	9	5	13	13
g / C, Green / Cycle	0.13	0.13	0.13	0.12	0.01	0.20	0.20	0.11	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.00	0.01	0.05	0.00	0.11	0.03	0.04	0.19	0.01
s, saturation flow rate [veh/h]	1603	1683	1431	1584	1603	3204	1431	1603	3204	1431
c, Capacity [veh/h]	210	220	187	199	17	631	282	176	949	423
d1, Uniform Delay [s]	17.99	0.00	17.50	18.38	22.44	16.58	15.27	18.85	14.06	11.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	0.00	0.23	1.24	7.27	0.79	0.29	1.20	0.78	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.00	0.10	0.39	0.24	0.56	0.17	0.35	0.66	0.04
d, Delay for Lane Group [s/veh]	18.80	0.00	17.74	19.61	29.71	17.36	15.56	20.05	14.83	11.48
Lane Group LOS	B	A	B	B	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.59	0.00	0.17	0.73	0.07	1.52	0.39	0.60	2.43	0.10
50th-Percentile Queue Length [ft/ln]	14.71	0.00	4.21	18.26	1.80	37.88	9.79	14.98	60.63	2.38
95th-Percentile Queue Length [veh/ln]	1.06	0.00	0.30	1.31	0.13	2.73	0.70	1.08	4.37	0.17
95th-Percentile Queue Length [ft/ln]	26.48	0.00	7.58	32.87	3.25	68.18	17.62	26.97	109.13	4.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.80	0.00	17.74	19.61	19.61	19.61	29.71	17.36	15.56	20.05	14.83	11.48
Movement LOS	B	A	B	B	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	18.56			19.61			17.27			15.22		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.37											
Intersection LOS	B											
Intersection V/C	0.440											

Emissions

Vehicle Miles Traveled [mph]	19.00	0.00	5.64	1.72	0.57	50.69	7.02	52.17	523.43	12.62
Stops [stops/h]	46.53	0.00	13.32	57.78	5.71	239.65	30.96	47.40	383.60	7.53
Fuel consumption [US gal/h]	1.28	0.00	0.37	0.70	0.08	4.66	0.62	2.66	25.54	0.60
CO [g/h]	89.76	0.00	26.17	48.73	5.54	325.84	42.99	186.13	1785.59	41.68
NOx [g/h]	17.46	0.00	5.09	9.48	1.08	63.40	8.36	36.21	347.41	8.11
VOC [g/h]	20.80	0.00	6.07	11.29	1.28	75.52	9.96	43.14	413.83	9.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.09	13.09	13.09	13.09
l_p,int, Pedestrian LOS Score for Intersectio	2.298	1.722	2.592	2.599
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1098	1098	1538	1538
d_b, Bicycle Delay [s]	4.63	4.63	1.22	1.22
l_b,int, Bicycle LOS Score for Intersection	1.697	1.687	1.895	2.136
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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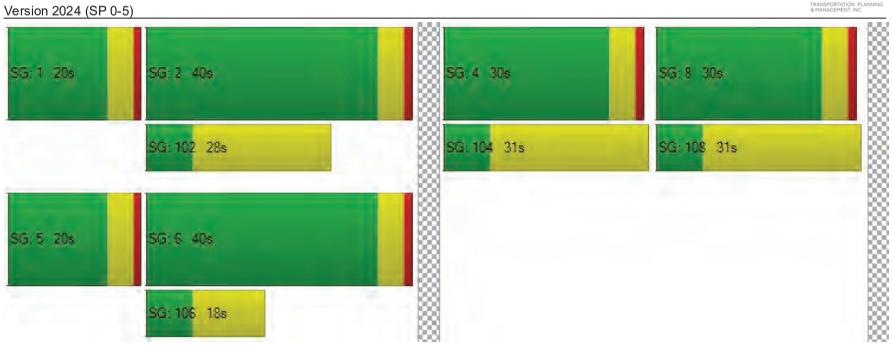

Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	72	5	243	5	5	0	5	644	184	0	499	505	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	73	0	0	0	0	0	55	0	0	0	2
Total Hourly Volume [veh/h]	72	5	170	5	5	0	5	644	129	0	499	505	3
Peak Hour Factor	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	1.000	0.970	0.970	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	19	1	44	1	1	0	1	166	33	0	129	130	1
Total Analysis Volume [veh/h]	74	5	175	5	5	0	5	664	133	0	514	521	3
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	6	15	1	10	1	46	46	36	81	81
g / C, Green / Cycle	0.05	0.13	0.01	0.08	0.01	0.38	0.38	0.30	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.00	0.00	0.00	0.19	0.08	0.29	0.14	0.14
s, saturation flow rate [veh/h]	1781	1596	1781	1870	1781	3560	1589	1781	1870	1866
c, Capacity [veh/h]	96	204	12	152	12	1354	604	537	1262	1259
d1, Uniform Delay [s]	56.04	51.41	59.33	50.78	59.34	28.34	25.16	41.16	7.39	7.39
k, delay calibration	0.04	0.04	0.11	0.04	0.11	0.50	0.50	0.24	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.83	4.76	19.50	0.03	19.95	1.27	0.84	18.67	0.37	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.88	0.40	0.03	0.40	0.49	0.22	0.96	0.21	0.21
d, Delay for Lane Group [s/veh]	60.87	56.16	78.83	50.82	79.29	29.61	26.00	59.83	7.76	7.76
Lane Group LOS	E	E	E	D	E	C	C	E	A	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	5.58	0.22	0.14	0.22	7.49	2.72	17.53	2.55	2.55
50th-Percentile Queue Length [ft/ln]	58.56	139.55	5.48	3.51	5.50	187.21	67.97	438.14	63.82	63.70
95th-Percentile Queue Length [veh/ln]	4.22	9.46	0.39	0.25	0.40	11.98	4.89	24.39	4.59	4.59
95th-Percentile Queue Length [ft/ln]	105.40	236.42	9.86	6.32	9.90	299.40	122.35	609.78	114.87	114.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.87	56.16	56.16	78.83	50.82	0.00	79.29	29.61	26.00	59.83	59.83	7.76	7.76
Movement LOS	E	E	E	E	D		E	C	C	E	E	A	A
d_A, Approach Delay [s/veh]	57.53			64.82			29.32			33.55			
Approach LOS	E			E			C			C			
d_I, Intersection Delay [s/veh]	34.98												
Intersection LOS	C												
Intersection V/C	0.656												

Emissions

Vehicle Miles Traveled [mph]	28.51	69.36	0.17	0.17	4.21	558.77	111.92	128.07	65.35	65.22
Stops [stops/h]	70.27	167.46	6.57	4.21	6.60	449.30	81.57	525.77	76.58	76.43
Fuel consumption [US gal/h]	2.48	5.84	0.12	0.08	0.29	29.49	5.76	14.44	3.53	3.52
CO [g/h]	173.25	408.03	8.65	5.74	20.30	2061.06	402.74	1009.02	246.58	246.09
NOx [g/h]	33.71	79.39	1.68	1.12	3.95	401.01	78.36	196.32	47.98	47.88
VOC [g/h]	40.15	94.57	2.00	1.33	4.70	477.67	93.34	233.85	57.15	57.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.394	1.962	2.781	0.000
Crosswalk LOS	B	A	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.099	1.576	2.267	1.994
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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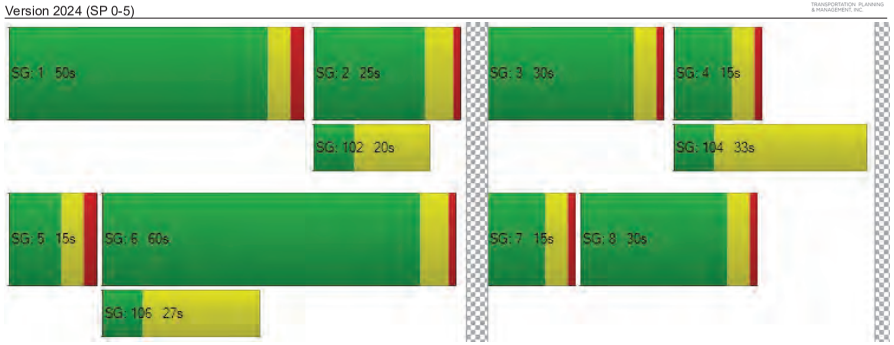

Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	44.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.607

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.0	100.0	100.0	100.0	200.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			No				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	60	7	28	115	11	210	0	243	666	62	56	885	214
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-18	0	-5	6	0	0	-45	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	8	0	0	58	0	0	0	19	0	0	64
Total Hourly Volume [veh/h]	60	7	20	115	11	134	0	238	672	43	56	840	150
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.910	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	2	5	32	3	37	0	65	185	12	15	231	41
Total Analysis Volume [veh/h]	66	8	22	126	12	147	0	262	738	47	62	923	165
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	7	24	0	7	26	0	0	23	75	0	15	67	0
Amber [s]	3.5	4.0	0.0	3.5	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.7	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	3.0	0.0	2.5	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	26	29	0	13	31	0	0	28	80	0	20	72	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	9	0	3	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No			No			No	Yes		No	No	
Maximum Recall		No			No			No	No		No	No	
Pedestrian Recall		No			No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	18	18	70	105	105	8	44	44
g / C, Green / Cycle	0.06	0.06	0.11	0.11	0.44	0.66	0.66	0.05	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.07	0.10	0.15	0.21	0.03	0.03	0.26	0.10
s, saturation flow rate [veh/h]	1790	1589	1781	1608	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	100	89	199	179	776	2331	1041	94	969	432
d1, Uniform Delay [s]	74.39	72.32	67.96	70.08	29.88	12.03	9.82	74.36	57.23	47.30
k, delay calibration	0.04	0.04	0.04	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.97	0.53	1.25	5.66	1.18	0.36	0.08	2.90	2.67	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.25	0.63	0.89	0.34	0.32	0.05	0.66	0.95	0.38
d, Delay for Lane Group [s/veh]	78.37	72.85	69.21	75.74	31.06	12.38	9.90	77.26	59.90	47.51
Lane Group LOS	E	E	E	E	C	B	A	E	E	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.13	0.89	5.03	6.74	7.07	5.91	0.63	2.59	18.72	5.45
50th-Percentile Queue Length [ft/ln]	78.19	22.13	125.81	168.52	176.76	147.70	15.66	64.87	467.98	136.26
95th-Percentile Queue Length [veh/ln]	5.63	1.59	8.71	11.00	11.43	9.89	1.13	4.67	25.81	9.28
95th-Percentile Queue Length [ft/ln]	140.74	39.83	217.78	274.97	285.79	247.36	28.19	116.77	645.37	231.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.37	78.37	72.85	69.21	75.74	75.74	31.06	31.06	12.38	9.90	77.26	59.90	47.51
Movement LOS	E	E	E	E	E	E	C	C	B	A	E	E	D
d_A, Approach Delay [s/veh]	77.10			72.85			16.94				59.06		
Approach LOS	E			E			B				E		
d_I, Intersection Delay [s/veh]	44.15												
Intersection LOS	D												
Intersection V/C	0.607												

Emissions

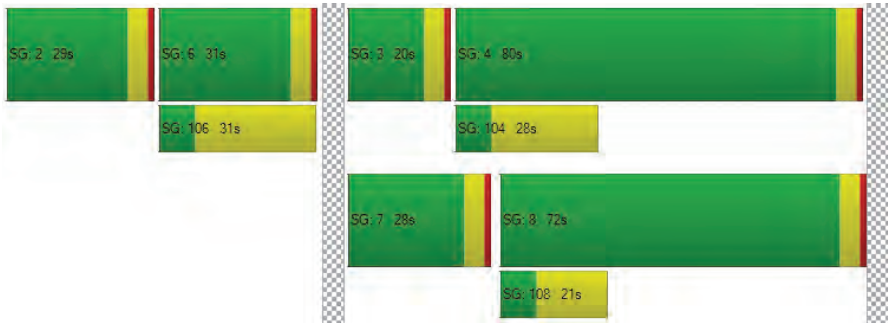
Vehicle Miles Traveled [mph]	3.70	1.10	5.86	7.39	27.48	77.40	4.93	21.71	323.20	57.78
Stops [stops/h]	70.37	19.92	113.23	151.67	159.09	265.87	14.09	58.39	842.37	122.63
Fuel consumption [US gal/h]	1.72	0.48	2.64	3.59	3.67	6.51	0.38	2.19	29.21	4.65
CO [g/h]	120.31	33.65	184.60	251.13	256.25	455.40	26.25	153.15	2041.67	325.10
NOx [g/h]	23.41	6.55	35.92	48.86	49.86	88.60	5.11	29.80	397.24	63.25
VOC [g/h]	27.88	7.80	42.78	58.20	59.39	105.54	6.08	35.49	473.18	75.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.058	2.324	2.874	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	325	938	838
d_b, Bicycle Delay [s]	57.80	56.11	22.58	27.03
I_b,int, Bicycle LOS Score for Intersection	1.731	2.126	2.223	2.561
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	2	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	300.00	100.00	300.00	200.00	100.00	200.00	300.00	100.00	200.00	500.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	300.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

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Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	129	55	474	219	51	48	223	336	271	414	989	335
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	4	0	-9	5	7	-1	0	-19	-49	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	143	0	0	16	0	0	81	0	0	101
Total Hourly Volume [veh/h]	129	52	335	219	42	37	230	335	190	395	940	234
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	15	96	63	12	11	66	96	55	114	270	67
Total Analysis Volume [veh/h]	148	60	385	252	48	43	264	385	218	454	1080	269
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	153
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Overlap	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	1	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,4									
Maximum Green [s]	0	35	25	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	3.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.5	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	28	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.2	1.5	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	150.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	29	0	45	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	2.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No	No		No		No	No		No	No	
Maximum Recall		No	No		No		No	No		No	No	
Pedestrian Recall		No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Calculated Cycle Length [s]	84	84	84	84	84	84	84	84	84	84	84	84
L, Total Lost Time per Cycle [s]	4.20	4.20	3.50	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.20	2.20	0.00	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	10	10	48	16	16	16	9	27	27	14	32	32
g / C, Green / Cycle	0.12	0.12	0.57	0.18	0.18	0.18	0.10	0.33	0.33	0.16	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.08	0.03	0.14	0.13	0.03	0.03	0.08	0.11	0.14	0.13	0.30	0.17
s, saturation flow rate [veh/h]	1781	1870	2813	1938	1870	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	214	224	1601	396	344	293	355	1162	519	571	1355	605
d1, Uniform Delay [s]	35.53	33.65	9.05	34.11	28.74	28.78	36.66	21.40	22.12	33.74	23.17	19.43
k, delay calibration	0.13	0.13	0.04	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.95	0.79	0.03	2.12	0.23	0.29	1.17	0.17	0.54	0.97	1.43	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.27	0.24	0.64	0.14	0.15	0.74	0.33	0.42	0.79	0.80	0.44
d, Delay for Lane Group [s/veh]	40.47	34.44	9.08	36.24	28.96	29.06	37.83	21.57	22.67	34.71	24.61	20.09
Lane Group LOS	D	C	A	D	C	C	D	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.14	1.14	1.60	2.53	0.82	0.74	2.64	2.80	3.32	4.41	9.25	3.86
50th-Percentile Queue Length [ft/ln]	78.58	28.59	40.11	63.37	20.42	18.41	65.95	69.95	83.06	110.37	231.14	96.52
95th-Percentile Queue Length [veh/ln]	5.66	2.06	2.89	4.56	1.47	1.33	4.75	5.04	5.98	7.86	14.23	6.95
95th-Percentile Queue Length [ft/ln]	141.44	51.46	72.19	114.07	36.75	33.13	118.70	125.92	149.50	196.52	355.81	173.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.47	34.44	9.08	36.24	28.96	29.06	37.83	21.57	22.67	34.71	24.61	20.09
Movement LOS	D	C	A	D	C	C	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.48			34.32			26.80			26.48		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	26.15											
Intersection LOS	C											
Intersection V/C	0.767											

Emissions

Vehicle Miles Traveled [mph]	253.80	102.89	660.21	51.09	9.73	8.72	92.44	134.81	76.33	204.86	487.32	121.38
Stops [stops/h]	134.73	49.01	137.53	217.31	35.00	31.56	226.14	239.89	142.41	378.48	792.63	165.50
Fuel consumption [US gal/h]	12.41	4.93	28.65	5.16	0.88	0.79	7.09	8.56	4.93	13.73	29.85	7.01
CO [g/h]	867.54	344.39	2002.61	360.83	61.30	55.05	495.38	598.69	344.94	959.79	2086.40	490.08
NOx [g/h]	168.79	67.01	389.64	70.20	11.93	10.71	96.38	116.48	67.11	186.74	405.94	95.35
VOC [g/h]	201.06	79.82	464.12	83.63	14.21	12.76	114.81	138.75	79.94	222.44	483.54	113.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		0.0	
M_corner, Corner Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	31.71		31.71		31.71		0.00	
l_p,int, Pedestrian LOS Score for Intersectio	2.902		2.643		3.016		0.000	
Crosswalk LOS	C		B		C		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	829		972		1064		1048	
d_b, Bicycle Delay [s]	14.40		11.10		9.19		9.52	
l_b,int, Bicycle LOS Score for Intersection	2.774		2.152		2.342		3.130	
Bicycle LOS	C		B		B		C	

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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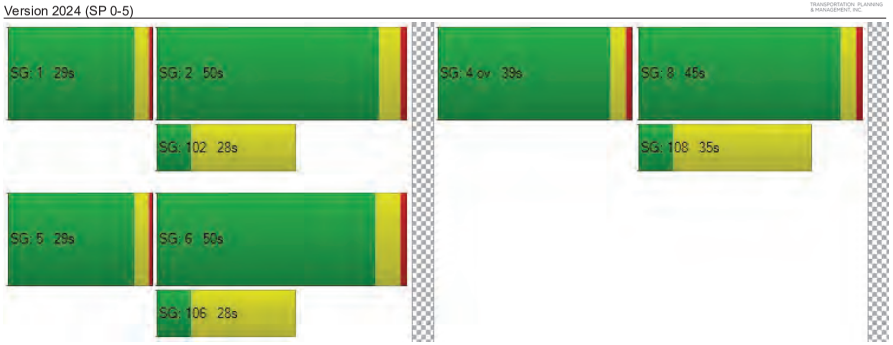

Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.928

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	5	4	0	354	3	1026	0	4	1384	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	0	-68	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	5	4	0	354	3	1029	0	4	1316	31
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	1	0	113	1	330	0	1	422	10
Total Analysis Volume [veh/h]	0	0	6	5	0	454	4	1319	0	5	1687	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	91	91	91	91	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	1	1	20	20	1	48	48	1	48	48
g / C, Green / Cycle	0.01	0.01	0.22	0.22	0.01	0.53	0.53	0.01	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.29	0.00	0.35	0.35	0.00	0.47	0.03
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	15	13	390	348	10	982	982	12	1875	837
d1, Uniform Delay [s]	0.00	45.13	27.97	35.71	45.28	15.91	15.91	45.19	19.47	10.51
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.18	0.18	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	23.08	0.01	156.85	22.45	1.30	1.30	19.45	1.79	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.46	0.01	1.31	0.39	0.67	0.67	0.40	0.90	0.05
d, Delay for Lane Group [s/veh]	0.00	68.21	27.98	192.55	67.73	17.21	17.21	64.65	21.26	10.53
Lane Group LOS	A	E	C	F	E	B	B	E	C	B
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.00	0.22	0.09	22.68	0.15	9.68	9.68	0.18	15.09	0.38
50th-Percentile Queue Length [ft/ln]	0.00	5.45	2.16	567.09	3.84	242.11	242.11	4.48	377.37	9.50
95th-Percentile Queue Length [veh/ln]	0.00	0.39	0.16	34.74	0.28	14.79	14.79	0.32	21.47	0.68
95th-Percentile Queue Length [ft/ln]	0.00	9.81	3.88	868.49	6.91	369.70	369.70	8.07	536.66	17.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	68.21	27.98	27.98	192.55	67.73	17.21	17.21	64.65	21.26	10.53
Movement LOS	A	A	E	C	C	F	E	B	B	E	C	B
d_A, Approach Delay [s/veh]	68.21			190.76			17.37			21.14		
Approach LOS	E			F			B			C		
d_I, Intersection Delay [s/veh]	41.92											
Intersection LOS	D											
Intersection V/C	0.928											

Emissions

Vehicle Miles Traveled [mph]	0.00	0.30	2.37	215.36	1.80	297.58	297.58	0.87	294.28	6.98
Stops [stops/h]	0.00	8.59	3.40	894.50	6.05	381.90	381.90	7.07	1190.49	14.98
Fuel consumption [US gal/h]	0.00	0.14	0.14	31.59	0.16	16.67	16.67	0.14	25.99	0.46
CO [g/h]	0.00	10.00	10.13	2208.43	11.38	1165.27	1165.27	9.84	1816.83	31.86
NOx [g/h]	0.00	1.95	1.97	429.68	2.21	226.72	226.72	1.91	353.49	6.20
VOC [g/h]	0.00	2.32	2.35	511.83	2.64	270.06	270.06	2.28	421.07	7.38

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	438	438	1095	1095
d_b, Bicycle Delay [s]	27.84	27.84	9.34	9.34
l_b,int, Bicycle LOS Score for Intersection	1.570	2.317	2.651	2.989
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	White Rock Rd			White Rock Rd			US 50 EB					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			White Rock Rd			US 50 EB					
Base Volume Input [veh/h]	0	425	610	0	1303	320	243	0	116	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	1	0	0	-68	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	3	426	610	0	1235	320	243	0	104	0	0	0
Peak Hour Factor	0.8300	0.8300	1.0000	1.0000	0.8300	0.8300	0.8300	1.0000	0.8300	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	128	153	0	372	96	73	0	31	0	0	0
Total Analysis Volume [veh/h]	4	513	610	0	1488	386	293	0	125	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	62	0	0	62	0	45	0	0	0	0	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	5.0	0.0	0.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	69	0	0	69	0	51	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	8	0	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	6.00	6.00	6.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00	
g_i, Effective Green Time [s]	95	95	95	95	12	12	12	
g / C, Green / Cycle	0.79	0.79	0.79	0.79	0.10	0.10	0.10	
(v / s)_i Volume / Saturation Flow Rate	0.14	0.38	0.42	0.24	0.08	0.08	0.08	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2808	1254	2808	1254	183	183	164	
d1, Uniform Delay [s]	3.13	4.34	4.60	3.54	52.62	52.62	52.41	
k, delay calibration	0.50	0.50	0.50	0.50	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.14	1.35	0.72	0.64	3.04	3.04	2.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.18	0.49	0.53	0.31	0.80	0.80	0.76	
d, Delay for Lane Group [s/veh]	3.27	5.70	5.32	4.17	55.66	55.66	55.20	
Lane Group LOS	A	A	A	A	E	E	E	
Critical Lane Group	No	No	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	1.30	4.57	5.57	2.33	4.47	4.47	3.80	
50th-Percentile Queue Length [ft/ln]	32.39	114.14	139.20	58.27	111.78	111.78	94.88	
95th-Percentile Queue Length [veh/ln]	2.33	8.07	9.44	4.20	7.94	7.94	6.83	
95th-Percentile Queue Length [ft/ln]	58.29	201.75	235.94	104.88	198.47	198.47	170.79	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	3.27	5.70	0.00	5.32	4.17	55.66	0.00	55.20	0.00	0.00	0.00
Movement LOS		A	A		A	A	E		E			
d_A, Approach Delay [s/veh]		4.59			5.08			55.52			0.00	
Approach LOS		A			A			E			A	
d_I, Intersection Delay [s/veh]	11.09											
Intersection LOS	B											
Intersection V/C	0.556											

Emissions

Vehicle Miles Traveled [mph]	89.49	106.41	263.69	68.40	8.87	8.87	7.57	
Stops [stops/h]	77.73	136.97	334.07	69.92	134.13	134.13	113.86	
Fuel consumption [US gal/h]	4.45	5.84	14.31	3.53	2.77	2.77	2.34	
CO [g/h]	311.40	408.53	1000.37	246.75	193.30	193.30	163.89	
NOx [g/h]	60.59	79.48	194.64	48.01	37.61	37.61	31.89	
VOC [g/h]	72.17	94.68	231.85	57.19	44.80	44.80	37.98	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1033	1033	750	0
d_b, Bicycle Delay [s]	14.02	14.02	23.44	60.00
l_b,int, Bicycle LOS Score for Intersection	2.486	3.106	2.269	4.132
Bicycle LOS	B	C	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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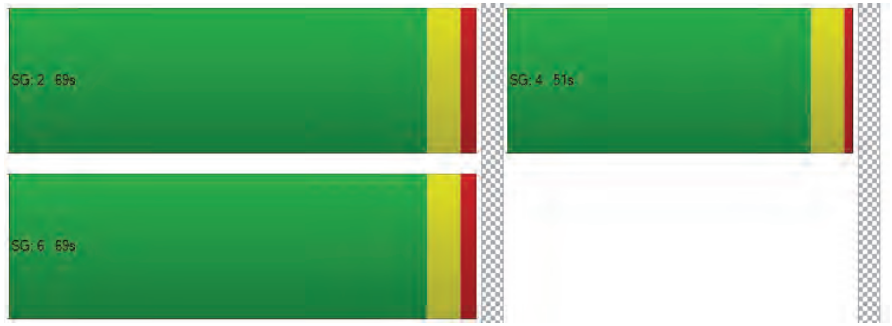

Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	47.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.009

Intersection Setup

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	590	78	0	518	719	1105	0	398	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	-12	0	-56	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	591	78	0	506	672	1049	0	368	0	0	0
Peak Hour Factor	0.7900	0.7900	1.0000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	187	20	0	160	213	332	0	116	0	0	0
Total Analysis Volume [veh/h]	0	748	78	0	641	851	1328	0	466	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	20	54	0	0	26	0	0	23	0	0	0	0
Amber [s]	3.7	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.5	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.2	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	125	70	0	0	70	0	0	50	0	0	0	0
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	8	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	6.80	6.80	6.80	6.80	5.80	5.80	5.80	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.80	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	63	63	63	63	44	44	44	
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.37	0.37	0.37	
(v / s)_i Volume / Saturation Flow Rate	0.21	0.05	0.18	0.54	0.37	0.37	0.29	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	1875	837	1875	837	656	656	585	
d1, Uniform Delay [s]	17.02	14.14	16.39	28.40	37.90	37.90	33.87	
k, delay calibration	0.50	0.50	0.50	0.50	0.44	0.44	0.25	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.64	0.22	0.50	35.31	35.94	35.94	5.74	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.40	0.09	0.34	1.02	1.01	1.01	0.80	
d, Delay for Lane Group [s/veh]	17.65	14.36	16.89	63.71	73.84	73.84	39.61	
Lane Group LOS	B	B	B	F	F	F	D	
Critical Lane Group	No	No	No	Yes	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	6.27	1.11	5.17	31.01	25.42	25.42	12.91	
50th-Percentile Queue Length [ft/ln]	156.76	27.72	129.23	775.37	635.48	635.48	322.85	
95th-Percentile Queue Length [veh/ln]	10.38	2.00	8.90	40.70	33.99	33.99	18.81	
95th-Percentile Queue Length [ft/ln]	259.42	49.90	222.45	1017.52	849.65	849.65	470.18	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	17.65	14.36	0.00	16.89	63.71	73.84	73.84	39.61	0.00	0.00	0.00
Movement LOS		B	B		B	F	F	E	D			
d_A, Approach Delay [s/veh]		17.34			43.60			64.95			0.00	
Approach LOS		B			D			E			A	
d_I, Intersection Delay [s/veh]	47.64											
Intersection LOS	D											
Intersection V/C	1.009											

Emissions

Vehicle Miles Traveled [mph]	132.55	13.82	87.65	116.36	43.60	43.60	30.60	
Stops [stops/h]	376.21	33.27	310.16	930.44	762.57	762.57	387.41	
Fuel consumption [US gal/h]	10.22	0.98	7.53	20.96	15.98	15.98	7.16	
CO [g/h]	714.55	68.55	526.02	1465.33	1117.29	1117.29	500.22	
NOx [g/h]	139.02	13.34	102.34	285.10	217.38	217.38	97.33	
VOC [g/h]	165.60	15.89	121.91	339.61	258.94	258.94	115.93	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1053	1053	737	0
d_b, Bicycle Delay [s]	13.44	13.44	23.94	60.00
I_b,int, Bicycle LOS Score for Intersection	2.241	2.829	4.569	4.132
Bicycle LOS	B	C	E	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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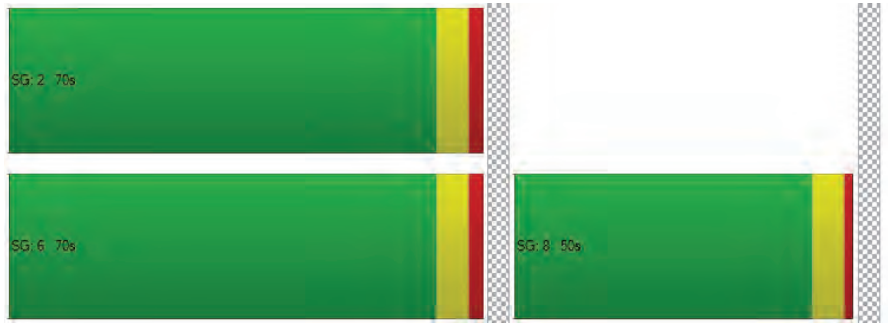

Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	658	360	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	13	0	0	0	0
Site-Generated Trips [veh/h]	0	128	60	31	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	31	-31	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	799	451	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	200	113	0	0	0
Total Analysis Volume [veh/h]	0	799	451	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.92
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.92	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.028

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	466	260	38	4	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-21	9	4	7	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	445	269	42	11	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	111	67	11	3	0
Total Analysis Volume [veh/h]	0	445	269	42	11	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	7.88	0.00	0.00	0.00	14.56	10.06
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	2.19	2.19
d_A, Approach Delay [s/veh]	0.00		0.00		14.18	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.22					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	21.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.161

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	6	241	41	52	127	9	48	87	0	37	75	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-31	0	8	-6	8	5	0	0	0	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	210	41	60	121	17	53	87	0	37	75	52
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	53	10	15	30	4	13	22	0	9	19	13
Total Analysis Volume [veh/h]	6	210	41	60	121	17	53	87	0	37	75	52
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance							No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.16	0.20	0.00	0.11	0.17	0.06
d_M, Delay for Movement [s/veh]	7.50	0.00	0.00	7.81	0.00	0.00	21.04	18.27	14.00	19.04	16.80	13.19
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.11	0.11	0.11	1.60	1.60	1.60	1.48	1.48	1.48
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.26	2.65	2.65	2.65	39.98	39.98	39.98	36.94	36.94	36.94
d_A, Approach Delay [s/veh]	0.18			2.37			19.32			16.16		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	7.73											
Intersection LOS	C											

Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	799	470	39	17
2	775	456	38	16
3	759	447	37	16
4	711	418	35	15
5	631	371	31	13
6	623	367	30	13
7	615	362	30	13
8	559	329	27	12
9	551	324	27	12
10	543	320	27	12
11	471	277	23	10
12	439	259	21	9
13	431	254	21	9
14	320	188	16	7
15	320	188	16	7
16	224	132	11	5
17	128	75	6	3
18	128	75	6	3
19	72	42	4	2
20	40	24	2	1
21	24	14	1	1
22	8	5	0	0
23	8	5	0	0
24	8	5	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1269	1	39	No	No	No	No	No	No	No	No	No	No
2	1	1231	1	38	No	No	No	No	No	No	No	No	No	No
3	1	1206	1	37	No	No	No	No	No	No	No	No	No	No
4	1	1129	1	35	No	No	No	No	No	No	No	No	No	No
5	1	1002	1	31	No	No	No	No	No	No	No	No	No	No
6	1	990	1	30	No	No	No	No	No	No	No	No	No	No
7	1	977	1	30	No	No	No	No	No	No	No	No	No	No
8	1	888	1	27	No	No	No	No	No	No	No	No	No	No
9	1	875	1	27	No	No	No	No	No	No	No	No	No	No
10	1	863	1	27	No	No	No	No	No	No	No	No	No	No
11	1	748	1	23	No	No	No	No	No	No	No	No	No	No
12	1	698	1	21	No	No	No	No	No	No	No	No	No	No
13	1	685	1	21	No	No	No	No	No	No	No	No	No	No
14	1	508	1	16	No	No	No	No	No	No	No	No	No	No
15	1	508	1	16	No	No	No	No	No	No	No	No	No	No
16	1	356	1	11	No	No	No	No	No	No	No	No	No	No
17	1	203	1	6	No	No	No	No	No	No	No	No	No	No
18	1	203	1	6	No	No	No	No	No	No	No	No	No	No
19	1	114	1	4	No	No	No	No	No	No	No	No	No	No
20	1	64	1	2	No	No	No	No	No	No	No	No	No	No
21	1	38	1	1	No	No	No	No	No	No	No	No	No	No
22	1	13	1	0	No	No	No	No	No	No	No	No	No	No
23	1	13	1	0	No	No	No	No	No	No	No	No	No	No
24	1	13	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.5	43.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:10	0:12
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	39	17
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1325	1325
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	456	451	263	172
2	442	437	255	167
3	433	428	250	163
4	406	401	234	153
5	360	356	208	136
6	356	352	205	134
7	351	347	203	132
8	319	316	184	120
9	315	311	181	119
10	310	307	179	117
11	269	266	155	101
12	251	248	145	95
13	246	244	142	93
14	182	180	105	69
15	182	180	105	69
16	128	126	74	48
17	73	72	42	28
18	73	72	42	28
19	41	41	24	15
20	23	23	13	9
21	14	14	8	5
22	5	5	3	2
23	5	5	3	2
24	5	5	3	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	907	1	263	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	879	1	255	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	2	861	1	250	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	2	807	1	234	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
5	2	716	1	208	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
6	2	708	1	205	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
7	2	698	1	203	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
8	2	635	1	184	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
9	2	626	1	181	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
10	2	617	1	179	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
11	2	535	1	155	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
12	2	499	1	145	No	Yes	Yes	Yes	No	No	No	No	No	No
13	2	490	1	142	No	Yes	Yes	Yes	No	No	No	No	No	No
14	2	362	1	105	No	No	No	Yes	No	No	No	No	No	No
15	2	362	1	105	No	No	No	Yes	No	No	No	No	No	No
16	2	254	1	74	No	No	No	No	No	No	No	No	No	No
17	2	145	1	42	No	No	No	No	No	No	No	No	No	No
18	2	145	1	42	No	No	No	No	No	No	No	No	No	No
19	2	82	1	24	No	No	No	No	No	No	No	No	No	No
20	2	46	1	13	No	No	No	No	No	No	No	No	No	No
21	2	28	1	8	No	No	No	No	No	No	No	No	No	No
22	2	10	1	3	No	No	No	No	No	No	No	No	No	No
23	2	10	1	3	No	No	No	No	No	No	No	No	No	No
24	2	10	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	1	4	8	11	11	7

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.3	476
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:20	22:44
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	263	172
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1342	1342
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1030	229	478
2	999	222	464
3	979	218	454
4	917	204	425
5	814	181	378
6	803	179	373
7	793	176	368
8	721	160	335
9	711	158	330
10	700	156	325
11	608	135	282
12	567	126	263
13	556	124	258
14	412	92	191
15	412	92	191
16	288	64	134
17	165	37	76
18	165	37	76
19	93	21	43
20	52	11	24
21	31	7	14
22	10	2	5
23	10	2	5
24	10	2	5

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1259	1	478	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1221	1	464	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1197	1	454	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1121	1	425	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	995	1	378	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	982	1	373	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	969	1	368	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	881	1	335	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	869	1	330	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	856	1	325	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	743	1	282	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	693	1	263	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	680	1	258	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	504	1	191	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	504	1	191	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	352	1	134	No	No	Yes	Yes	No	No	No	No	No	No
17	1	202	1	76	No	No	No	No	No	No	No	No	No	No
18	1	202	1	76	No	No	No	No	No	No	No	No	No	No
19	1	114	1	43	No	No	No	No	No	No	No	No	No	No
20	1	63	1	24	No	No	No	No	No	No	No	No	No	No
21	1	38	1	14	No	No	No	No	No	No	No	No	No	No
22	1	12	1	5	No	No	No	No	No	No	No	No	No	No
23	1	12	1	5	No	No	No	No	No	No	No	No	No	No
24	1	12	1	5	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	10	13	13	15	13	8

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	65.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	8:38
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	478
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1737
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	128	744	103	49
2	124	722	100	48
3	122	707	98	47
4	114	662	92	44
5	101	588	81	39
6	100	580	80	38
7	99	573	79	38
8	90	521	72	34
9	88	513	71	34
10	87	506	70	33
11	76	439	61	29
12	70	409	57	27
13	69	402	56	26
14	51	298	41	20
15	51	298	41	20
16	36	208	29	14
17	20	119	16	8
18	20	119	16	8
19	12	67	9	4
20	6	37	5	2
21	4	22	3	1
22	1	7	1	0
23	1	7	1	0
24	1	7	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	872	1	103	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
2	1	846	1	100	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
3	1	829	1	98	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
4	1	776	1	92	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
5	1	689	1	81	No	No	No	No	No	Yes	Yes	Yes	No	No
6	1	680	1	80	No	No	No	No	No	Yes	Yes	Yes	No	No
7	1	672	1	79	No	No	No	No	No	Yes	Yes	Yes	No	No
8	1	611	1	72	No	No	No	No	No	Yes	Yes	Yes	No	No
9	1	601	1	71	No	No	No	No	No	Yes	Yes	Yes	No	No
10	1	593	1	70	No	No	No	No	No	No	Yes	Yes	No	No
11	1	515	1	61	No	No	No	No	No	No	No	Yes	No	No
12	1	479	1	57	No	No	No	No	No	No	No	Yes	No	No
13	1	471	1	56	No	No	No	No	No	No	No	Yes	No	No
14	1	349	1	41	No	No	No	No	No	No	No	No	No	No
15	1	349	1	41	No	No	No	No	No	No	No	No	No	No
16	1	244	1	29	No	No	No	No	No	No	No	No	No	No
17	1	139	1	16	No	No	No	No	No	No	No	No	No	No
18	1	139	1	16	No	No	No	No	No	No	No	No	No	No
19	1	79	1	9	No	No	No	No	No	No	No	No	No	No
20	1	43	1	5	No	No	No	No	No	No	No	No	No	No
21	1	26	1	3	No	No	No	No	No	No	No	No	No	No
22	1	8	1	1	No	No	No	No	No	No	No	No	No	No
23	1	8	1	1	No	No	No	No	No	No	No	No	No	No
24	1	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	4	9	10	13	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.4	10.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:17	0:08
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	103	49
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1024	1024
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	190	349	222
2	184	339	215
3	181	332	211
4	169	311	198
5	150	276	175
6	148	272	173
7	146	269	171
8	133	244	155
9	131	241	153
10	129	237	151
11	112	206	131
12	105	192	122
13	103	188	120
14	76	140	89
15	76	140	89
16	53	98	62
17	30	56	36
18	30	56	36
19	17	31	20
20	10	17	11
21	6	10	7
22	2	3	2
23	2	3	2
24	2	3	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	539	2	222	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	523	2	215	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	513	2	211	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	480	2	198	No	Yes	Yes	Yes	No	No	No	No	No	No
5	2	426	2	175	No	No	Yes	Yes	No	No	No	No	No	No
6	2	420	2	173	No	No	Yes	Yes	No	No	No	No	No	No
7	2	415	2	171	No	No	No	Yes	No	No	No	No	No	No
8	2	377	2	155	No	No	No	Yes	No	No	No	No	No	No
9	2	372	2	153	No	No	No	Yes	No	No	No	No	No	No
10	2	366	2	151	No	No	No	Yes	No	No	No	No	No	No
11	2	318	2	131	No	No	No	No	No	No	No	No	No	No
12	2	297	2	122	No	No	No	No	No	No	No	No	No	No
13	2	291	2	120	No	No	No	No	No	No	No	No	No	No
14	2	216	2	89	No	No	No	No	No	No	No	No	No	No
15	2	216	2	89	No	No	No	No	No	No	No	No	No	No
16	2	151	2	62	No	No	No	No	No	No	No	No	No	No
17	2	86	2	36	No	No	No	No	No	No	No	No	No	No
18	2	86	2	36	No	No	No	No	No	No	No	No	No	No
19	2	48	2	20	No	No	No	No	No	No	No	No	No	No
20	2	27	2	11	No	No	No	No	No	No	No	No	No	No
21	2	16	2	7	No	No	No	No	No	No	No	No	No	No
22	2	5	2	2	No	No	No	No	No	No	No	No	No	No
23	2	5	2	2	No	No	No	No	No	No	No	No	No	No
24	2	5	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	6	10	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.2
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:56
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	222
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	761
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	343	221	262
2	333	214	254
3	326	210	249
4	305	197	233
5	271	175	207
6	268	172	204
7	264	170	202
8	240	155	183
9	237	152	181
10	233	150	178
11	202	130	155
12	189	122	144
13	185	119	141
14	137	88	105
15	137	88	105
16	96	62	73
17	55	35	42
18	55	35	42
19	31	20	24
20	17	11	13
21	10	7	8
22	3	2	3
23	3	2	3
24	3	2	3

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	564	1	262	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	2	547	1	254	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	2	536	1	249	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	502	1	233	No	Yes	Yes	Yes	No	No	No	No	No	No
5	2	446	1	207	No	No	Yes	Yes	No	No	No	No	No	No
6	2	440	1	204	No	No	Yes	Yes	No	No	No	No	No	No
7	2	434	1	202	No	No	Yes	Yes	No	No	No	No	No	No
8	2	395	1	183	No	No	No	Yes	No	No	No	No	No	No
9	2	389	1	181	No	No	No	Yes	No	No	No	No	No	No
10	2	383	1	178	No	No	No	Yes	No	No	No	No	No	No
11	2	332	1	155	No	No	No	No	No	No	No	No	No	No
12	2	311	1	144	No	No	No	No	No	No	No	No	No	No
13	2	304	1	141	No	No	No	No	No	No	No	No	No	No
14	2	225	1	105	No	No	No	No	No	No	No	No	No	No
15	2	225	1	105	No	No	No	No	No	No	No	No	No	No
16	2	158	1	73	No	No	No	No	No	No	No	No	No	No
17	2	90	1	42	No	No	No	No	No	No	No	No	No	No
18	2	90	1	42	No	No	No	No	No	No	No	No	No	No
19	2	51	1	24	No	No	No	No	No	No	No	No	No	No
20	2	28	1	13	No	No	No	No	No	No	No	No	No	No
21	2	17	1	8	No	No	No	No	No	No	No	No	No	No
22	2	5	1	3	No	No	No	No	No	No	No	No	No	No
23	2	5	1	3	No	No	No	No	No	No	No	No	No	No
24	2	5	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	23
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:40
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	262
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	826
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	74	110	38
2	72	107	37
3	70	105	36
4	66	98	34
5	58	87	30
6	58	86	30
7	57	85	29
8	52	77	27
9	51	76	26
10	50	75	26
11	44	65	22
12	41	61	21
13	40	59	21
14	30	44	15
15	30	44	15
16	21	31	11
17	12	18	6
18	12	18	6
19	7	10	3
20	4	6	2
21	2	3	1
22	1	1	0
23	1	1	0
24	1	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	184	1	38	No	No	No	No	No	No	No	No	No	No
2	3	179	1	37	No	No	No	No	No	No	No	No	No	No
3	3	175	1	36	No	No	No	No	No	No	No	No	No	No
4	3	164	1	34	No	No	No	No	No	No	No	No	No	No
5	3	145	1	30	No	No	No	No	No	No	No	No	No	No
6	3	144	1	30	No	No	No	No	No	No	No	No	No	No
7	3	142	1	29	No	No	No	No	No	No	No	No	No	No
8	3	129	1	27	No	No	No	No	No	No	No	No	No	No
9	3	127	1	26	No	No	No	No	No	No	No	No	No	No
10	3	125	1	26	No	No	No	No	No	No	No	No	No	No
11	3	109	1	22	No	No	No	No	No	No	No	No	No	No
12	3	102	1	21	No	No	No	No	No	No	No	No	No	No
13	3	99	1	21	No	No	No	No	No	No	No	No	No	No
14	3	74	1	15	No	No	No	No	No	No	No	No	No	No
15	3	74	1	15	No	No	No	No	No	No	No	No	No	No
16	3	52	1	11	No	No	No	No	No	No	No	No	No	No
17	3	30	1	6	No	No	No	No	No	No	No	No	No	No
18	3	30	1	6	No	No	No	No	No	No	No	No	No	No
19	3	17	1	3	No	No	No	No	No	No	No	No	No	No
20	3	10	1	2	No	No	No	No	No	No	No	No	No	No
21	3	5	1	1	No	No	No	No	No	No	No	No	No	No
22	3	2	1	0	No	No	No	No	No	No	No	No	No	No
23	3	2	1	0	No	No	No	No	No	No	No	No	No	No
24	3	2	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	222
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	799	451	0
2	775	437	0
3	759	428	0
4	711	401	0
5	631	356	0
6	623	352	0
7	615	347	0
8	559	316	0
9	551	311	0
10	543	307	0
11	471	266	0
12	439	248	0
13	431	244	0
14	320	180	0
15	320	180	0
16	224	126	0
17	128	72	0
18	128	72	0
19	72	41	0
20	40	23	0
21	24	14	0
22	8	5	0
23	8	5	0
24	8	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1250	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1212	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1187	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1112	1	0	No	No	No	No	No	No	No	No	No	No
5	1	987	1	0	No	No	No	No	No	No	No	No	No	No
6	1	975	1	0	No	No	No	No	No	No	No	No	No	No
7	1	962	1	0	No	No	No	No	No	No	No	No	No	No
8	1	875	1	0	No	No	No	No	No	No	No	No	No	No
9	1	862	1	0	No	No	No	No	No	No	No	No	No	No
10	1	850	1	0	No	No	No	No	No	No	No	No	No	No
11	1	737	1	0	No	No	No	No	No	No	No	No	No	No
12	1	687	1	0	No	No	No	No	No	No	No	No	No	No
13	1	675	1	0	No	No	No	No	No	No	No	No	No	No
14	1	500	1	0	No	No	No	No	No	No	No	No	No	No
15	1	500	1	0	No	No	No	No	No	No	No	No	No	No
16	1	350	1	0	No	No	No	No	No	No	No	No	No	No
17	1	200	1	0	No	No	No	No	No	No	No	No	No	No
18	1	200	1	0	No	No	No	No	No	No	No	No	No	No
19	1	113	1	0	No	No	No	No	No	No	No	No	No	No
20	1	63	1	0	No	No	No	No	No	No	No	No	No	No
21	1	38	1	0	No	No	No	No	No	No	No	No	No	No
22	1	13	1	0	No	No	No	No	No	No	No	No	No	No
23	1	13	1	0	No	No	No	No	No	No	No	No	No	No
24	1	13	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1250
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	445	311	12
2	432	302	12
3	423	295	11
4	396	277	11
5	352	246	9
6	347	243	9
7	343	239	9
8	312	218	8
9	307	215	8
10	303	211	8
11	263	183	7
12	245	171	7
13	240	168	6
14	178	124	5
15	178	124	5
16	125	87	3
17	71	50	2
18	71	50	2
19	40	28	1
20	22	16	1
21	13	9	0
22	4	3	0
23	4	3	0
24	4	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	756	1	12	No	No	No	No	No	No	No	No	No	No
2	1	734	1	12	No	No	No	No	No	No	No	No	No	No
3	1	718	1	11	No	No	No	No	No	No	No	No	No	No
4	1	673	1	11	No	No	No	No	No	No	No	No	No	No
5	1	598	1	9	No	No	No	No	No	No	No	No	No	No
6	1	590	1	9	No	No	No	No	No	No	No	No	No	No
7	1	582	1	9	No	No	No	No	No	No	No	No	No	No
8	1	530	1	8	No	No	No	No	No	No	No	No	No	No
9	1	522	1	8	No	No	No	No	No	No	No	No	No	No
10	1	514	1	8	No	No	No	No	No	No	No	No	No	No
11	1	446	1	7	No	No	No	No	No	No	No	No	No	No
12	1	416	1	7	No	No	No	No	No	No	No	No	No	No
13	1	408	1	6	No	No	No	No	No	No	No	No	No	No
14	1	302	1	5	No	No	No	No	No	No	No	No	No	No
15	1	302	1	5	No	No	No	No	No	No	No	No	No	No
16	1	212	1	3	No	No	No	No	No	No	No	No	No	No
17	1	121	1	2	No	No	No	No	No	No	No	No	No	No
18	1	121	1	2	No	No	No	No	No	No	No	No	No	No
19	1	68	1	1	No	No	No	No	No	No	No	No	No	No
20	1	38	1	1	No	No	No	No	No	No	No	No	No	No
21	1	22	1	0	No	No	No	No	No	No	No	No	No	No
22	1	7	1	0	No	No	No	No	No	No	No	No	No	No
23	1	7	1	0	No	No	No	No	No	No	No	No	No	No
24	1	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	12
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	768
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	257	198	164	140
2	249	192	159	136
3	244	188	156	133
4	229	176	146	125
5	203	156	130	111
6	200	154	128	109
7	198	152	126	108
8	180	139	115	98
9	177	137	113	97
10	175	135	112	95
11	152	117	97	83
12	141	109	90	77
13	139	107	89	76
14	103	79	66	56
15	103	79	66	56
16	72	55	46	39
17	41	32	26	22
18	41	32	26	22
19	23	18	15	13
20	13	10	8	7
21	8	6	5	4
22	3	2	2	1
23	3	2	2	1
24	3	2	2	1

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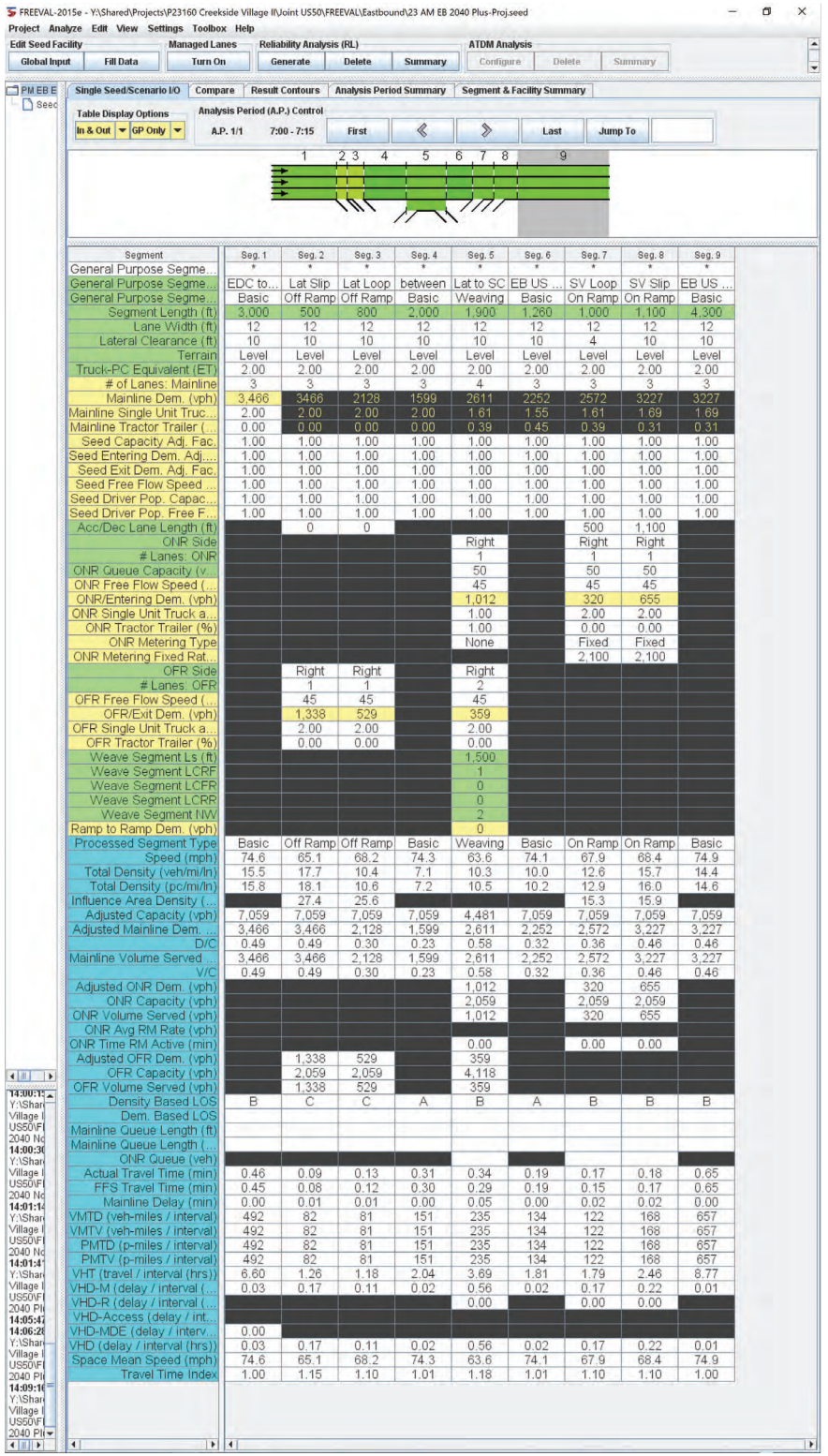
Warrant Analysis by Hour

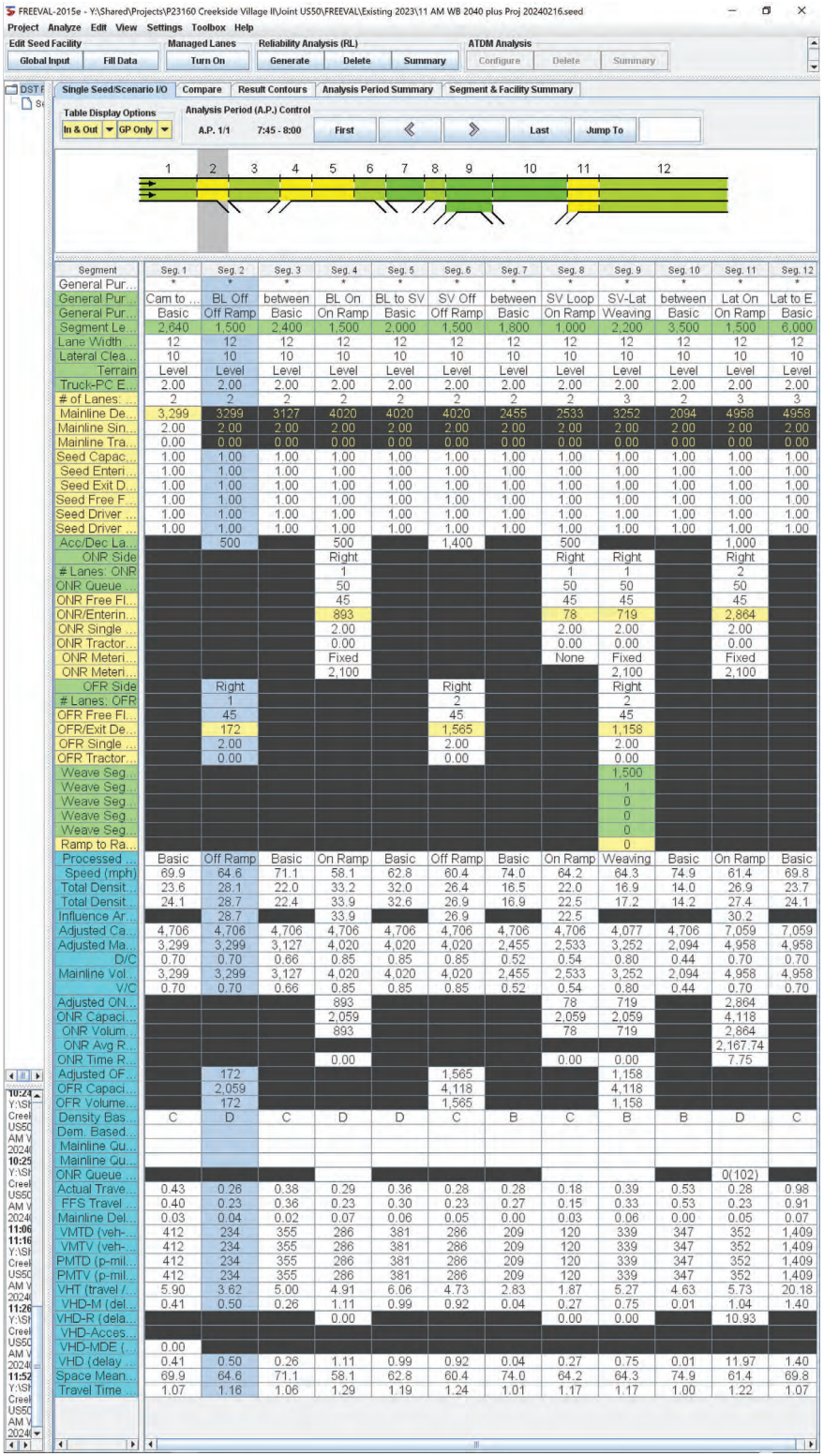
Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	455	1	164	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
2	1	441	1	159	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	1	432	1	156	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	1	405	1	146	No	Yes	Yes	Yes	No	No	No	No	No	No
5	1	359	1	130	No	No	Yes	Yes	No	No	No	No	No	No
6	1	354	1	128	No	No	Yes	Yes	No	No	No	No	No	No
7	1	350	1	126	No	No	Yes	Yes	No	No	No	No	No	No
8	1	319	1	115	No	No	No	Yes	No	No	No	No	No	No
9	1	314	1	113	No	No	No	Yes	No	No	No	No	No	No
10	1	310	1	112	No	No	No	Yes	No	No	No	No	No	No
11	1	269	1	97	No	No	No	No	No	No	No	No	No	No
12	1	250	1	90	No	No	No	No	No	No	No	No	No	No
13	1	246	1	89	No	No	No	No	No	No	No	No	No	No
14	1	182	1	66	No	No	No	No	No	No	No	No	No	No
15	1	182	1	66	No	No	No	No	No	No	No	No	No	No
16	1	127	1	46	No	No	No	No	No	No	No	No	No	No
17	1	73	1	26	No	No	No	No	No	No	No	No	No	No
18	1	73	1	26	No	No	No	No	No	No	No	No	No	No
19	1	41	1	15	No	No	No	No	No	No	No	No	No	No
20	1	23	1	8	No	No	No	No	No	No	No	No	No	No
21	1	14	1	5	No	No	No	No	No	No	No	No	No	No
22	1	5	1	2	No	No	No	No	No	No	No	No	No	No
23	1	5	1	2	No	No	No	No	No	No	No	No	No	No
24	1	5	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	0	3	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.2	19.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:44	0:45
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	164	140
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	759	759
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9
General Purpose Segme...	*	*	*	*	*	*	*	*	*
General Purpose Segme...	EDC to...	Lat Slip	Lat Loop	between	Lat to SC	EB US ...	SV Loop	SV Slip	EB US ...
General Purpose Segme...	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Segment Length (ft)	3,000	500	800	2,000	1,900	1,260	1,000	1,100	4,300
Lane Width (ft)	12	12	12	12	12	12	12	12	12
Lateral Clearance (ft)	10	10	10	10	10	10	4	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: Mainline	3	3	3	3	4	3	3	3	3
Mainline Dem. (vph)	3,466	3466	2128	1599	2611	2252	2572	3227	3227
Mainline Single Unit Truc...	2.00	2.00	2.00	2.00	1.61	1.55	1.61	1.69	1.69
Mainline Tractor Trailer (...	0.00	0.00	0.00	0.00	0.39	0.45	0.39	0.31	0.31
Seed Capacity Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Entering Dem. Adj....	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit Dem. Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free Flow Speed ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec Lane Length (ft)		0	0				500	1,100	
ONR Side					Right		Right	Right	
# Lanes: ONR					1		1	1	
ONR Queue Capacity (v...					50		50	50	
ONR Free Flow Speed (...					45		45	45	
ONR/Entering Dem. (vph)					1,012		320	655	
ONR Single Unit Truck a...					1.00		2.00	2.00	
ONR Tractor Trailer (%)					1.00		0.00	0.00	
ONR Metering Type					None		Fixed	Fixed	
ONR Metering Fixed Rat...							2,100	2,100	
OFR Side		Right	Right		Right				
# Lanes: OFR		1	1		2				
OFR Free Flow Speed (...		45	45		45				
OFR/Exit Dem. (vph)		1,338	529		359				
OFR Single Unit Truck a...		2.00	2.00		2.00				
OFR Tractor Trailer (%)		0.00	0.00		0.00				
Weave Segment Ls (ft)					1,500				
Weave Segment LCRF					1				
Weave Segment LCFR					0				
Weave Segment LCRR					0				
Weave Segment NW					2				
Ramp to Ramp Dem. (vph)					0				
Processed Segment Type	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Speed (mph)	74.6	65.1	68.2	74.3	63.6	74.1	67.9	68.4	74.9
Total Density (veh/mi/ln)	15.5	17.7	10.4	7.1	10.3	10.0	12.6	15.7	14.4
Total Density (pc/mi/ln)	15.8	18.1	10.6	7.2	10.5	10.2	12.9	16.0	14.6
Influence Area Density (...		27.4	25.6				15.3	15.9	
Adjusted Capacity (vph)	7,059	7,059	7,059	7,059	4,481	7,059	7,059	7,059	7,059
Adjusted Mainline Dem. ...	3,466	3,466	2,128	1,599	2,611	2,252	2,572	3,227	3,227
D/C	0.49	0.49	0.30	0.23	0.58	0.32	0.36	0.46	0.46
Mainline Volume Served...	3,466	3,466	2,128	1,599	2,611	2,252	2,572	3,227	3,227
V/C	0.49	0.49	0.30	0.23	0.58	0.32	0.36	0.46	0.46
Adjusted ONR Dem. (vph)					1,012		320	655	
ONR Capacity (vph)					2,059		2,059	2,059	
ONR Volume Served (vph)					1,012		320	655	
ONR Avg RM Rate (vph)									
ONR Time RM Active (min)					0.00		0.00	0.00	
Adjusted OFR Dem. (vph)		1,338	529		359				
OFR Capacity (vph)		2,059	2,059		4,118				
OFR Volume Served (vph)		1,338	529		359				
Density Based LOS	B	C	C	A	B	A	B	B	B
Dem. Based LOS									
Mainline Queue Length (ft)									
Mainline Queue Length (...									
ONR Queue (veh)									
Actual Travel Time (min)	0.46	0.09	0.13	0.31	0.34	0.19	0.17	0.18	0.65
FFS Travel Time (min)	0.45	0.08	0.12	0.30	0.29	0.19	0.15	0.17	0.65
Mainline Delay (min)	0.00	0.01	0.01	0.00	0.05	0.00	0.02	0.02	0.00
VMTD (veh-miles / interval)	492	82	81	151	235	134	122	168	657
VMTV (veh-miles / interval)	492	82	81	151	235	134	122	168	657
PMTD (p-miles / interval)	492	82	81	151	235	134	122	168	657
PMTV (p-miles / interval)	492	82	81	151	235	134	122	168	657
VHT (travel / interval (hrs))	6.60	1.26	1.18	2.04	3.69	1.81	1.79	2.46	8.77
VHD-M (delay / interval (...	0.03	0.17	0.11	0.02	0.56	0.02	0.17	0.22	0.01
VHD-R (delay / interval (...					0.00		0.00	0.00	
VHD-Access (delay / int...									
VHD-MDE (delay / interv...	0.00								
VHD (delay / interval (hrs))	0.03	0.17	0.11	0.02	0.56	0.02	0.17	0.22	0.01
Space Mean Speed (mph)	74.6	65.1	68.2	74.3	63.6	74.1	67.9	68.4	74.9
Travel Time Index	1.00	1.15	1.10	1.01	1.18	1.01	1.10	1.10	1.00



Creekside Village
Traffic Impact Analysis

El Dorado Hills, California

Cumulative PM plus Project

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Report File: C:\...\16 2040 PM plus Proj.pdf

Scenario 6 2040 PM with CCSP, + Project
9/30/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	El Dorado Hills Blvd/Serrano Pkwy	Signalized	HCM 7th Edition	NB Thru	0.974	58.2	E
2	El Dorado Hills Blvd/Saratoga Way	Signalized	HCM 7th Edition	NB Left	0.963	65.4	E
3	El Dorado Hills Blvd/US 50 WB	Signalized	HCM 7th Edition	NB Left	1.048	63.9	E
4	Latrobe Rd/US 50 EB	Signalized	HCM 7th Edition	EB Right	0.950	61.0	E
5	Latrobe Rd/Town Center Blvd	Signalized	HCM 7th Edition	SB Left	1.035	67.0	E
6	Latrobe Rd/White Rock Rd	Signalized	HCM 7th Edition	NB Left	0.784	50.0	D
7	Latrobe Rd/Golden Foothill Pkwy N	Signalized	HCM 7th Edition	SB Left	0.799	22.6	C
8	Latrobe Rd/Suncast Ln	Signalized	HCM 7th Edition	EB Left	0.981	41.6	D
9	Latrobe Rd/Golden Foothill Pkwy S	Signalized	HCM 7th Edition	SB Left	1.126	147.4	F
10	Latrobe Rd/Investment Blvd	Signalized	HCM 7th Edition	NB Left	0.870	27.8	C
11	Latrobe Rd/Avanti	Two-way stop	HCM 7th Edition	EB Left	0.164	54.6	F
12	Latrobe Rd/Royal Oaks Dr	Two-way stop	HCM 7th Edition	EB Left	1.388	313.4	F
13	Golden Foothill/Robert J Mathews	Two-way stop	HCM 7th Edition	NB Left	21.977	10,000.0	F
14	Investment Blvd/Robert J Mathews Pkwy	All-way stop	HCM 7th Edition	SB Thru	0.929	34.1	D
15	Golden Foothill Pkwy/Carson Crossing Rd	Two-way stop	HCM 7th Edition	NB Left	0.451	20.5	C
16	Carson Crossing Rd/Calypso Cir.	Two-way stop	HCM 7th Edition	NB Left	0.843	100.5	F
17	Carson Crossing Rd/Four Seasons Dr	All-way stop	HCM 7th Edition	NB Thru	0.167	8.4	A
	White Rock Rd/Carson		HCM 7th				

18	White Rock Rd/Carson Crossing Rd	Signalized	HCM 7th Edition	EB Left	0.520	16.6	B
19	White Rock Rd/Windfield Way	Signalized	HCM 7th Edition	SB Thru	0.640	34.8	C
20	White Rock Rd/Post St	Signalized	HCM 7th Edition	WB Left	0.664	44.0	D
21	White Rock Rd/Valley View Pkwy	Signalized	HCM 7th Edition	EB Left	0.883	32.4	C
22	White Rock Rd/Clarksville Crossing	Signalized	HCM 7th Edition	SB Right	0.992	53.8	D
23	White Rock Rd/US 50 EB	Signalized	HCM 7th Edition	NB Right	1.043	34.1	C
24	Silva Valley Pkwy/US 50 WB	Signalized	HCM 7th Edition	WB Left	0.737	27.1	C
25	New Intersection	Two-way stop	HCM 7th Edition	SB Thru	0.007	0.0	A
26	Latrobe/Wetsl-Oviatt	Two-way stop	HCM 7th Edition	EB Left	0.096	16.5	C
27	Latrobe/S. Shingle	Two-way stop	HCM 7th Edition	EB Left	0.070	20.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: El Dorado Hills Blvd/Serrano Pkwy

Control Type:	Signalized	Delay (sec / veh):	58.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	260.0	100.0	100.0	100.0	110.00	100.00	100.00	100.00	100.00	100.00	430.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00			30.00			30.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	No				Yes			Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd			Lassen Ln			Serrano Pkwy		
Base Volume Input [veh/h]	3	131	1772	406	35	1147	74	62	29	110	339	66	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-50	0	0	-12	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	22	0	0	33	0	0	7
Total Hourly Volume [veh/h]	3	131	1722	406	35	1135	52	62	29	77	339	66	15
Peak Hour Factor	1.000	0.870	0.870	0.870	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	38	495	117	10	326	15	18	8	22	97	19	4
Total Analysis Volume [veh/h]	3	151	1979	467	40	1305	60	71	33	89	390	76	17
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	1	6	0	7	7	0	0	8	0
Auxiliary Signal Groups													
Maximum Green [s]	0	25	40	0	25	40	0	35	35	0	0	35	0
Amber [s]	0.0	3.0	4.7	0.0	3.0	4.7	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	12	0	0	12	0	0	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	2.0	3.7	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	100.0	245.0	0.0	100.0	100.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	46	0	29	46	0	39	39	0	0	39	0
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	3	6	0	3	3	0	3	3	0	0	3	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	4.0	0.0
Minimum Recall		No	No		No	No			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C
C, Calculated Cycle Length [s]	83	83	83	83	83	83	83	83	83	83
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	40	40	2	33	33	8	8	15	15
g / C, Green / Cycle	0.11	0.48	0.48	0.03	0.40	0.40	0.10	0.10	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.09	0.56	0.29	0.02	0.37	0.37	0.04	0.07	0.14	0.14
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1870	1841	1781	1657	1781	1793
c, Capacity [veh/h]	193	1710	763	51	749	738	176	163	322	324
d1, Uniform Delay [s]	36.39	21.74	16.00	40.36	23.75	23.79	35.39	36.68	32.45	32.45
k, delay calibration	0.04	0.07	0.10	0.04	0.23	0.23	0.04	0.04	0.15	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.86	71.87	0.72	9.29	9.57	10.00	0.56	2.55	4.89	4.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	1.16	0.61	0.78	0.92	0.92	0.40	0.75	0.75	0.75
d, Delay for Lane Group [s/veh]	39.25	93.60	16.72	49.65	33.31	33.79	35.94	39.23	37.34	37.31
Lane Group LOS	D	F	B	D	C	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.04	31.00	5.75	0.91	13.18	13.12	1.36	2.49	4.92	4.95
50th-Percentile Queue Length [ft/ln]	75.91	774.91	143.81	22.67	329.45	327.95	33.97	62.17	123.00	123.73
95th-Percentile Queue Length [veh/ln]	5.47	44.57	9.69	1.63	19.13	19.06	2.45	4.48	8.56	8.60
95th-Percentile Queue Length [ft/ln]	136.63	1114.17	242.14	40.81	478.29	476.45	61.14	111.91	213.94	214.95

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.25	39.25	93.60	16.72	49.65	33.54	33.79	35.94	39.23	39.23	37.33	37.31	37.31
Movement LOS	D	D	F	B	D	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	76.57				34.01			38.02			37.33		
Approach LOS	E				C			D			D		
d_I, Intersection Delay [s/veh]	58.16												
Intersection LOS	E												
Intersection V/C	0.974												

Emissions

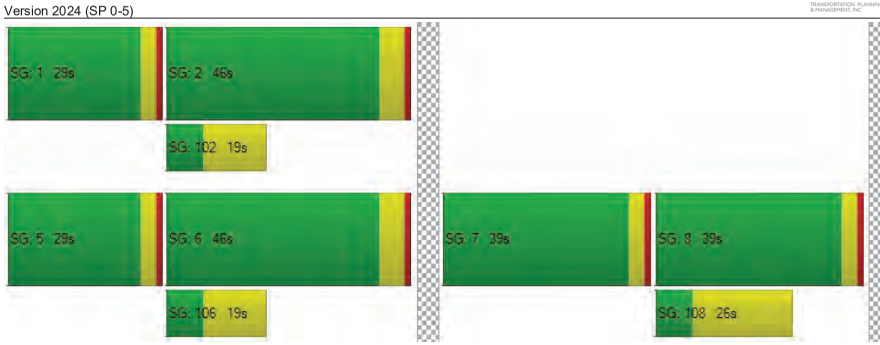
Vehicle Miles Traveled [mph]	36.78	472.65	111.53	5.88	100.97	99.72	3.03	5.21	12.60	12.68
Stops [stops/h]	131.06	2675.90	248.30	39.15	568.83	566.24	58.64	107.35	212.37	213.64
Fuel consumption [US gal/h]	4.12	87.16	8.50	1.09	15.19	15.12	0.97	1.78	3.52	3.54
CO [g/h]	288.01	6092.70	594.10	76.36	1061.73	1057.08	67.67	124.52	246.12	247.57
NOx [g/h]	56.04	1185.42	115.59	14.86	206.57	205.67	13.17	24.23	47.89	48.17
VOC [g/h]	66.75	1412.04	137.69	17.70	246.07	244.99	15.68	28.86	57.04	57.38

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.43	31.43	31.43
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.351	2.157	2.280
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	966	966	839	839
d_b, Bicycle Delay [s]	11.14	11.14	14.04	14.04
l_b,int, Bicycle LOS Score for Intersection	3.702	2.737	1.933	2.368
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: El Dorado Hills Blvd/Saratoga Way

Control Type:	Signalized	Delay (sec / veh):	65.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	500.0	100.0	100.0	100.0	500.0	100.0	100.0	300.0	150.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				Yes				Yes			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				Saratoga Way			Park Dr		
Base Volume Input [veh/h]	5	445	1623	173	4	218	1176	198	390	53	619	69	107	295
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-23	-50	0	0	0	-12	0	0	0	-6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	52	0	0	0	59	0	0	184	0	0	89
Total Hourly Volume [veh/h]	5	422	1573	121	4	218	1164	139	390	53	429	69	107	206
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	113	423	33	1	59	313	37	105	14	115	19	29	55
Total Analysis Volume [veh/h]	5	454	1691	130	4	234	1252	149	419	57	461	74	115	222
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Overlap	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	7	7	5	3	8	0
Auxiliary Signal Groups											5,7			
Maximum Green [s]	0	20	50	0	0	20	50	0	20	20	20	0	20	0
Amber [s]	0.0	3.0	4.7	0.0	0.0	3.0	4.7	0.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	14	0	0	0	24	0	0	0	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	3.7	0.0	0.0	2.0	3.7	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	56	0	0	24	56	0	24	24	24	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	4	5	0	0	4	4	0	5	5	4	0	5	0
Vehicle Extension [s]	0.0	2.0	3.5	0.0	0.0	2.0	3.5	0.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No	No		No	
Maximum Recall		No	No			No	No			No	No		No	
Pedestrian Recall		No	No			No	No			No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Calculated Cycle Length [s]	121	121	121	121	121	121	121	121	121	121	121
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	4.00	5.70	5.70	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
I2, Clearance Lost Time [s]	2.00	3.70	3.70	2.00	3.70	3.70	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	20	47	47	18	45	45	18	18	66	20	20
g / C, Green / Cycle	0.17	0.39	0.39	0.15	0.37	0.37	0.15	0.15	0.55	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.25	0.34	0.34	0.13	0.25	0.09	0.13	0.13	0.16	0.08	0.20
s, saturation flow rate [veh/h]	1808	3560	1803	1781	5094	1589	1781	1801	2813	931	1675
c, Capacity [veh/h]	329	1378	698	265	1885	588	270	274	1546	198	278
d1, Uniform Delay [s]	52.98	34.28	34.48	50.46	31.75	26.42	50.10	50.03	14.65	47.47	50.35
k, delay calibration	0.22	0.13	0.33	0.25	0.13	0.13	0.25	0.25	0.04	0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	185.58	2.28	10.76	20.85	0.49	0.27	18.38	16.97	0.04	0.43	124.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.39	0.87	0.88	0.90	0.66	0.25	0.88	0.87	0.30	0.37	1.21
d, Delay for Lane Group [s/veh]	238.56	36.56	45.24	71.31	32.24	26.69	68.48	66.99	14.68	47.90	175.08
Lane Group LOS	F	D	D	E	C	C	E	E	B	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	13.41	15.88	18.00	8.39	9.80	2.93	8.39	8.30	3.37	2.08	17.96
50th-Percentile Queue Length [ft/ln]	335.32	397.01	449.96	209.76	244.88	73.23	209.70	207.44	84.28	52.08	448.88
95th-Percentile Queue Length [veh/ln]	22.15	22.42	24.96	13.14	14.93	5.27	13.14	13.02	6.07	3.75	27.24
95th-Percentile Queue Length [ft/ln]	553.78	560.40	623.90	328.52	373.20	131.81	328.45	325.55	151.70	93.74	680.99

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	238.5	238.5	39.06	45.24	71.31	71.31	32.24	26.69	67.84	66.99	14.68	47.90	175.08	175.08
Movement LOS	F	F	D	D	E	E	C	C	E	E	B	D	F	F
d_A, Approach Delay [s/veh]	79.57				37.41				41.64			152.18		
Approach LOS	E				D				D			F		
d_I, Intersection Delay [s/veh]	65.37													
Intersection LOS	E													
Intersection V/C	0.963													

Emissions

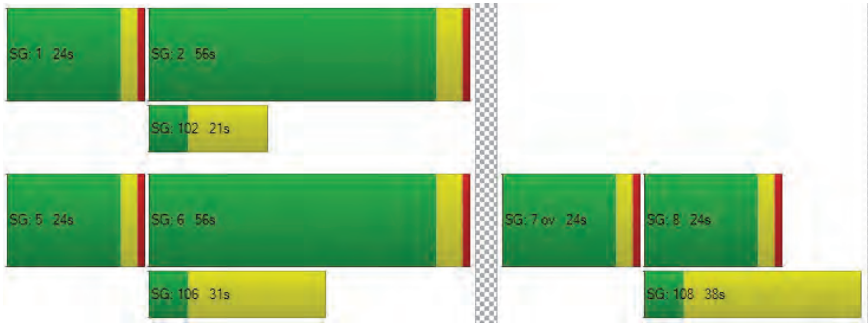
Vehicle Miles Traveled [mph]	86.38	226.63	116.08	56.84	299.02	35.59	14.83	14.86	28.75	3.61	16.43
Stops [stops/h]	800.76	948.08	537.26	250.46	877.19	87.44	250.39	247.69	201.26	62.18	535.97
Fuel consumption [US gal/h]	35.20	28.51	16.34	8.52	29.37	3.12	5.31	5.23	3.67	1.21	15.64
CO [g/h]	2460.16	1993.16	1141.92	595.27	2052.99	217.83	371.00	365.37	256.75	84.81	1093.39
NOx [g/h]	478.66	387.80	222.18	115.82	399.44	42.38	72.18	71.09	49.95	16.50	212.73
VOC [g/h]	570.17	461.93	264.65	137.96	475.80	50.48	85.98	84.68	59.51	19.66	253.40

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.80	49.80	49.80
l_p,int, Pedestrian LOS Score for Intersectio	0.000	3.576	3.690	2.397
Crosswalk LOS	F	D	D	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	834	834	332	332
d_b, Bicycle Delay [s]	20.49	20.49	41.96	41.96
l_b,int, Bicycle LOS Score for Intersection	2.839	2.365	3.409	2.385
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 3: El Dorado Hills Blvd/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	63.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.048

Intersection Setup

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	1	0	0	1	1	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	220.0	100.0	100.0	220.0	100.00	100.00	200.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	No				No				No			Yes		

Volumes

Name	El Dorado Hills Blvd				El Dorado Hills Blvd				US 50 WB			Saratoga Way		
Base Volume Input [veh/h]	1	1441	1689	425	0	37	1298	534	306	130	409	257	92	251
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	3.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-99	-73	-16	0	0	-18	0	0	0	-11	-3	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	123	0	0	0	160	0	0	119	0	0	75
Total Hourly Volume [veh/h]	1	1342	1616	286	0	37	1280	374	306	130	279	254	92	176
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	336	404	72	0	9	320	94	77	33	70	64	23	44
Total Analysis Volume [veh/h]	1	1342	1616	286	0	37	1280	374	306	130	279	254	92	176
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	136
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Overl	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	5	2	0	0	1	6	7	0	7	5	0	8	0
Auxiliary Signal Groups								6,7					8	
Maximum Green [s]	0	45	62	0	0	14	29	22	0	22	45	0	16	0
Amber [s]	0.0	3.6	4.8	0.0	0.0	3.6	4.8	4.1	0.0	4.1	3.6	0.0	3.6	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	19	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.6	3.8	0.0	0.0	2.6	3.8	3.1	0.0	3.1	2.6	0.0	2.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	0.0	245.0	245.0	245.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	6.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	50	68	0	0	19	35	28	0	28	50	0	21	0
Lead / Lag	-	Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	10	0	0	8	10	10	0	10	10	0	10	0
Vehicle Extension [s]	0.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.5	2.0	0.0	2.0	0.0
Minimum Recall		No	Yes			No	Yes	No		No			No	
Maximum Recall		No	No			No	No	No		No			No	
Pedestrian Recall		No	No			No	No	No		No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Calculated Cycle Length [s]	136	136	136	136	136	136	136	136	136	136	136
L, Total Lost Time per Cycle [s]	4.60	5.80	5.80	4.60	5.80	5.80	5.10	5.10	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.60	3.80	3.80	2.60	3.80	0.00	3.10	3.10	2.60	2.60	2.60
g_i, Effective Green Time [s]	45	74	74	6	34	59	19	19	17	17	17
g / C, Green / Cycle	0.33	0.54	0.54	0.04	0.25	0.43	0.14	0.14	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.39	0.35	0.38	0.02	0.25	0.24	0.12	0.12	0.10	0.10	0.11
s, saturation flow rate [veh/h]	3459	3532	1722	1781	5053	1589	1781	1832	1781	1827	1589
c, Capacity [veh/h]	1155	1913	933	81	1278	685	250	257	223	228	199
d1, Uniform Delay [s]	45.28	22.08	23.05	63.30	50.81	28.83	57.16	57.15	57.60	57.57	58.54
k, delay calibration	0.09	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.15	0.15	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	74.96	1.74	4.40	1.51	25.62	3.12	12.10	11.78	7.63	7.17	23.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.16	0.65	0.70	0.46	1.00	0.55	0.86	0.86	0.77	0.77	0.89
d, Delay for Lane Group [s/veh]	120.25	23.82	27.45	64.81	76.43	31.95	69.25	68.93	65.24	64.74	81.67
Lane Group LOS	F	C	C	E	F	C	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	31.35	14.35	16.37	1.26	17.08	9.37	8.07	8.28	6.19	6.28	7.25
50th-Percentile Queue Length [ft/ln]	783.85	358.73	409.20	31.57	427.05	234.17	201.87	207.05	154.73	157.11	181.19
95th-Percentile Queue Length [veh/ln]	44.63	20.56	23.00	2.27	23.89	14.39	12.73	13.00	10.27	10.40	11.66
95th-Percentile Queue Length [ft/ln]	1115.71	514.04	575.07	56.82	597.19	359.65	318.37	325.04	256.73	259.89	291.57

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	120.2	120.2	24.65	27.45	64.81	64.81	76.43	31.95	69.16	68.93	0.00	65.07	64.74	81.67
Movement LOS	F	F	C	C	E	E	F	C	E	E		E	E	F
d_A, Approach Delay [s/veh]	64.46				66.34				42.13			70.61		
Approach LOS	E				E				D			E		
d_I, Intersection Delay [s/veh]	63.89													
Intersection LOS	E													
Intersection V/C	1.048													

Emissions

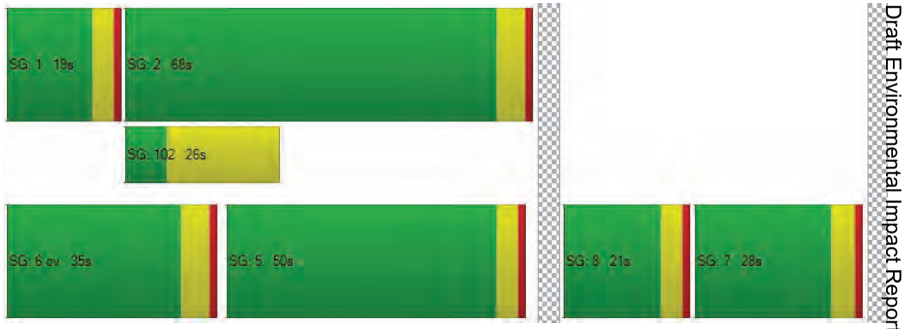
Vehicle Miles Traveled [mph]	230.01	213.58	112.17	6.96	240.89	70.39	9.94	10.23	5.44	5.56	5.60
Stops [stops/h]	1659.93	759.67	433.27	33.42	1356.53	247.95	213.74	219.23	163.83	166.35	191.85
Fuel consumption [US gal/h]	51.50	19.04	10.67	1.14	45.03	7.93	4.62	4.73	3.40	3.45	4.21
CO [g/h]	3599.69	1330.57	745.88	79.84	3147.53	554.07	322.86	330.81	237.84	241.12	294.62
NOx [g/h]	700.37	258.88	145.12	15.53	612.39	107.80	62.82	64.36	46.27	46.91	57.32
VOC [g/h]	834.26	308.37	172.87	18.50	729.47	128.41	74.83	76.67	55.12	55.88	68.28

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	57.44
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.543
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	915	429	337	241
d_b, Bicycle Delay [s]	20.02	41.93	47.03	52.59
l_b,int, Bicycle LOS Score for Intersection	3.411	2.557	2.279	2.052
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Latrobe Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	61.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.950

Intersection Setup

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	570.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Curb Present	No			No				No			No		
Crosswalk	No			No				No			Yes		

Volumes

Name	Latrobe Rd			El Dorado Hills Blvd				US 50 EB Off Ramp			US 50 EB Loop Off Ramp		
Base Volume Input [veh/h]	0	2691	613	1	388	1576	0	0	0	1667	0	0	864
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-188	-38	0	0	-32	0	0	0	-21	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	173	0	0	0	0	0	0	494	0	0	259
Total Hourly Volume [veh/h]	0	2503	402	1	388	1544	0	0	0	1152	0	0	605
Peak Hour Factor	1.0000	0.9500	0.8400	1.000	0.840	0.950	1.000	1.0000	1.0000	0.8400	1.0000	1.0000	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	659	120	0	115	406	0	0	0	343	0	0	180
Total Analysis Volume [veh/h]	0	2635	479	1	462	1625	0	0	0	1371	0	0	720
Presence of On-Street Parking	No		No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0				0			0		
v_co, Outbound Pedestrian Volume crossing	0			0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0				0			0		
Bicycle Volume [bicycles/h]	0			0				0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	68
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	26.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permi	Prote	Permi	Permi	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	1	6	0	0	0	5	0	0	0
Auxiliary Signal Groups													
Maximum Green [s]	0	30	0	0	26	34	0	0	0	22	0	0	0
Amber [s]	0.0	5.2	0.0	0.0	3.6	5.2	0.0	0.0	0.0	3.6	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No				No				No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.2	0.0	0.0	2.6	4.2	0.0	0.0	0.0	2.6	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	245.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	37	0	0	31	41	0	0	0	27	0	0	0
Lead / Lag	-	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	10	15	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	2.5	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Minimum Recall		No			No	No				No			
Maximum Recall		No			No	No				No			
Pedestrian Recall		No			No	No				No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	R	
C, Calculated Cycle Length [s]	68	68	68	68	68	
L, Total Lost Time per Cycle [s]	6.20	6.20	4.60	6.20	4.60	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.20	4.20	2.60	4.20	2.60	
g_i, Effective Green Time [s]	38	38	20	35	22	
g / C, Green / Cycle	0.55	0.55	0.29	0.51	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.39	0.30	0.26	0.24	0.49	
s, saturation flow rate [veh/h]	6792	1589	1781	6792	2813	
c, Capacity [veh/h]	3745	876	516	3476	927	
d1, Uniform Delay [s]	11.18	9.79	23.17	10.65	22.80	
k, delay calibration	0.50	0.50	0.17	0.50	0.19	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.13	2.45	8.80	0.45	217.96	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.70	0.55	0.90	0.47	1.48	
d, Delay for Lane Group [s/veh]	12.31	12.24	31.97	11.11	240.76	
Lane Group LOS	B	B	C	B	F	
Critical Lane Group	No	No	No	Yes	Yes	
50th-Percentile Queue Length [veh/ln]	5.56	3.95	7.43	3.13	34.81	
50th-Percentile Queue Length [ft/ln]	139.04	98.77	185.84	78.26	870.36	
95th-Percentile Queue Length [veh/ln]	9.43	7.11	11.90	5.64	54.54	
95th-Percentile Queue Length [ft/ln]	235.73	177.78	297.62	140.88	1363.62	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.31	12.24	31.97	31.97	11.11	0.00	0.00	0.00	240.76	0.00	0.00	0.00
Movement LOS		B	B	C	C	B				F			
d_A, Approach Delay [s/veh]	12.30			15.73			240.76				0.00		
Approach LOS	B			B			F				A		
d_I, Intersection Delay [s/veh]	61.04												
Intersection LOS	E												
Intersection V/C	0.950												

Emissions

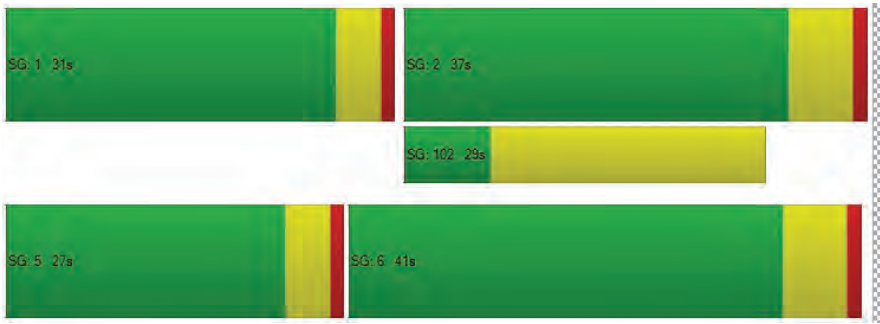
Vehicle Miles Traveled [mph]	381.28	69.31	79.30	278.31	98.11	
Stops [stops/h]	1177.74	209.16	393.53	662.94	3686.23	
Fuel consumption [US gal/h]	34.32	6.17	10.62	21.46	91.56	
CO [g/h]	2398.66	431.26	742.59	1499.78	6400.32	
NOx [g/h]	466.69	83.91	144.48	291.80	1245.27	
VOC [g/h]	555.91	99.95	172.10	347.59	1483.34	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	23.89
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	2.243
Crosswalk LOS	F	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	1024	659	0
d_b, Bicycle Delay [s]	10.18	8.10	15.29	34.00
l_b,int, Bicycle LOS Score for Intersection	2.915	2.230	1.560	1.560
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 5: Latrobe Rd/Town Center Blvd

Control Type:	Signalized	Delay (sec / veh):	67.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.035

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Approach	Northbound				Southbound				Eastbound			Westbound			
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	0	2	0	0	0	2	0	0	1	0	0	0
Entry Pocket Length [ft]	220.0	100.0	100.0	100.0	330.0	100.0	100.0	100.0	300.00	100.00	100.00	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00				30.00				30.00			30.00			
Grade [%]	0.00				0.00				0.00			0.00			
Curb Present	No				No				No			No			
Crosswalk	Yes				No				Yes			Yes			

Volumes

Name	Latrobe Rd				Latrobe Rd				Town Center Blvd			Town Center Blvd			
Base Volume Input [veh/h]	1	24	2098	245	3	606	2038	596	508	40	83	1	94	6	695
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-5	-226	-13	0	0	-53	0	0	0	-1	0	-2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	70	0	0	0	179	0	0	25	0	0	0	209
Total Hourly Volume [veh/h]	1	19	1872	162	3	606	1985	417	508	40	57	1	92	6	486
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	5	488	42	1	158	517	109	132	10	15	0	24	2	127
Total Analysis Volume [veh/h]	1	20	1950	169	3	631	2068	434	529	42	59	1	96	6	506
Presence of On-Street Parking	No			No	No			No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0			
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0			
v_co, Outbound Pedestrian Volume crossing	0				0				0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0			
Bicycle Volume [bicycles/h]	0				0				0			0			

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	138
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split	Split
Signal Group	0	1	6	0	0	5	2	0	3	4	0	0	3	3	0
Auxiliary Signal Groups															
Maximum Green [s]	0	20	40	0	0	12	65	0	15	20	0	0	15	15	0
Amber [s]	0.0	3.0	4.5	0.0	0.0	3.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.5	1.0	0.0	0.0	0.5	1.0	0.0	0.5	0.5	0.0	0.0	0.5	0.5	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	7	0	0	0	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	15	0	0	20	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No				No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.5	3.5	0.0	0.0	1.5	3.5	0.0	1.5	1.5	0.0	0.0	1.5	1.5	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	200.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	24	46	0	0	16	71	0	19	24	0	0	19	19	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	Lag	-	-	-	Lag	-	-
Minimum Green [s]	0	4	5	0	0	4	5	0	6	6	0	0	6	6	0
Vehicle Extension [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.5	2.5	0.0	0.0	2.5	2.5	0.0
Minimum Recall		No	Yes			No	Yes			No				No	
Maximum Recall		No	No			No	No			No				No	
Pedestrian Recall		No	No			No	No			No				No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	107	107	107	107	107	107	107	107	107	107	107	107
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	3.50	5.50	5.50	3.50	3.50	3.50	3.50	3.50	3.50
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	1.50	3.50	3.50	1.50	3.50	3.50	1.50	1.50	1.50	1.50	1.50	1.50
g_i, Effective Green Time [s]	2	45	45	12	55	55	18	18	18	15	15	15
g / C, Green / Cycle	0.02	0.42	0.42	0.11	0.52	0.52	0.17	0.17	0.17	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.01	0.38	0.11	0.18	0.41	0.27	0.15	0.02	0.04	0.05	0.16	0.16
s, saturation flow rate [veh/h]	3459	5094	1589	3459	5094	1589	3459	1870	1589	1781	1595	1589
c, Capacity [veh/h]	61	2163	675	388	2645	825	598	323	275	250	224	223
d1, Uniform Delay [s]	51.89	28.66	19.79	47.44	20.78	16.98	43.15	37.39	37.96	41.77	45.94	45.94
k, delay calibration	0.04	0.04	0.04	0.25	0.04	0.04	0.08	0.08	0.08	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.24	0.60	0.07	290.53	0.20	0.19	3.45	0.13	0.29	0.73	104.95	105.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.90	0.25	1.63	0.78	0.53	0.88	0.13	0.21	0.39	1.15	1.15
d, Delay for Lane Group [s/veh]	53.13	29.26	19.86	337.97	20.98	17.18	46.60	37.52	38.25	42.50	150.89	151.07
Lane Group LOS	D	C	B	F	C	B	D	D	D	D	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.29	15.06	2.70	20.79	13.24	6.83	7.05	0.94	1.35	2.37	12.41	12.38
50th-Percentile Queue Length [ft/ln]	7.19	376.45	67.39	519.84	331.04	170.80	176.13	23.55	33.70	59.23	310.28	309.47
95th-Percentile Queue Length [veh/ln]	0.52	21.42	4.85	33.18	19.21	11.12	11.40	1.70	2.43	4.26	19.30	19.26
95th-Percentile Queue Length [ft/ln]	12.95	535.55	121.30	829.38	480.23	277.97	284.96	42.38	60.66	106.61	482.42	481.38

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.13	53.13	29.26	19.86	337.9	337.9	20.98	17.18	46.60	37.52	38.25	42.50	42.50	150.8	150.9
Movement LOS	D	D	C	B	F	F	C	B	D	D	D	D	D	F	F
d_A, Approach Delay [s/veh]	28.75				84.54				45.22			133.70			
Approach LOS	C				F				D			F			
d_I, Intersection Delay [s/veh]	67.01														
Intersection LOS	E														
Intersection V/C	1.035														

Emissions

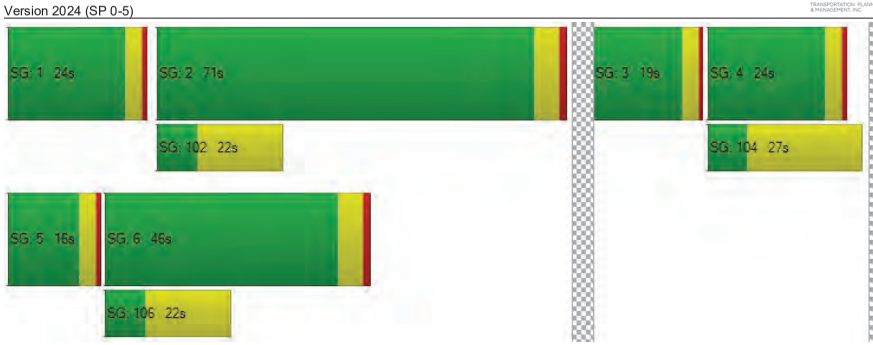
Vehicle Miles Traveled [mph]	4.69	435.31	37.73	91.74	299.23	62.80	67.47	5.36	7.53	34.04	90.00	89.70
Stops [stops/h]	19.41	1523.58	90.91	1402.61	1339.78	230.42	475.22	31.77	45.46	79.90	418.59	417.50
Fuel consumption [US gal/h]	0.53	37.95	2.74	55.12	28.55	5.38	10.42	0.72	1.02	2.68	13.89	13.86
CO [g/h]	36.85	2652.62	191.42	3852.91	1995.62	375.74	728.35	50.10	71.31	187.45	970.93	968.47
NOx [g/h]	7.17	516.10	37.24	749.64	388.28	73.11	141.71	9.75	13.87	36.47	188.91	188.43
VOC [g/h]	8.54	614.77	44.36	892.95	462.51	87.08	168.80	11.61	16.53	43.44	225.02	224.45

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.94	0.00	42.94	42.94
l_p,int, Pedestrian LOS Score for Intersectio	3.440	0.000	2.707	2.943
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	759	1227	384	290
d_b, Bicycle Delay [s]	20.55	7.97	34.84	39.00
l_b,int, Bicycle LOS Score for Intersection	2.775	3.036	2.100	2.751
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 6: Latrobe Rd/White Rock Rd

Control Type:	Signalized	Delay (sec / veh):	50.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Approach	Northbound				Southbound				Eastbound				Westbound		
Lane Configuration															
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	2	2	0	0	1	2	0	0	1	1	0	2
Entry Pocket Length [ft]	270.0	100.0	100.0	180.0	400.0	100.0	100.0	400.0	360.0	100.0	100.0	300.0	400.00	100.00	300.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				45.00				30.00				30.00		
Grade [%]	0.00				0.00				0.00				0.00		
Curb Present	No				No				No				No		
Crosswalk	Yes				Yes				Yes				Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	6	155	1777	629	2	259	1490	465	2	395	566	152	600	264	194
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00														
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-244	-57	0	0	-56	0	0	0	0	0	-14	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	172	0	0	0	140	0	0	0	46	0	0	58
Total Hourly Volume [veh/h]	6	155	1533	400	2	259	1434	325	2	395	566	106	586	264	136
Peak Hour Factor	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	0.930	0.930	0.930	0.9300	0.9300	0.9300
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	42	412	108	1	70	385	87	1	106	152	28	158	71	37
Total Analysis Volume [veh/h]	6	167	1648	430	2	278	1542	349	2	425	609	114	630	284	146
Presence of On-Street Parking	No			No	No			No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0				0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0				0		
v_co, Outbound Pedestrian Volume crossing	0				0				0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0				0		
Bicycle Volume [bicycles/h]	0				0				0				0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Overl	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	0	5	2	3	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups				2,3											
Maximum Green [s]	0	20	53	37	0	20	53	0	0	22	30	0	37	45	0
Amber [s]	0.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	5	0	0	0	5	0	0	0	4	0	0	5	0
Pedestrian Clearance [s]	0	0	28	0	0	0	24	0	0	0	31	0	0	31	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	25	58	42	0	25	58	0	0	27	35	0	42	50	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	9	9	0	9	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	1.0	1.5	1.0	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No	No	No		No	No			No	No		No	No	
Maximum Recall		No	No	No		No	No			No	No		No	No	
Pedestrian Recall		No	No	No		No	No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Calculated Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	46	101	15	51	51	22	29	29	50	57	57
g / C, Green / Cycle	0.06	0.29	0.63	0.09	0.32	0.32	0.14	0.18	0.18	0.31	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.27	0.08	0.30	0.22	0.12	0.17	0.07	0.18	0.08	0.09
s, saturation flow rate [veh/h]	3459	6792	1589	3459	5094	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	218	1973	1003	322	1634	510	469	648	289	1069	1266	565
d1, Uniform Delay [s]	73.93	53.16	14.93	71.57	52.93	47.29	68.18	64.58	57.67	24.43	15.54	15.65
k, delay calibration	0.04	0.04	0.23	0.04	0.04	0.07	0.04	0.04	0.04	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	0.37	0.62	2.81	1.40	1.08	2.89	3.12	0.32	2.38	0.41	1.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.84	0.43	0.87	0.94	0.68	0.91	0.94	0.39	0.59	0.22	0.26
d, Delay for Lane Group [s/veh]	76.41	53.53	15.56	74.38	54.33	48.37	71.07	67.69	57.99	26.81	15.95	16.76
Lane Group LOS	E	D	B	E	D	D	E	E	E	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.61	15.64	8.14	5.72	19.84	12.06	8.84	12.58	4.14	5.88	1.77	1.93
50th-Percentile Queue Length [ft/ln]	90.14	390.96	203.40	143.07	495.88	301.45	221.05	314.40	103.42	147.08	44.23	48.20
95th-Percentile Queue Length [veh/ln]	6.49	22.12	12.81	9.65	27.14	17.75	13.72	18.39	7.45	9.86	3.18	3.47
95th-Percentile Queue Length [ft/ln]	162.26	553.10	320.35	241.16	678.48	443.82	342.97	459.79	186.15	246.52	79.61	86.77

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	76.41	76.41	53.53	15.56	74.38	74.38	54.33	48.37	71.07	71.07	67.69	57.99	26.81	15.95	16.76
Movement LOS	E	E	D	B	E	E	D	D	E	E	E	E	C	B	B
d_A, Approach Delay [s/veh]	48.04				55.96				67.98				22.51		
Approach LOS	D				E				E				C		
d_I, Intersection Delay [s/veh]	50.01														
Intersection LOS	D														
Intersection V/C	0.784														

Emissions

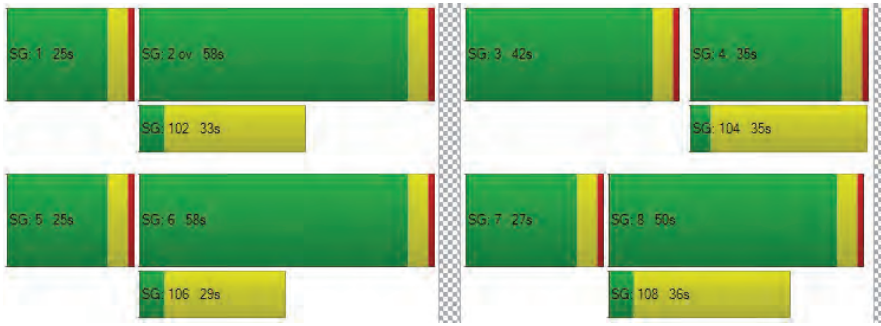
Vehicle Miles Traveled [mph]	68.89	656.23	171.23	62.51	344.23	77.91	106.57	151.99	28.45	66.56	30.01	15.43
Stops [stops/h]	162.26	1407.47	183.06	257.53	1338.87	271.30	397.90	565.91	93.08	264.74	79.61	43.38
Fuel consumption [US gal/h]	6.42	52.74	9.42	9.58	45.49	9.48	12.76	17.77	3.03	7.64	2.60	1.37
CO [g/h]	448.90	3686.60	658.55	669.81	3179.87	662.57	891.91	1242.23	211.84	533.99	181.50	95.94
NOx [g/h]	87.34	717.28	128.13	130.32	618.69	128.91	173.53	241.69	41.22	103.89	35.31	18.67
VOC [g/h]	104.04	854.41	152.62	155.23	736.97	153.56	206.71	287.90	49.10	123.76	42.06	22.24

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	71.25	71.25	71.25
l_p,int, Pedestrian LOS Score for Intersectio	3.704	3.865	2.985	3.068
Crosswalk LOS	D	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	663	663	375	563
d_b, Bicycle Delay [s]	35.78	35.78	52.81	41.33
l_b,int, Bicycle LOS Score for Intersection	2.557	2.678	2.196	2.482
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 7: Latrobe Rd/Golden Foothill Pkwy N

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Approach	Northbound				Southbound				Eastbound			Westbound		
Lane Configuration														
Turning Movement	U-tu	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	300.0	200.0	100.0	100.0	100.0	320.00	100.00	320.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				55.00				30.00			30.00		
Grade [%]	0.00				0.00				0.00			0.00		
Curb Present	No				No				No			No		
Crosswalk	Yes				No				Yes			Yes		

Volumes

Name	Latrobe Rd				Latrobe Rd				Golden Foothill Pkwy N			Monteverde Dr		
Base Volume Input [veh/h]	1	18	1787	36	0	34	1740	490	751	10	41	2	8	19
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-301	0	0	0	-70	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	0	0	147	0	0	12	0	0	6
Total Hourly Volume [veh/h]	1	18	1486	25	0	34	1670	343	751	10	29	2	8	13
Peak Hour Factor	1.000	0.890	0.890	0.870	1.000	0.870	0.890	0.890	0.8900	0.8700	0.8900	0.8700	0.8700	0.8700
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	417	7	0	10	469	96	211	3	8	1	2	4
Total Analysis Volume [veh/h]	1	20	1670	29	0	39	1876	385	844	11	33	2	9	15
Presence of On-Street Parking	No			No	No			No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0				0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0				0			0		
v_co, Outbound Pedestrian Volume crossing	0				0				0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0				0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			0		
Bicycle Volume [bicycles/h]	0				0				0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permi	Prote	Permi	Permi	Permi	Prote	Permi	Permi	Split	Split	Split	Split	Split	Split
Signal Group	0	5	2	0	0	1	6	0	0	4	0	0	3	0
Auxiliary Signal Groups														
Maximum Green [s]	0	16	34	0	0	15	34	0	0	36	0	0	16	0
Amber [s]	0.0	3.0	5.0	0.0	0.0	3.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	0	0	4	0	0	4	0	0	0	0
Pedestrian Clearance [s]	0	0	11	0	0	0	18	0	0	24	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	245.0	0.0	0.0	0.0	0.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	20	40	0	0	20	40	0	0	40	0	0	20	0
Lead / Lag	-	Lead	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	0	3	5	0	0	5	0	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	0.0	0.0	2.0	4.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0
Minimum Recall		No	No			No	No			No			No	
Maximum Recall		No	No			No	No			No			No	
Pedestrian Recall		No	No			No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	C
C, Calculated Cycle Length [s]	78	78	78	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	34	34	2	34	34	22	22	22	2
g / C, Green / Cycle	0.02	0.43	0.43	0.03	0.43	0.43	0.28	0.28	0.28	0.03
(v / s)_i Volume / Saturation Flow Rate	0.01	0.31	0.31	0.02	0.37	0.24	0.24	0.24	0.02	0.02
s, saturation flow rate [veh/h]	1781	3560	1854	1781	5094	1589	1781	1783	1589	1691
c, Capacity [veh/h]	42	1527	795	49	2203	688	508	509	454	47
d1, Uniform Delay [s]	37.69	18.59	18.59	37.78	19.92	16.61	26.26	26.26	20.38	37.50
k, delay calibration	0.04	0.15	0.25	0.04	0.15	0.15	0.11	0.11	0.11	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.30	0.98	3.07	10.16	1.41	1.02	3.84	3.82	0.07	3.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.73	0.73	0.79	0.85	0.56	0.84	0.84	0.07	0.55
d, Delay for Lane Group [s/veh]	40.99	19.57	21.66	47.94	21.33	17.63	30.10	30.07	20.45	41.16
Lane Group LOS	D	B	C	D	C	B	C	C	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.43	7.94	8.73	0.82	8.48	4.40	7.64	7.64	0.43	0.53
50th-Percentile Queue Length [ft/ln]	10.69	198.39	218.20	20.48	211.96	109.97	191.00	190.97	10.85	13.21
95th-Percentile Queue Length [veh/ln]	0.77	12.56	13.57	1.47	13.25	7.84	12.17	12.17	0.78	0.95
95th-Percentile Queue Length [ft/ln]	19.24	313.88	339.32	36.87	331.35	195.96	304.33	304.28	19.52	23.78

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.99	40.99	20.26	21.66	47.94	47.94	21.33	17.63	30.09	30.07	20.45	41.16	41.16	41.16
Movement LOS	D	D	C	C	D	D	C	B	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	20.54				21.16				29.73			41.16		
Approach LOS	C				C				C			D		
d_I, Intersection Delay [s/veh]	22.59													
Intersection LOS	C													
Intersection V/C	0.799													

Emissions

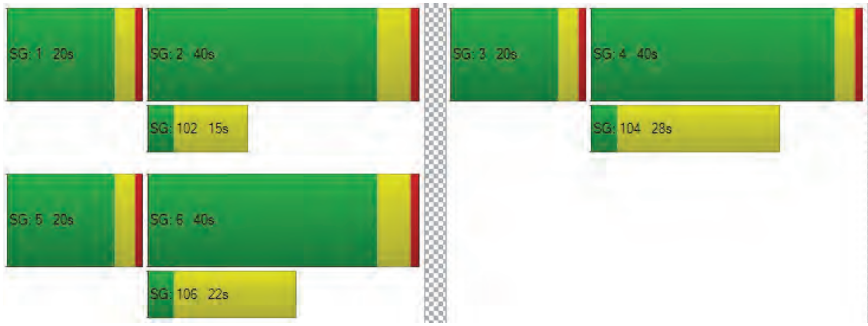
Vehicle Miles Traveled [mph]	7.43	395.21	205.82	15.53	747.02	153.31	102.89	102.93	7.94	0.49
Stops [stops/h]	19.71	731.91	402.50	37.78	1173.00	202.85	352.33	352.27	20.01	24.37
Fuel consumption [US gal/h]	0.59	24.76	13.26	1.60	54.92	10.28	8.80	8.80	0.57	0.37
CO [g/h]	41.23	1730.90	926.98	111.96	3839.04	718.39	615.14	615.13	40.18	26.06
NOx [g/h]	8.02	336.77	180.36	21.78	746.94	139.77	119.68	119.68	7.82	5.07
VOC [g/h]	9.56	401.15	214.84	25.95	889.73	166.49	142.56	142.56	9.31	6.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.44	0.00	31.44	31.44
l_p,int, Pedestrian LOS Score for Intersectio	3.114	0.000	2.500	1.778
Crosswalk LOS	C	F	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	871	871	922	410
d_b, Bicycle Delay [s]	12.44	12.44	11.33	24.67
l_b,int, Bicycle LOS Score for Intersection	2.511	2.884	3.045	1.612
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 8: Latrobe Rd/Suncast Ln

Control Type:	Signalized	Delay (sec / veh):	41.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.981

Intersection Setup

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Approach	Northbound			Southbound		Eastbound	
Lane Configuration							
Turning Movement	U-turn	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00	
Grade [%]	0.00			0.00		0.00	
Curb Present	No			No		No	
Crosswalk	Yes			No		Yes	

Volumes

Name	Latrobe Rd			Latrobe Rd		Suncast Ln	
Base Volume Input [veh/h]	0	131	1454	1541	243	388	219
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	69	0	0	0	0
Site-Generated Trips [veh/h]	0	-1	-301	-70	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	73	0	66
Total Hourly Volume [veh/h]	0	130	1222	1471	170	388	155
Peak Hour Factor	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	343	413	48	109	44
Total Analysis Volume [veh/h]	0	146	1373	1653	191	436	174
Presence of On-Street Parking	No		No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0		0	
v_di, Inbound Pedestrian Volume crossing m	0			0		0	
v_co, Outbound Pedestrian Volume crossing	0			0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0			0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0			0		0	
Bicycle Volume [bicycles/h]	0			0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	5	2	6	0	3	0
Auxiliary Signal Groups							
Maximum Green [s]	0	12	40	40	0	20	0
Amber [s]	0.0	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	16	46	46	0	24	0
Lead / Lag	-	Lead	-	-	-	Lead	-
Minimum Green [s]	0	5	5	5	0	5	0
Vehicle Extension [s]	0.0	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall		No	No	No		No	
Maximum Recall		No	No	No		No	
Pedestrian Recall		No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Calculated Cycle Length [s]	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	52	40	40	20	20
g / C, Green / Cycle	0.10	0.64	0.49	0.49	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.08	0.39	0.49	0.51	0.24	0.11
s, saturation flow rate [veh/h]	1781	3560	1870	1804	1781	1589
c, Capacity [veh/h]	182	2264	908	876	432	386
d1, Uniform Delay [s]	36.19	8.89	21.21	21.21	31.21	26.54
k, delay calibration	0.04	0.15	0.45	0.47	0.44	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.13	0.38	32.27	44.47	42.59	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.61	1.02	1.05	1.01	0.45
d, Delay for Lane Group [s/veh]	39.31	9.26	53.47	65.67	73.80	27.37
Lane Group LOS	D	A	F	F	F	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.97	6.21	23.81	25.94	13.36	2.91
50th-Percentile Queue Length [ft/ln]	74.21	155.18	595.28	648.47	333.92	72.77
95th-Percentile Queue Length [veh/ln]	5.34	10.29	32.21	35.68	19.45	5.24
95th-Percentile Queue Length [ft/ln]	133.57	257.33	805.25	892.00	486.23	130.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.31	39.31	9.26	58.87	65.67	73.80	27.37
Movement LOS	D	D	A	E	E	F	C
d_A, Approach Delay [s/veh]	12.15			59.57		60.55	
Approach LOS	B			E		E	
d_I, Intersection Delay [s/veh]	41.59						
Intersection LOS	D						
Intersection V/C	0.981						

Emissions

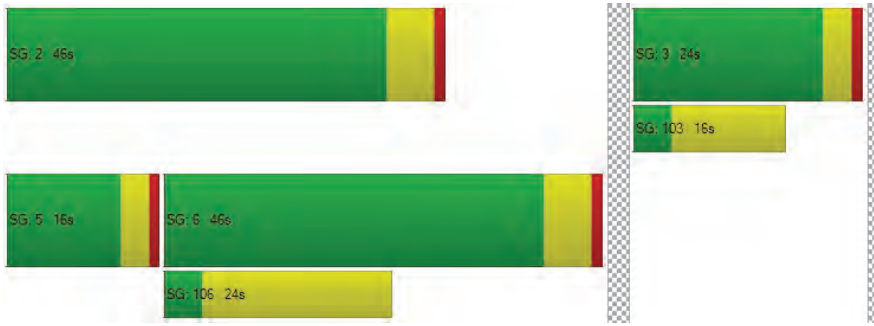
Vehicle Miles Traveled [mph]	101.55	954.99	326.16	326.16	147.10	58.71
Stops [stops/h]	129.71	542.48	1040.49	1133.45	583.65	127.20
Fuel consumption [US gal/h]	6.07	44.90	29.21	32.01	15.83	4.09
CO [g/h]	423.95	3138.47	2041.64	2237.51	1106.35	285.78
NOx [g/h]	82.49	610.63	397.23	435.34	215.26	55.60
VOC [g/h]	98.25	727.37	473.17	518.56	256.41	66.23

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.58	0.00	33.58
l_p,int, Pedestrian LOS Score for Intersectio	2.963	0.000	2.385
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	971	971	486
d_b, Bicycle Delay [s]	10.90	10.90	23.62
l_b,int, Bicycle LOS Score for Intersection	2.813	3.141	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 9: Latrobe Rd/Golden Foothill Pkwy S

Control Type:	Signalized	Delay (sec / veh):	147.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.126

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	220.00	100.00	100.00	530.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			Golden Foothill Pkwy S			Clubview Dr		
Base Volume Input [veh/h]	114	590	31	419	446	895	817	306	63	76	201	178
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	147	17	0	85	0	0	0	6	0	0	0
Site-Generated Trips [veh/h]	-23	-67	-14	0	55	-123	-236	-40	13	2	-21	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	232	0	0	25	0	0	53
Total Hourly Volume [veh/h]	91	670	24	419	586	540	581	266	57	78	180	125
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	184	7	115	161	148	160	73	16	21	49	34
Total Analysis Volume [veh/h]	100	736	26	460	644	593	638	292	63	86	198	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	106
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	8	0	0	7	0
Auxiliary Signal Groups												
Maximum Green [s]	12	25	0	12	25	0	0	15	0	0	20	0
Amber [s]	3.0	4.3	0.0	3.0	4.3	0.0	0.0	3.0	0.0	0.0	3.5	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	30	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	2.0	3.3	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	200.0	245.0	0.0	245.0	245.0	0.0	0.0	100.0	0.0	0.0	150.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	30	0	16	30	0	0	20	0	0	25	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Calculated Cycle Length [s]	78	78	78	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	4.00	5.30	5.30	4.50	4.50	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	3.30	3.30	2.00	3.30	3.30	2.50	2.50	3.00	3.00
g_i, Effective Green Time [s]	6	19	19	12	25	25	15	15	14	14
g / C, Green / Cycle	0.07	0.24	0.24	0.15	0.32	0.32	0.19	0.19	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.06	0.20	0.20	0.26	0.34	0.37	0.28	0.28	0.15	0.09
s, saturation flow rate [veh/h]	1781	1870	1848	1781	1870	1590	1781	1804	1842	1589
c, Capacity [veh/h]	130	446	440	272	596	506	340	345	328	283
d1, Uniform Delay [s]	35.75	28.64	28.64	33.25	26.75	26.75	31.75	31.75	31.34	29.01
k, delay calibration	0.04	0.10	0.10	0.50	0.46	0.50	0.50	0.50	0.06	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.62	4.74	4.80	325.83	58.05	97.98	222.22	214.05	4.22	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.86	0.86	1.69	1.08	1.18	1.46	1.44	0.87	0.48
d, Delay for Lane Group [s/veh]	39.37	33.38	33.44	359.08	84.80	124.74	253.97	245.80	35.56	29.49
Lane Group LOS	D	C	C	F	F	F	F	F	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.97	7.20	7.12	29.27	19.05	21.82	27.20	26.77	5.43	2.29
50th-Percentile Queue Length [ft/ln]	49.13	179.89	177.95	731.85	476.26	545.50	680.00	669.21	135.74	57.25
95th-Percentile Queue Length [veh/ln]	3.54	11.59	11.49	46.11	27.48	32.47	42.15	41.39	9.25	4.12
95th-Percentile Queue Length [ft/ln]	88.43	289.87	287.34	1152.85	687.02	811.71	1053.75	1034.77	231.28	103.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.37	33.41	33.44	359.08	84.93	124.74	252.16	245.80	245.80	35.56	35.56	29.49
Movement LOS	D	C	C	F	F	F	F	F	F	D	D	C
d_A, Approach Delay [s/veh]	34.10			173.15			249.89			33.59		
Approach LOS	C			F			F			C		
d_I, Intersection Delay [s/veh]	147.37											
Intersection LOS	F											
Intersection V/C	1.126											

Emissions

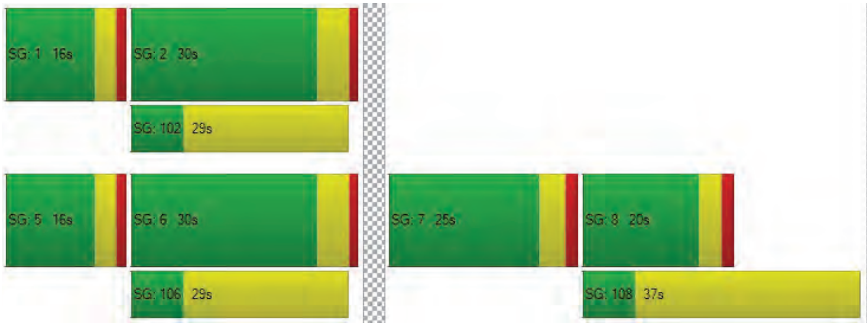
Vehicle Miles Traveled [mph]	57.75	221.34	218.73	319.95	446.44	413.96	37.35	37.35	31.41	15.15
Stops [stops/h]	90.24	330.39	326.84	1344.16	874.74	1001.91	1248.93	1229.12	249.31	105.15
Fuel consumption [US gal/h]	3.68	13.54	13.39	69.28	42.26	47.56	34.09	33.16	4.73	2.03
CO [g/h]	257.03	946.49	935.79	4842.49	2953.77	3324.63	2383.15	2317.83	330.33	141.67
NOx [g/h]	50.01	184.15	182.07	942.17	574.70	646.85	463.67	450.97	64.27	27.56
VOC [g/h]	59.57	219.36	216.88	1122.29	684.56	770.52	552.32	537.18	76.56	32.83

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.97	0.00	28.97	28.97
l_p,int, Pedestrian LOS Score for Intersectio	2.636	0.000	2.664	2.418
Crosswalk LOS	B	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	630	630	395	510
d_b, Bicycle Delay [s]	18.39	18.39	25.23	21.75
l_b,int, Bicycle LOS Score for Intersection	2.279	3.151	3.239	2.342
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.870

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	171	325	456	129	410	157
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	47	209	0
Site-Generated Trips [veh/h]	-19	136	195	-125	-239	-37
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	15	0	36
Total Hourly Volume [veh/h]	152	461	651	36	380	84
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	128	181	11	120	23
Total Analysis Volume [veh/h]	169	512	723	46	481	93
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54	56	56	0	54	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Calculated Cycle Length [s]	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	10	52	38	38	27	27
g / C, Green / Cycle	0.12	0.59	0.43	0.43	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.09	0.27	0.39	0.03	0.27	0.06
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	206	1097	796	676	535	478
d1, Uniform Delay [s]	38.26	10.43	23.83	15.05	29.68	23.01
k, delay calibration	0.04	0.15	0.25	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.06	0.44	9.10	0.06	5.70	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.47	0.91	0.07	0.90	0.19
d, Delay for Lane Group [s/veh]	41.32	10.87	32.93	15.11	35.38	23.20
Lane Group LOS	D	B	C	B	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.48	4.46	13.91	0.49	10.27	1.44
50th-Percentile Queue Length [ft/ln]	87.01	111.58	347.73	12.23	256.76	35.96
95th-Percentile Queue Length [veh/ln]	6.26	7.93	20.03	0.88	15.53	2.59
95th-Percentile Queue Length [ft/ln]	156.62	198.20	500.64	22.02	388.15	64.73

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.32	10.87	32.93	15.11	35.38	23.20
Movement LOS	D	B	C	B	D	C
d_A, Approach Delay [s/veh]	18.43		31.87		33.41	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	27.78					
Intersection LOS	C					
Intersection V/C	0.870					

Emissions

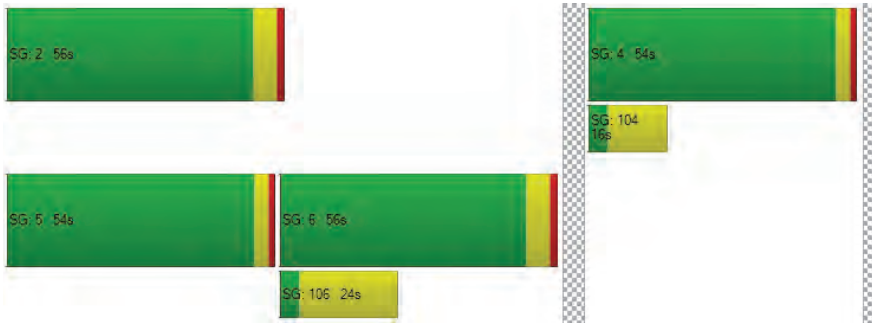
Vehicle Miles Traveled [mph]	20.85	63.17	417.55	26.57	112.97	21.84
Stops [stops/h]	141.69	181.70	566.23	19.92	418.09	58.56
Fuel consumption [US gal/h]	4.75	6.62	29.33	1.40	10.42	1.66
CO [g/h]	332.05	462.82	2050.20	97.88	728.62	116.16
NOx [g/h]	64.60	90.05	398.89	19.04	141.76	22.60
VOC [g/h]	76.96	107.26	475.15	22.68	168.86	26.92

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.58	0.00	36.58
l_p,int, Pedestrian LOS Score for Intersectio	2.855	0.000	2.266
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1131	1131	1131
d_b, Bicycle Delay [s]	8.35	8.35	8.35
l_b,int, Bicycle LOS Score for Intersection	2.683	2.853	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 11: Latrobe Rd/Avanti

Control Type:	Two-way stop	Delay (sec / veh):	54.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.164

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd			Avanti			Avanti		
Base Volume Input [veh/h]	0	438	0	25	588	0	0	0	0	2	0	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	10	6	0	0	0	0	0
Site-Generated Trips [veh/h]	2	110	0	0	149	9	7	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	548	0	25	737	19	13	0	1	2	0	58
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	149	0	6	200	5	4	0	0	1	0	15
Total Analysis Volume [veh/h]	2	596	0	25	801	21	14	0	1	2	0	58
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes		Yes	
Storage Area [veh]	0		0		1		1	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.03	0.01	0.00	0.16	0.00	0.00	0.02	0.00	0.12
d_M, Delay for Movement [s/veh]	9.46	0.00	0.00	8.70	0.00	0.00	54.57	41.97	22.02	41.56	35.81	13.08
Movement LOS	A	A	A	A	A	A	F	E	C	E	E	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.55	0.55	0.55	0.39	0.39	0.39
95th-Percentile Queue Length [ft/ln]	0.08	0.08	0.08	1.06	1.06	1.06	13.86	13.86	13.86	9.86	9.86	9.86
d_A, Approach Delay [s/veh]	0.03			0.26			52.40			14.02		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	1.23											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Two-way stop	Delay (sec / veh):	313.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.388

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	334	21	144	446	0	0	0	0	59	0	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	-9	0	0	-21	161	121	0	14	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	10	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	325	21	144	425	171	121	0	14	59	2	104
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	87	6	39	114	46	33	0	4	16	1	28
Total Analysis Volume [veh/h]	22	349	23	155	457	184	130	0	15	63	2	112
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.13	0.00	0.00	1.39	0.00	0.03	0.53	0.02	0.16
d_M, Delay for Movement [s/veh]	8.91	0.00	0.00	8.49	0.00	0.00	313.37	300.35	281.67	63.69	61.94	38.80
Movement LOS	A	A	A	A	A	A	F	F	F	F	F	E
95th-Percentile Queue Length [veh/ln]	0.07	0.00	0.00	0.45	0.00	0.00	10.50	10.50	10.50	4.76	4.76	4.76
95th-Percentile Queue Length [ft/ln]	1.79	0.00	0.00	11.23	0.00	0.00	262.49	262.49	262.49	119.12	119.12	119.12
d_A, Approach Delay [s/veh]	0.50			1.65			310.09			47.92		
Approach LOS	A			A			F			E		
d_I, Intersection Delay [s/veh]	36.35											
Intersection LOS	F											

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Intersection Level Of Service Report
Intersection 13: Golden Foothill/Robert J Mathews

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	21.977

Intersection Setup

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Approach	Northbound			Eastbound		Westbound		
Lane Configuration								
Turning Movement	U-turn	Left	Right	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00		30.00		
Grade [%]	0.00			0.00		0.00		
Crosswalk	No			No		No		

Volumes

Name	Robert J Mathews Pkwy			Golden Foothill Pkwy		Golden Foothill Pkwy S		
Base Volume Input [veh/h]	0	127	1017	168	55	1	1019	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-83	-276	13	-43	0	-144	-23
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	59	0	0	36	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	103	741	181	48	1	875	167
Peak Hour Factor	1.0000	0.8800	0.8800	0.8800	0.8800	1.0000	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	29	211	51	14	0	249	47
Total Analysis Volume [veh/h]	0	117	842	206	55	1	994	190
Pedestrian Volume [ped/h]	0			0		0		

Intersection Settings

Priority Scheme	Stop			Free		Free		
Flared Lane	No							
Storage Area [veh]	0			0		0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0			0		0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	21.98	1.05	0.00	0.00	0.00	0.76	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	10000.00	0.00	0.00	10000.00	14.01	0.00
Movement LOS	F	F	F	A	A	F	B	A
95th-Percentile Queue Length [veh/ln]	117.72	117.72	117.72	0.00	0.00	6.68	6.68	6.68
95th-Percentile Queue Length [ft/ln]	2943.07	2943.07	2943.07	0.00	0.00	167.00	167.00	167.00
d_A, Approach Delay [s/veh]	10000.00			0.00		20.19		
Approach LOS	F			A		C		
d_I, Intersection Delay [s/veh]	3997.48							
Intersection LOS	F							

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Intersection Level Of Service Report
Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Control Type:	All-way stop	Delay (sec / veh):	34.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.929

Intersection Setup

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00				30.00			30.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

Volumes

Name	Robert J Mathews Pkwy			Robert J Mathews Pkwy				Investment Blvd			Investment Blvd		
Base Volume Input [veh/h]	60	657	105	0	40	585	40	56	49	40	225	17	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-293	-225	0	5	-176	-18	-79	-56	0	-135	-13	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	364	0	0	45	409	22	0	0	40	90	4	83
Peak Hour Factor	0.8300	0.8300	0.8300	1.000	0.790	0.830	0.830	0.8300	0.8300	0.8300	0.8300	0.8300	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	110	0	0	14	123	7	0	0	12	27	1	26
Total Analysis Volume [veh/h]	72	439	0	0	57	493	27	0	0	48	108	5	105
Pedestrian Volume [ped/h]	0			0				0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	607	621	501	524
Degree of Utilization, x	0.84	0.93	0.10	0.42

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	9.09	12.22	0.32	2.03
95th-Percentile Queue Length [ft]	227.21	305.57	7.91	50.70
Approach Delay [s/veh]	32.62	44.65	10.95	14.67
Approach LOS	D	E	B	B
Intersection Delay [s/veh]	34.09			
Intersection LOS	D			

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Intersection Level Of Service Report
Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Control Type:	Two-way stop	Delay (sec / veh):	20.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.451

Intersection Setup

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Approach	Northbound		Eastbound			Westbound		
Lane Configuration								
Turning Movement	Left	Right	U-turn	Thru	Right	U-turn	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	220.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00			30.00		
Grade [%]	0.00		0.00			0.00		
Crosswalk	No		No			No		

Volumes

Name	Carson Crossing Rd		Golden Foothill Pkwy N			Golden Foothill Pkwy		
Base Volume Input [veh/h]	159	80	0	143	294	2	132	196
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-26	0	-4	0	0	-98	-8
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	54	0	139	294	2	34	188
Peak Hour Factor	0.8400	0.8400	1.0000	0.8400	0.8400	1.0000	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	16	0	41	88	1	10	56
Total Analysis Volume [veh/h]	189	64	0	165	350	2	40	224
Pedestrian Volume [ped/h]	0		0			0		

Intersection Settings

Priority Scheme	Stop		Free			Free		
Flared Lane								
Storage Area [veh]	0		0			0		
Two-Stage Gap Acceptance	No							
Number of Storage Spaces in Median	0		0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.45	0.09	0.00	0.00	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	20.47	10.64	9.36	0.00	0.00	12.61	8.59	0.00
Movement LOS	C	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	2.28	0.30	0.00	0.00	0.00	0.13	0.13	0.00
95th-Percentile Queue Length [ft/ln]	57.12	7.49	0.00	0.00	0.00	3.30	3.30	0.00
d_A, Approach Delay [s/veh]	17.98			0.00			1.39	
Approach LOS	C			A			A	
d_I, Intersection Delay [s/veh]	4.76							
Intersection LOS	C							

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Intersection Level Of Service Report
Intersection 16: Carson Crossing Rd/Calypso Cir.

Control Type:	Two-way stop	Delay (sec / veh):	100.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name			Carson Crossing Rd		Carson Crossing Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	190.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Carson Crossing Rd		Carson Crossing Rd	
Base Volume Input [veh/h]	205	208	87	201	294	187
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-26	0	0	-98
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	205	208	61	201	294	89
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	57	17	55	80	24
Total Analysis Volume [veh/h]	223	226	66	218	320	97
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.84	0.23	0.00	0.00	0.25	0.00
d_M, Delay for Movement [s/veh]	100.51	90.50	0.00	0.00	8.75	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	14.94	14.94	0.00	0.00	0.99	0.00
95th-Percentile Queue Length [ft/ln]	373.46	373.46	0.00	0.00	24.84	0.00
d_A, Approach Delay [s/veh]	95.47		0.00		6.72	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	39.71					
Intersection LOS	F					

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Intersection Level Of Service Report
Intersection 17: Carson Crossing Rd/Four Seasons Dr

Control Type:	All-way stop	Delay (sec / veh):	8.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.167

Intersection Setup

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	500.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	500.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Carson Crossing Rd		Carson Crossing Rd		Four Seasons Dr	
Base Volume Input [veh/h]	310	12	28	203	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-98	0	0	-26	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	12	28	177	0	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	3	8	48	0	1
Total Analysis Volume [veh/h]	230	13	30	192	0	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	729	740	689	762	762	734
Degree of Utilization, x	0.17	0.16	0.04	0.13	0.13	0.00

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.60	0.59	0.14	0.43	0.43	0.01
95th-Percentile Queue Length [ft]	14.89	14.63	3.41	10.76	10.76	0.31
Approach Delay [s/veh]	8.57		8.11			7.93
Approach LOS	A		A			A
Intersection Delay [s/veh]	8.35					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 18: White Rock Rd/Carson Crossing Rd

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Carson Crossing Rd						White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	253	10	50	7	1	21	5	697	138	90	634	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-98	0	0	0	0	0	0	0	-26	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	15	0	0	6	0	0	34	0	0	3
Total Hourly Volume [veh/h]	155	10	35	7	1	15	5	697	78	90	634	8
Peak Hour Factor	0.9700	1.0000	0.9300	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9300	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	3	9	2	0	4	1	180	20	24	163	2
Total Analysis Volume [veh/h]	160	10	38	7	1	15	5	719	80	97	654	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	25	0	15	35	0	15	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	21	0	0	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	0.0	150.0	0.0	0.0	100.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	30	0	0	30	0	20	40	0	20	40	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	9	0	0	9	0	9	9	0	9	9	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	52	52	52	52	52	52	52	52	52	52
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	9	3	1	14	14	7	20	20
g / C, Green / Cycle	0.16	0.16	0.16	0.05	0.01	0.27	0.27	0.13	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.09	0.01	0.02	0.01	0.00	0.20	0.05	0.05	0.18	0.01
s, saturation flow rate [veh/h]	1781	1870	1589	1654	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	293	307	261	83	22	969	433	234	1392	621
d1, Uniform Delay [s]	20.06	18.36	18.71	23.94	25.57	17.36	14.59	20.87	11.88	9.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.59	0.04	0.25	1.81	5.06	1.14	0.20	1.18	0.25	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.03	0.15	0.28	0.23	0.74	0.18	0.42	0.47	0.01
d, Delay for Lane Group [s/veh]	21.65	18.40	18.96	25.75	30.64	18.50	14.79	22.05	12.13	9.76
Lane Group LOS	C	B	B	C	C	B	B	C	B	A
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.75	0.10	0.38	0.30	0.09	3.61	0.67	1.07	2.43	0.05
50th-Percentile Queue Length [ft/ln]	43.75	2.41	9.43	7.38	2.21	90.21	16.76	26.80	60.77	1.23
95th-Percentile Queue Length [veh/ln]	3.15	0.17	0.68	0.53	0.16	6.50	1.21	1.93	4.38	0.09
95th-Percentile Queue Length [ft/ln]	78.75	4.33	16.98	13.29	3.98	162.38	30.17	48.24	109.39	2.22

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.65	18.40	18.96	25.75	25.75	25.75	30.64	18.50	14.79	22.05	12.13	9.76
Movement LOS	C	B	B	C	C	C	C	B	B	C	B	A
d_A, Approach Delay [s/veh]	21.00			25.75			18.21			13.37		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	16.58											
Intersection LOS	B											
Intersection V/C	0.520											

Emissions

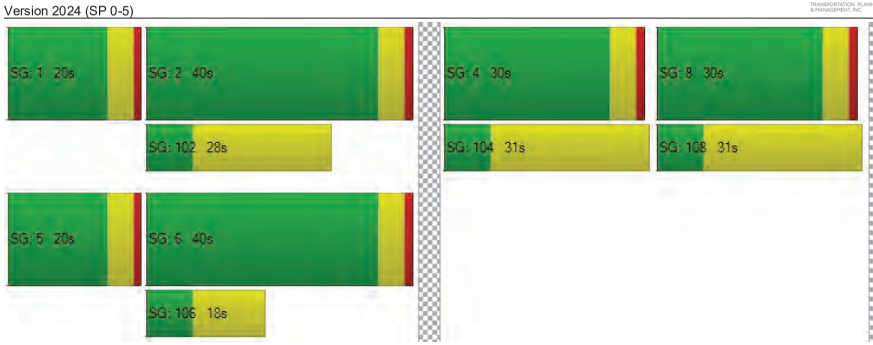
Vehicle Miles Traveled [mph]	47.50	2.97	11.28	0.51	0.72	102.95	11.45	81.63	550.36	6.73
Stops [stops/h]	120.80	6.65	26.05	20.39	6.10	498.17	46.29	74.00	335.62	3.40
Fuel consumption [US gal/h]	3.33	0.20	0.75	0.25	0.09	9.70	0.97	4.20	26.13	0.31
CO [g/h]	232.61	13.73	52.77	17.77	6.60	677.85	67.67	293.89	1826.14	21.80
NOx [g/h]	45.26	2.67	10.27	3.46	1.28	131.88	13.17	57.18	355.30	4.24
VOC [g/h]	53.91	3.18	12.23	4.12	1.53	157.10	15.68	68.11	423.23	5.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.24	16.24	16.24	16.24
l_p,int, Pedestrian LOS Score for Intersectio	2.375	1.719	2.742	2.677
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	959	959	1342	1342
d_b, Bicycle Delay [s]	7.07	7.07	2.82	2.82
l_b,int, Bicycle LOS Score for Intersection	1.928	1.607	2.251	2.188
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 19: White Rock Rd/Windfield Way

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	Windfield Way						White Rock Rd			White Rock Rd			
Approach	Northbound			Southbound			Eastbound			Westbound			
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00			
Grade [%]	0.00			0.00			0.00			0.00			
Curb Present	No			No			No			No			
Crosswalk	Yes			Yes			Yes			No			

Volumes

Name	Windfield Way						White Rock Rd			White Rock Rd			
Base Volume Input [veh/h]	305	5	361	5	5	5	5	754	92	14	260	607	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	108	0	0	0	0	0	28	0	0	0	0
Total Hourly Volume [veh/h]	305	5	253	5	5	5	5	754	64	14	260	607	5
Peak Hour Factor	0.9400	1.0000	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	1.000	0.940	0.940	1.000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	1	67	1	1	1	1	201	17	4	69	161	1
Total Analysis Volume [veh/h]	324	5	269	5	5	5	5	802	68	14	277	646	5
Presence of On-Street Parking	No		No	No		No	No		No	No			No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0			
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0			
v_co, Outbound Pedestrian Volume crossing	0			0			0			0			
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0			
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0			
Bicycle Volume [bicycles/h]	0			0			0			0			

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Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	135
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permi	Prote	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	0	1	6	0
Auxiliary Signal Groups													
Maximum Green [s]	25	25	0	10	10	0	9	19	0	0	44	54	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	0.0	0.0	4.0	5.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	2.0	1.0	0.0	0.0	2.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	26	0	0	13	0	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	245.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	30	30	0	15	15	0	15	25	0	0	50	60	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	Lead	-	-
Minimum Green [s]	3	3	0	5	3	0	5	7	0	0	3	7	0
Vehicle Extension [s]	1.0	1.0	0.0	3.0	1.0	0.0	3.0	3.6	0.0	0.0	1.0	3.6	0.0
Minimum Recall	No	No		No	No		No	Yes			No	Yes	
Maximum Recall	No	No		No	No		No	No			No	No	
Pedestrian Recall	No	No		No	No		No	No			No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	24	1	1	1	52	52	21	73	73
g / C, Green / Cycle	0.20	0.20	0.01	0.01	0.01	0.44	0.44	0.18	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.18	0.17	0.00	0.01	0.00	0.23	0.04	0.16	0.17	0.17
s, saturation flow rate [veh/h]	1781	1594	1781	1718	1781	3560	1589	1781	1870	1865
c, Capacity [veh/h]	349	313	12	13	12	1548	691	318	1134	1131
d1, Uniform Delay [s]	47.44	46.78	59.33	59.43	59.34	24.73	20.02	48.42	11.26	11.26
k, delay calibration	0.30	0.09	0.11	0.04	0.11	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.29	6.61	19.50	27.26	19.95	1.24	0.28	4.44	0.64	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.88	0.40	0.76	0.40	0.52	0.10	0.92	0.29	0.29
d, Delay for Lane Group [s/veh]	70.72	53.39	78.83	86.69	79.29	25.97	20.30	52.87	11.90	11.91
Lane Group LOS	E	D	E	F	E	C	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.73	8.48	0.22	0.40	0.22	8.52	1.19	8.92	4.24	4.23
50th-Percentile Queue Length [ft/ln]	293.26	212.08	5.48	10.09	5.50	212.88	29.66	222.95	105.90	105.63
95th-Percentile Queue Length [veh/ln]	17.35	13.26	0.39	0.73	0.40	13.30	2.14	13.82	7.61	7.60
95th-Percentile Queue Length [ft/ln]	433.68	331.49	9.86	18.17	9.90	332.52	53.40	345.39	190.28	189.90

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.72	53.39	53.39	78.83	86.69	86.69	79.29	25.97	20.30	52.87	52.87	11.90	11.91
Movement LOS	E	D	D	E	F	F	E	C	C	D	D	B	B
d_A, Approach Delay [s/veh]	62.78			84.07			25.84			24.56			
Approach LOS	E			F			C			C			
d_I, Intersection Delay [s/veh]	34.79												
Intersection LOS	C												
Intersection V/C	0.640												

Emissions

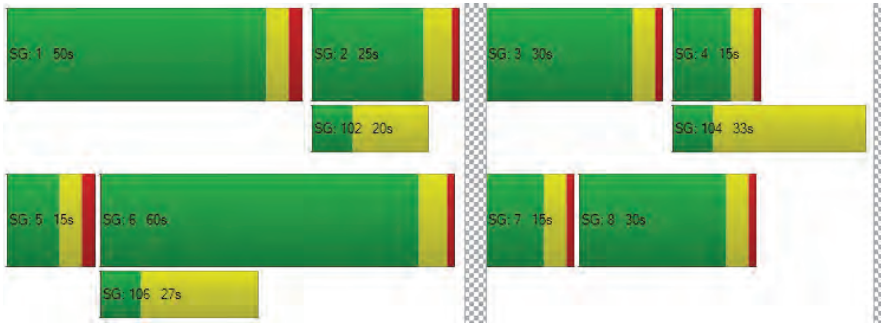
Vehicle Miles Traveled [mph]	124.84	105.58	0.23	0.46	4.21	674.90	57.22	72.63	81.35	81.13
Stops [stops/h]	351.91	254.49	6.57	12.11	6.60	510.92	35.60	267.54	127.08	126.75
Fuel consumption [US gal/h]	11.75	8.73	0.13	0.26	0.29	34.84	2.83	7.60	4.84	4.83
CO [g/h]	821.04	610.15	8.80	18.32	20.29	2435.66	198.05	531.12	338.35	337.45
NOx [g/h]	159.75	118.71	1.71	3.56	3.95	473.89	38.53	103.34	65.83	65.65
VOC [g/h]	190.29	141.41	2.04	4.25	4.70	564.49	45.90	123.09	78.41	78.21

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.460	1.964	2.812	0.000
Crosswalk LOS	B	A	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	417	167	317	900
d_b, Bicycle Delay [s]	37.60	50.42	42.50	18.15
l_b,int, Bicycle LOS Score for Intersection	2.725	1.584	2.305	2.108
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 20: White Rock Rd/Post St

Control Type:	Signalized	Delay (sec / veh):	44.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Approach	Northbound			Southbound			Eastbound				Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.0	100.0	100.0	100.0	200.00	100.00	400.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00				30.00		
Grade [%]	0.00			0.00			0.00				0.00		
Curb Present	No			No			No				No		
Crosswalk	Yes			Yes			No				No		

Volumes

Name	Post St			Post St			White Rock Rd				White Rock Rd		
Base Volume Input [veh/h]	71	16	42	191	15	246	3	227	1167	57	86	738	181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00												
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	-10	0	-18	-39	0	0	-4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	13	0	0	71	0	0	0	17	0	0	54
Total Hourly Volume [veh/h]	71	16	29	191	15	165	3	209	1128	40	86	734	127
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.000	0.910	0.860	0.910	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	4	8	52	4	45	1	57	328	11	24	202	35
Total Analysis Volume [veh/h]	78	18	32	210	16	181	3	230	1312	44	95	807	140
Presence of On-Street Parking	No		No	No		No	No			No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0				0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0				0		
v_co, Outbound Pedestrian Volume crossing	0			0			0				0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0				0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0				0		
Bicycle Volume [bicycles/h]	0			0			0				0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Split	Split	Split	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	7	4	0	3	8	0
Auxiliary Signal Groups													
Maximum Green [s]	7	24	0	7	26	0	0	24	75	0	15	67	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	21	0	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Advanced Detector Location [ft]	100.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	245.0	0.0	150.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	13	29	0	47	31	0	0	28	80	0	20	72	0
Lead / Lag	Lead	-	-	Lead	-	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	3	9	0	3	9	0	0	9	9	0	9	9	0
Vehicle Extension [s]	1.0	1.5	0.0	1.0	1.5	0.0	0.0	1.0	1.5	0.0	1.0	1.5	0.0
Minimum Recall		No			No			No	No		No	No	
Maximum Recall		No			No			No	No		No	No	
Pedestrian Recall		No			No			No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	11	22	22	70	98	98	10	38	38
g / C, Green / Cycle	0.07	0.07	0.14	0.14	0.43	0.61	0.61	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.12	0.12	0.13	0.37	0.03	0.05	0.23	0.09
s, saturation flow rate [veh/h]	1797	1589	1781	1609	1781	3560	1589	1781	3560	1589
c, Capacity [veh/h]	118	105	241	218	774	2170	969	115	853	381
d1, Uniform Delay [s]	73.74	71.24	67.82	68.17	29.45	19.33	12.55	73.96	59.83	50.74
k, delay calibration	0.04	0.04	0.04	0.04	0.50	0.50	0.50	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.92	0.60	3.82	5.59	1.00	1.26	0.09	5.60	2.68	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.31	0.87	0.91	0.30	0.60	0.05	0.83	0.95	0.37
d, Delay for Lane Group [s/veh]	78.66	71.84	71.64	73.77	30.45	20.59	12.64	79.56	62.51	50.96
Lane Group LOS	E	E	E	E	C	C	B	E	E	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.08	1.28	8.72	8.32	6.18	15.40	0.68	4.06	16.45	4.77
50th-Percentile Queue Length [ft/ln]	102.02	31.99	217.98	207.97	154.42	385.05	16.96	101.55	411.25	119.25
95th-Percentile Queue Length [veh/ln]	7.35	2.30	13.56	13.05	10.25	21.84	1.22	7.31	23.10	8.35
95th-Percentile Queue Length [ft/ln]	183.64	57.58	339.05	326.22	256.31	545.95	30.52	182.79	577.54	208.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.66	78.66	71.84	71.70	73.77	73.77	30.45	30.45	20.59	12.64	79.56	62.51	50.96
Movement LOS	E	E	E	E	E	E	C	C	C	B	E	E	D
d_A, Approach Delay [s/veh]	76.96			72.67			21.82				62.51		
Approach LOS	E			E			C				E		
d_I, Intersection Delay [s/veh]	43.98												
Intersection LOS	D												
Intersection V/C	0.664												

Emissions

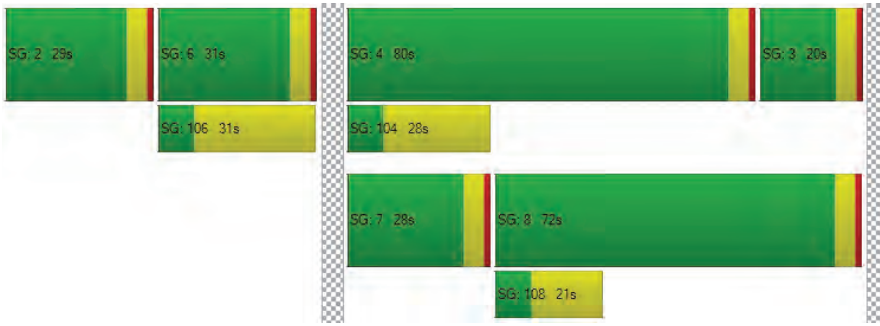
Vehicle Miles Traveled [mph]	4.80	1.60	9.76	9.16	24.62	138.62	4.65	33.15	281.63	48.86
Stops [stops/h]	91.82	28.79	196.18	187.17	138.98	693.09	15.26	91.40	740.25	107.33
Fuel consumption [US gal/h]	2.24	0.69	4.55	4.37	3.22	15.03	0.39	3.41	25.95	4.06
CO [g/h]	156.69	48.42	317.83	305.32	225.42	1050.81	27.18	238.19	1813.75	283.50
NOx [g/h]	30.49	9.42	61.84	59.40	43.86	204.45	5.29	46.34	352.89	55.16
VOC [g/h]	36.31	11.22	73.66	70.76	52.24	243.54	6.30	55.20	420.35	65.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.088	2.368	2.950	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	325	938	838
d_b, Bicycle Delay [s]	57.80	56.11	22.58	27.03
l_b,int, Bicycle LOS Score for Intersection	1.792	2.348	2.695	2.464
Bicycle LOS	A	B	B	B

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 21: White Rock Rd/Valley View Pkwy

Control Type:	Signalized	Delay (sec / veh):	32.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	2	2	0	1	2	0	1	2	0	1
Entry Pocket Length [ft]	300.00	100.00	300.00	200.00	100.00	200.00	300.00	100.00	200.00	500.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	300.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Valley View Pkwy			Valley View Pkwy			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	117	83	587	373	142	63	67	1081	264	432	840	207
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-9	-17	0	-5	8	6	-44	0	0	-12	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	171	0	0	21	0	0	79	0	0	62
Total Hourly Volume [veh/h]	117	74	399	373	137	50	73	1037	185	432	828	145
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	19	103	96	35	13	19	267	48	111	213	37
Total Analysis Volume [veh/h]	121	76	411	385	141	52	75	1069	191	445	854	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	153
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Split	Split	Overlap	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	1	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,4									
Maximum Green [s]	0	35	25	0	40	0	25	45	0	25	44	0
Amber [s]	0.0	3.2	3.0	0.0	3.2	0.0	3.0	4.3	0.0	3.0	5.0	0.0
All red [s]	0.0	1.0	0.5	0.0	1.0	0.0	0.5	1.0	0.0	0.5	1.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	28	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.2	1.5	0.0	2.2	0.0	1.5	3.3	0.0	1.5	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	245.0	0.0	150.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	6.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	39	29	0	45	0	29	50	0	29	50	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	5	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.6	2.0	0.0	3.6	0.0	2.0	3.0	0.0	2.0	3.7	0.0
Minimum Recall		No	No		No		No	No		No	No	
Maximum Recall		No	No		No		No	No		No	No	
Pedestrian Recall		No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Calculated Cycle Length [s]	109	109	109	109	109	109	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	4.20	4.20	3.50	4.20	4.20	4.20	3.50	5.30	5.30	3.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.20	2.20	0.00	2.20	2.20	2.20	1.50	3.30	3.30	1.50	4.00	4.00
g_i, Effective Green Time [s]	11	11	63	27	27	27	4	37	37	17	48	48
g / C, Green / Cycle	0.10	0.10	0.58	0.25	0.25	0.25	0.04	0.34	0.34	0.15	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.07	0.04	0.15	0.20	0.08	0.03	0.02	0.30	0.12	0.13	0.24	0.09
s, saturation flow rate [veh/h]	1781	1870	2813	1893	1870	1589	3459	3560	1589	3459	3560	1589
c, Capacity [veh/h]	182	191	1637	502	464	395	143	1200	536	533	1579	705
d1, Uniform Delay [s]	46.99	45.66	11.13	40.42	33.21	31.74	51.05	34.12	27.14	44.63	22.14	18.57
k, delay calibration	0.13	0.13	0.04	0.13	0.13	0.13	0.04	0.11	0.11	0.04	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.11	1.67	0.03	3.09	0.46	0.19	1.11	2.51	0.40	1.35	0.37	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.40	0.25	0.77	0.30	0.13	0.53	0.89	0.36	0.84	0.54	0.21
d, Delay for Lane Group [s/veh]	52.10	47.32	11.16	43.51	33.66	31.93	52.17	36.63	27.54	45.98	22.51	18.76
Lane Group LOS	D	D	B	D	C	C	D	D	C	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.40	2.00	2.35	5.13	3.08	1.08	1.02	13.48	3.77	5.88	7.89	2.32
50th-Percentile Queue Length [ft/ln]	84.96	50.11	58.67	128.19	76.88	27.10	25.49	337.06	94.32	146.92	197.25	58.07
95th-Percentile Queue Length [veh/ln]	6.12	3.61	4.22	8.84	5.54	1.95	1.84	19.50	6.79	9.85	12.50	4.18
95th-Percentile Queue Length [ft/ln]	152.93	90.20	105.61	221.02	138.39	48.77	45.88	487.61	169.77	246.32	312.42	104.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.10	47.32	11.16	43.51	33.66	31.93	52.17	36.63	27.54	45.98	22.51	18.76
Movement LOS	D	D	B	D	C	C	D	D	C	D	C	B
d_A, Approach Delay [s/veh]	23.83			40.07			36.20			29.34		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	32.36											
Intersection LOS	C											
Intersection V/C	0.883											

Emissions

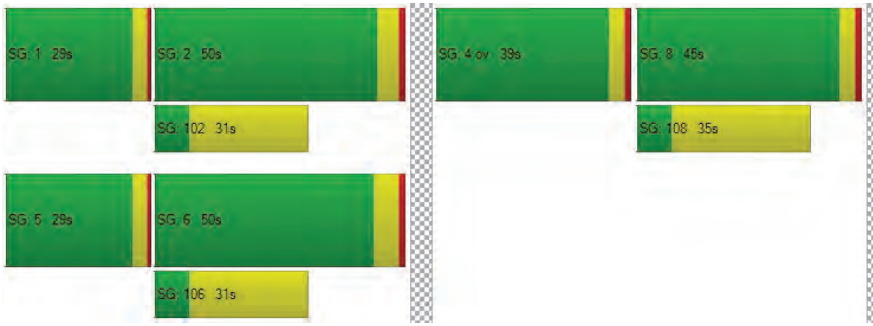
Vehicle Miles Traveled [mph]	206.98	130.00	703.05	78.05	28.59	10.54	26.17	373.06	66.66	200.80	385.35	67.23
Stops [stops/h]	112.71	66.48	155.67	340.11	101.99	35.95	67.63	894.31	125.13	389.83	523.36	77.03
Fuel consumption [US gal/h]	10.43	6.45	30.73	8.50	2.71	0.97	2.25	28.27	4.51	14.58	22.67	3.76
CO [g/h]	728.79	450.92	2148.38	594.21	189.16	67.83	157.08	1975.78	314.94	1019.35	1584.45	262.98
NOx [g/h]	141.80	87.73	418.00	115.61	36.80	13.20	30.56	384.41	61.28	198.33	308.28	51.17
VOC [g/h]	168.90	104.50	497.91	137.71	43.84	15.72	36.40	457.91	72.99	236.25	367.21	60.95

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.83	43.83	43.83	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.971	2.648	3.058	0.000
Crosswalk LOS	C	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	641	752	824	811
d_b, Bicycle Delay [s]	25.05	21.14	18.78	19.19
l_b,int, Bicycle LOS Score for Intersection	2.845	2.548	2.726	2.805
Bicycle LOS	C	B	B	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 22: White Rock Rd/Clarksville Crossing

Control Type:	Signalized	Delay (sec / veh):	53.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.992

Intersection Setup

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	180.00	460.00	100.00	100.00	290.00	100.00	190.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Clarksville Crossing			Clarksville Crossing			White Rock Rd			White Rock Rd		
Base Volume Input [veh/h]	0	0	2	80	0	334	8	2032	1	0	1145	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	-61	0	0	-13	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	2	80	0	334	8	1971	1	0	1132	2
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.9600	0.7800	0.7800	0.9600	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	26	0	107	3	513	0	0	295	1
Total Analysis Volume [veh/h]	0	0	3	103	0	428	10	2053	1	0	1179	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	3	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	20	0	0	20	0	20	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	4.0	5.0	0.0	4.0	5.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [ft]	0.0	20.0	0.0	0.0	0.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	100.0	0.0	0.0	0.0	0.0	245.0	245.0	0.0	245.0	245.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	0.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	93	93	93	93	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	0	0	20	20	1	50	50	0	49	49
g / C, Green / Cycle	0.00	0.00	0.22	0.22	0.01	0.54	0.54	0.00	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.06	0.27	0.01	0.55	0.55	0.00	0.33	0.00
s, saturation flow rate [veh/h]	1870	1589	1781	1589	1781	1870	1870	1781	3560	1589
c, Capacity [veh/h]	11	9	384	343	25	1009	1009	3	1877	838
d1, Uniform Delay [s]	0.00	45.90	30.25	36.34	45.31	21.34	21.34	0.00	15.50	10.38
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.44	0.44	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	19.59	0.37	133.62	9.98	31.25	31.30	0.00	0.35	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.33	0.27	1.25	0.40	1.02	1.02	0.00	0.63	0.00
d, Delay for Lane Group [s/veh]	0.00	65.49	30.62	169.96	55.29	52.59	52.65	0.00	15.85	10.39
Lane Group LOS	A	E	C	F	E	F	F	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.12	1.93	20.28	0.30	28.31	28.33	0.00	8.24	0.03
50th-Percentile Queue Length [ft/ln]	0.00	2.95	48.17	506.99	7.39	707.87	708.13	0.00	206.01	0.70
95th-Percentile Queue Length [veh/ln]	0.00	0.21	3.47	30.90	0.53	37.60	37.61	0.00	12.95	0.05
95th-Percentile Queue Length [ft/ln]	0.00	5.30	86.70	772.40	13.29	939.92	940.35	0.00	323.71	1.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	65.49	30.62	30.62	169.96	55.29	52.62	52.65	0.00	15.85	10.39
Movement LOS	A	A	E	C	C	F	E	F	D	A	B	B
d_A, Approach Delay [s/veh]		65.49			142.93			52.63			15.83	
Approach LOS		E			F			D			B	
d_I, Intersection Delay [s/veh]	53.82											
Intersection LOS	D											
Intersection V/C	0.992											

Emissions

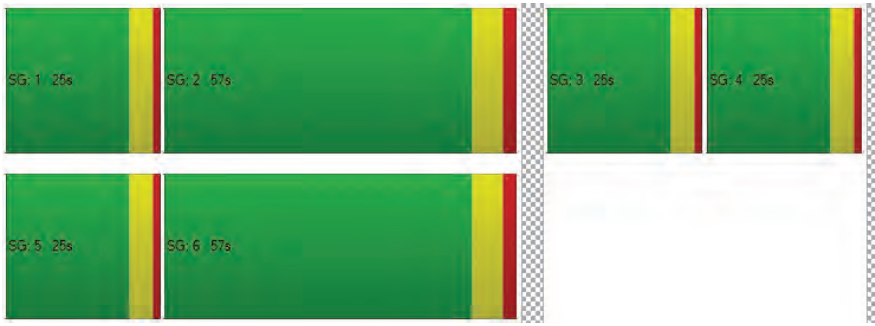
Vehicle Miles Traveled [mph]	0.00	0.15	48.86	203.03	4.51	463.42	463.42	0.00	205.67	0.52
Stops [stops/h]	0.00	4.59	74.96	789.00	11.49	1101.63	1102.02	0.00	641.21	1.10
Fuel consumption [US gal/h]	0.00	0.07	3.07	27.52	0.36	36.15	36.17	0.00	15.81	0.03
CO [g/h]	0.00	5.00	214.41	1923.50	25.29	2527.21	2528.14	0.00	1105.22	2.37
NOx [g/h]	0.00	0.97	41.72	374.24	4.92	491.70	491.88	0.00	215.04	0.46
VOC [g/h]	0.00	1.16	49.69	445.79	5.86	585.70	585.92	0.00	256.14	0.55

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	432	432	1081	1081
d_b, Bicycle Delay [s]	28.43	28.43	9.77	9.77
l_b,int, Bicycle LOS Score for Intersection	1.565	2.436	3.262	2.535
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 23: White Rock Rd/US 50 EB

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.043

Intersection Setup

Name	White Rock Rd			White Rock Rd			US 50 EB					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			White Rock Rd			US 50 EB					
Base Volume Input [veh/h]	0	855	1259	0	1056	301	512	0	91	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	-9	-9	-43	0	-13	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	0	846	1216	0	1043	301	512	0	79	0	0	0
Peak Hour Factor	0.8300	0.9100	1.0000	1.0000	0.9100	0.8300	0.8300	1.0000	0.8300	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	232	304	0	287	91	154	0	24	0	0	0
Total Analysis Volume [veh/h]	0	930	1216	0	1146	363	617	0	95	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	0	0	73	0	34	0	0	0	0	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No		No					
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	5.0	0.0	0.0	5.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	245.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	80	0	0	80	0	40	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	9	0	0	9	0	8	0	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes		No					
Maximum Recall		No			No		No					
Pedestrian Recall		No			No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	6.00	6.00	6.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	4.00	4.00	4.00	
g_i, Effective Green Time [s]	84	84	84	84	23	23	23	
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.19	0.19	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.77	0.32	0.23	0.17	0.17	0.06	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2485	1109	2485	1109	345	345	308	
d1, Uniform Delay [s]	7.42	18.13	8.08	7.10	47.16	47.16	41.47	
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.08	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.43	57.32	0.62	0.79	6.43	6.43	0.21	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.37	1.10	0.46	0.33	0.89	0.89	0.31	
d, Delay for Lane Group [s/veh]	7.85	75.45	8.70	7.89	53.60	53.60	41.68	
Lane Group LOS	A	F	A	A	D	D	D	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	4.66	43.98	6.27	3.62	9.57	9.57	2.44	
50th-Percentile Queue Length [ft/ln]	116.57	1099.47	156.82	90.40	239.36	239.36	61.08	
95th-Percentile Queue Length [veh/ln]	8.20	59.48	10.38	6.51	14.65	14.65	4.40	
95th-Percentile Queue Length [ft/ln]	205.10	1487.00	259.50	162.72	366.22	366.22	109.95	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.85	75.45	0.00	8.70	7.89	53.60	0.00	41.68	0.00	0.00	0.00
Movement LOS		A	F		A	A	D		D			
d_A, Approach Delay [s/veh]	46.15			8.50			52.01			0.00		
Approach LOS	D			A			D			A		
d_I, Intersection Delay [s/veh]	34.10											
Intersection LOS	C											
Intersection V/C	1.043											

Emissions

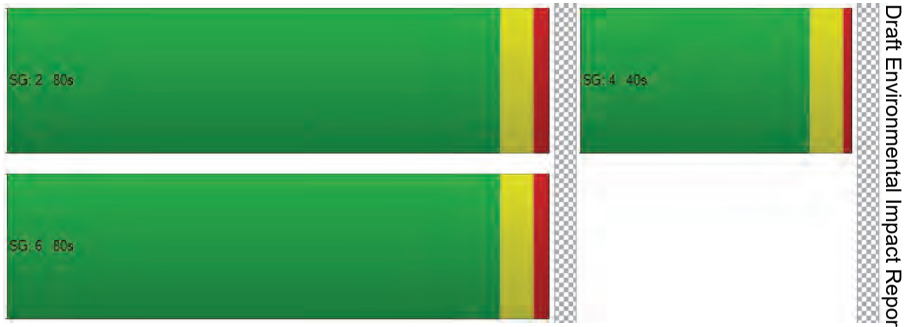
Vehicle Miles Traveled [mph]	162.23	212.12	203.08	64.33	18.68	18.68	5.75	
Stops [stops/h]	279.76	1319.37	376.36	108.48	287.23	287.23	73.30	
Fuel consumption [US gal/h]	9.71	34.69	12.47	3.83	5.72	5.72	1.45	
CO [g/h]	678.71	2424.75	871.53	267.73	399.85	399.85	101.18	
NOx [g/h]	132.05	471.77	169.57	52.09	77.80	77.80	19.69	
VOC [g/h]	157.30	561.96	201.98	62.05	92.67	92.67	23.45	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1217	1217	567	0
d_b, Bicycle Delay [s]	9.20	9.20	30.82	60.00
l_b,int, Bicycle LOS Score for Intersection	3.330	2.805	2.754	4.132
Bicycle LOS	C	C	C	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 24: Silva Valley Pkwy/US 50 WB

Control Type:	Signalized	Delay (sec / veh):	27.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	White Rock Rd			Silva Valley Pkwy			US 50 WB			US 50 WB		
Base Volume Input [veh/h]	0	1215	152	0	686	254	671	1	310	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-9	0	0	-2	0	-11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	47	0	0	30	0	0	0
Total Hourly Volume [veh/h]	0	1206	152	0	684	207	660	1	280	0	0	0
Peak Hour Factor	0.7900	0.7900	1.0000	1.0000	0.7900	0.7900	0.7900	0.7900	0.7900	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	382	38	0	216	66	209	0	89	0	0	0
Total Analysis Volume [veh/h]	0	1527	152	0	866	262	835	1	354	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	0	0	73	0	0	34	0	0	0	0
Amber [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	80	0	0	80	0	0	40	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	8	0	0	0	0
Vehicle Extension [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Minimum Recall		Yes			Yes			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	L	C	R	
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	
L, Total Lost Time per Cycle [s]	6.80	6.80	6.80	6.80	5.80	5.80	5.80	
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
I2, Clearance Lost Time [s]	4.80	4.80	4.80	4.80	3.80	3.80	3.80	
g_i, Effective Green Time [s]	77	77	77	77	30	30	30	
g / C, Green / Cycle	0.64	0.64	0.64	0.64	0.25	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.43	0.10	0.24	0.16	0.23	0.23	0.22	
s, saturation flow rate [veh/h]	3560	1589	3560	1589	1781	1781	1589	
c, Capacity [veh/h]	2295	1025	2295	1025	446	446	398	
d1, Uniform Delay [s]	13.27	8.38	10.01	9.07	44.06	44.05	43.38	
k, delay calibration	0.50	0.50	0.50	0.50	0.26	0.26	0.23	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.54	0.31	0.47	0.60	18.93	18.91	13.09	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.67	0.15	0.38	0.26	0.94	0.94	0.89	
d, Delay for Lane Group [s/veh]	14.81	8.69	10.49	9.68	62.99	62.96	56.46	
Lane Group LOS	B	A	B	A	E	E	E	
Critical Lane Group	Yes	No	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	12.46	1.59	5.27	2.98	14.42	14.42	11.52	
50th-Percentile Queue Length [ft/ln]	311.44	39.78	131.81	74.48	360.59	360.53	287.96	
95th-Percentile Queue Length [veh/ln]	18.25	2.86	9.04	5.36	20.65	20.65	17.08	
95th-Percentile Queue Length [ft/ln]	456.15	71.61	225.95	134.07	516.31	516.22	427.10	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	14.81	8.69	0.00	10.49	9.68	62.98	62.96	56.46	0.00	0.00	0.00
Movement LOS		B	A		B	A	E	E	E			
d_A, Approach Delay [s/veh]		14.26			10.30			61.04			0.00	
Approach LOS		B			B			E			A	
d_I, Intersection Delay [s/veh]	27.07											
Intersection LOS	C											
Intersection V/C	0.737											

Emissions

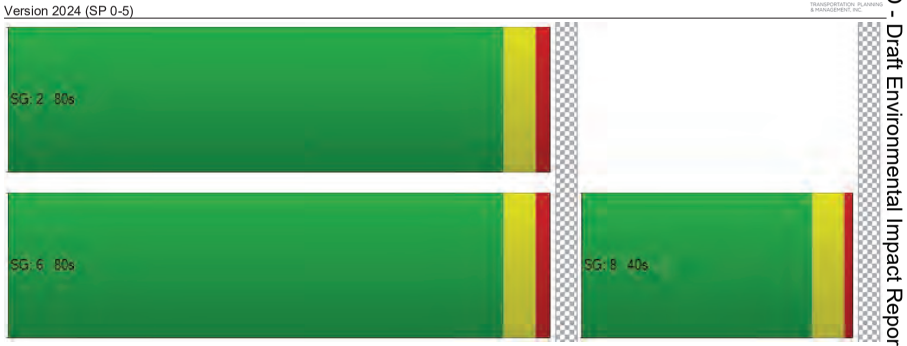
Vehicle Miles Traveled [mph]	270.60	26.94	118.42	35.83	14.48	14.48	12.26	
Stops [stops/h]	747.45	47.74	316.35	89.38	432.71	432.63	345.55	
Fuel consumption [US gal/h]	19.87	1.64	8.47	2.48	8.34	8.34	6.48	
CO [g/h]	1389.06	114.73	592.12	173.67	583.24	583.08	453.01	
NOx [g/h]	270.26	22.32	115.21	33.79	113.48	113.45	88.14	
VOC [g/h]	321.93	26.59	137.23	40.25	135.17	135.13	104.99	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1220	1220	570	0
d_b, Bicycle Delay [s]	9.13	9.13	30.67	60.00
l_b,int, Bicycle LOS Score for Intersection	2.945	2.529	3.573	4.132
Bicycle LOS	C	B	D	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 25: New Intersection

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Latrobe Rd		Latrobe Rd		Commercial Access	
Base Volume Input [veh/h]	0	438	590	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	112	140	10	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	10	-10	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	550	740	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	138	185	0	0	0
Total Analysis Volume [veh/h]	0	550	740	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	13.64
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		13.64	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 26: Latrobe/Wetsl-Oviatt

Control Type:	Two-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.096

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Wetsel-Oviatt Rd	
Base Volume Input [veh/h]	0	328	485	20	27	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	5	-17	9	6	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	333	468	29	33	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	83	117	7	8	0
Total Analysis Volume [veh/h]	1	333	468	29	33	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane					Yes	
Storage Area [veh]	0		0		1	
Two-Stage Gap Acceptance					No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	8.38	0.00	0.00	0.00	16.49	12.23
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.31	0.31
95th-Percentile Queue Length [ft/ln]	0.04	0.04	0.00	0.00	7.86	7.86
d_A, Approach Delay [s/veh]	0.03		0.00		16.36	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.65					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Latrobe/S. Shingle

Control Type:	Two-way stop	Delay (sec / veh):	20.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

Intersection Setup

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Latrobe Rd			Latrobe Rd			S. Shingle Rd			S. Shingle Rd		
Base Volume Input [veh/h]	0	185	67	47	288	46	10	41	2	49	25	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-12	0	6	-28	6	9	0	0	0	0	9
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	173	67	53	260	52	19	41	2	49	25	96
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	45	17	14	67	13	5	11	1	13	6	25
Total Analysis Volume [veh/h]	0	178	69	55	268	54	20	42	2	51	26	99
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					No		No	
Storage Area [veh]	0		0		0		0	
Two-Stage Gap Acceptance					No		No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.07	0.11	0.00	0.16	0.07	0.12
d_M, Delay for Movement [s/veh]	7.91	0.00	0.00	7.80	0.00	0.00	20.06	17.21	12.25	19.67	18.38	13.03
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.10	0.10	0.10	0.68	0.68	0.68	1.53	1.53	1.53
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.44	2.44	2.44	16.95	16.95	16.95	38.18	38.18	38.18
d_A, Approach Delay [s/veh]	0.00			1.14			17.95			15.75		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	5.03											
Intersection LOS	C											

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Signal Warrants Report For Intersection 11: Latrobe Rd/Avanti

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	550	781	60	14
2	534	758	58	14
3	523	742	57	13
4	490	695	53	12
5	435	617	47	11
6	429	609	47	11
7	424	601	46	11
8	385	547	42	10
9	379	539	41	10
10	374	531	41	10
11	325	461	35	8
12	303	430	33	8
13	297	422	32	8
14	220	312	24	6
15	220	312	24	6
16	154	219	17	4
17	88	125	10	2
18	88	125	10	2
19	50	70	5	1
20	28	39	3	1
21	17	23	2	0
22	6	8	1	0
23	6	8	1	0
24	6	8	1	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1331	1	60	No	No	No	No	No	Yes	Yes	Yes	No	No
2	1	1292	1	58	No	No	No	No	No	No	Yes	Yes	No	No
3	1	1265	1	57	No	No	No	No	No	No	Yes	Yes	No	No
4	1	1185	1	53	No	No	No	No	No	No	Yes	Yes	No	No
5	1	1052	1	47	No	No	No	No	No	No	No	Yes	No	No
6	1	1038	1	47	No	No	No	No	No	No	No	Yes	No	No
7	1	1025	1	46	No	No	No	No	No	No	No	Yes	No	No
8	1	932	1	42	No	No	No	No	No	No	No	Yes	No	No
9	1	918	1	41	No	No	No	No	No	No	No	No	No	No
10	1	905	1	41	No	No	No	No	No	No	No	No	No	No
11	1	786	1	35	No	No	No	No	No	No	No	No	No	No
12	1	733	1	33	No	No	No	No	No	No	No	No	No	No
13	1	719	1	32	No	No	No	No	No	No	No	No	No	No
14	1	532	1	24	No	No	No	No	No	No	No	No	No	No
15	1	532	1	24	No	No	No	No	No	No	No	No	No	No
16	1	373	1	17	No	No	No	No	No	No	No	No	No	No
17	1	213	1	10	No	No	No	No	No	No	No	No	No	No
18	1	213	1	10	No	No	No	No	No	No	No	No	No	No
19	1	120	1	5	No	No	No	No	No	No	No	No	No	No
20	1	67	1	3	No	No	No	No	No	No	No	No	No	No
21	1	40	1	2	No	No	No	No	No	No	No	No	No	No
22	1	14	1	1	No	No	No	No	No	No	No	No	No	No
23	1	14	1	1	No	No	No	No	No	No	No	No	No	No
24	1	14	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	1	4	8	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14	52.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:14	0:12
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	60	14
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1405	1405
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 12: Latrobe Rd/Royal Oaks Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	366	740	165	135
2	355	718	160	131
3	348	703	157	128
4	326	659	147	120
5	289	585	130	107
6	285	577	129	105
7	282	570	127	104
8	256	518	115	95
9	253	511	114	93
10	249	503	112	92
11	216	437	97	80
12	201	407	91	74
13	198	400	89	73
14	146	296	66	54
15	146	296	66	54
16	102	207	46	38
17	59	118	26	22
18	59	118	26	22
19	33	67	15	12
20	18	37	8	7
21	11	22	5	4
22	4	7	2	1
23	4	7	2	1
24	4	7	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	1106	1	165	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2	1073	1	160	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2	1051	1	157	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2	985	1	147	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2	874	1	130	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	2	862	1	129	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	2	852	1	127	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
8	2	774	1	115	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
9	2	764	1	114	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
10	2	752	1	112	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
11	2	653	1	97	No	No	No	Yes	No	No	Yes	Yes	No	No
12	2	608	1	91	No	No	No	Yes	No	No	No	Yes	No	No
13	2	598	1	89	No	No	No	Yes	No	No	No	Yes	No	No
14	2	442	1	66	No	No	No	No	No	No	No	No	No	No
15	2	442	1	66	No	No	No	No	No	No	No	No	No	No
16	2	309	1	46	No	No	No	No	No	No	No	No	No	No
17	2	177	1	26	No	No	No	No	No	No	No	No	No	No
18	2	177	1	26	No	No	No	No	No	No	No	No	No	No
19	2	100	1	15	No	No	No	No	No	No	No	No	No	No
20	2	55	1	8	No	No	No	No	No	No	No	No	No	No
21	2	33	1	5	No	No	No	No	No	No	No	No	No	No
22	2	11	1	2	No	No	No	No	No	No	No	No	No	No
23	2	11	1	2	No	No	No	No	No	No	No	No	No	No
24	2	11	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	4	10	11	13	10	4

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	47.9	310.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2:11	11:37
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	165	135
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1406	1406
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

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Signal Warrants Report For Intersection 13: Golden Foothill/Robert J Mathews

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	1043	229	844
2	1012	222	819
3	991	218	802
4	928	204	751
5	824	181	667
6	814	179	658
7	803	176	650
8	730	160	591
9	720	158	582
10	709	156	574
11	615	135	498
12	574	126	464
13	563	124	456
14	417	92	338
15	417	92	338
16	292	64	236
17	167	37	135
18	167	37	135
19	94	21	76
20	52	11	42
21	31	7	25
22	10	2	8
23	10	2	8
24	10	2	8

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1272	1	844	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1234	1	819	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1209	1	802	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1132	1	751	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1005	1	667	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	993	1	658	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	979	1	650	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	890	1	591	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	878	1	582	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	865	1	574	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	750	1	498	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1	700	1	464	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
13	1	687	1	456	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
14	1	509	1	338	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
15	1	509	1	338	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
16	1	356	1	236	No	No	Yes	Yes	No	No	No	No	No	No
17	1	204	1	135	No	No	No	No	No	No	No	No	No	No
18	1	204	1	135	No	No	No	No	No	No	No	No	No	No
19	1	115	1	76	No	No	No	No	No	No	No	No	No	No
20	1	63	1	42	No	No	No	No	No	No	No	No	No	No
21	1	38	1	25	No	No	No	No	No	No	No	No	No	No
22	1	12	1	8	No	No	No	No	No	No	No	No	No	No
23	1	12	1	8	No	No	No	No	No	No	No	No	No	No
24	1	12	1	8	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	11	13	13	15	15	13

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	2344:26
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	844
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	2116
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

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Signal Warrants Report For Intersection 14: Investment Blvd/Robert J Mathews Pkwy

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	80%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	424	476	177	40
2	411	462	172	39
3	403	452	168	38
4	377	424	158	36
5	335	376	140	32
6	331	371	138	31
7	326	367	136	31
8	297	333	124	28
9	293	328	122	28
10	288	324	120	27
11	250	281	104	24
12	233	262	97	22
13	229	257	96	22
14	170	190	71	16
15	170	190	71	16
16	119	133	50	11
17	68	76	28	6
18	68	76	28	6
19	38	43	16	4
20	21	24	9	2
21	13	14	5	1
22	4	5	2	0
23	4	5	2	0
24	4	5	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	900	1	177	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	873	1	172	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	855	1	168	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	801	1	158	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	711	1	140	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	702	1	138	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	693	1	136	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	630	1	124	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
9	1	621	1	122	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
10	1	612	1	120	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
11	1	531	1	104	No	No	No	Yes	No	No	Yes	Yes	No	No
12	1	495	1	97	No	No	No	Yes	No	No	No	Yes	No	No
13	1	486	1	96	No	No	No	Yes	No	No	No	Yes	No	No
14	1	360	1	71	No	No	No	No	No	No	No	No	No	No
15	1	360	1	71	No	No	No	No	No	No	No	No	No	No
16	1	252	1	50	No	No	No	No	No	No	No	No	No	No
17	1	144	1	28	No	No	No	No	No	No	No	No	No	No
18	1	144	1	28	No	No	No	No	No	No	No	No	No	No
19	1	81	1	16	No	No	No	No	No	No	No	No	No	No
20	1	45	1	9	No	No	No	No	No	No	No	No	No	No
21	1	27	1	5	No	No	No	No	No	No	No	No	No	No
22	1	9	1	2	No	No	No	No	No	No	No	No	No	No
23	1	9	1	2	No	No	No	No	No	No	No	No	No	No
24	1	9	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	10	13	4	10	11	13	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.7	11
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:43	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	177	40
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1117	1117
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Signal Warrants Report For Intersection 15: Golden Foothill Pkwy/Carson Crossing Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	224	433	213
2	217	420	207
3	213	411	202
4	199	385	190
5	177	342	168
6	175	338	166
7	172	333	164
8	157	303	149
9	155	299	147
10	152	294	145
11	132	255	126
12	123	238	117
13	121	234	115
14	90	173	85
15	90	173	85
16	63	121	60
17	36	69	34
18	36	69	34
19	20	39	19
20	11	22	11
21	7	13	6
22	2	4	2
23	2	4	2
24	2	4	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	657	2	213	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	2	637	2	207	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	2	624	2	202	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	584	2	190	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	519	2	168	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	513	2	166	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	505	2	164	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	460	2	149	No	No	Yes	Yes	No	No	No	No	No	No
9	2	454	2	147	No	No	Yes	Yes	No	No	No	No	No	No
10	2	446	2	145	No	No	Yes	Yes	No	No	No	No	No	No
11	2	387	2	126	No	No	No	Yes	No	No	No	No	No	No
12	2	361	2	117	No	No	No	Yes	No	No	No	No	No	No
13	2	355	2	115	No	No	No	Yes	No	No	No	No	No	No
14	2	263	2	85	No	No	No	No	No	No	No	No	No	No
15	2	263	2	85	No	No	No	No	No	No	No	No	No	No
16	2	184	2	60	No	No	No	No	No	No	No	No	No	No
17	2	105	2	34	No	No	No	No	No	No	No	No	No	No
18	2	105	2	34	No	No	No	No	No	No	No	No	No	No
19	2	59	2	19	No	No	No	No	No	No	No	No	No	No
20	2	33	2	11	No	No	No	No	No	No	No	No	No	No
21	2	20	2	6	No	No	No	No	No	No	No	No	No	No
22	2	6	2	2	No	No	No	No	No	No	No	No	No	No
23	2	6	2	2	No	No	No	No	No	No	No	No	No	No
24	2	6	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	0	2	7	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	18
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	213
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	870
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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Signal Warrants Report For Intersection 16: Carson Crossing Rd/Calypso Cir.

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	383	262	413
2	372	254	401
3	364	249	392
4	341	233	368
5	303	207	326
6	299	204	322
7	295	202	318
8	268	183	289
9	264	181	285
10	260	178	281
11	226	155	244
12	211	144	227
13	207	141	223
14	153	105	165
15	153	105	165
16	107	73	116
17	61	42	66
18	61	42	66
19	34	24	37
20	19	13	21
21	11	8	12
22	4	3	4
23	4	3	4
24	4	3	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	645	1	413	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	2	626	1	401	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
3	2	613	1	392	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
4	2	574	1	368	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
5	2	510	1	326	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	503	1	322	No	Yes	Yes	Yes	No	No	No	No	No	No
7	2	497	1	318	No	Yes	Yes	Yes	No	No	No	No	No	No
8	2	451	1	289	No	No	Yes	Yes	No	No	No	No	No	No
9	2	445	1	285	No	No	Yes	Yes	No	No	No	No	No	No
10	2	438	1	281	No	No	Yes	Yes	No	No	No	No	No	No
11	2	381	1	244	No	No	No	Yes	No	No	No	No	No	No
12	2	355	1	227	No	No	No	Yes	No	No	No	No	No	No
13	2	348	1	223	No	No	No	Yes	No	No	No	No	No	No
14	2	258	1	165	No	No	No	No	No	No	No	No	No	No
15	2	258	1	165	No	No	No	No	No	No	No	No	No	No
16	2	180	1	116	No	No	No	No	No	No	No	No	No	No
17	2	103	1	66	No	No	No	No	No	No	No	No	No	No
18	2	103	1	66	No	No	No	No	No	No	No	No	No	No
19	2	58	1	37	No	No	No	No	No	No	No	No	No	No
20	2	32	1	21	No	No	No	No	No	No	No	No	No	No
21	2	19	1	12	No	No	No	No	No	No	No	No	No	No
22	2	7	1	4	No	No	No	No	No	No	No	No	No	No
23	2	7	1	4	No	No	No	No	No	No	No	No	No	No
24	2	7	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	0	1	5	4	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	95.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	10:57
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	413
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1058
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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Signal Warrants Report For Intersection 17: Carson Crossing Rd/Four Seasons Dr

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	E
1	224	205	3
2	217	199	3
3	213	195	3
4	199	182	3
5	177	162	2
6	175	160	2
7	172	158	2
8	157	144	2
9	155	141	2
10	152	139	2
11	132	121	2
12	123	113	2
13	121	111	2
14	90	82	1
15	90	82	1
16	63	57	1
17	36	33	0
18	36	33	0
19	20	18	0
20	11	10	0
21	7	6	0
22	2	2	0
23	2	2	0
24	2	2	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	429	1	3	No	No	No	No	No	No	No	No	No	No
2	3	416	1	3	No	No	No	No	No	No	No	No	No	No
3	3	408	1	3	No	No	No	No	No	No	No	No	No	No
4	3	381	1	3	No	No	No	No	No	No	No	No	No	No
5	3	339	1	2	No	No	No	No	No	No	No	No	No	No
6	3	335	1	2	No	No	No	No	No	No	No	No	No	No
7	3	330	1	2	No	No	No	No	No	No	No	No	No	No
8	3	301	1	2	No	No	No	No	No	No	No	No	No	No
9	3	296	1	2	No	No	No	No	No	No	No	No	No	No
10	3	291	1	2	No	No	No	No	No	No	No	No	No	No
11	3	253	1	2	No	No	No	No	No	No	No	No	No	No
12	3	236	1	2	No	No	No	No	No	No	No	No	No	No
13	3	232	1	2	No	No	No	No	No	No	No	No	No	No
14	3	172	1	1	No	No	No	No	No	No	No	No	No	No
15	3	172	1	1	No	No	No	No	No	No	No	No	No	No
16	3	120	1	1	No	No	No	No	No	No	No	No	No	No
17	3	69	1	0	No	No	No	No	No	No	No	No	No	No
18	3	69	1	0	No	No	No	No	No	No	No	No	No	No
19	3	38	1	0	No	No	No	No	No	No	No	No	No	No
20	3	21	1	0	No	No	No	No	No	No	No	No	No	No
21	3	13	1	0	No	No	No	No	No	No	No	No	No	No
22	3	4	1	0	No	No	No	No	No	No	No	No	No	No
23	3	4	1	0	No	No	No	No	No	No	No	No	No	No
24	3	4	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	3
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	432
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 25: New Intersection

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	550	740	0
2	534	718	0
3	523	703	0
4	490	659	0
5	435	585	0
6	429	577	0
7	424	570	0
8	385	518	0
9	379	511	0
10	374	503	0
11	325	437	0
12	303	407	0
13	297	400	0
14	220	296	0
15	220	296	0
16	154	207	0
17	88	118	0
18	88	118	0
19	50	67	0
20	28	37	0
21	17	22	0
22	6	7	0
23	6	7	0
24	6	7	0

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Version 2024 (SP 0-5)

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	1290	1	0	No	No	No	No	No	No	No	No	No	No
2	1	1252	1	0	No	No	No	No	No	No	No	No	No	No
3	1	1226	1	0	No	No	No	No	No	No	No	No	No	No
4	1	1149	1	0	No	No	No	No	No	No	No	No	No	No
5	1	1020	1	0	No	No	No	No	No	No	No	No	No	No
6	1	1006	1	0	No	No	No	No	No	No	No	No	No	No
7	1	994	1	0	No	No	No	No	No	No	No	No	No	No
8	1	903	1	0	No	No	No	No	No	No	No	No	No	No
9	1	890	1	0	No	No	No	No	No	No	No	No	No	No
10	1	877	1	0	No	No	No	No	No	No	No	No	No	No
11	1	762	1	0	No	No	No	No	No	No	No	No	No	No
12	1	710	1	0	No	No	No	No	No	No	No	No	No	No
13	1	697	1	0	No	No	No	No	No	No	No	No	No	No
14	1	516	1	0	No	No	No	No	No	No	No	No	No	No
15	1	516	1	0	No	No	No	No	No	No	No	No	No	No
16	1	361	1	0	No	No	No	No	No	No	No	No	No	No
17	1	206	1	0	No	No	No	No	No	No	No	No	No	No
18	1	206	1	0	No	No	No	No	No	No	No	No	No	No
19	1	117	1	0	No	No	No	No	No	No	No	No	No	No
20	1	65	1	0	No	No	No	No	No	No	No	No	No	No
21	1	39	1	0	No	No	No	No	No	No	No	No	No	No
22	1	13	1	0	No	No	No	No	No	No	No	No	No	No
23	1	13	1	0	No	No	No	No	No	No	No	No	No	No
24	1	13	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	0
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1290
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 26: Latrobe/Wetsl-Oviatt

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	334	497	34
2	324	482	33
3	317	472	32
4	297	442	30
5	264	393	27
6	261	388	27
7	257	383	26
8	234	348	24
9	230	343	23
10	227	338	23
11	197	293	20
12	184	273	19
13	180	268	18
14	134	199	14
15	134	199	14
16	94	139	10
17	53	80	5
18	53	80	5
19	30	45	3
20	17	25	2
21	10	15	1
22	3	5	0
23	3	5	0
24	3	5	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	831	1	34	No	No	No	No	No	No	No	No	No	No
2	1	806	1	33	No	No	No	No	No	No	No	No	No	No
3	1	789	1	32	No	No	No	No	No	No	No	No	No	No
4	1	739	1	30	No	No	No	No	No	No	No	No	No	No
5	1	657	1	27	No	No	No	No	No	No	No	No	No	No
6	1	649	1	27	No	No	No	No	No	No	No	No	No	No
7	1	640	1	26	No	No	No	No	No	No	No	No	No	No
8	1	582	1	24	No	No	No	No	No	No	No	No	No	No
9	1	573	1	23	No	No	No	No	No	No	No	No	No	No
10	1	565	1	23	No	No	No	No	No	No	No	No	No	No
11	1	490	1	20	No	No	No	No	No	No	No	No	No	No
12	1	457	1	19	No	No	No	No	No	No	No	No	No	No
13	1	448	1	18	No	No	No	No	No	No	No	No	No	No
14	1	333	1	14	No	No	No	No	No	No	No	No	No	No
15	1	333	1	14	No	No	No	No	No	No	No	No	No	No
16	1	233	1	10	No	No	No	No	No	No	No	No	No	No
17	1	133	1	5	No	No	No	No	No	No	No	No	No	No
18	1	133	1	5	No	No	No	No	No	No	No	No	No	No
19	1	75	1	3	No	No	No	No	No	No	No	No	No	No
20	1	42	1	2	No	No	No	No	No	No	No	No	No	No
21	1	25	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	16.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	34
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	865
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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Signal Warrants Report For Intersection 27: Latrobe/S. Shingle

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	240	365	170	62
2	233	354	165	60
3	228	347	162	59
4	214	325	151	55
5	190	288	134	49
6	187	285	133	48
7	185	281	131	48
8	168	255	119	43
9	166	252	117	43
10	163	248	116	42
11	142	215	100	37
12	132	201	94	34
13	130	197	92	33
14	96	146	68	25
15	96	146	68	25
16	67	102	48	17
17	38	58	27	10
18	38	58	27	10
19	22	33	15	6
20	12	18	9	3
21	7	11	5	2
22	2	4	2	1
23	2	4	2	1
24	2	4	2	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	605	1	170	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	1	587	1	165	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	1	575	1	162	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
4	1	539	1	151	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
5	1	478	1	134	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
6	1	472	1	133	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
7	1	466	1	131	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	423	1	119	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	418	1	117	No	No	Yes	Yes	No	No	No	No	No	No
10	1	411	1	116	No	No	Yes	Yes	No	No	No	No	No	No
11	1	357	1	100	No	No	No	Yes	No	No	No	No	No	No
12	1	333	1	94	No	No	No	Yes	No	No	No	No	No	No
13	1	327	1	92	No	No	No	Yes	No	No	No	No	No	No
14	1	242	1	68	No	No	No	No	No	No	No	No	No	No
15	1	242	1	68	No	No	No	No	No	No	No	No	No	No
16	1	169	1	48	No	No	No	No	No	No	No	No	No	No
17	1	96	1	27	No	No	No	No	No	No	No	No	No	No
18	1	96	1	27	No	No	No	No	No	No	No	No	No	No
19	1	55	1	15	No	No	No	No	No	No	No	No	No	No
20	1	30	1	9	No	No	No	No	No	No	No	No	No	No
21	1	18	1	5	No	No	No	No	No	No	No	No	No	No
22	1	6	1	2	No	No	No	No	No	No	No	No	No	No
23	1	6	1	2	No	No	No	No	No	No	No	No	No	No
24	1	6	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	7	10	13	0	1	4	8	6	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.7	17.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:44	0:18
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	170	62
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	837	837
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
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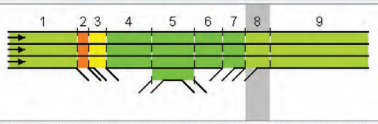
FREEVAL-2015e - Y:\Shared\Projects\P23160 Creekside Village II\Joint US50\FREEVAL\Eastbound\24 PM EB Cum plus Proj.seed

Project Analyze Edit View Settings Toolbox Help

Edit Seed Facility: Global Input | Fill Data
Managed Lanes: Turn On
Reliability Analysis (RL): Generate | Delete | Summary
ATDM Analysis: Configure | Delete | Summary

Single Seed/Scenario I/O | Compare | Result Contours | Analysis Period Summary | Segment & Facility Summary

Table Display Options: In & Out | GP Only
Analysis Period (A.P.) Control: A.P. 1/1 7:00 - 7:15 | First | Last | Jump To



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9
General Purpose Segme...	*	*	*	*	*	*	*	*	*
General Purpose Segme...	EDC to...	Lat Slip	Lat Loop	between	Lat to SC	EB US ...	SV Loop	SV Slip	EB US ...
General Purpose Segme...	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Segment Length (ft)	3,000	500	800	2,000	1,900	1,260	1,000	1,100	4,300
Lane Width (ft)	12	12	12	12	12	12	12	12	12
Lateral Clearance (ft)	10	10	10	10	10	10	4	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: Mainline	3	3	3	3	4	3	3	3	3
Mainline Dem. (vph)	5,138	5138	3418	2554	3528	2925	3226	4465	4465
Mainline Single Unit Truc...	2.00	2.00	2.00	2.00	1.72	1.67	1.70	1.78	1.78
Mainline Tractor Trailer (...	0.00	0.00	0.00	0.00	0.28	0.33	0.30	0.22	0.22
Seed Capacity Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Entering Dem. Adj....	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit Dem. Adj. Fac.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free Flow Speed ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver Pop. Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec Lane Length (ft)		0	0				500	1,100	
ONR Side					Right		Right	Right	
# Lanes: ONR					1		1	1	
ONR Queue Capacity (v...					50		50	50	
ONR Free Flow Speed (...					45		45	45	
ONR/Entering Dem. (vph)					974		301	1,239	
ONR Single Unit Truck a...					1.00		2.00	2.00	
ONR Tractor Trailer (%)					1.00		0.00	0.00	
ONR Metering Type					None		Fixed	Fixed	
ONR Metering Fixed Rat...							2,100	2,100	
OFR Side		Right	Right		Right				
# Lanes: OFR		1	1		2				
OFR Free Flow Speed (...		45	45		45				
OFR/Exit Dem. (vph)		1,720	864		603				
OFR Single Unit Truck a...		2.00	2.00		2.00				
OFR Tractor Trailer (%)		0.00	0.00		0.00				
Weave Segment Ls (ft)					1,500				
Weave Segment LCRF					1				
Weave Segment LCFR					0				
Weave Segment LCRR					0				
Weave Segment NW					2				
Ramp to Ramp Dem. (vph)					0				
Processed Segment Type	Basic	Off Ramp	Off Ramp	Basic	Weaving	Basic	On Ramp	On Ramp	Basic
Speed (mph)	68.8	64.4	67.4	74.2	63.1	74.1	67.5	66.3	72.0
Total Density (veh/mi/ln)	24.9	26.6	16.9	11.4	14.0	13.0	15.9	22.4	20.7
Total Density (pc/mi/ln)	25.4	27.1	17.2	11.6	14.3	13.3	16.3	22.9	21.1
Influence Area Density (...		37.4	33.9				18.4	23.5	
Adjusted Capacity (vph)	7,059	7,059	7,059	7,059	5,264	7,059	7,059	7,059	7,059
Adjusted Mainline Dem. ...	5,138	5,138	3,418	2,554	3,528	2,925	3,226	4,465	4,465
D/C	0.73	0.73	0.48	0.36	0.67	0.41	0.46	0.63	0.63
Mainline Volume Served ...	5,138	5,138	3,418	2,554	3,528	2,925	3,226	4,465	4,465
V/C	0.73	0.73	0.48	0.36	0.67	0.41	0.46	0.63	0.63
Adjusted ONR Dem. (vph)					974		301	1,239	
ONR Capacity (vph)					2,059		2,059	2,059	
ONR Volume Served (vph)					974		301	1,239	
ONR Avg RM Rate (vph)									
ONR Time RM Active (min)					0.00		0.00	0.00	
Adjusted OFR Dem. (vph)		1,720	864		603				
OFR Capacity (vph)		2,059	2,059		4,118				
OFR Volume Served (vph)		1,720	864		603				
Density Based LOS	C	E	D	B	B	B	B	C	C
Dem. Based LOS									
Mainline Queue Length (ft)									
Mainline Queue Length (...									
ONR Queue (veh)									
Actual Travel Time (min)	0.50	0.09	0.13	0.31	0.34	0.19	0.17	0.19	0.68
FFS Travel Time (min)	0.45	0.08	0.12	0.30	0.29	0.19	0.15	0.17	0.65
Mainline Delay (min)	0.04	0.01	0.01	0.00	0.05	0.00	0.02	0.02	0.03
VMTD (veh-miles / interval)	730	122	129	242	317	175	153	233	909
VMTV (veh-miles / interval)	730	122	129	242	317	175	153	233	909
PMTD (p-miles / interval)	730	122	129	242	317	175	153	233	909
PMTV (p-miles / interval)	730	122	129	242	317	175	153	233	909
VHT (travel / interval (hrs))	10.60	1.89	1.92	3.26	5.03	2.36	2.26	3.51	12.62
VHD-M (delay / interval (...	0.87	0.27	0.19	0.03	0.80	0.03	0.23	0.40	0.50
VHD-R (delay / interval (...					0.00		0.00	0.00	
VHD-Access (delay / int...									
VHD-MDE (delay / interv...	0.00								
VHD (delay / interval (hrs))	0.87	0.27	0.19	0.03	0.80	0.03	0.23	0.40	0.50
Space Mean Speed (mph)	68.8	64.4	67.4	74.2	63.1	74.1	67.5	66.3	72.0
Travel Time Index	1.09	1.17	1.11	1.01	1.19	1.01	1.11	1.13	1.04

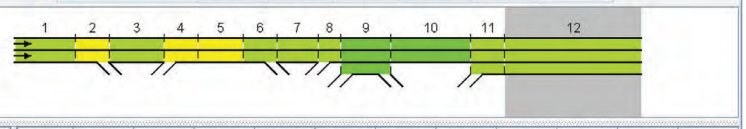
FREEVAL-2015e - Y:\Shared\Projects\P23160 Creekside Village II\Joint US50\FREEVAL\Existing 2023\12 PM WB 2040 plus Proj 20240216.seed

Project Analyze Edit View Settings Toolbox Help

Edit Seed Facility: Global Input | Fill Data
Managed Lanes: Turn On
Reliability Analysis (RL): Generate | Delete | Summary
ATDM Analysis: Configure | Delete | Summary

Single Seed/Scenario I/O | Compare | Result Contours | Analysis Period Summary | Segment & Facility Summary

Table Display Options: In & Out | GP Only
Analysis Period (A.P.) Control: A.P. 1/1 7:45 - 8:00 | First | Last | Jump To



Segment	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Seg. 7	Seg. 8	Seg. 9	Seg. 10	Seg. 11	Seg. 12
General Pur...	*	*	*	*	*	*	*	*	*	*	*	*
General Pur...	Cam to ...	BL Off	between	BL On	BL to SV	SV Off	between	SV Loop	SV-Lat	between	Lat On	Lat to E...
General Pur...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Segment Le...	2,640	1,500	2,400	1,500	2,000	1,500	1,800	1,000	2,200	3,500	1,500	6,000
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Lateral Clea...	10	10	10	10	10	10	10	10	10	10	10	10
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC E...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
# of Lanes: ...	2	2	2	2	2	2	2	2	3	2	3	3
Mainline De...	3,424	3424	3151	3645	3645	3645	2628	2780	3034	2178	4184	4184
Mainline Sin...	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Mainline Tra...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seed Capac...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Enteri...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Exit D...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Free F...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Seed Driver ...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Acc/Dec La...		500		500		1,400		500			1,000	
ONR Side				Right				Right	Right		Right	
# Lanes: ONR				1				1	1		2	
ONR Queue ...				50				50	50		50	
ONR Free Fl...				45				45	45		45	
ONR/Enterin...				494				152	254		2,006	
ONR Single ...				2.00				2.00	2.00		2.00	
ONR Tractor...				0.00				0.00	0.00		0.00	
ONR Meteri...				Fixed				None	Fixed		Fixed	
ONR Meteri...				2,100					2,100		2,100	
OFR Side		Right				Right			Right			
# Lanes: OFR		1				2			2			
OFR Free Fl...		45				45			45			
OFR/Exit De...		273				1,017			856			
OFR Single ...		2.00				2.00			2.00			
OFR Tractor...		0.00				0.00			0.00			
Weave Seg...									1,500			
Weave Seg...									1			
Weave Seg...									0			
Weave Seg...									0			
Weave Seg...									0			
Ramp to Ra...									0			
Processed ...	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Weaving	Basic	On Ramp	Basic
Speed (mph)	68.8	64.3	70.9	60.6	66.8	62.1	73.7	63.7	67.4	74.9	65.7	73.0
Total Densit...	24.9	29.2	22.2	30.5	27.3	23.2	17.8	23.9	15.0	14.5	21.2	19.1
Total Densit...	25.4	29.8	22.7	31.1	27.8	23.6	18.2	24.4	15.3	14.8	21.6	19.5
Influence Ar...		29.8		31.1		23.6		24.4			24.1	
Adjusted Ca...	4,706	4,706	4,706	4,706	4,706	4,706	4,706	4,706	5,274	4,706	7,059	7,059
Adjusted Ma...	3,424	3,424	3,151	3,645	3,645	3,645	2,628	2,780	3,034	2,178	4,184	4,184
D/C	0.73	0.73	0.67	0.77	0.77	0.77	0.56	0.59	0.58	0.46	0.59	0.59
Mainline Vol...	3,424	3,424	3,151	3,645	3,645	3,645	2,628	2,780	3,034	2,178	4,184	4,184
V/C	0.73	0.73	0.67	0.77	0.77	0.77	0.56	0.59	0.58	0.46	0.59	0.59
Adjusted ON...				494				152	254		2,006	
ONR Capaci...				2,059				2,059	2,059		4,118	
ONR Volum...				494				152	254		2,006	
ONR Avg R...												
ONR Time R...				0.00				0.00	0.00		0.00	
Adjusted OF...		273				1,017			856			
OFR Capaci...		2,059				4,118			4,118			
OFR Volume...		273				1,017			856			
Density Bas...	C	D	C	D	D	C	C	C	B	B	C	C
Dem. Based...												
Mainline Qu...												
Mainline Qu...												
ONR Queue ...												
Actual Trave...	0.44	0.26	0.38	0.28	0.34	0.27	0.28	0.18	0.37	0.53	0.26	0.93
FFS Travel ...	0.40	0.23	0.36	0.23	0.30	0.23	0.27	0.15	0.33	0.53	0.23	0.91
Mainline Del...	0.04	0.04	0.02	0.05	0.04	0.05	0.00	0.03	0.04	0.00	0.03	0.02
VMTD (veh-...	428	243	358	259	345	259	224	132	316	361	297	1,189
VMTV (veh-...	428	243	358	259	345	259	224	132	316	361	297	1,189
PMTD (p-mil...	428	243	358	259	345	259	224	132	316	361	297	1,189
PMTV (p-mil...	428	243	358	259	345	259	224	132	316	361	297	1,189
VHT (travel /...	6.22	3.78	5.05	4.27	5.16	4.17	3.04	2.07	4.69	4.82	4.52	16.28
VHD-M (del...	0.51	0.54	0.27	0.82	0.56	0.72	0.05	0.31	0.48	0.01	0.56	0.43
VHD-R (dela...				0.00				0.00	0.00		0.00	
VHD-Acces...												
VHD-MDE (...	0.00											
VHD (delay ...	0.51	0.54	0.27	0.82	0.56	0.72	0.05	0.31	0.48	0.01	0.56	0.43
Space Mean...	68.8	64.3	70.9	60.6	66.8	62.1	73.7	63.7	67.4	74.9	65.7	73.0
Travel Time ...	1.09	1.17	1.06	1.24	1.12	1.21	1.02	1.18	1.11	1.00	1.14	1.03

Cumulative AM plus abated Project

Generated with PTV VISTRO Report File: Y:\...\2040 AM Abated 10,12.pdf
Version 2024 (SP 0-5)

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.815

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	160.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	122	582	265	358	277	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	44	0	0	155	21	0
Site-Generated Trips [veh/h]	-40	171	104	-240	-72	-12
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	82	0	29
Total Hourly Volume [veh/h]	126	753	369	191	226	68
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	209	103	53	63	19
Total Analysis Volume [veh/h]	140	837	410	212	251	76
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	86
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	12	56	40	0	20	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	16	62	46	0	24	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

GPA20-0001, Z20-0005, SP20-0001, TM20-0002
Creekside Village Specific Plan - Reduced Impact Alternative
Exhibit O - Draft Environmental Impact Report Appendices Pt. 3
25-1836 D.3 Page 4570 of 4853

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Calculated Cycle Length [s]	36	36	36	36	36	36
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	4	20	12	12	6	6
g / C, Green / Cycle	0.11	0.56	0.34	0.34	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.08	0.45	0.22	0.13	0.09	0.09
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1684
c, Capacity [veh/h]	188	1049	643	547	286	271
d1, Uniform Delay [s]	15.60	6.27	9.91	8.92	13.98	13.99
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.18	2.04	1.50	0.64	1.90	2.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.80	0.64	0.39	0.59	0.59
d, Delay for Lane Group [s/veh]	17.78	8.30	11.40	9.56	15.88	16.02
Lane Group LOS	B	A	B	A	B	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.86	1.13	1.59	0.71	1.16	1.12
50th-Percentile Queue Length [ft/ln]	21.41	28.24	39.73	17.82	29.11	27.93
95th-Percentile Queue Length [veh/ln]	1.54	2.03	2.86	1.28	2.10	2.01
95th-Percentile Queue Length [ft/ln]	38.53	50.83	71.51	32.07	52.39	50.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.78	8.30	11.40	9.56	15.93	16.02
Movement LOS	B	A	B	A	B	B
d_A, Approach Delay [s/veh]	9.66		10.78		15.95	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	11.09					
Intersection LOS	B					
Intersection V/C	0.815					

Emissions

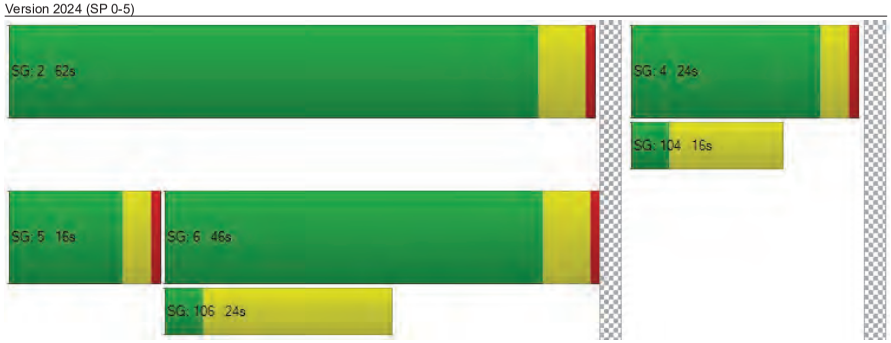
Vehicle Miles Traveled [mph]	17.27	103.27	236.78	122.44	39.37	37.44
Stops [stops/h]	86.00	113.44	159.59	71.57	116.93	112.20
Fuel consumption [US gal/h]	2.68	6.98	11.84	5.84	2.81	2.68
CO [g/h]	187.46	487.62	827.38	408.06	196.29	187.39
NOx [g/h]	36.47	94.87	160.98	79.39	38.19	36.46
VOC [g/h]	43.44	113.01	191.75	94.57	45.49	43.43

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	10.82	0.00	10.82
l_p,int, Pedestrian LOS Score for Intersectio	2.782	0.000	2.191
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3125	2232	1116
d_b, Bicycle Delay [s]	5.67	0.24	3.50
l_b,int, Bicycle LOS Score for Intersection	3.172	2.721	2.147
Bicycle LOS	C	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.815

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	422	48	74	286	0	0	0	0	12	0	250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	-25	0	0	-4	64	153	2	17	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	31	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	14	0	0	0	0	0	0	0	14
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	397	48	88	282	95	153	2	17	12	1	264
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	107	13	24	76	26	41	1	5	3	0	71
Total Analysis Volume [veh/h]	12	427	52	95	303	102	165	2	18	13	1	284
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Calculated Cycle Length [s]	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	22	5	26	10	16
g / C, Green / Cycle	0.01	0.32	0.07	0.38	0.14	0.24
(v / s)_i Volume / Saturation Flow Rate	0.01	0.29	0.06	0.25	0.12	0.21
s, saturation flow rate [veh/h]	1603	1651	1603	1611	1585	1438
c, Capacity [veh/h]	24	523	120	606	225	339
d1, Uniform Delay [s]	33.87	22.80	31.52	18.00	28.86	25.54
k, delay calibration	0.04	0.16	0.04	0.08	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.83	9.52	4.38	0.96	2.83	2.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.92	0.79	0.67	0.82	0.88
d, Delay for Lane Group [s/veh]	39.70	32.32	35.90	18.96	31.69	28.50
Lane Group LOS	D	C	D	B	C	C
Critical Lane Group	No	Yes	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.22	7.52	1.53	4.47	3.02	4.71
50th-Percentile Queue Length [ft/ln]	5.47	188.10	38.33	111.63	75.56	117.78
95th-Percentile Queue Length [veh/ln]	0.39	12.02	2.76	7.93	5.44	8.27
95th-Percentile Queue Length [ft/ln]	9.85	300.56	69.00	198.26	136.00	206.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.70	32.32	32.32	35.90	18.96	18.96	31.69	31.69	31.69	28.50	28.50	28.50
Movement LOS	D	C	C	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	32.50			22.18			31.69			28.50		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.09											
Intersection LOS	C											
Intersection V/C	0.815											

Emissions

Vehicle Miles Traveled [mph]	4.07	162.50	9.63	41.06	10.06	251.57
Stops [stops/h]	11.41	392.00	79.89	232.63	157.46	245.45
Fuel consumption [US gal/h]	0.45	15.87	2.50	7.26	2.48	13.44
CO [g/h]	31.11	1109.15	174.75	507.26	173.17	939.50
NOx [g/h]	6.05	215.80	34.00	98.69	33.69	182.79
VOC [g/h]	7.21	257.06	40.50	117.56	40.13	217.74

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	868	868	868	868
d_b, Bicycle Delay [s]	11.06	11.06	11.06	11.06
l_b,int, Bicycle LOS Score for Intersection	2.370	2.385	1.865	2.051
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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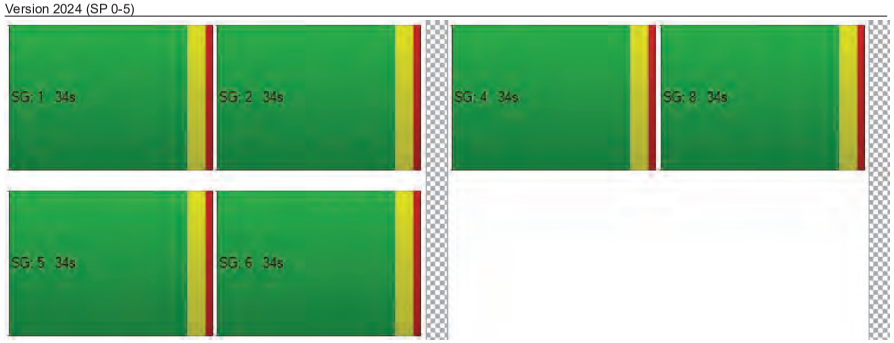

Cumulative PM plus abated Project

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	160.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	300.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	171	325	456	129	410	157
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	47	209	0
Site-Generated Trips [veh/h]	-19	136	195	-125	-239	-37
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	15	0	36
Total Hourly Volume [veh/h]	152	461	651	36	380	84
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	128	181	11	120	23
Total Analysis Volume [veh/h]	169	512	723	46	481	93
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	46	94	44	0	60	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0	0	4	0	4	0
Pedestrian Clearance [s]	0	0	20	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	50	100	50	0	64	0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Calculated Cycle Length [s]	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	8	40	28	28	14	14
g / C, Green / Cycle	0.12	0.63	0.44	0.44	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.09	0.27	0.39	0.03	0.16	0.16
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1713
c, Capacity [veh/h]	215	1175	832	707	381	366
d1, Uniform Delay [s]	27.12	6.03	15.96	10.08	23.47	23.48
k, delay calibration	0.04	0.15	0.16	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.40	0.36	4.34	0.05	3.26	3.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.44	0.87	0.07	0.77	0.77
d, Delay for Lane Group [s/veh]	29.53	6.40	20.29	10.13	26.74	26.89
Lane Group LOS	C	A	C	B	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.28	1.90	7.79	0.28	4.18	4.04
50th-Percentile Queue Length [ft/ln]	57.12	47.45	194.78	7.09	104.52	101.01
95th-Percentile Queue Length [veh/ln]	4.11	3.42	12.37	0.51	7.53	7.27
95th-Percentile Queue Length [ft/ln]	102.81	85.41	309.22	12.76	188.13	181.82

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.53	6.40	20.29	10.13	26.80	26.89
Movement LOS	C	A	C	B	C	C
d_A, Approach Delay [s/veh]	12.14		19.69		26.81	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	19.17					
Intersection LOS	B					
Intersection V/C	0.797					

Emissions

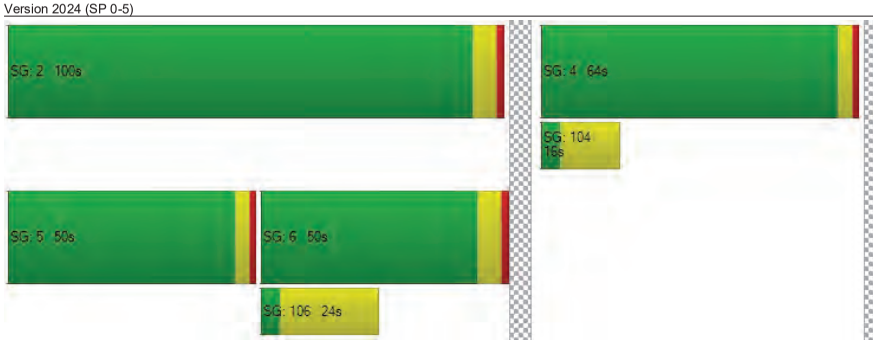
Vehicle Miles Traveled [mph]	20.85	63.17	417.55	26.57	68.68	66.13
Stops [stops/h]	129.72	107.77	442.37	16.10	237.37	229.41
Fuel consumption [US gal/h]	4.12	4.78	25.17	1.28	5.73	5.53
CO [g/h]	288.17	334.22	1759.42	89.65	400.54	386.59
NOx [g/h]	56.07	65.03	342.32	17.44	77.93	75.22
VOC [g/h]	66.79	77.46	407.76	20.78	92.83	89.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.21	0.00	24.21
l_p,int, Pedestrian LOS Score for Intersectio	2.839	0.000	2.250
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2965	1388	1893
d_b, Bicycle Delay [s]	7.38	2.97	0.09
l_b,int, Bicycle LOS Score for Intersection	2.683	2.853	2.566
Bicycle LOS	B	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 12: Latrobe Rd/Royal Oaks Dr

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	320.00	100.00	100.00	320.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Latrobe Rd			Latrobe Rd						Royal Oaks Dr		
Base Volume Input [veh/h]	0	334	21	144	446	0	0	0	0	59	0	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	-9	0	0	-21	161	121	0	14	0	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	10	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	325	21	144	425	171	121	0	14	59	2	104
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	87	6	39	114	46	33	0	4	16	1	28
Total Analysis Volume [veh/h]	22	349	23	155	457	184	130	0	15	63	2	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	18	0	0	14	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
Advanced Detector Location [ft]	245.0	245.0	0.0	245.0	245.0	0.0	0.0	245.0	0.0	0.0	245.0	0.0
Advanced Detector Length [ft]	6.0	6.0	0.0	6.0	6.0	0.0	0.0	6.0	0.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	9	0	9	9	0	0	9	0	0	9	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Vehicle Extension [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Calculated Cycle Length [s]	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	19	7	24	7	8
g / C, Green / Cycle	0.03	0.33	0.12	0.43	0.12	0.15
(v / s)_i Volume / Saturation Flow Rate	0.01	0.22	0.10	0.40	0.09	0.12
s, saturation flow rate [veh/h]	1603	1665	1603	1602	1583	1490
c, Capacity [veh/h]	42	556	195	688	183	218
d1, Uniform Delay [s]	27.20	16.16	24.16	15.35	24.36	23.40
k, delay calibration	0.04	0.04	0.04	0.23	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.78	0.52	2.79	11.90	2.94	2.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.67	0.80	0.93	0.79	0.81
d, Delay for Lane Group [s/veh]	30.99	16.69	26.95	27.25	27.30	26.18
Lane Group LOS	C	B	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.29	3.16	1.82	7.54	1.90	2.28
50th-Percentile Queue Length [ft/ln]	7.37	78.90	45.59	188.41	47.55	56.92
95th-Percentile Queue Length [veh/ln]	0.53	5.68	3.28	12.04	3.42	4.10
95th-Percentile Queue Length [ft/ln]	13.26	142.03	82.07	300.97	85.59	102.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.99	16.69	16.69	26.95	27.25	27.25	27.30	27.30	27.30	26.18	26.18	26.18
Movement LOS	C	B	B	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	17.48			27.19			27.30			26.18		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	24.55											
Intersection LOS	C											
Intersection V/C	0.793											

Emissions

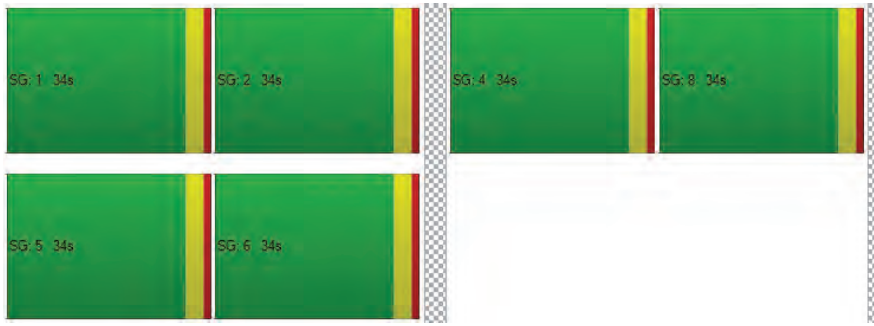
Vehicle Miles Traveled [mph]	7.46	126.15	15.73	65.03	7.89	149.43
Stops [stops/h]	18.80	201.41	116.38	480.93	121.37	145.31
Fuel consumption [US gal/h]	0.74	9.22	3.54	14.66	1.80	7.90
CO [g/h]	51.55	644.77	247.30	1024.94	125.89	552.01
NOx [g/h]	10.03	125.45	48.11	199.42	24.49	107.40
VOC [g/h]	11.95	149.43	57.31	237.54	29.18	127.93

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1064	1064	1064	1064
d_b, Bicycle Delay [s]	6.18	6.18	6.18	6.18
l_b,int, Bicycle LOS Score for Intersection	2.210	2.873	1.799	1.852
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Appendix C: Travel Demand Model Plots

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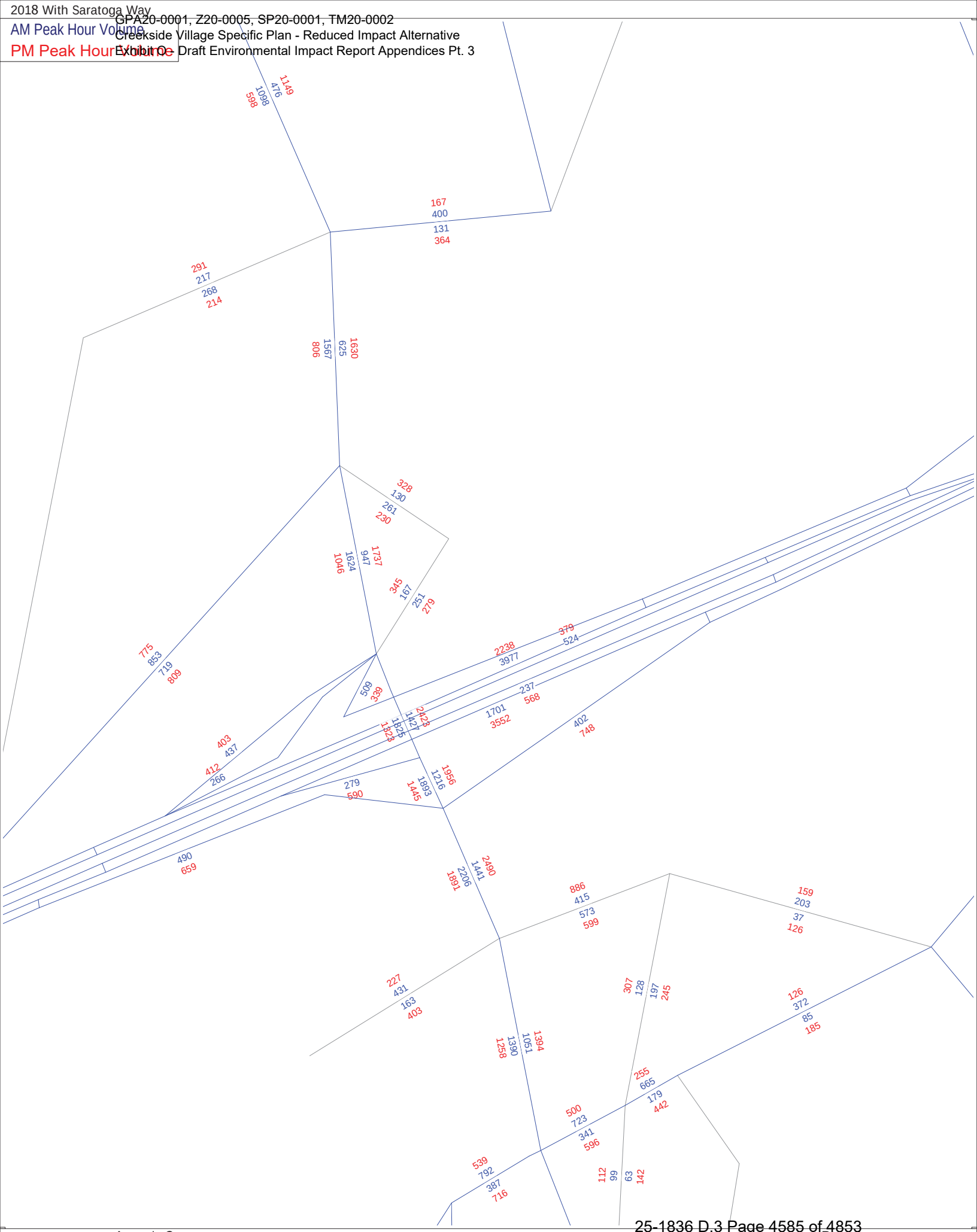

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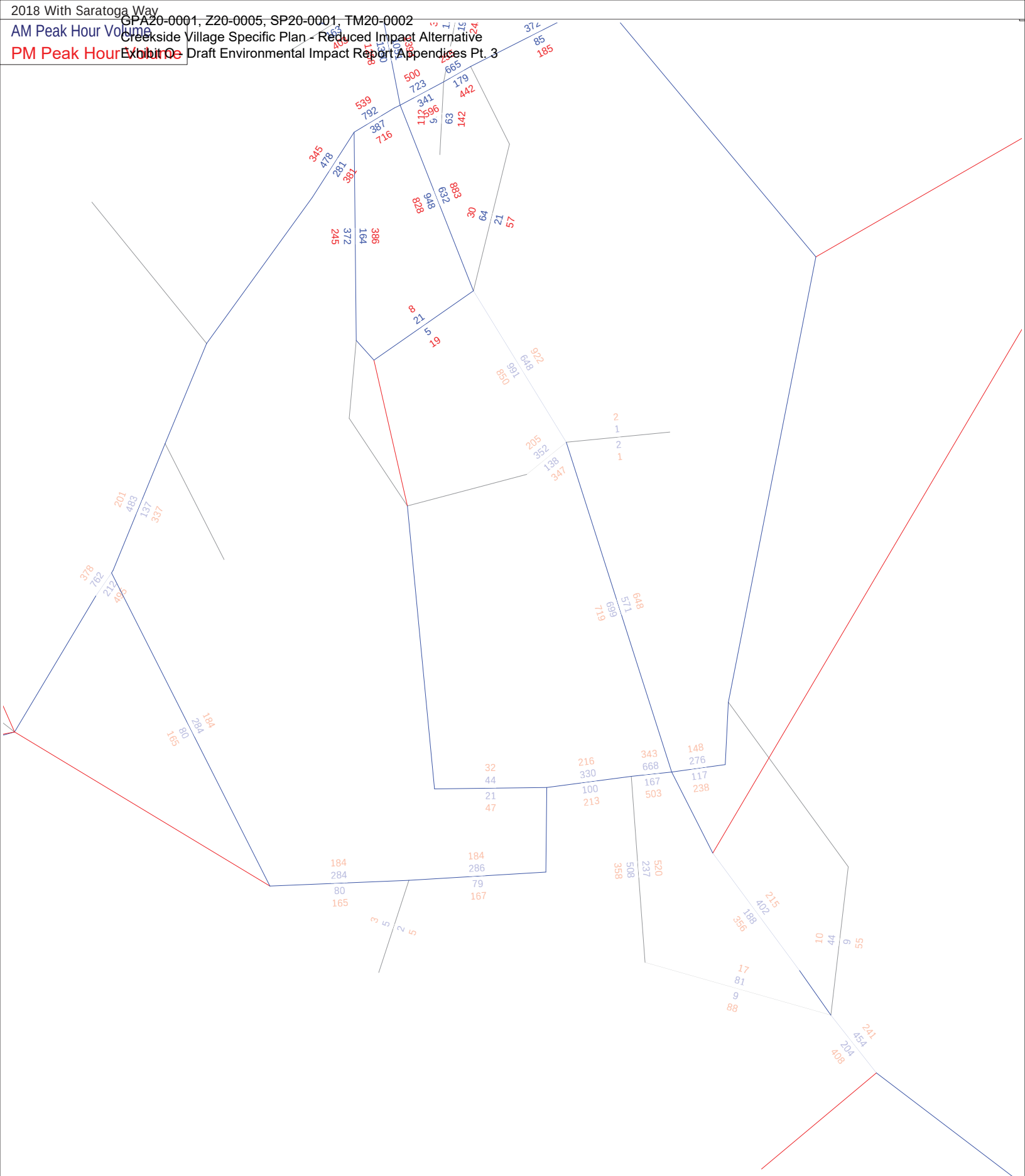

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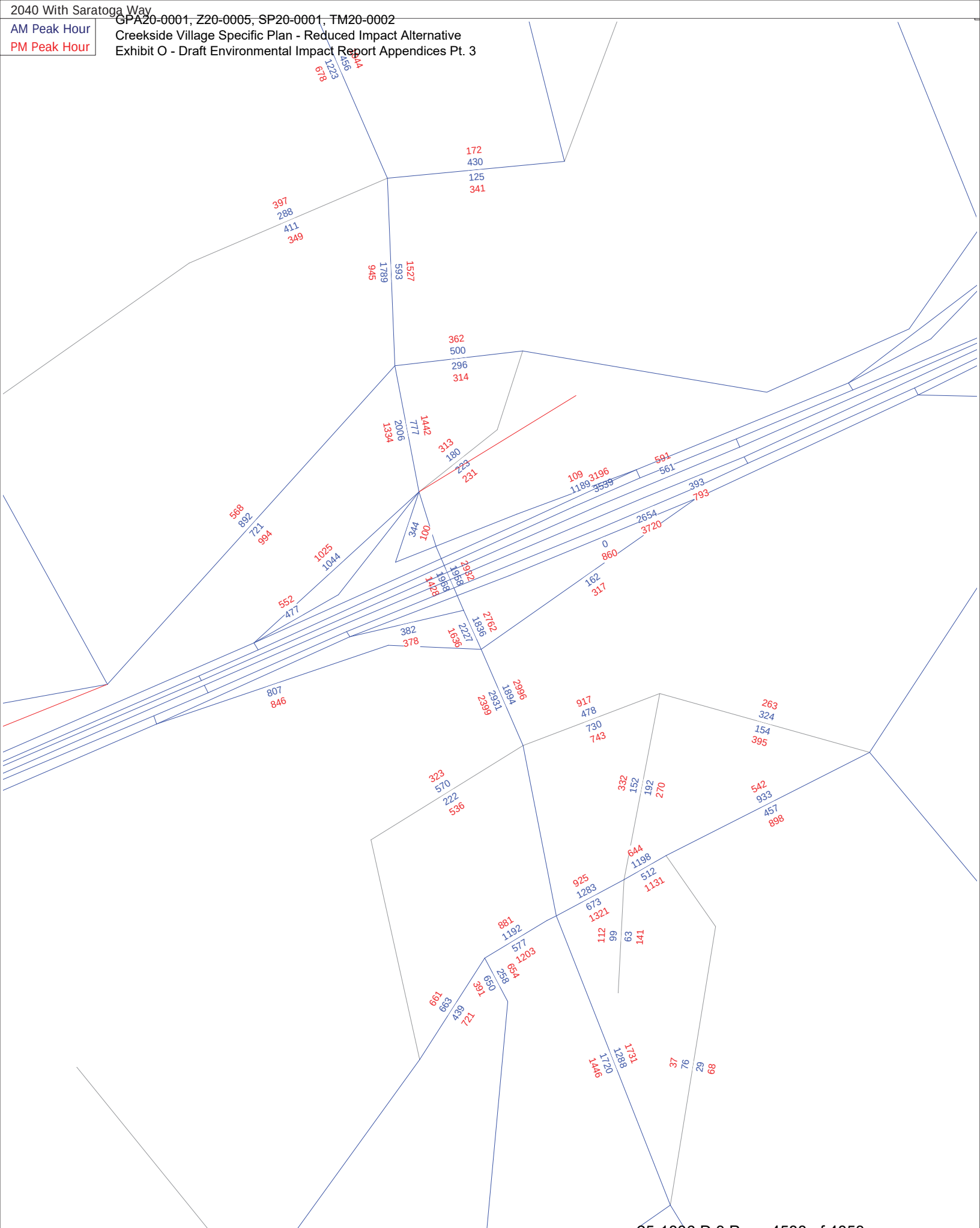

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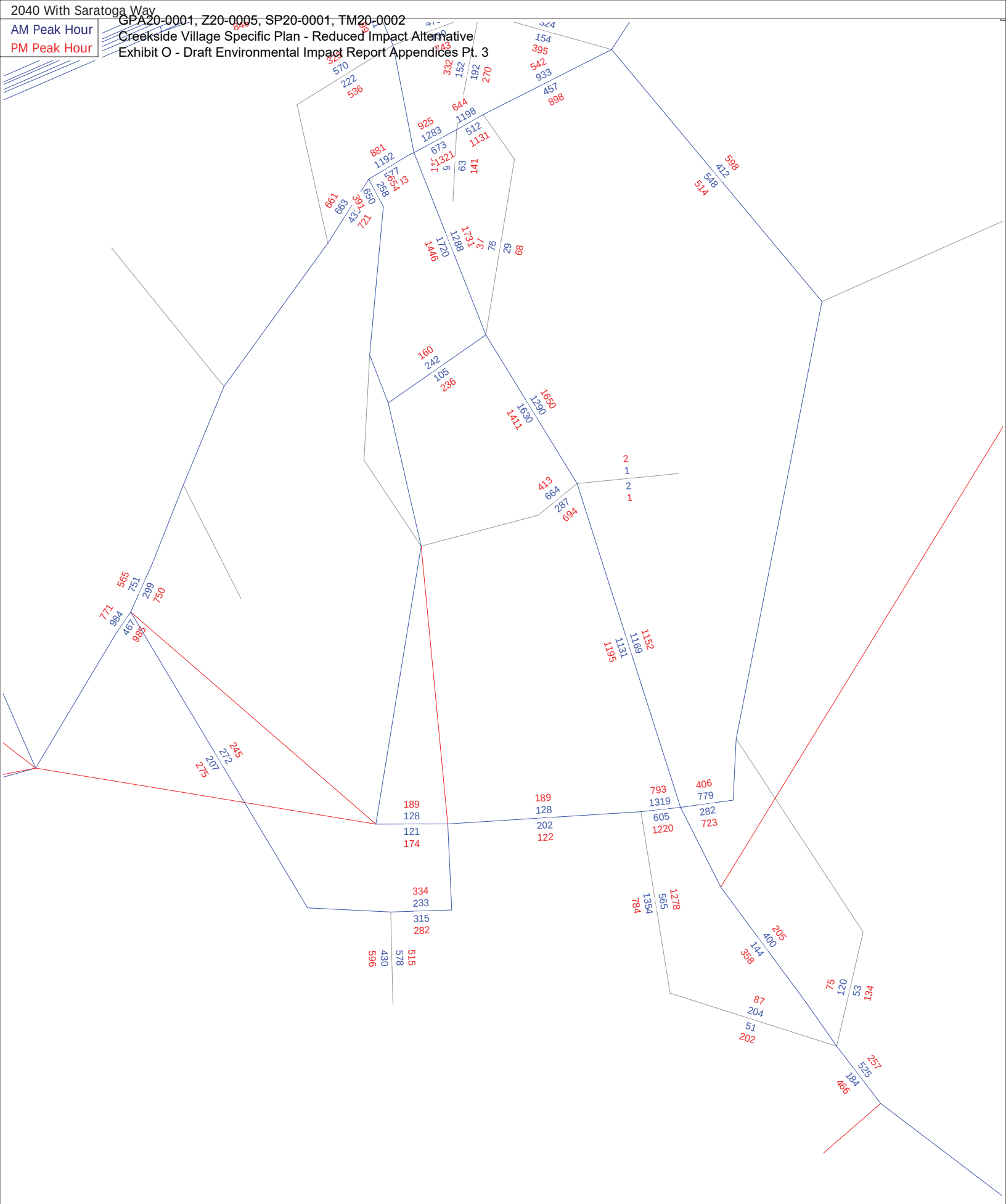

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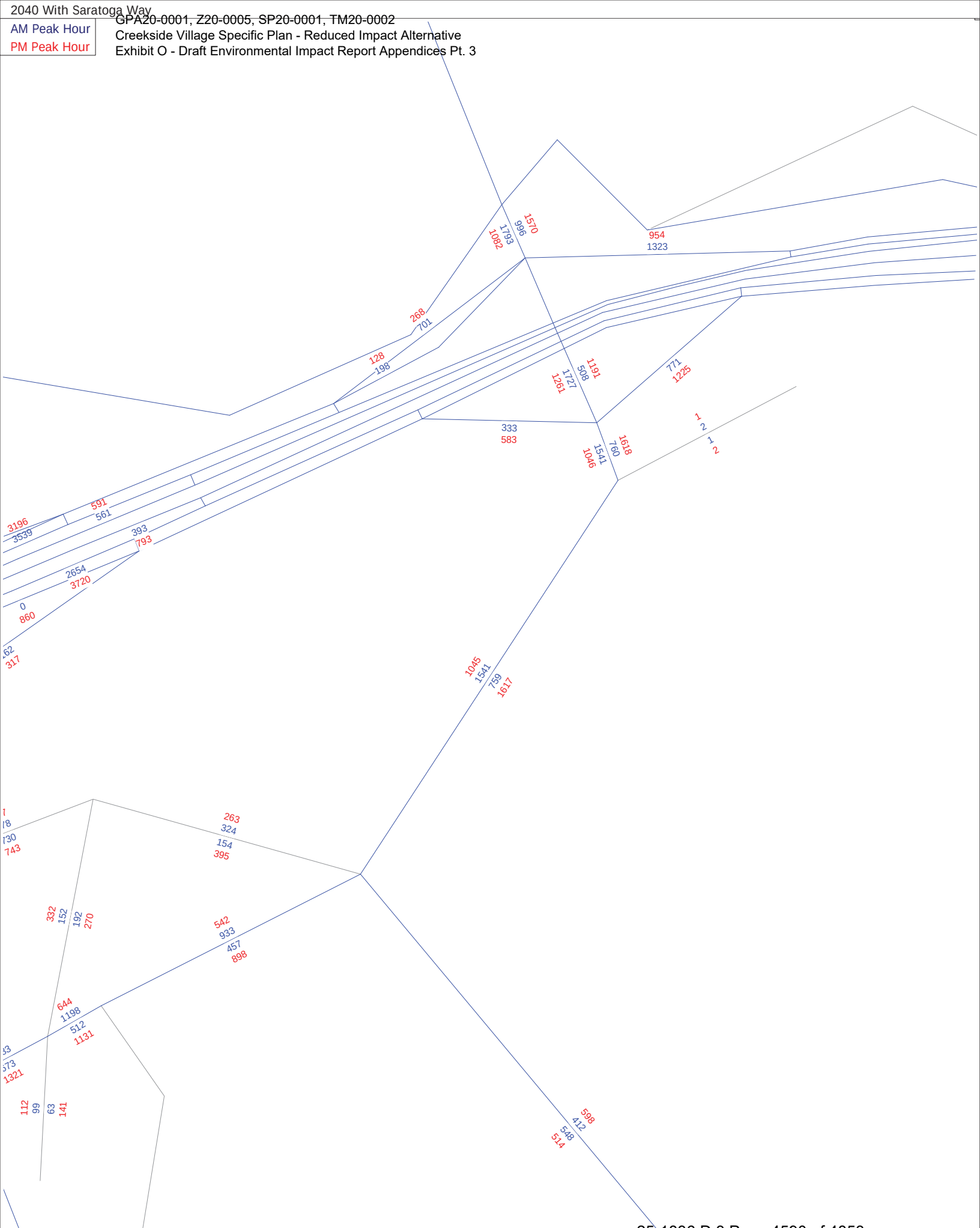

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Appendix D: NCHRP 255 Calculations

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INTERSECTIONNUMBER	NLA	NLD	ELA	ELD	SLA	SLD	WLA	WLD
1	1723	918	511	270	1200	2146	214	314
2	2145	1199	106	305	1483	2301	875	804
3	2302	1484	293	299	2492	2247	1164	2221
4	2247	2492	528	980	2424	2782	1055	0
5	2782	2424	635	733	2104	2060	109	413
6	2060	2104	757	588	1774	1919	738	718
7	1919	1774	24	24	1577	1452	237	507
8	1452	1577	0	0	1542	1157	100	360
9	1157	1542	565	256	821	527	480	698
10	527	821	0	0	587	309	317	301
11	309	587	39	14	548	295	0	0
12	295	548	171	73	419	264	0	0
13	0	0	698	480	328	561	210	195
14	486	87	297	102	104	668	11	41
15	0	0	195	190	139	80	95	159
16	0	0	116	121	88	96	109	96
17	124	85	36	20	77	132	0	0
18	491	311	83	124	317	512	75	19
19	718	738	242	447	664	439	0	0
20	317	356	765	565	84	76	588	757
21	237	528	1077	605	401	382	565	765
22	730	610	4	4	605	1077	358	6
23	917	471	0	0	610	730	189	515
24	813	562	863	0	471	917	0	668
25	295	548	0	0	548	295	0	0
26	264	419	0	0	415	226	4	38
27	188	320	147	165	285	164	116	87
501	1188	1824	356	453	2258	1434	107	198
502	1430	2254	437	280	2133	1652	933	747
503	1657	2138	469	486	2978	1718	726	1488
504	1718	2978	854	926	2733	2884	1483	0
505	2884	2733	701	780	2058	1961	399	568
506	1961	2058	751	941	1950	1805	771	629
507	1805	1950	24	62	1327	1387	653	410
508	1387	1327	0	0	1179	1320	257	176
509	1320	1179	258	369	694	485	638	877
510	485	694	0	0	429	524	457	153
511	524	429	51	25	380	501	0	0
512	501	380	95	110	327	433	0	0
513	0	0	877	638	584	747	223	299
514	366	256	272	107	284	549	58	68
515	0	0	299	223	130	211	245	240
516	0	0	211	130	55	75	125	186
517	152	177	3	39	186	125	0	0
518	474	442	177	152	498	568	29	16
519	629	771	477	249	603	689	0	0
520	429	399	720	899	112	153	941	751
521	388	285	975	1151	408	517	902	720

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522 643 1146 1 0 1151 975 336 10
523 787 1033 0 0 1146 643 566 823
524 589 1079 604 0 1033 787 0 360
525 501 380 0 0 380 501 0 0
526 461 327 0 0 300 441 27 20
527 362 274 136 140 250 334 44 44

| Turning Movement Volumes Report | 01:34p Aug 31, 2023 |

Counts Data

Node	Southbound R	Southbound T	Southbound L	Westbound R	Westbound T	Westbound L	Northbound R	Northbound T	Northbound L	Eastbound R	Eastbound T	Eastbound L
1	40	1615	68	108	57	346	191	792	217	185	11	18
2	391	1608	146	82	13	11	98	985	400	682	61	132
3	948	1285	69	55	92	146	138	1173	1181	816	92	256
4	0	1727	520	528	0	0	460	1964	0	1055	0	0
5	322	1970	490	535	30	70	235	1808	61	20	8	81
6	407	1561	92	232	227	298	173	1517	84	60	323	355
7	462	1439	18	14	7	3	2	1537	38	10	4	223
8	300	1152	0	0	0	0	0	1482	60	5	0	95
9	563	386	208	395	94	76	7	773	41	65	41	374
10	273	254	0	0	0	0	0	559	28	55	0	262
11	0	295	14	39	0	0	0	548	0	0	0	0
12	0	254	41	161	0	10	32	387	0	0	0	0
13	0	0	0	0	182	516	315	0	13	45	165	0
14	13	443	30	46	26	225	63	39	2	0	9	2
15	0	0	0	0	128	67	108	0	31	13	82	0
16	0	0	0	0	51	65	43	0	45	31	78	0
17	0	114	10	18	0	18	10	67	0	0	0	0
18	15	439	37	18	0	65	86	227	4	8	1	66
19	0	386	332		189	53	115	549	0	0	0	0
20	192	11	114	204	508	53	20	7	57	12	431	145
21	46	36	155	262	624	191	256	50	95	155	194	216
22	3	723	4	4	0	0	0	602	3	354	0	4
23	220	697	0	0	0	0	0	315	295	33	0	156
24	590	223	0	169	0	694	0	393	78	0	0	0
25	0	295	0	0	0	0	0	548	0	0	0	0
26	38	226	0	0	0	0	0	415	0	0	0	4
27	9	127	52	38	72	37	41	238	6	0	72	44
501	55	1098	35	22	52	282	401	1766	91	54	17	36
502	198	1068	164	273	107	57	75	1616	442	527	41	365
503	428	1192	37	153	80	236	319	1679	980	290	130	306
504	0	1401	317	854	0	0	609	2124	0	1483	0	0
505	549	1803	532	604	6	91	215	1830	13	67	33	299
506	392	1326	243	194	164	393	362	1515	73	86	336	349

File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2033 turns.rpt 8/31/2023, 3:32:07 PM

507	400	1371	34	19	4	1	21	1300	6	15	7	631
508	128	1259	0	0	0	0	0	1131	48	61	0	196
509	686	385	249	110	93	55	21	575	98	45	99	494
510	38	447	0	0	0	0	0	314	115	77	0	380
511	0	499	25	49	0	2	0	380	0	0	0	0
512	0	407	94	69	0	26	16	311	0	0	0	0
513	0	0	0	0	185	692	470	0	114	55	168	0
514	22	319	25	45	16	211	59	195	30	19	23	16
515	0	0	0	0	190	109	80	0	50	102	143	0
516	0	0	0	0	174	37	43	0	12	38	87	0
517	0	125	27	3	0	0	12	174	0	0	0	0
518	11	397	66	27	0	150	85	408	5	21	1	7
519	0	451	178	239	0	238	71	532	0	0	0	0
520	228	15	186	178	456	86	29	16	67	52	684	205
521	58	100	230	158	583	234	268	61	79	183	653	66
522	2	641	0	1	0	0	0	1143	8	334	0	2
523	200	587	0	0	0	0	0	523	623	56	0	510
524	207	382	0	198	1	405	0	881	152	0	0	0
525	0	501	0	0	0	0	0	380	0	0	0	0
526	20	441	0	0	0	0	0	300	0	0	0	27
527	31	288	43	79	13	44	65	185	0	2	32	10

Furness Adjusted Turning Volumes	01:34p Aug 31, 2023

	Southbound			Westbound			Northbound			Eastbound		
Node	R	T	L	R	T	L	R	T	L	R	T	L
1	46	1655	70	111	64	346	183	774	232	234	14	23
2	372	1718	150	191	34	33	109	886	413	708	60	106
3	1044	1353	64	48	99	151	141	1150	1417	801	80	214
4	0	1821	477	493	0	0	403	2219	0	1263	0	0
5	369	2174	537	557	32	72	251	1957	68	24	9	99
6	444	1737	95	248	318	425	238	1681	121	78	391	346
7	532	1699	18	15	9	4	2	1777	57	15	5	257
8	397	1327	0	0	0	0	0	1693	92	9	0	153
9	750	341	249	520	164	88	8	757	53	78	67	514
10	291	220	0	0	0	0	0	575	61	88	0	245
11	0	295	14	39	0	0	0	599	0	0	0	0
12	0	244	49	190	0	11	41	408	0	0	0	0
13	0	0	0	0	104	862	460	0	6	51	201	0
14	37	779	22	62	45	240	80	149	9	0	17	11
15	0	0	0	0	83	26	126	0	110	30	106	0
16	0	0	0	0	95	121	80	0	83	57	145	0
17	0	165	11	16	0	19	8	63	0	0	0	0
18	14	536	50	16	0	61	125	296	4	8	1	66
19	0	442	378	185	0	72	184	632	0	0	0	0
20	203	8	114	205	728	55	19	5	59	12	569	142

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21	46	45	193	307	836	320	383	53	115	224	276	218
22	3	1112	4	5	0	0	0	851	2	354	0	4
23	278	1054	0	0	0	0	0	376	481	64	0	187
24	671	388	0	298	0	941	0	514	51	0	0	0
25	0	295	0	0	0	0	0	599	0	0	0	0
26	38	218	0	0	0	0	0	445	0	0	0	4
27	7	102	50	43	73	36	39	215	4	0	81	47
501	67	1126	33	20	61	278	385	1708	113	85	25	53
502	178	1127	185	286	101	63	81	1544	380	581	48	380
503	493	1252	34	131	88	236	323	1638	1224	272	108	246
504	0	1504	251	733	0	0	495	2456	0	1591	0	0
505	587	1937	570	615	6	92	233	1987	14	76	37	340
506	436	1422	253	190	223	516	518	1668	111	124	471	376
507	454	1590	27	18	6	1	30	1582	11	27	9	703
508	190	1424	0	0	0	0	0	1321	71	93	0	309
509	809	359	352	150	147	68	28	551	108	57	191	686
510	34	452	0	0	0	0	0	303	148	118	0	386
511	0	547	25	49	0	2	0	405	0	0	0	0
512	0	424	123	90	0	32	19	314	0	0	0	0
513	0	0	0	0	174	886	790	0	113	38	146	0
514	32	476	33	66	16	218	87	466	49	32	34	39
515	0	0	0	0	195	92	67	0	109	180	117	0
516	0	0	0	0	103	170	158	0	107	152	18	0
517	0	171	27	3	0	0	11	199	0	0	0	0
518	10	536	81	29	0	172	115	578	5	21	0	6
519	0	542	225	310	0	278	84	663	0	0	0	0
520	238	11	189	177	619	85	29	12	69	55	967	218
521	60	125	315	187	731	350	453	74	102	231	903	66
522	2	937	0	2	0	0	1	1666	8	333	0	2
523	261	861	0	0	0	0	0	672	995	78	0	509
524	236	557	0	263	1	562	0	1034	145	0	0	0
525	0	549	0	0	0	0	0	405	0	0	0	0
526	20	465	0	0	0	0	0	306	0	0	0	27
527	40	261	45	84	20	47	66	162	0	2	37	9

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| Counts Data Approach & Departure Volumes 01:34p Aug 31, 2023 |
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!	North Leg		East Leg		South Leg		West Leg	
!Node	App	Dep	App	Dep	App	Dep	App	Dep
1	1723	918	511	270	1200	2146	214	314
2	2145	1199	106	305	1483	2301	875	804
3	2302	1484	293	299	2492	2247	1164	2221
4	2247	2492	528	980	2424	2782	1055	0
5	2782	2424	635	733	2104	2060	109	413
6	2060	2104	757	588	1774	1919	738	718
7	1919	1774	24	24	1577	1452	237	507

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8	1452	1577	0	0	1542	1157	100	360
9	1157	1542	565	256	821	527	480	698
10	527	821	0	0	587	309	317	301
11	309	587	39	14	548	295	0	0
12	295	548	171	73	419	264	0	0
13	0	0	698	480	328	561	210	195
14	486	87	297	102	104	668	11	41
15	0	0	195	190	139	80	95	159
16	0	0	116	121	88	96	109	96
17	124	85	36	20	77	132	0	0
18	491	311	83	124	317	512	75	19
19	718	738	242	447	664	439	0	0
20	317	356	765	565	84	76	588	757
21	237	528	1077	605	401	382	565	765
22	730	610	4	4	605	1077	358	6
23	917	471	0	0	610	730	189	515
24	813	562	863	0	471	917	0	668
25	295	548	0	0	548	295	0	0
26	264	419	0	0	415	226	4	38
27	188	320	147	165	285	164	116	87
501	1188	1824	356	453	2258	1434	107	198
502	1430	2254	437	280	2133	1652	933	747
503	1657	2138	469	486	2978	1718	726	1488
504	1718	2978	854	926	2733	2884	1483	0
505	2884	2733	701	780	2058	1961	399	568
506	1961	2058	751	941	1950	1805	771	629
507	1805	1950	24	62	1327	1387	653	410
508	1387	1327	0	0	1179	1320	257	176
509	1320	1179	258	369	694	485	638	877
510	485	694	0	0	429	524	457	153
511	524	429	51	25	380	501	0	0
512	501	380	95	110	327	433	0	0
513	0	0	877	638	584	747	223	299
514	366	256	272	107	284	549	58	68
515	0	0	299	223	130	211	245	240
516	0	0	211	130	55	75	125	186
517	152	177	3	39	186	125	0	0
518	474	442	177	152	498	568	29	16
519	629	771	477	249	603	689	0	0
520	429	399	720	899	112	153	941	751
521	388	285	975	1151	408	517	902	720
522	643	1146	1	1	1152	975	336	10
523	787	1033	0	0	1146	643	566	823
524	589	1079	604	0	1033	787	0	360
525	501	380	0	0	380	501	0	0
526	461	327	0	0	300	441	27	20
527	362	274	136	140	250	334	44	44

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| Model Future Year Approach & Departure Volumes 01:34p Aug 31, 2023 |

	North Leg		East Leg		South Leg		West Leg	
Node	App	Dep	App	Dep	App	Dep	App	Dep
1	1776	910	523	268	1186	2237	273	343
2	2238	1185	260	320	1413	2460	875	821
3	2461	1414	299	286	2713	2306	1095	2562
4	2306	2713	491	880	2613	3085	1268	0
5	3083	2615	662	798	2275	2271	134	470
6	2270	2276	991	726	2048	2241	818	884
7	2241	2049	29	27	1845	1719	279	599
8	1718	1846	0	0	1792	1337	163	490
9	1338	1792	774	325	821	509	662	969
10	509	821	0	0	638	309	335	352
11	309	638	39	14	599	295	0	0
12	295	599	202	91	449	256	0	0
13	0	0	970	662	464	913	252	111
14	838	223	348	120	240	1020	29	92
15	0	0	110	233	237	57	137	194
16	0	0	93	219	329	274	162	91
17	177	80	36	20	72	185	0	0
18	603	379	78	177	424	605	75	19
19	885	818	281	563	730	515	0	0
20	326	353	988	704	84	76	726	991
21	285	579	1466	854	552	591	720	999
22	1119	860	5	4	854	1466	358	6
23	1330	564	0	0	860	1119	253	760
24	1062	813	1240	0	564	1330	0	723
25	295	599	0	0	599	295	0	0
26	256	449	0	0	445	218	4	38
27	161	306	154	171	259	139	128	86
501	1222	1782	359	444	2214	1491	164	242
502	1487	2211	451	315	2011	1772	1009	660
503	1777	2016	456	467	3190	1761	627	1806
504	1761	3190	731	747	2944	3096	1597	0
505	3096	2943	714	841	2235	2107	454	608
506	2107	2235	928	1244	2304	2063	974	771
507	2063	2304	27	67	1631	1620	743	473
508	1620	1631	0	0	1389	1518	402	262
509	1518	1389	366	572	690	485	937	1065
510	485	690	0	0	454	571	505	183
511	572	454	51	25	405	549	0	0
512	550	405	122	143	333	457	0	0
513	0	0	1065	937	900	925	185	288
514	544	572	302	155	600	727	106	98
515	0	0	288	185	177	273	298	305
516	0	0	273	177	267	323	171	211

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517	198	202	3	39	211	171	0	0
518	627	615	202	198	702	731	29	16
519	771	974	589	310	745	821	0	0
520	440	409	883	1187	111	153	1243	928
521	501	328	1272	1673	630	707	1199	894
522	940	1670	2	1	1674	1271	336	10
523	1120	1182	0	0	1670	940	589	1257
524	793	1298	826	0	1182	1120	0	383
525	549	405	0	0	405	549	0	0
526	485	333	0	0	306	465	27	20
527	347	257	152	149	230	311	49	61

Computed Approach & Departure Volumes 01:34p Aug 31, 2023

Node	North Leg App	North Leg Dep	East Leg App	East Leg Dep	South Leg App	South Leg Dep	West Leg App	West Leg Dep
1	1776	910	523	268	1186	2237	273	343
2	2238	1185	260	320	1413	2460	875	821
3	2461	1414	299	286	2713	2306	1095	2562
4	2306	2713	491	880	2613	3085	1268	0
5	3083	2615	662	798	2275	2271	134	470
6	2270	2276	991	726	2048	2241	818	884
7	2241	2049	29	27	1845	1719	279	599
8	1718	1846	0	0	1792	1337	163	490
9	1338	1792	774	325	821	509	662	969
10	509	821	0	0	638	309	335	352
11	309	638	39	14	599	295	0	0
12	295	599	202	91	449	256	0	0
13	0	0	970	662	464	913	252	111
14	838	223	348	120	240	1020	29	92
15	0	0	110	233	237	57	137	194
16	0	0	217	226	164	179	203	179
17	177	80	36	20	72	185	0	0
18	603	379	78	177	424	605	75	19
19	818	818	259	563	818	515	0	0
20	326	353	988	704	84	76	726	991
21	285	579	1466	854	552	591	720	999
22	1119	860	5	4	854	1466	358	6
23	1330	564	0	0	860	1119	253	760
24	1062	813	1240	0	564	1330	0	723
25	295	599	0	0	599	295	0	0
26	256	449	0	0	445	218	4	38
27	161	306	154	171	259	139	128	86
501	1222	1782	359	444	2214	1491	164	242
502	1487	2211	451	315	2011	1772	1009	660
503	1777	2016	456	467	3190	1761	627	1806

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504	1761	3190	731	747	2944	3096	1597	0
505	3096	2943	714	841	2235	2107	454	608
506	2107	2235	928	1244	2304	2063	974	771
507	2063	2304	27	67	1631	1620	743	473
508	1620	1631	0	0	1389	1518	402	262
509	1518	1389	366	572	690	485	937	1065
510	485	690	0	0	454	571	505	183
511	572	454	51	25	405	549	0	0
512	550	405	122	143	333	457	0	0
513	0	0	1065	937	900	925	185	288
514	544	572	302	155	600	727	106	98
515	0	0	288	185	177	273	298	305
516	0	0	273	177	267	323	171	211
517	198	202	3	39	211	171	0	0
518	627	615	202	198	702	731	29	16
519	771	974	589	310	745	821	0	0
520	440	409	883	1187	111	153	1243	928
521	501	328	1272	1673	630	707	1199	894
522	940	1670	2	1	1674	1271	336	10
523	1120	1182	0	0	1670	940	589	1257
524	793	1298	826	0	1182	1120	0	383
525	549	405	0	0	405	549	0	0
526	485	333	0	0	306	465	27	20
527	347	257	152	149	230	311	49	61

Nodes Report 01:34p Aug 31, 2023

Project Nodes

Node	North Link	East Link	South Link	West Link
1				
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INTERSECTIONNUMBER	NLA	NLD	ELA	ELD	SLA	SLD	WLA	WLD
1	1812	904	532	266	1177	2302	315	364
2	2302	1176	368	330	1363	2571	876	832
3	2572	1364	303	278	2868	2348	1047	2800
4	2348	2868	465	810	2745	3296	1416	0
5	3294	2745	680	844	2394	2419	151	511
6	2418	2394	1154	823	2239	2466	873	1001
7	2466	2239	32	30	2032	1905	308	664
8	1904	2032	0	0	1966	1463	206	581
9	1463	1966	921	373	820	496	790	1159
10	496	820	0	0	673	308	347	388
11	308	673	39	14	634	294	0	0
12	294	634	224	104	470	250	0	0
13	0	0	1160	790	560	1160	282	52
14	1085	319	384	132	336	1267	41	128
15	0	0	51	262	306	42	166	219
16	0	0	78	288	496	398	199	87
17	214	76	36	20	68	222	0	0
18	681	426	74	214	498	669	75	19
19	1001	873	309	644	776	569	0	0
20	333	352	1143	801	84	76	823	1154
21	319	614	1738	1029	658	738	828	1162
22	1391	1035	5	4	1029	1738	358	6
23	1620	630	0	0	1035	1391	297	931
24	1237	989	1503	0	630	1620	0	761
25	294	634	0	0	634	294	0	0
26	250	470	0	0	466	212	4	38
27	141	295	159	175	241	121	136	86
501	1245	1750	360	437	2184	1532	203	273
502	1528	2181	461	339	1924	1856	1063	600
503	1861	1929	446	453	3338	1792	557	2028
504	1792	3338	644	621	3091	3244	1676	0
505	3244	3091	723	883	2359	2209	493	636
506	2209	2359	1052	1455	2551	2243	1116	871
507	2243	2551	29	70	1843	1784	807	517
508	1784	1843	0	0	1536	1657	503	323
509	1657	1536	441	713	687	486	1146	1196
510	486	687	0	0	471	605	538	203
511	606	471	51	25	422	583	0	0
512	583	422	141	166	338	474	0	0
513	0	0	1196	1146	1121	1049	158	280
514	668	793	322	188	821	851	139	118
515	0	0	280	158	211	317	335	351
516	0	0	317	211	416	496	203	229
517	230	220	3	39	229	203	0	0
518	733	735	220	230	845	846	29	16
519	871	1116	667	353	844	913	0	0
520	447	416	996	1387	111	153	1454	1052
521	579	358	1479	2039	786	839	1407	1015

File: Y:\Shared\Projects\P23160 Creekside Village II\Joint Turns W32\Turns 2023\Appendix\2040 turns.rpt 8/31/2023, 3:53:54 PM

522 1148 2036 2 1 2040 1479 336 10
523 1354 1286 0 0 2036 1148 605 1561
524 936 1452 982 0 1286 1354 0 398
525 583 422 0 0 422 583 0 0
526 502 338 0 0 311 482 27 20
527 336 245 163 156 215 294 53 72

| Turning Movement Volumes Report | 03:38p Aug 31, 2023 |

Counts Data

	Southbound			Westbound			Northbound			Eastbound		
Node	R	T	L	R	T	L	R	T	L	R	T	L
1	40	1615	68	108	57	346	191	792	217	185	11	18
2	391	1608	146	82	13	11	98	985	400	682	61	132
3	948	1285	69	55	92	146	138	1173	1181	816	92	256
4	0	1727	520	528	0	0	460	1964	0	1055	0	0
5	322	1970	490	535	30	70	235	1808	61	20	8	81
6	407	1561	92	232	227	298	173	1517	84	60	323	355
7	462	1439	18	14	7	3	2	1537	38	10	4	223
8	300	1152	0	0	0	0	0	1482	60	5	0	95
9	563	386	208	395	94	76	7	773	41	65	41	374
10	273	254	0	0	0	0	0	559	28	55	0	262
11	0	295	14	39	0	0	0	548	0	0	0	0
12	0	254	41	161	0	10	32	387	0	0	0	0
13	0	0	0	0	182	516	315	0	13	45	165	0
14	13	443	30	46	26	225	63	39	2	0	9	2
15	0	0	0	0	128	67	108	0	31	13	82	0
16	0	0	0	0	51	65	43	0	45	31	78	0
17	0	114	10	18	0	18	10	67	0	0	0	0
18	15	439	37	18	0	65	86	227	4	8	1	66
19	0	386	332		189	53	115	549	0	0	0	0
20	192	11	114	204	508	53	20	7	57	12	431	145
21	46	36	155	262	624	191	256	50	95	155	194	216
22	3	723	4	4	0	0	0	602	3	354	0	4
23	220	697	0	0	0	0	0	315	295	33	0	156
24	590	223	0	169	0	694	0	393	78	0	0	0
25	0	295	0	0	0	0	0	548	0	0	0	0
26	38	226	0	0	0	0	0	415	0	0	0	4
27	9	127	52	38	72	37	41	238	6	0	72	44
501	55	1098	35	22	52	282	401	1766	91	54	17	36
502	198	1068	164	273	107	57	75	1616	442	527	41	365
503	428	1192	37	153	80	236	319	1679	980	290	130	306
504	0	1401	317	854	0	0	609	2124	0	1483	0	0
505	549	1803	532	604	6	91	215	1830	13	67	33	299
506	392	1326	243	194	164	393	362	1515	73	86	336	349

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507	400	1371	34	19	4	1	21	1300	6	15	7	631
508	128	1259	0	0	0	0	0	1131	48	61	0	196
509	686	385	249	110	93	55	21	575	98	45	99	494
510	38	447	0	0	0	0	0	314	115	77	0	380
511	0	499	25	49	0	2	0	380	0	0	0	0
512	0	407	94	69	0	26	16	311	0	0	0	0
513	0	0	0	0	185	692	470	0	114	55	168	0
514	22	319	25	45	16	211	59	195	30	19	23	16
515	0	0	0	0	190	109	80	0	50	102	143	0
516	0	0	0	0	174	37	43	0	12	38	87	0
517	0	125	27	3	0	0	12	174	0	0	0	0
518	11	397	66	27	0	150	85	408	5	21	1	7
519	0	451	178	239	0	238	71	532	0	0	0	0
520	228	15	186	178	456	86	29	16	67	52	684	205
521	58	100	230	158	583	234	268	61	79	183	653	66
522	2	641	0	1	0	0	0	1143	8	334	0	2
523	200	587	0	0	0	0	0	523	623	56	0	510
524	207	382	0	198	1	405	0	881	152	0	0	0
525	0	501	0	0	0	0	0	380	0	0	0	0
526	20	441	0	0	0	0	0	300	0	0	0	27
527	31	288	43	79	13	44	65	185	0	2	32	10

Furness Adjusted Turning Volumes	03:38p Aug 31, 2023

	Southbound			Westbound			Northbound			Eastbound		
Node	R	T	L	R	T	L	R	T	L	R	T	L
1	51	1684	72	114	70	347	177	761	242	270	16	27
2	359	1793	152	261	52	53	116	822	420	724	60	92
3	1107	1406	62	44	104	154	142	1130	1588	787	73	189
4	0	1886	454	467	0	0	356	2400	0	1410	0	0
5	403	2317	570	572	33	74	262	2060	73	27	10	112
6	469	1858	98	257	381	517	287	1794	150	90	437	342
7	577	1879	19	15	11	5	3	1944	74	20	6	279
8	462	1449	0	0	0	0	0	1839	118	13	0	192
9	877	315	276	604	221	93	8	747	60	86	88	613
10	298	198	0	0	0	0	0	582	89	109	0	237
11	0	294	14	39	0	0	0	634	0	0	0	0
12	0	237	55	211	0	12	48	422	0	0	0	0
13	0	0	0	0	49	1106	560	0	2	53	229	0
14	55	1009	21	70	55	258	88	229	16	0	21	19
15	0	0	0	0	43	7	130	0	175	34	131	0
16	0	0	0	0	152	194	128	0	134	92	233	0
17	0	202	12	16	0	20	7	60	0	0	0	0
18	14	603	60	16	0	57	152	343	4	7	1	66
19	0	504	499	243	0	65	144	629	0	0	0	0
20	210	7	115	206	883	56	19	4	60	12	666	141

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21	48	51	219	335	984	414	474	55	129	271	334	223
22	3	1384	4	5	0	0	0	1026	2	354	0	4
23	320	1303	0	0	0	0	0	421	610	87	0	208
24	719	514	0	398	0	1105	0	590	41	0	0	0
25	0	294	0	0	0	0	0	634	0	0	0	0
26	38	212	0	0	0	0	0	466	0	0	0	4
27	6	85	49	47	75	36	38	199	4	0	87	48
501	74	1144	30	18	66	276	376	1668	131	110	29	62
502	163	1168	200	295	96	67	85	1494	339	619	53	390
503	534	1298	33	117	92	237	325	1604	1401	256	94	207
504	0	1576	208	646	0	0	412	2691	0	1667	0	0
505	615	2032	596	623	6	94	245	2098	14	82	40	369
506	465	1490	259	189	264	600	629	1774	141	152	566	395
507	490	1740	23	18	8	2	36	1780	18	41	10	751
508	235	1541	0	0	0	0	0	1454	88	115	0	388
509	895	346	419	178	186	76	31	539	114	63	262	817
510	32	456	0	0	0	0	0	298	171	148	0	388
511	0	581	25	49	0	2	0	422	0	0	0	0
512	0	437	144	104	0	36	21	317	0	0	0	0
513	0	0	0	0	171	1019	1017	0	108	29	129	0
514	40	585	40	79	17	225	105	657	60	40	42	56
515	0	0	0	0	196	83	56	0	154	233	101	0
516	0	0	0	0	23	294	208	0	205	201	2	0
517	0	203	28	3	0	0	11	217	0	0	0	0
518	10	634	90	30	0	189	138	697	5	21	0	6
519	0	607	260	361	0	305	92	754	0	0	0	0
520	246	10	191	177	734	85	29	10	71	57	1166	227
521	63	142	373	207	834	432	587	83	117	264	1078	67
522	2	1145	0	2	0	0	1	2032	8	333	0	2
523	301	1056	0	0	0	0	0	773	1259	91	0	512
524	254	682	0	310	1	671	0	1141	142	0	0	0
525	0	583	0	0	0	0	0	422	0	0	0	0
526	20	482	0	0	0	0	0	311	0	0	0	27
527	46	242	47	87	25	49	67	147	0	2	41	9

Counts Data Approach & Departure Volumes								03:38p Aug 31, 2023	
!	North Leg		East Leg		South Leg		West Leg	
!Node	App	Dep	App	Dep	App	Dep	App	Dep
1	1723	918	511	270	1200	2146	214	314
2	2145	1199	106	305	1483	2301	875	804
3	2302	1484	293	299	2492	2247	1164	2221
4	2247	2492	528	980	2424	2782	1055	0
5	2782	2424	635	733	2104	2060	109	413
6	2060	2104	757	588	1774	1919	738	718
7	1919	1774	24	24	1577	1452	237	507

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8	1452	1577	0	0	1542	1157	100	360
9	1157	1542	565	256	821	527	480	698
10	527	821	0	0	587	309	317	301
11	309	587	39	14	548	295	0	0
12	295	548	171	73	419	264	0	0
13	0	0	698	480	328	561	210	195
14	486	87	297	102	104	668	11	41
15	0	0	195	190	139	80	95	159
16	0	0	116	121	88	96	109	96
17	124	85	36	20	77	132	0	0
18	491	311	83	124	317	512	75	19
19	718	738	242	447	664	439	0	0
20	317	356	765	565	84	76	588	757
21	237	528	1077	605	401	382	565	765
22	730	610	4	4	605	1077	358	6
23	917	471	0	0	610	730	189	515
24	813	562	863	0	471	917	0	668
25	295	548	0	0	548	295	0	0
26	264	419	0	0	415	226	4	38
27	188	320	147	165	285	164	116	87
501	1188	1824	356	453	2258	1434	107	198
502	1430	2254	437	280	2133	1652	933	747
503	1657	2138	469	486	2978	1718	726	1488
504	1718	2978	854	926	2733	2884	1483	0
505	2884	2733	701	780	2058	1961	399	568
506	1961	2058	751	941	1950	1805	771	629
507	1805	1950	24	62	1327	1387	653	410
508	1387	1327	0	0	1179	1320	257	176
509	1320	1179	258	369	694	485	638	877
510	485	694	0	0	429	524	457	153
511	524	429	51	25	380	501	0	0
512	501	380	95	110	327	433	0	0
513	0	0	877	638	584	747	223	299
514	366	256	272	107	284	549	58	68
515	0	0	299	223	130	211	245	240
516	0	0	211	130	55	75	125	186
517	152	177	3	39	186	125	0	0
518	474	442	177	152	498	568	29	16
519	629	771	477	249	603	689	0	0
520	429	399	720	899	112	153	941	751
521	388	285	975	1151	408	517	902	720
522	643	1146	1	1	1152	975	336	10
523	787	1033	0	0	1146	643	566	823
524	589	1079	604	0	1033	787	0	360
525	501	380	0	0	380	501	0	0
526	461	327	0	0	300	441	27	20
527	362	274	136	140	250	334	44	44

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| Model Future Year Approach & Departure Volumes 03:38p Aug 31, 2023 |

	North Leg		East Leg		South Leg		West Leg	
Node	App	Dep	App	Dep	App	Dep	App	Dep
1	1812	904	532	266	1177	2302	315	364
2	2302	1176	368	330	1363	2571	876	832
3	2572	1364	303	278	2868	2348	1047	2800
4	2348	2868	465	810	2745	3296	1416	0
5	3294	2745	680	844	2394	2419	151	511
6	2418	2394	1154	823	2239	2466	873	1001
7	2466	2239	32	30	2032	1905	308	664
8	1904	2032	0	0	1966	1463	206	581
9	1463	1966	921	373	820	496	790	1159
10	496	820	0	0	673	308	347	388
11	308	673	39	14	634	294	0	0
12	294	634	224	104	470	250	0	0
13	0	0	1160	790	560	1160	282	52
14	1085	319	384	132	336	1267	41	128
15	0	0	51	262	306	42	166	219
16	0	0	78	288	496	398	199	87
17	214	76	36	20	68	222	0	0
18	681	426	74	214	498	669	75	19
19	1001	873	309	644	776	569	0	0
20	333	352	1143	801	84	76	823	1154
21	319	614	1738	1029	658	738	828	1162
22	1391	1035	5	4	1029	1738	358	6
23	1620	630	0	0	1035	1391	297	931
24	1237	989	1503	0	630	1620	0	761
25	294	634	0	0	634	294	0	0
26	250	470	0	0	466	212	4	38
27	141	295	159	175	241	121	136	86
501	1245	1750	360	437	2184	1532	203	273
502	1528	2181	461	339	1924	1856	1063	600
503	1861	1929	446	453	3338	1792	557	2028
504	1792	3338	644	621	3091	3244	1676	0
505	3244	3091	723	883	2359	2209	493	636
506	2209	2359	1052	1455	2551	2243	1116	871
507	2243	2551	29	70	1843	1784	807	517
508	1784	1843	0	0	1536	1657	503	323
509	1657	1536	441	713	687	486	1146	1196
510	486	687	0	0	471	605	538	203
511	606	471	51	25	422	583	0	0
512	583	422	141	166	338	474	0	0
513	0	0	1196	1146	1121	1049	158	280
514	668	793	322	188	821	851	139	118
515	0	0	280	158	211	317	335	351
516	0	0	317	211	416	496	203	229

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517	230	220	3	39	229	203	0	0
518	733	735	220	230	845	846	29	16
519	871	1116	667	353	844	913	0	0
520	447	416	996	1387	111	153	1454	1052
521	579	358	1479	2039	786	839	1407	1015
522	1148	2036	2	1	2040	1479	336	10
523	1354	1286	0	0	2036	1148	605	1561
524	936	1452	982	0	1286	1354	0	398
525	583	422	0	0	422	583	0	0
526	502	338	0	0	311	482	27	20
527	336	245	163	156	215	294	53	72

Computed Approach & Departure Volumes 03:38p Aug 31, 2023

Node	North Leg App	North Leg Dep	East Leg App	East Leg Dep	South Leg App	South Leg Dep	West Leg App	West Leg Dep
1	1812	904	532	266	1177	2302	315	364
2	2302	1176	368	330	1363	2571	876	832
3	2572	1364	303	278	2868	2348	1047	2800
4	2348	2868	465	810	2745	3296	1416	0
5	3294	2745	680	844	2394	2419	151	511
6	2418	2394	1154	823	2239	2466	873	1001
7	2466	2239	32	30	2032	1905	308	664
8	1904	2032	0	0	1966	1463	206	581
9	1463	1966	921	373	820	496	790	1159
10	496	820	0	0	673	308	347	388
11	308	673	39	14	634	294	0	0
12	294	634	224	104	470	250	0	0
13	0	0	1160	790	560	1160	282	52
14	1085	319	384	132	336	1267	41	128
15	0	0	51	262	306	42	166	219
16	0	0	347	362	263	287	326	287
17	214	76	36	20	68	222	0	0
18	681	426	74	214	498	669	75	19
19	1001	873	309	644	776	569	0	0
20	333	352	1143	801	84	76	823	1154
21	319	614	1738	1029	658	738	828	1162
22	1391	1035	5	4	1029	1738	358	6
23	1620	630	0	0	1035	1391	297	931
24	1237	989	1503	0	630	1620	0	761
25	294	634	0	0	634	294	0	0
26	250	470	0	0	466	212	4	38
27	141	295	159	175	241	121	136	86
501	1245	1750	360	437	2184	1532	203	273
502	1528	2181	461	339	1924	1856	1063	600
503	1861	1929	446	453	3338	1792	557	2028

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504	1792	3338	644	621	3091	3244	1676	0
505	3244	3091	723	883	2359	2209	493	636
506	2209	2359	1052	1455	2551	2243	1116	871
507	2243	2551	29	70	1843	1784	807	517
508	1784	1843	0	0	1536	1657	503	323
509	1657	1536	441	713	687	486	1146	1196
510	486	687	0	0	471	605	538	203
511	606	471	51	25	422	583	0	0
512	583	422	141	166	338	474	0	0
513	0	0	1196	1146	1121	1049	158	280
514	668	793	322	188	821	851	139	118
515	0	0	280	158	211	317	335	351
516	0	0	317	211	416	496	203	229
517	230	220	3	39	229	203	0	0
518	733	735	220	230	845	846	29	16
519	871	1116	667	353	844	913	0	0
520	447	416	996	1387	111	153	1454	1052
521	579	358	1479	2039	786	839	1407	1015
522	1148	2036	2	1	2040	1479	336	10
523	1354	1286	0	0	2036	1148	605	1561
524	936	1452	982	0	1286	1354	0	398
525	583	422	0	0	422	583	0	0
526	502	338	0	0	311	482	27	20
527	336	245	163	156	215	294	53	72

Nodes Report 03:38p Aug 31, 2023

Project Nodes

Node	North Link	East Link	South Link	West Link
1				
2				
3				
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Appendix E: VMT Estimation Scripts

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```
;-------------------------------------------------------------------------------
;
; Step 1: Skim the loaded networks for each period to get TAZ-to-TAZ
;         distances. Use half of the shortest centroid connector
;         length for the intrazonal distance. Adjust gateway trip lengths.
;
;         Inputs: loaded networks and final OD tables for each period.
;         Outputs: total TAZ-to-TAZ VMT by DA, SR, C2 and C3 for each period.
;
;-------------------------------------------------------------------------------
; Input networks
;-------------------------------------------------------------------------------
AMNET='.\Loaded_Networks\2040A3VS.NET'
MIDDAYNET='.\Loaded_Networks\2040MDVS.NET'
PMNET='.\Loaded_Networks\2040P3V.NET'
EVVNET='.\Loaded_Networks\2040EVV.NET'
;-------------------------------------------------------------------------------
; Input OD
;-------------------------------------------------------------------------------
AMOD='.\OD_Tables\2040A3VS.MAT'
MDOD='.\OD_Tables\2040MDVS.MAT'
PMOD='.\OD_Tables\2040P3V.MAT'
EVVOD='.\OD_Tables\2040EVV.MAT'
;-------------------------------------------------------------------------------
; Output distance skims
;-------------------------------------------------------------------------------
AMDIST='.\Temp_Files\2040A3VS_Distance.MAT'
MDDIST='.\Temp_Files\2040MDVS_Distance.MAT'
PMDIST='.\Temp_Files\2040P3V_Distance.MAT'
EVVDIST='.\Temp_Files\2040EVV_Distance.MAT'
;-------------------------------------------------------------------------------
; Output VMT matrices
;-------------------------------------------------------------------------------
AMVMT='2040A3VS_vmt_6_Class.MAT'
MDVMT='2040MDVS_VMT_6_Class.MAT'
PMVMT='2040P3V_VMT_6_Class.MAT'
EVVVMT='2040EVV_VMT_6_Class.MAT'
;
AMVMTSIMP='2040A3VS_vmt_4_Class.MAT'
MDVMTSIMP='2040MDVS_VMT_4_Class.MAT'
PMVMTSIMP='2040P3V_VMT_4_Class.MAT'
EVVVMTSIMP='2040EVV_VMT_4_Class.MAT'
;-------------------------------------------------------------------------------
; Temp Output VMT matrices files
;-------------------------------------------------------------------------------
TEMP='.\Temp_Files\TEMP.MAT'
TEMP2='.\Temp_Files\TEMP2.MAT'
;
;
;
;-------------------------------------------------------------------------------
; Run a distance skim for each time period
;-------------------------------------------------------------------------------
; AM peak period enterzonal distance skim
RUN PGM=HWYLOAD
FILEI NETI = "@AMNET@"
FILEO MATO[1] = "@TEMP@",
 MO=1 FORMAT=tpp                                    ; output skim matrix
 PHASE=LINKREAD                                     ; define link groups
  IF (LI.HOVLINK=0) ADDTOGROUP=1                    ; no restriction
  IF (LI.HOVLINK=1) ADDTOGROUP=2                    ; walk
```

```
   IF (LI.HOVLINK=2) ADDTOGROUP=3                    ; HOV lanes
   IF (LI.HOVLINK=3) ADDTOGROUP=4                    ; HOV bypassses
   IF (LI.CAPCLASS=99) ADDTOGROUP=5                  ; switched off links
  endphase
  PHASE=ILOOP                                        ; skim path building
     PATHLOAD PATH=li.TIME_1,EXCLUDEGRP=2,5,         ; pathload without HOV links
        MW[1]=PATHTRACE(LI.DISTANCE),SELECTGROUP=1   ; select links used by all veh
  endphase
ENDRUN
; intrazonals - fill the diagonal element with half of the rowmin value
RUN PGM=MATRIX
FILEI MATI[1] = "@TEMP@"
FILEO MATO[1] = "@TEMP2@",
 MO=1
 MW[1]=MI.1.1
 iz1 = lowest(1,1,0.5,32700)*0.5
 jloop j=i
    mw[1] = iz1
 endjloop
ENDRUN
;
; Adjust gateway distnaces
;(Note: these values come from the 1/5/2021 Central El Dorado Hills Specific Plan VMT Analysis memorandom)
RUN PGM=MATRIX
FILEI MATI[1] = "@TEMP2@"
FILEO MATO[1] = "@AMDIST@",
 MO=1
 MW[1]=MI.1.1
;
;Adjust external to internal (XI) gateway distance
 IF (I=650) mw[1]=mw[1]+13.08
 IF (I=651) mw[1]=mw[1]+3.96
 IF (I=652) mw[1]=mw[1]+0
 IF (I=653) mw[1]=mw[1]+20.39
 IF (I=654) mw[1]=mw[1]+10.38
 IF (I=655) mw[1]=mw[1]+8.80
 IF (I=656) mw[1]=mw[1]+0
 IF (I=657) mw[1]=mw[1]+6.4
 IF (I=658) mw[1]=mw[1]+0
 IF (I=659) mw[1]=mw[1]+0
 IF (I=660) mw[1]=mw[1]+7.19
 IF (I=661) mw[1]=mw[1]+8.54
 IF (I=662) mw[1]=mw[1]+6.14
 IF (I=663) mw[1]=mw[1]+5.41
 IF (I=664) mw[1]=mw[1]+12.66
 IF (I=665) mw[1]=mw[1]+5.17
 IF (I=666) mw[1]=mw[1]+7.44
 IF (I=667) mw[1]=mw[1]+0
 IF (I=668) mw[1]=mw[1]+14.21
 IF (I=669) mw[1]=mw[1]+0
 IF (I=670) mw[1]=mw[1]+0
 IF (I=671) mw[1]=mw[1]+16.28
 IF (I=672) mw[1]=mw[1]+0
 IF (I=673) mw[1]=mw[1]+3.82
 IF (I=674) mw[1]=mw[1]+18.38
;
;Adjust internal to external (IX) gateway distance
 jloop j=650
    mw[1] = mw[1]+12.41
```

```
 endjloop
;
 jloop j=651
    mw[1] = mw[1]+4.11
 endjloop
;
 jloop j=652
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=653
    mw[1] = mw[1]+31.33
 endjloop
;
 jloop j=654
    mw[1] = mw[1]+11.07
 endjloop
;
 jloop j=655
    mw[1] = mw[1]+11.32
 endjloop
;
 jloop j=656
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=657
    mw[1] = mw[1]+6.91
 endjloop
;
 jloop j=658
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=659
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=660
    mw[1] = mw[1]+7.73
 endjloop
;
 jloop j=661
    mw[1] = mw[1]+8.88
 endjloop
;
 jloop j=662
    mw[1] = mw[1]+5.47
 endjloop
;
 jloop j=663
    mw[1] = mw[1]+8.16
 endjloop
;
 jloop j=664
    mw[1] = mw[1]+10.17
 endjloop
;
 jloop j=665
    mw[1] = mw[1]+5.43
 endjloop
```

```
;
 jloop j=666
    mw[1] = mw[1]+6.97
 endjloop
;
 jloop j=667
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=668
    mw[1] = mw[1]+15.96
 endjloop
;
 jloop j=669
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=670
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=671
    mw[1] = mw[1]+18.61
 endjloop
;
 jloop j=672
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=673
    mw[1] = mw[1]+3.73
 endjloop
;
 jloop j=674
    mw[1] = mw[1]+19.21
 endjloop
;
ENDRUN
;
;
; mid day enterzonal distance skim
RUN PGM=HWYLOAD
FILEI NETI = "@MIDDAYNET@"
FILEO MATO[1] = "@TEMP@",
 MO=1 FORMAT=tpp                                  ; output skim matrix
 PHASE=LINKREAD                                   ; define link groups
  IF (LI.HOVLINK=0) ADDTOGROUP=1                  ; no restriction
  IF (LI.HOVLINK=1) ADDTOGROUP=2                  ; walk
  IF (LI.HOVLINK=2) ADDTOGROUP=3                  ; HOV lanes
  IF (LI.HOVLINK=3) ADDTOGROUP=4                  ; HOV bypassses
  IF (LI.CAPCLASS=99) ADDTOGROUP=5                ; switched off links
 endphase
 PHASE=ILOOP                                      ; skim path building
    PATHLOAD PATH=li.TIME_1,EXCLUDEGRP=2,5,       ; pathload without HOV links
       MW[1]=PATHTRACE(LI.DISTANCE),SELECTGROUP=1 ; select links used by all
veh
 endphase
ENDRUN
; intrazonals - fill the diagonal element with half of the rowmin value
RUN PGM=MATRIX
FILEI MATI[1] = "@TEMP@"
```

```
  FILEO MATO[1] = "@TEMP2@",
   MO=1
   MW[1]=MI.1.1
   iz1 = lowest(1,1,0.5,32700)*0.5
   jloop j=i
      mw[1] = iz1
   endjloop
  ENDRUN
  ;
  ; Adjust gateway distnaces
  ;(Note: these values come from the 1/5/2021 Central El Dorado Hills Specific
  Plan VMT Analysis memorandom)
  RUN PGM=MATRIX
  FILEI MATI[1] = "@TEMP2@"
  FILEO MATO[1] = "@MDDIST@",
   MO=1
   MW[1]=MI.1.1
  ;
  ;Adjust external to internal (XI) gateway distance
   IF (I=650) mw[1]=mw[1]+13.08
   IF (I=651) mw[1]=mw[1]+3.96
   IF (I=652) mw[1]=mw[1]+0
   IF (I=653) mw[1]=mw[1]+20.39
   IF (I=654) mw[1]=mw[1]+10.38
   IF (I=655) mw[1]=mw[1]+8.80
   IF (I=656) mw[1]=mw[1]+0
   IF (I=657) mw[1]=mw[1]+6.4
   IF (I=658) mw[1]=mw[1]+0
   IF (I=659) mw[1]=mw[1]+0
   IF (I=660) mw[1]=mw[1]+7.19
   IF (I=661) mw[1]=mw[1]+8.54
   IF (I=662) mw[1]=mw[1]+6.14
   IF (I=663) mw[1]=mw[1]+5.41
   IF (I=664) mw[1]=mw[1]+12.66
   IF (I=665) mw[1]=mw[1]+5.17
   IF (I=666) mw[1]=mw[1]+7.44
   IF (I=667) mw[1]=mw[1]+0
   IF (I=668) mw[1]=mw[1]+14.21
   IF (I=669) mw[1]=mw[1]+0
   IF (I=670) mw[1]=mw[1]+0
   IF (I=671) mw[1]=mw[1]+16.28
   IF (I=672) mw[1]=mw[1]+0
   IF (I=673) mw[1]=mw[1]+3.82
   IF (I=674) mw[1]=mw[1]+18.38
  ;
  ;Adjust internal to external (IX) gateway distance
   jloop j=650
      mw[1] = mw[1]+12.41
   endjloop
  ;
   jloop j=651
      mw[1] = mw[1]+4.11
   endjloop
  ;
   jloop j=652
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=653
      mw[1] = mw[1]+31.33
   endjloop
```

```
302   ;
303    jloop j=654
304       mw[1] = mw[1]+11.07
305    endjloop
306   ;
307    jloop j=655
308       mw[1] = mw[1]+11.32
309    endjloop
310   ;
311    jloop j=656
312       mw[1] = mw[1]+0
313    endjloop
314   ;
315    jloop j=657
316       mw[1] = mw[1]+6.91
317    endjloop
318   ;
319    jloop j=658
320       mw[1] = mw[1]+0
321    endjloop
322   ;
323    jloop j=659
324       mw[1] = mw[1]+0
325    endjloop
326   ;
327    jloop j=660
328       mw[1] = mw[1]+7.73
329    endjloop
330   ;
331    jloop j=661
332       mw[1] = mw[1]+8.88
333    endjloop
334   ;
335    jloop j=662
336       mw[1] = mw[1]+5.47
337    endjloop
338   ;
339    jloop j=663
340       mw[1] = mw[1]+8.16
341    endjloop
342   ;
343    jloop j=664
344       mw[1] = mw[1]+10.17
345    endjloop
346   ;
347    jloop j=665
348       mw[1] = mw[1]+5.43
349    endjloop
350   ;
351    jloop j=666
352       mw[1] = mw[1]+6.97
353    endjloop
354   ;
355    jloop j=667
356       mw[1] = mw[1]+0
357    endjloop
358   ;
359    jloop j=668
360       mw[1] = mw[1]+15.96
361    endjloop
362   ;
```

```
 jloop j=669
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=670
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=671
    mw[1] = mw[1]+18.61
 endjloop
;
 jloop j=672
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=673
    mw[1] = mw[1]+3.73
 endjloop
;
 jloop j=674
    mw[1] = mw[1]+19.21
 endjloop
;
ENDRUN
;
;
; PM peak period enterzonal distance skim
RUN PGM=HWYLOAD
FILEI NETI = "@PMNET@"
FILEO MATO[1] = "@TEMP@",
 MO=1 FORMAT=tpp                                    ; output skim matrix
 PHASE=LINKREAD                                     ; define link groups
  IF (LI.HOVLINK=0) ADDTOGROUP=1                    ; no restriction
  IF (LI.HOVLINK=1) ADDTOGROUP=2                    ; walk
  IF (LI.HOVLINK=2) ADDTOGROUP=3                    ; HOV lanes
  IF (LI.HOVLINK=3) ADDTOGROUP=4                    ; HOV bypassses
  IF (LI.CAPCLASS=99) ADDTOGROUP=5                  ; switched off links
 endphase
 PHASE=ILOOP                                        ; skim path building
    PATHLOAD PATH=li.TIME_1,EXCLUDEGRP=2,5,         ; pathload without HOV links
       MW[1]=PATHTRACE(LI.DISTANCE),SELECTGROUP=1   ; select links used by all
veh
 endphase
ENDRUN
; intrazonals - fill the diagonal element with half of the rowmin value
RUN PGM=MATRIX
FILEI MATI[1] = "@TEMP@"
FILEO MATO[1] = "@TEMP2@",
 MO=1
 MW[1]=MI.1.1
 iz1 = lowest(1,1,0.5,32700)*0.5
 jloop j=i
    mw[1] = iz1
 endjloop
ENDRUN
;
; Adjust gateway distnaces
;(Note: these values come from the 1/5/2021 Central El Dorado Hills Specific
Plan VMT Analysis memorandom)
RUN PGM=MATRIX
```

```
  FILEI MATI[1] = "@TEMP2@"
  FILEO MATO[1] = "@PMDIST@",
   MO=1
   MW[1]=MI.1.1
  ;
  ;Adjust external to internal (XI) gateway distance
   IF (I=650) mw[1]=mw[1]+13.08
   IF (I=651) mw[1]=mw[1]+3.96
   IF (I=652) mw[1]=mw[1]+0
   IF (I=653) mw[1]=mw[1]+20.39
   IF (I=654) mw[1]=mw[1]+10.38
   IF (I=655) mw[1]=mw[1]+8.80
   IF (I=656) mw[1]=mw[1]+0
   IF (I=657) mw[1]=mw[1]+6.4
   IF (I=658) mw[1]=mw[1]+0
   IF (I=659) mw[1]=mw[1]+0
   IF (I=660) mw[1]=mw[1]+7.19
   IF (I=661) mw[1]=mw[1]+8.54
   IF (I=662) mw[1]=mw[1]+6.14
   IF (I=663) mw[1]=mw[1]+5.41
   IF (I=664) mw[1]=mw[1]+12.66
   IF (I=665) mw[1]=mw[1]+5.17
   IF (I=666) mw[1]=mw[1]+7.44
   IF (I=667) mw[1]=mw[1]+0
   IF (I=668) mw[1]=mw[1]+14.21
   IF (I=669) mw[1]=mw[1]+0
   IF (I=670) mw[1]=mw[1]+0
   IF (I=671) mw[1]=mw[1]+16.28
   IF (I=672) mw[1]=mw[1]+0
   IF (I=673) mw[1]=mw[1]+3.82
   IF (I=674) mw[1]=mw[1]+18.38
  ;
  ;Adjust internal to external (IX) gateway distance
   jloop j=650
      mw[1] = mw[1]+12.41
   endjloop
  ;
   jloop j=651
      mw[1] = mw[1]+4.11
   endjloop
  ;
   jloop j=652
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=653
      mw[1] = mw[1]+31.33
   endjloop
  ;
   jloop j=654
      mw[1] = mw[1]+11.07
   endjloop
  ;
   jloop j=655
      mw[1] = mw[1]+11.32
   endjloop
  ;
   jloop j=656
      mw[1] = mw[1]+0
   endjloop
  ;
```

```
 jloop j=657
    mw[1] = mw[1]+6.91
 endjloop
;
 jloop j=658
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=659
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=660
    mw[1] = mw[1]+7.73
 endjloop
;
 jloop j=661
    mw[1] = mw[1]+8.88
 endjloop
;
 jloop j=662
    mw[1] = mw[1]+5.47
 endjloop
;
 jloop j=663
    mw[1] = mw[1]+8.16
 endjloop
;
 jloop j=664
    mw[1] = mw[1]+10.17
 endjloop
;
 jloop j=665
    mw[1] = mw[1]+5.43
 endjloop
;
 jloop j=666
    mw[1] = mw[1]+6.97
 endjloop
;
 jloop j=667
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=668
    mw[1] = mw[1]+15.96
 endjloop
;
 jloop j=669
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=670
    mw[1] = mw[1]+0
 endjloop
;
 jloop j=671
    mw[1] = mw[1]+18.61
 endjloop
;
 jloop j=672
```

```
      mw[1] = mw[1]+0
    endjloop
  ;
    jloop j=673
      mw[1] = mw[1]+3.73
    endjloop
  ;
    jloop j=674
      mw[1] = mw[1]+19.21
    endjloop
  ;
  ENDRUN
  ;
  ;
  ; Evening enterzonal distance skim
  RUN PGM=HWYLOAD
  FILEI NETI = "@EVVNET@"
  FILEO MATO[1] = "@TEMP@",
    MO=1 FORMAT=tpp                                    ; output skim matrix
    PHASE=LINKREAD                                     ; define link groups
     IF (LI.HOVLINK=0) ADDTOGROUP=1                    ; no restriction
     IF (LI.HOVLINK=1) ADDTOGROUP=2                    ; walk
     IF (LI.HOVLINK=2) ADDTOGROUP=3                    ; HOV lanes
     IF (LI.HOVLINK=3) ADDTOGROUP=4                    ; HOV bypassses
     IF (LI.CAPCLASS=99) ADDTOGROUP=5                  ; switched off links
    endphase
    PHASE=ILOOP                                        ; skim path building
      PATHLOAD PATH=li.TIME_1,EXCLUDEGRP=2,5,          ; pathload without HOV links
        MW[1]=PATHTRACE(LI.DISTANCE),SELECTGROUP=1     ; select links used by all
  veh
    endphase
  ENDRUN
  ; intrazonals - fill the diagonal element with half of the rowmin value
  RUN PGM=MATRIX
  FILEI MATI[1] = "@TEMP@"
  FILEO MATO[1] = "@TEMP2@",
    MO=1
    MW[1]=MI.1.1
    iz1 = lowest(1,1,0.5,32700)*0.5
    jloop j=i
      mw[1] = iz1
    endjloop
  ENDRUN
  ;
  ; Adjust gateway distnaces
  ;(Note: these values come from the 1/5/2021 Central El Dorado Hills Specific
  Plan VMT Analysis memorandom)
  RUN PGM=MATRIX
  FILEI MATI[1] = "@TEMP2@"
  FILEO MATO[1] = "@EVVDIST@",
    MO=1
    MW[1]=MI.1.1
  ;
  ;Adjust external to internal (XI) gateway distance
    IF (I=650) mw[1]=mw[1]+13.08
    IF (I=651) mw[1]=mw[1]+3.96
    IF (I=652) mw[1]=mw[1]+0
    IF (I=653) mw[1]=mw[1]+20.39
    IF (I=654) mw[1]=mw[1]+10.38
    IF (I=655) mw[1]=mw[1]+8.80
    IF (I=656) mw[1]=mw[1]+0
```

```
   IF (I=657) mw[1]=mw[1]+6.4
   IF (I=658) mw[1]=mw[1]+0
   IF (I=659) mw[1]=mw[1]+0
   IF (I=660) mw[1]=mw[1]+7.19
   IF (I=661) mw[1]=mw[1]+8.54
   IF (I=662) mw[1]=mw[1]+6.14
   IF (I=663) mw[1]=mw[1]+5.41
   IF (I=664) mw[1]=mw[1]+12.66
   IF (I=665) mw[1]=mw[1]+5.17
   IF (I=666) mw[1]=mw[1]+7.44
   IF (I=667) mw[1]=mw[1]+0
   IF (I=668) mw[1]=mw[1]+14.21
   IF (I=669) mw[1]=mw[1]+0
   IF (I=670) mw[1]=mw[1]+0
   IF (I=671) mw[1]=mw[1]+16.28
   IF (I=672) mw[1]=mw[1]+0
   IF (I=673) mw[1]=mw[1]+3.82
   IF (I=674) mw[1]=mw[1]+18.38
  ;
  ;Adjust internal to external (IX) gateway distance
   jloop j=650
      mw[1] = mw[1]+12.41
   endjloop
  ;
   jloop j=651
      mw[1] = mw[1]+4.11
   endjloop
  ;
   jloop j=652
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=653
      mw[1] = mw[1]+31.33
   endjloop
  ;
   jloop j=654
      mw[1] = mw[1]+11.07
   endjloop
  ;
   jloop j=655
      mw[1] = mw[1]+11.32
   endjloop
  ;
   jloop j=656
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=657
      mw[1] = mw[1]+6.91
   endjloop
  ;
   jloop j=658
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=659
      mw[1] = mw[1]+0
   endjloop
  ;
   jloop j=660
```

```
664         mw[1] = mw[1]+7.73
665       endjloop
666     ;
667       jloop j=661
668         mw[1] = mw[1]+8.88
669       endjloop
670     ;
671       jloop j=662
672         mw[1] = mw[1]+5.47
673       endjloop
674     ;
675       jloop j=663
676         mw[1] = mw[1]+8.16
677       endjloop
678     ;
679       jloop j=664
680         mw[1] = mw[1]+10.17
681       endjloop
682     ;
683       jloop j=665
684         mw[1] = mw[1]+5.43
685       endjloop
686     ;
687       jloop j=666
688         mw[1] = mw[1]+6.97
689       endjloop
690     ;
691       jloop j=667
692         mw[1] = mw[1]+0
693       endjloop
694     ;
695       jloop j=668
696         mw[1] = mw[1]+15.96
697       endjloop
698     ;
699       jloop j=669
700         mw[1] = mw[1]+0
701       endjloop
702     ;
703       jloop j=670
704         mw[1] = mw[1]+0
705       endjloop
706     ;
707       jloop j=671
708         mw[1] = mw[1]+18.61
709       endjloop
710     ;
711       jloop j=672
712         mw[1] = mw[1]+0
713       endjloop
714     ;
715       jloop j=673
716         mw[1] = mw[1]+3.73
717       endjloop
718     ;
719       jloop j=674
720         mw[1] = mw[1]+19.21
721       endjloop
722     ;
723     ENDRUN
724     ;
```

```
;-------------------------------------------------------------------------------
; Combine distance skimes and OD DAta to get VMT (6 classes)
;-------------------------------------------------------------------------------
/*
; AM peak period VMT
RUN PGM=MATRIX
FILEI MATI[1] = "@AMOD@"                                ; OD Tables
; There are 6 tables in the OD file
;   1 = drive alone, no HOV lane use
;   2 = shared ride, no HOV lane use
;   3 = drive alone, with HOV lane use
;   4 = shared ride, with HOV lane use
;   5 = comercial vehicle 2 axles
;   6 = comercial vehicle 3+ axles
FILEI MATI[2] = "@AMDIST@"
; Note: Gateway TAZs are 650-674
FILEO MATO[1] = "@AMVMT@", MO=1-6, NAME= DA, SR, DA_HOV, SR_HOV, C2, C3
  MW[11]=MI.1.1
  MW[12]=MI.1.2
  MW[13]=MI.1.3
  MW[14]=MI.1.4
  MW[15]=MI.1.5
  MW[16]=MI.1.6
  MW[17]=MI.2.1
;
  JLOOP
    MW[1]=MW[11]*MW[17]
    MW[2]=MW[12]*MW[17]
    MW[3]=MW[13]*MW[17]
    MW[4]=MW[14]*MW[17]
    MW[5]=MW[15]*MW[17]
    MW[6]=MW[16]*MW[17]
  ENDJLOOP
ENDRUN
;
;
; Mid day period VMT
RUN PGM=MATRIX
FILEI MATI[1] = "@MDOD@"                                ; OD Tables
; There are 6 tables in the OD file
;   1 = drive alone, no HOV lane use
;   2 = shared ride, no HOV lane use
;   3 = drive alone, with HOV lane use
;   4 = shared ride, with HOV lane use
;   5 = comercial vehicle 2 axles
;   6 = comercial vehicle 3+ axles
FILEI MATI[2] = "@MDDIST@"
; Note: Gateway TAZs are 650-674
FILEO MATO[1] = "@MDVMT@", MO=1-6, NAME= DA, SR, DA_HOV, SR_HOV, C2, C3
  MW[11]=MI.1.1
  MW[12]=MI.1.2
  MW[13]=MI.1.3
  MW[14]=MI.1.4
  MW[15]=MI.1.5
  MW[16]=MI.1.6
  MW[17]=MI.2.1
;
  JLOOP
    MW[1]=MW[11]*MW[17]
    MW[2]=MW[12]*MW[17]
    MW[3]=MW[13]*MW[17]
```

```
      MW[4]=MW[14]*MW[17]
      MW[5]=MW[15]*MW[17]
      MW[6]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ;
  ; PM peak period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@PMOD@"                                ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@PMDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@PMVMT@", MO=1-6, NAME= DA, SR, DA_HOV, SR_HOV, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
      MW[1]=MW[11]*MW[17]
      MW[2]=MW[12]*MW[17]
      MW[3]=MW[13]*MW[17]
      MW[4]=MW[14]*MW[17]
      MW[5]=MW[15]*MW[17]
      MW[6]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ;
  ; Evening period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@EVVOD@"                                ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@EVVDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@EVVVMT@", MO=1-6, NAME= DA, SR, DA_HOV, SR_HOV, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
```

```
      MW[1]=MW[11]*MW[17]
      MW[2]=MW[12]*MW[17]
      MW[3]=MW[13]*MW[17]
      MW[4]=MW[14]*MW[17]
      MW[5]=MW[15]*MW[17]
      MW[6]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  */
  ;
  ;-------------------------------------------------------------------------------
  ; ombine distance skimes and OD DAta to get VMT.
  ; Simplify VMT tables to 4 classes: DA, SR, C2, and C3
  ;-------------------------------------------------------------------------------
  ; AM peak period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@AMOD@"                              ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@AMDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@AMVMTSIMP@", MO=1-4, NAME= DA, SR, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
      MW[1]=MW[11]*MW[17]+MW[13]*MW[17]
      MW[2]=MW[12]*MW[17]+MW[14]*MW[17]
      MW[3]=MW[15]*MW[17]
      MW[4]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ; Mid day period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@MDOD@"                              ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@MDDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@MDVMTSIMP@", MO=1-4, NAME= DA, SR, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
```

```
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
      MW[1]=MW[11]*MW[17]+MW[13]*MW[17]
      MW[2]=MW[12]*MW[17]+MW[14]*MW[17]
      MW[3]=MW[15]*MW[17]
      MW[4]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ; PM peak period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@PMOD@"                              ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@PMDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@PMVMTSIMP@", MO=1-4, NAME= DA, SR, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
    JLOOP
      MW[1]=MW[11]*MW[17]+MW[13]*MW[17]
      MW[2]=MW[12]*MW[17]+MW[14]*MW[17]
      MW[3]=MW[15]*MW[17]
      MW[4]=MW[16]*MW[17]
    ENDJLOOP
  ENDRUN
  ;
  ; Evening period VMT
  RUN PGM=MATRIX
  FILEI MATI[1] = "@EVVOD@"                              ; OD Tables
  ; There are 6 tables in the OD file
  ;   1 = drive alone, no HOV lane use
  ;   2 = shared ride, no HOV lane use
  ;   3 = drive alone, with HOV lane use
  ;   4 = shared ride, with HOV lane use
  ;   5 = comercial vehicle 2 axles
  ;   6 = comercial vehicle 3+ axles
  FILEI MATI[2] = "@EVVDIST@"
  ; Note: Gateway TAZs are 650-674
  FILEO MATO[1] = "@EVVVMTSIMP@", MO=1-4, NAME= DA, SR, C2, C3
    MW[11]=MI.1.1
    MW[12]=MI.1.2
    MW[13]=MI.1.3
    MW[14]=MI.1.4
    MW[15]=MI.1.5
    MW[16]=MI.1.6
    MW[17]=MI.2.1
  ;
```

```
969     JLOOP
970       MW[1]=MW[11]*MW[17]+MW[13]*MW[17]
971       MW[2]=MW[12]*MW[17]+MW[14]*MW[17]
972       MW[3]=MW[15]*MW[17]
973       MW[4]=MW[16]*MW[17]
974     ENDJLOOP
975   ENDRUN
976   ;
977   ;
978   ;
```

```
;-------------------------------------------------------------------------
;
; Step 2: Determine trips by purpose for each time period.
;
;         Inputs: PA tables for HBW, HBS, HBSc, HBO, WO, OO, Commercial,
;                 transit access, and Thru trips by class
;
;         Output for each period: Production to Attraction (PA) and
;                 Attraction to Production (AP) trip tables for
;                    (File 1) drive alone (HBW, HBS, HBSc, HBO, WO,and OO)
;                    (File 2) shared ride (HBW, HBS, HBSc, HBO, WO,and OO)
;                    (File 3) C2
;                    (File 4) C3
;        these are then  further processed to multiclass OD tables and
;        multiclass OD percentage tables.
;
;        Combine multiclass PA and AP tables to true OD tables for C2, C3, and
;        by purpose for drive alone and shared ride. Then estiumate the
;        percentage of each trip...all by period.
;
;        Inputs: PA and AP tables by purpose for DA, SR, C2 and C3 for each
;                 time period.
;        Outputs: Fraction of trips for DA (by purpose), SR (by purpose)
;                  C2, and C3.
;        These outputs from step 2 will be combined with VMT by class from
;        step 1 to estimate total VMT by trip purpose in step 3.
;
;-------------------------------------------------------------------------
; Note This is addopted from the script that parse the daily PA's to OD pairs
; by time-of-day (i.e., "EDC_CAT_082118C\APPLICATIONS1\03_ASSIGN\3AMAT00C.S")
; and from 3AMAT00D.S which is under the first highway assignment step in
; the assenment portion of the catalog.
;-------------------------------------------------------------------------
;    We have TAZ-to-TAZ VMT for DA, SR C2 and C3.
;
;   For residential we want want HBW, HBS, HBSc, and HBO trips for DA and SR.
;   For office we want HBW.
;   To derive percentages, we also want total OD pairs across HBW, HBS, HBS, HBO,
;   WO, OO, C2, and C3.
;-------------------------------------------------------------------------
;-------------------------------------------------------------------------
; Input daily PA tables (sub tables in parentheses)
;-------------------------------------------------------------------------
HBW='.\PA_Tables\2040HBWM.MAT'    ;home based work
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
HBS='.\PA_Tables\2040HBSM.MAT'    ;home based shop
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
HBSC='.\PA_Tables\2040HSCM.MAT'   ;home based school
;                         (1)m1, (2)m2 ???
HBO='.\PA_Tables\2040HBOM.MAT'     ;home based other
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
WO='.\PA_Tables\2040WOM.MAT'       ;work-other
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
OO='.\PA_Tables\2040OOM.MAT'       ;other-other
;                        (1)DA, (2)SR2, (3)SR3, (4)transit access walk,
;                        (5)transit access drive, (6)walk, (7)bike
NWTD='.\PA_Tables\2040NWTD.MAT'   ;used for commercial vehicle trips (???)
```

```
;                          (1)HBS, (2)HBSC, (3)HBO, (4)WO, (5)OO,
;                          (6)C2, (7)C3
TDVT='.\PA_Tables\TDVT.MAT'       ;transit access
;                          (1)HBW DA, (2)HBW SR, (3)HBS DA, (4)HBS SR,
;                          (5)HBO DA, (6)HBO SR, (7)WO DA, (8)WO SR,
;                          (9)OO DA, (10)OO SR)
THRU='.\PA_Tables\2040THRU.MAT'   ;through trips
;                          (1)auto, (2)C3
;
;-------------------------------------------------------------------------------
; Temp output trips by purpose
;-------------------------------------------------------------------------------
; AM Peak Period
DA_AM='.\Temp_Files\DA_AM_Trips_by_Purpose.mat'
SR_AM='.\Temp_Files\SR_AM_Trips_by_Purpose.mat'
C2_AM='.\Temp_Files\C2_AM_Trips_by_Purpose.mat'
C3_AM='.\Temp_Files\C3_AM_Trips_by_Purpose.mat'
;
; mid day Period
DA_MD='.\Temp_Files\DA_MD_Trips_by_Purpose.mat'
SR_MD='.\Temp_Files\SR_MD_Trips_by_Purpose.mat'
C2_MD='.\Temp_Files\C2_MD_Trips_by_Purpose.mat'
C3_MD='.\Temp_Files\C3_MD_Trips_by_Purpose.mat'
;
; PM Peak Period
DA_PM='.\Temp_Files\DA_PM_Trips_by_Purpose.mat'
SR_PM='.\Temp_Files\SR_PM_Trips_by_Purpose.mat'
C2_PM='.\Temp_Files\C2_PM_Trips_by_Purpose.mat'
C3_PM='.\Temp_Files\C3_PM_Trips_by_Purpose.mat'
;
; Evening Peak Period
DA_EV='.\Temp_Files\DA_EV_Trips_by_Purpose.mat'
SR_EV='.\Temp_Files\SR_EV_Trips_by_Purpose.mat'
C2_EV='.\Temp_Files\C2_EV_Trips_by_Purpose.mat'
C3_EV='.\Temp_Files\C3_EV_Trips_by_Purpose.mat'
;
;-------------------------------------------------------------------------------
; Output multi-class OD tables
;-------------------------------------------------------------------------------
AM_OD=  '.\Temp_Files\AM_MULTICLASS.MAT'
AM_FRAC='AM_FRACTIONS_BY_PURPOSE.MAT'
MD_OD=  '.\Temp_Files\MD_MULTICLASS.MAT'
MD_FRAC='MD_FRACTIONS_BY_PURPOSE.MAT'
PM_OD=  '.\Temp_Files\PM_MULTICLASS.MAT'
PM_FRAC='PM_FRACTIONS_BY_PURPOSE.MAT'
EV_OD=  '.\Temp_Files\EV_MULTICLASS.MAT'
EV_FRAC='EV_FRACTIONS_BY_PURPOSE.MAT'
DAILY_OD='Daily_multiclass_OD.MAT'
;
;-------------------------------------------------------------------------------
; Estimate trip purposes for AM3
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; Inputs
FILEI MATI[1] = "@HBW@"
FILEI MATI[2] = "@HBS@"
FILEI MATI[3] = "@HBSC@"
FILEI MATI[4] = "@HBO@"
FILEI MATI[5] = "@WO@"
FILEI MATI[6] = "@OO@"
FILEI MATI[7] = "@nwtd@"
```

```
  FILEI MATI[8] = "@TDVT@"
  FILEI MATI[9] = "@THRU@"
  ;
  ; Outputs
  FILEO MATO[1] = "@DA_AM@", MO=21-34,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[2] = "@SR_AM@", MO=41-54,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[3] = "@C2_AM@", MO=55-56, NAME= C2_PA, C2_AP
  FILEO MATO[4] = "@C3_AM@", MO=57-58, NAME= C3_PA, C3_AP
  ;
  ; Input DA trips
    MW[1] = mi.1.1 *0.01                        ; HBW (scaled by 100)
    MW[2] = mi.2.1                              ; HBS (unscaled)
    MW[3] = (mi.3.1*0.06 + mi.3.1.t*0.22)       ; HBSc (unscaled)
    MW[4] = mi.4.1                              ; HBO (unscaled)
    MW[5] = mi.5.1                              ; WO (unscaled)
    MW[6] = mi.6.1                              ; OO (unscaled)
  ;
  ; Input and convert SR to Vehicle Trips
    MW[11] = (mi.1.2*0.50 + mi.1.3*0.302)*0.01 ; HBW SR (scaled by 100)
    MW[12] = (mi.2.2*0.50 + mi.2.3*0.272)       ; HBS (unscaled)
    MW[13] = (mi.3.1*0.34)                      ; HBSc (unscaled)
    MW[14] = (mi.4.2*0.50 + mi.4.3*0.287)       ; HBO (unscaled)
    MW[15] = (mi.5.2*0.50 + mi.5.3*0.279)       ; WO (unscaled)
    MW[16] = (mi.6.2*0.50 + mi.6.3*0.272)       ; OO (unscaled)
  ;
  ; Drive Alone P-A to O-D factoring
  ; P-A
    MW[21] = 0.330 *MW[1] + 0.406 *mi.8.1       ;HBW + HBW TD access
    MW[23] = 0.052 *MW[2] + 0.185 *mi.8.3       ;HBS + HBS TD access
    MW[25] = 0.523 *MW[3]                       ;HBSc
    MW[27] = 0.147 *MW[4] + 0.108 *mi.8.5       ;HBO + HBO TD access
    MW[29] = 0.146 *MW[5] + 0.075 *mi.8.7       ;WO + WO TD access
    MW[31] = 0.063 *MW[6] + 0.1675*mi.8.9       ;OO + OO TD access
    MW[33] = 0.090 *mi.9.1*0.8                  ;Thru
  ;
  ; A-P
    MW[22] = 0.014 *MW[1] + 0.0   *mi.8.1       ;HBW + HBW TD access
    MW[24] = 0.026 *MW[2] + 0.004 *mi.8.3       ;HBS + HBS TD access
    MW[26] = 0.006 *MW[3]                       ;HBSc
    MW[28] = 0.045 *MW[4] + 0.004 *mi.8.5       ;HBO + HBO TD access
    MW[30] = 0.040 *MW[5] + 0.093 *mi.8.7       ;WO + WO TD access
    MW[32] = 0.063 *MW[6] + 0.1675*mi.8.9       ;OO + OO TD access
    MW[34] = 0.090 *mi.9.1*0.8                  ;Thru
  ;
  ; Shared Ride  P-A to O-D factoring
  ; P-A
    MW[41] = 0.365 *MW[11] + 0.406 *mi.8.2       ;HBW + HBW TD access
    MW[43] = 0.052 *MW[12] + 0.185 *mi.8.4       ;HBS + HBS TD access
    MW[45] = 0.523 *MW[13]                       ;HBSc
    MW[47] = 0.147 *MW[14] + 0.108 *mi.8.6       ;HBO + HBO TD access
    MW[49] = 0.146 *MW[15] + 0.075 *mi.8.8       ;WO + WO TD access
    MW[51] = 0.063 *MW[16] + 0.1675*mi.8.10      ;OO + OO TD access
    MW[53] = 0.090 *mi.9.1*0.2                   ;Thru
  ;
  ; A-P
```

```
    MW[42] = 0.009 *MW[11] + 0.0   *mi.8.2       ;HBW + HBW TD access
    MW[43] = 0.026 *MW[12] + 0.004 *mi.8.4       ;HBS + HBS TD access
    MW[46] = 0.006 *MW[13]                       ;HBSc
    MW[48] = 0.045 *MW[14] + 0.004 *mi.8.6       ;HBO + HBO TD access
    MW[50] = 0.040 *MW[15] + 0.093 *mi.8.8       ;WO + WO TD access
    MW[52] = 0.063 *MW[16] + 0.1675*mi.8.10      ;OO + OO TD access
    MW[54] = 0.090 *MI.9.1*0.2                   ;Thru
  ;
  ; C2  P-A to O-D factoring
    MW[55] = 0.091*mi.7.6                        ; P-A
    MW[56] = MW[55]                              ; A-P
  ;
  ; C3  P-A to O-D factoring
    MW[57] = 0.091*mi.7.7 + 0.91*mi.9.2          ; P-A (with XX commercial)
    MW[58] = MW[57]                              ; A-P
  ENDRUN
  ;
  ;
  ;
  ;-------------------------------------------------------------------------------
  ; Estimate trip purposes for mid day
  ;-------------------------------------------------------------------------------
  RUN PGM=MATRIX
  ; Inputs
  FILEI MATI[1] = "@HBW@"
  FILEI MATI[2] = "@HBS@"
  FILEI MATI[3] = "@HBSC@"
  FILEI MATI[4] = "@HBO@"
  FILEI MATI[5] = "@WO@"
  FILEI MATI[6] = "@OO@"
  FILEI MATI[7] = "@nwtd@"
  FILEI MATI[8] = "@TDVT@"
  FILEI MATI[9] = "@THRU@"
  ;
  ; Outputs
  FILEO MATO[1] = "@DA_MD@", MO=21-34,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[2] = "@SR_MD@", MO=41-54,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[3] = "@C2_MD@", MO=55-56, NAME= C2_PA, C2_AP
  FILEO MATO[4] = "@C3_MD@", MO=57-78, NAME= C3_PA, C3_AP
  ;
  ; Input DA trips
    MW[1] = mi.1.1 *0.01                         ; HBW (scaled by 100)
    MW[2] = mi.2.1                               ; HBS (unscaled)
    MW[3] = (mi.3.1*0.06 + mi.3.1.t*0.22)        ; HBSc (unscaled)
    MW[4] = mi.4.1                               ; HBO (unscaled)
    MW[5] = mi.5.1                               ; WO (unscaled)
    MW[6] = mi.6.1                               ; OO (unscaled)
  ;
  ; Input and convert SR to Vehicle Trips
    MW[11] = (mi.1.2*0.50 + mi.1.3*0.302)*0.01 ; HBW SR (scaled by 100)
    MW[12] = (mi.2.2*0.50 + mi.2.3*0.272)        ; HBS (unscaled)
    MW[13] = (mi.3.1*0.34)                       ; HBSc (unscaled)
    MW[14] = (mi.4.2*0.50 + mi.4.3*0.287)        ; HBO (unscaled)
    MW[15] = (mi.5.2*0.50 + mi.5.3*0.279)        ; WO (unscaled)
    MW[16] = (mi.6.2*0.50 + mi.6.3*0.272)        ; OO (unscaled)
```

```
;
; Drive Alone P-A to O-D factoring
; P-A
  MW[21] = 0.082 *MW[1] + 0.044 *mi.8.1      ;HBW + HBW TD access
  MW[23] = 0.145 *MW[2] + 0.015 *mi.8.3      ;HBS + HBS TD access
  MW[25] = 0.028 *MW[3]                      ;HBSc
  MW[27] = 0.135 *MW[4] + 0.131 *mi.8.5      ;HBO + HBO TD access
  MW[29] = 0.219 *MW[5] + 0.394 *mi.8.7      ;WO + WO TD access
  MW[31] = 0.194 *MW[6] + 0.1295*mi.8.9      ;OO + OO TD access
  MW[33] = 0.180 *mi.9.1*0.8                 ;Thru
;
; A-P
  MW[22] = 0.076 *MW[1] + 0.0   *mi.8.1      ;HBW + HBW TD access
  MW[24] = 0.189 *MW[2] + 0.311 *mi.8.3      ;HBS + HBS TD access
  MW[26] = 0.119 *MW[3]                      ;HBSc
  MW[28] = 0.109 *MW[4] + 0.138 *mi.8.5      ;HBO + HBO TD access
  MW[30] = 0.203 *MW[5] + 0.309 *mi.8.7      ;WO + WO TD access
  MW[32] = 0.194 *MW[6] + 0.1295*mi.8.9      ;OO + OO TD access
  MW[34] = 0.180 *mi.9.1*0.8                 ;Thru
;
; Shared Ride  P-A to O-D factoring
; P-A
  MW[41] = 0.083 *MW[11] + 0.044 *mi.8.2      ;HBW + HBW TD access
  MW[43] = 0.145 *MW[12] + 0.015 *mi.8.4      ;HBS + HBS TD access
  MW[45] = 0.028 *MW[13]                      ;HBSc
  MW[47] = 0.135 *MW[14] + 0.131 *mi.8.6      ;HBO + HBO TD access
  MW[49] = 0.219 *MW[15] + 0.394 *mi.8.8      ;WO + WO TD access
  MW[51] = 0.194 *MW[16] + 0.129*mi.8.10      ;OO + OO TD access
  MW[53] = 0.180 *mi.9.1*0.2                  ;Thru
;
; A-P
  MW[42] = 0.064 *MW[11] + 0.0   *mi.8.2      ;HBW + HBW TD access
  MW[42] = 0.189 *MW[12] + 0.311 *mi.8.4      ;HBS + HBS TD access
  MW[46] = 0.119 *MW[13]                      ;HBSc
  MW[48] = 0.109 *MW[14] + 0.138 *mi.8.6      ;HBO + HBO TD access
  MW[50] = 0.203 *MW[15] + 0.309 *mi.8.8      ;WO + WO TD access
  MW[52] = 0.194 *MW[16] + 0.129 *mi.8.10     ;OO + OO TD access
  MW[54] = 0.180 *MI.9.1*0.2                  ;Thru
;
; C2  P-A to O-D factoring
  MW[55] = 0.144*mi.7.6                       ; P-A
  MW[56] = MW[55]                             ; A-P
;
; C3  P-A to O-D factoring
  MW[57] = 0.1625*mi.7.7 + 0.1625*mi.9.2      ; P-A (with XX commercial)
  MW[58] = MW[57]                             ; A-P
ENDRUN
;
;
;
;-------------------------------------------------------------------------------
; Estimate trip purposes for PM3
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; Inputs
FILEI MATI[1] = "@HBW@"
FILEI MATI[2] = "@HBS@"
FILEI MATI[3] = "@HBSC@"
FILEI MATI[4] = "@HBO@"
FILEI MATI[5] = "@WO@"
FILEI MATI[6] = "@OO@"
```

```
  FILEI MATI[7] = "@nwtd@"
  FILEI MATI[8] = "@TDVT@"
  FILEI MATI[9] = "@THRU@"
  ;
  ; Outputs
  FILEO MATO[1] = "@DA_PM@", MO=21-34,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[2] = "@SR_PM@", MO=41-54,
                  NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                        HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                        THRU_PA, THRU_AP
  FILEO MATO[3] = "@C2_PM@", MO=55-56, NAME= C2_PA, C2_AP
  FILEO MATO[4] = "@C3_PM@", MO=57-78, NAME= C3_PA, C3_AP
  ;
  ; Input DA trips
    MW[1] = mi.1.1 *0.01                        ; HBW (scaled by 100)
    MW[2] = mi.2.1                              ; HBS (unscaled)
    MW[3] = (mi.3.1*0.06 + mi.3.1.t*0.22)       ; HBSc (unscaled)
    MW[4] = mi.4.1                              ; HBO (unscaled)
    MW[5] = mi.5.1                              ; WO (unscaled)
    MW[6] = mi.6.1                              ; OO (unscaled)
  ;
  ; Input and convert SR to Vehicle Trips
    MW[11] = (mi.1.2*0.50 + mi.1.3*0.302)*0.01 ; HBW SR (scaled by 100)
    MW[12] = (mi.2.2*0.50 + mi.2.3*0.272)       ; HBS (unscaled)
    MW[13] = (mi.3.1*0.34)                      ; HBSc (unscaled)
    MW[14] = (mi.4.2*0.50 + mi.4.3*0.287)       ; HBO (unscaled)
    MW[15] = (mi.5.2*0.50 + mi.5.3*0.279)       ; WO (unscaled)
    MW[16] = (mi.6.2*0.50 + mi.6.3*0.272)       ; OO (unscaled)
  ;
  ; Drive Alone P-A to O-D factoring
  ; P-A
    MW[21] = 0.026 *MW[1] + 0.0 *mi.8.1         ;HBW + HBW TD access
    MW[23] = 0.093 *MW[2] + 0.069 *mi.8.3       ;HBS + HBS TD access
    MW[25] = 0.023 *MW[3]                       ;HBSc
    MW[27] = 0.088 *MW[4] + 0.154 *mi.8.5       ;HBO + HBO TD access
    MW[29] = 0.075 *MW[5] + 0.039 *mi.8.7       ;WO + WO TD access
    MW[31] = 0.142 *MW[6] + 0.146*mi.8.9        ;OO + OO TD access
    MW[33] = 0.090 *mi.9.1*0.8                  ;Thru
  ;
  ; A-P
    MW[22] = 0.226 *MW[1] + 0.465 *mi.8.1       ;HBW + HBW TD access
    MW[24] = 0.213 *MW[2] + 0.171 *mi.8.3       ;HBS + HBS TD access
    MW[26] = 0.246 *MW[3]                       ;HBSc
    MW[28] = 0.133 *MW[4] + 0.176 *mi.8.5       ;HBO + HBO TD access
    MW[30] = 0.207 *MW[5] + 0.064 *mi.8.7       ;WO + WO TD access
    MW[32] = 0.142 *MW[6] + 0.146 *mi.8.9       ;OO + OO TD access
    MW[34] = 0.090 *mi.9.1*0.8                  ;Thru
  ;
  ; Shared Ride  P-A to O-D factoring
  ; P-A
    MW[41] = 0.037 *MW[11] + 0.0 *mi.8.2         ;HBW + HBW TD access
    MW[43] = 0.093 *MW[12] + 0.069 *mi.8.4       ;HBS + HBS TD access
    MW[45] = 0.023 *MW[13]                       ;HBSc
    MW[47] = 0.088 *MW[14] + 0.154 *mi.8.6       ;HBO + HBO TD access
    MW[49] = 0.075 *MW[15] + 0.039 *mi.8.8       ;WO + WO TD access
    MW[51] = 0.142 *MW[16] + 0.146 *mi.8.10      ;OO + OO TD access
    MW[53] = 0.090 *mi.9.1*0.2                   ;Thru
  ;
```

```
; A-P
  MW[42] = 0.211 *MW[11] + 0.465 *mi.8.2      ;HBW + HBW TD access
  MW[44] = 0.213 *MW[12] + 0.171 *mi.8.4      ;HBS + HBS TD access
  MW[46] = 0.246 *MW[13]                      ;HBSc
  MW[48] = 0.133 *MW[14] + 0.176 *mi.8.6      ;HBO + HBO TD access
  MW[50] = 0.207 *MW[15] + 0.064 *mi.8.8      ;WO + WO TD access
  MW[52] = 0.142 *MW[16] + 0.146 *mi.8.10     ;OO + OO TD access
  MW[54] = 0.090 *MI.9.1*0.2                  ;Thru
;
; C2  P-A to O-D factoring
  MW[55] = 0.1175*mi.7.6                       ; P-A
  MW[56] = MW[55]                             ; A-P
;
; C3  P-A to O-D factoring
  MW[57] = 0.072*mi.7.7 + 0.072*mi.9.2        ; P-A (with XX commercial)
  MW[58] = MW[57]                             ; A-P
ENDRUN
;
;
;
;-------------------------------------------------------------------------------
; Estimate trip purposes for evening
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; Inputs
FILEI MATI[1] = "@HBW@"
FILEI MATI[2] = "@HBS@"
FILEI MATI[3] = "@HBSC@"
FILEI MATI[4] = "@HBO@"
FILEI MATI[5] = "@WO@"
FILEI MATI[6] = "@OO@"
FILEI MATI[7] = "@nwtd@"
FILEI MATI[8] = "@TDVT@"
FILEI MATI[9] = "@THRU@"
;
; Outputs
FILEO MATO[1] = "@DA_EV@", MO=21-34,
                NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                      HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                      THRU_PA, THRU_AP
FILEO MATO[2] = "@SR_EV@", MO=41-54,
                NAME= HBW_PA, HBW_AP,    HBS_PA, HBS_AP,    HBSc_PA, HBSC_AP,
                      HBO_PA, HBO_AP,    WO_PA, WO_AP,      OO_PA, OO_AP,
                      THRU_PA, THRU_AP
FILEO MATO[3] = "@C2_EV@", MO=55-56, NAME= C2_PA, C2_AP
FILEO MATO[4] = "@C3_EV@", MO=57-78, NAME= C3_PA, C3_AP
;
; Input DA trips
  MW[1] = mi.1.1 *0.01                      ; HBW (scaled by 100)
  MW[2] = mi.2.1                            ; HBS (unscaled)
  MW[3] = (mi.3.1*0.06 + mi.3.1.t*0.22)     ; HBSc (unscaled)
  MW[4] = mi.4.1                            ; HBO (unscaled)
  MW[5] = mi.5.1                            ; WO (unscaled)
  MW[6] = mi.6.1                            ; OO (unscaled)
;
; Input and convert SR to Vehicle Trips
  MW[11] = (mi.1.2*0.50 + mi.1.3*0.302)*0.01 ; HBW SR (scaled by 100)
  MW[12] = (mi.2.2*0.50 + mi.2.3*0.272)     ; HBS (unscaled)
  MW[13] = (mi.3.1*0.34)                    ; HBSc (unscaled)
  MW[14] = (mi.4.2*0.50 + mi.4.3*0.287)     ; HBO (unscaled)
  MW[15] = (mi.5.2*0.50 + mi.5.3*0.279)     ; WO (unscaled)
```

```
  MW[16] = (mi.6.2*0.50 + mi.6.3*0.272)      ; OO (unscaled)
;
; Drive Alone P-A to O-D factoring
; P-A
  MW[21] = 0.098 *MW[1] + 0.048 *mi.8.1      ;HBW + HBW TD access
  MW[23] = 0.089 *MW[2] + 0.136 *mi.8.3      ;HBS + HBS TD access
  MW[25] = 0.018 *MW[3]                      ;HBSc
  MW[27] = 0.140 *MW[4] + 0.128 *mi.8.5      ;HBO + HBO TD access
  MW[29] = 0.036 *MW[5] + 0.0 *mi.8.7        ;WO + WO TD access
  MW[31] = 0.101 *MW[6] + 0.057*mi.8.9       ;OO + OO TD access
  MW[33] = 0.140 *mi.9.1*0.8                 ;Thru
;
; A-P
  MW[22] = 0.149 *MW[1] + 0.037 *mi.8.1      ;HBW + HBW TD access
  MW[24] = 0.194 *MW[2] + 0.109 *mi.8.3      ;HBS + HBS TD access
  MW[26] = 0.036 *MW[3]                      ;HBSc
  MW[28] = 0.204 *MW[4] + 0.161 *mi.8.5      ;HBO + HBO TD access
  MW[30] = 0.072 *MW[5] + 0.026 *mi.8.7      ;WO + WO TD access
  MW[32] = 0.101 *MW[6] + 0.057 *mi.8.9      ;OO + OO TD access
  MW[34] = 0.140 *mi.9.1*0.8                 ;Thru
;
; Shared Ride  P-A to O-D factoring
; P-A
  MW[41] = 0.082 *MW[11] + 0.048 *mi.8.2      ;HBW + HBW TD access
  MW[43] = 0.089 *MW[12] + 0.136 *mi.8.4      ;HBS + HBS TD access
  MW[45] = 0.018 *MW[13]                      ;HBSc
  MW[47] = 0.140 *MW[14] + 0.128 *mi.8.6      ;HBO + HBO TD access
  MW[49] = 0.036 *MW[15] + 0.0 *mi.8.8        ;WO + WO TD access
  MW[51] = 0.101 *MW[16] + 0.057 *mi.8.10     ;OO + OO TD access
  MW[53] = 0.140 *mi.9.1*0.2                  ;Thru
;
; A-P
  MW[42] = 0.148 *MW[11] + 0.037 *mi.8.2      ;HBW + HBW TD access
  MW[44] = 0.194 *MW[12] + 0.109 *mi.8.4      ;HBS + HBS TD access
  MW[46] = 0.036 *MW[13]                      ;HBSc
  MW[48] = 0.204 *MW[14] + 0.161 *mi.8.6      ;HBO + HBO TD access
  MW[50] = 0.072 *MW[15] + 0.026 *mi.8.8      ;WO + WO TD access
  MW[52] = 0.101 *MW[16] + 0.057 *mi.8.10     ;OO + OO TD access
  MW[54] = 0.140 *MI.9.1*0.2                  ;Thru
;
; C2  P-A to O-D factoring
  MW[55] = 0.1475*mi.7.6                      ; P-A
  MW[56] = MW[55]                             ; A-P
;
; C3  P-A to O-D factoring
  MW[57] = 0.1745*mi.7.7 + 0.1745*mi.9.2      ; P-A (with XX commercial)
  MW[58] = MW[57]                             ; A-P
ENDRUN
;*************************************************************************
;
;-------------------------------------------------------------------------
;  Combine P-A and A-P into assignable vehicle trips and estimate percentages
;-------------------------------------------------------------------------
;
;-------------------------------------------------------------------------
; For A3 period,
;-------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@DA_AM@"
FILEI MATI[2] = "@SR_AM@"
```

```
  FILEI MATI[3] = "@C2_AM@"
  FILEI MATI[4] = "@C3_AM@"
  ;
  ; OUTPUTS
  FILEO MATO[1] = "@AM_OD@'", mo=1-17, name=
                  DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                  DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                  DA_WO, SR_WO, DA_OO, SR_OO,
                  DA_THRU, SR_THRU, C2, C3, TOT
  FILEO MATO[2] = "@AM_FRAC@'", mo=21-37, name=
                  DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                  DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                  DA_WO, SR_WO, DA_OO, SR_OO,
                  DA_THRU, SR_THRU, C2, C3, TOT
  ;
  ; TRIPS
  ; HBW
    MW[1] = mi.1.1 + mi.1.2.t                                   ;DA_HBW
    MW[2] = mi.2.1 + mi.2.2.t                                   ;SR_HBW
  ; HBS
    MW[3] = mi.1.3 + mi.1.4.t                                   ;DA_HBS
    MW[4] = mi.2.3 + mi.2.4.t                                   ;SR_HBS
  ; HBSC
    MW[5] = mi.1.5 + mi.1.6.t                                   ;DA_HBSC
    MW[6] = mi.2.5 + mi.2.6.t                                   ;SR_HBSC
  ; HBO
    MW[7] = mi.1.7 + mi.1.8.t                                   ;DA_HBO
    MW[8] = mi.2.7 + mi.2.8.t                                   ;SR_HBO
  ; WO
    MW[9] = mi.1.9 + mi.1.10.t                                  ;DA_WO
    MW[10] = mi.2.9 + mi.2.10.t                                 ;SR_WO
  ; OO
    MW[11] = mi.1.11 + mi.1.12.t                                ;DA_OO
    MW[12] = mi.2.11 + mi.2.12.t                                ;SR_OO
  ; THRU
    MW[13] = mi.1.13 + mi.1.14.t                                ;DA_THRU
    MW[14] = mi.2.13 + mi.2.14.t                                ;SR_THRU
  ; C2
    MW[15] = mi.3.1 + mi.3.2.t                                  ;C2
  ; C3
    MW[16] = mi.4.1 + mi.4.2.t                                  ;C2
  ; TOTAL
    MW[17]=MW[1] +MW[2] +MW[3] +MW[4] +MW[5] +MW[6] +           ;TOTAL
           MW[7] +MW[8] +MW[9] +MW[10]+MW[11]+MW[12]+
           MW[13]+MW[14]+MW[15]+MW[16]
  ;
  ; fRACTIONS
  ; HBW
    JLOOP
      IF (MW[17] == 0)
        MW[21] = 0
        MW[22] = 0
        MW[23] = 0
        MW[24] = 0
        MW[25] = 0
        MW[26] = 0
        MW[27] = 0
        MW[28] = 0
        MW[29] = 0
        MW[30] = 0
        MW[31] = 0
```

```
        MW[32] = 0
        MW[33] = 0
        MW[34] = 0
        MW[35] = 0
        MW[36] = 0
      ELSE
        MW[21] = MW[1] / MW[17]                                  ;DA_HBW
        MW[22] = MW[2] / MW[17]                                  ;SR_HBW
  ;
        MW[23] = MW[3] / MW[17]                                  ;DA_HBS
        MW[24] = MW[4] / MW[17]                                  ;SR_HBS
  ;
        MW[25] = MW[5] / MW[17]                                  ;DA_HBSC
        MW[26] = MW[6] / MW[17]                                  ;SR_HBSC
  ;
        MW[27] = MW[7] / MW[17]                                  ;DA_HBO
        MW[28] = MW[8] / MW[17]                                  ;SR_HBO
  ;
        MW[29] = MW[9] / MW[17]                                  ;DA_WO
        MW[30] = MW[10] / MW[17]                                 ;SR_WO
  ;
        MW[31] = MW[11] / MW[17]                                 ;DA_OO
        MW[32] = MW[12] / MW[17]                                 ;SR_OO
  ;
        MW[33] = MW[13] / MW[17]                                 ;DA_THRU
        MW[34] = MW[14] / MW[17]                                 ;SR_THRY
  ;
        MW[35] = MW[15] / MW[17]                                 ;C2
        MW[36] = MW[16] / MW[17]                                 ;C3
      ENDIF
    ENDJLOOP
    MW[37]=MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26] +           ;TOTAL
           MW[27]+MW[28]+MW[29]+ MW[30]+MW[31]+MW[32]+
           MW[33]+MW[34]+MW[35]+MW[36]
ENDRUN
;
;-------------------------------------------------------------------------------
; For mid day period,
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@DA_MD@"
FILEI MATI[2] = "@SR_MD@"
FILEI MATI[3] = "@C2_MD@"
FILEI MATI[4] = "@C3_MD@"
;
; OUTPUTS
FILEO MATO[1] = "@MD_OD@'", mo=1-17, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
FILEO MATO[2] = "@MD_FRAC@'", mo=21-37, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
;
; TRIPS
; HBW
  MW[1] = mi.1.1 + mi.1.2.t                                      ;DA_HBW
```

```
611     MW[2] = mi.2.1 + mi.2.2.t                                   ;SR_HBW
612   ; HBS
613     MW[3] = mi.1.3 + mi.1.4.t                                   ;DA_HBS
614     MW[4] = mi.2.3 + mi.2.4.t                                   ;SR_HBS
615   ; HBSC
616     MW[5] = mi.1.5 + mi.1.6.t                                   ;DA_HBSC
617     MW[6] = mi.2.5 + mi.2.6.t                                   ;SR_HBSC
618   ; HBO
619     MW[7] = mi.1.7 + mi.1.8.t                                   ;DA_HBO
620     MW[8] = mi.2.7 + mi.2.8.t                                   ;SR_HBO
621   ; WO
622     MW[9] = mi.1.9 + mi.1.10.t                                  ;DA_WO
623     MW[10] = mi.2.9 + mi.2.10.t                                 ;SR_WO
624   ; OO
625     MW[11] = mi.1.11 + mi.1.12.t                                ;DA_OO
626     MW[12] = mi.2.11 + mi.2.12.t                                ;SR_OO
627   ; THRU
628     MW[13] = mi.1.13 + mi.1.14.t                                ;DA_THRU
629     MW[14] = mi.2.13 + mi.2.14.t                                ;SR_THRU
630   ; C2
631     MW[15] = mi.3.1 + mi.3.2.t                                  ;C2
632   ; C3
633     MW[16] = mi.4.1 + mi.4.2.t                                  ;C2
634   ; TOTAL
635     MW[17]=MW[1] +MW[2] +MW[3] +MW[4] +MW[5] +MW[6] +           ;TOTAL
636            MW[7] +MW[8] +MW[9] +MW[10]+MW[11]+MW[12]+
637            MW[13]+MW[14]+MW[15]+MW[16]
638   ;
639   ; fRACTIONS
640   ; HBW
641     JLOOP
642       IF (MW[17] == 0)
643         MW[21] = 0
644         MW[22] = 0
645         MW[23] = 0
646         MW[24] = 0
647         MW[25] = 0
648         MW[26] = 0
649         MW[27] = 0
650         MW[28] = 0
651         MW[29] = 0
652         MW[30] = 0
653         MW[31] = 0
654         MW[32] = 0
655         MW[33] = 0
656         MW[34] = 0
657         MW[35] = 0
658         MW[36] = 0
659       ELSE
660         MW[21] = MW[1] / MW[17]                                 ;DA_HBW
661         MW[22] = MW[2] / MW[17]                                 ;SR_HBW
662    ;
663         MW[23] = MW[3] / MW[17]                                 ;DA_HBS
664         MW[24] = MW[4] / MW[17]                                 ;SR_HBS
665    ;
666         MW[25] = MW[5] / MW[17]                                 ;DA_HBSC
667         MW[26] = MW[6] / MW[17]                                 ;SR_HBSC
668    ;
669         MW[27] = MW[7] / MW[17]                                 ;DA_HBO
670         MW[28] = MW[8] / MW[17]                                 ;SR_HBO
671    ;
```

```
        MW[29] = MW[9] / MW[17]                                    ;DA_WO
        MW[30] = MW[10] / MW[17]                                   ;SR_WO
   ;
        MW[31] = MW[11] / MW[17]                                   ;DA_OO
        MW[32] = MW[12] / MW[17]                                   ;SR_OO
   ;
        MW[33] = MW[13] / MW[17]                                   ;DA_THRU
        MW[34] = MW[14] / MW[17]                                   ;SR_THRY
   ;
        MW[35] = MW[15] / MW[17]                                   ;C2
        MW[36] = MW[16] / MW[17]                                   ;C3
       ENDIF
    ENDJLOOP
    MW[37]=MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26] +             ;TOTAL
           MW[27]+MW[28]+MW[29]+ MW[30]+MW[31]+MW[32]+
           MW[33]+MW[34]+MW[35]+MW[36]
ENDRUN
;
;-------------------------------------------------------------------------------
; For P3 period,
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@DA_PM@"
FILEI MATI[2] = "@SR_PM@"
FILEI MATI[3] = "@C2_PM@"
FILEI MATI[4] = "@C3_PM@"
;
; OUTPUTS
FILEO MATO[1] = "@PM_OD@'", mo=1-17, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
FILEO MATO[2] = "@PM_FRAC@'", mo=21-37, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
;
; TRIPS
; HBW
  MW[1] = mi.1.1 + mi.1.2.t                                        ;DA_HBW
  MW[2] = mi.2.1 + mi.2.2.t                                        ;SR_HBW
; HBS
  MW[3] = mi.1.3 + mi.1.4.t                                        ;DA_HBS
  MW[4] = mi.2.3 + mi.2.4.t                                        ;SR_HBS
; HBSC
  MW[5] = mi.1.5 + mi.1.6.t                                        ;DA_HBSC
  MW[6] = mi.2.5 + mi.2.6.t                                        ;SR_HBSC
; HBO
  MW[7] = mi.1.7 + mi.1.8.t                                        ;DA_HBO
  MW[8] = mi.2.7 + mi.2.8.t                                        ;SR_HBO
; WO
  MW[9] = mi.1.9 + mi.1.10.t                                       ;DA_WO
  MW[10] = mi.2.9 + mi.2.10.t                                      ;SR_WO
; OO
  MW[11] = mi.1.11 + mi.1.12.t                                     ;DA_OO
  MW[12] = mi.2.11 + mi.2.12.t                                     ;SR_OO
; THRU
  MW[13] = mi.1.13 + mi.1.14.t                                     ;DA_THRU
```

```
    MW[14] = mi.2.13 + mi.2.14.t                                    ;SR_THRU
  ; C2
    MW[15] = mi.3.1 + mi.3.2.t                                      ;C2
  ; C3
    MW[16] = mi.4.1 + mi.4.2.t                                      ;C2
  ; TOTAL
    MW[17]=MW[1] +MW[2] +MW[3] +MW[4] +MW[5] +MW[6] +               ;TOTAL
           MW[7] +MW[8] +MW[9] +MW[10]+MW[11]+MW[12]+
           MW[13]+MW[14]+MW[15]+MW[16]
  ;
  ; fRACTIONS
  ; HBW
    JLOOP
      IF (MW[17] == 0)
        MW[21] = 0
        MW[22] = 0
        MW[23] = 0
        MW[24] = 0
        MW[25] = 0
        MW[26] = 0
        MW[27] = 0
        MW[28] = 0
        MW[29] = 0
        MW[30] = 0
        MW[31] = 0
        MW[32] = 0
        MW[33] = 0
        MW[34] = 0
        MW[35] = 0
        MW[36] = 0
      ELSE
        MW[21] = MW[1] / MW[17]                                     ;DA_HBW
        MW[22] = MW[2] / MW[17]                                     ;SR_HBW
   ;
        MW[23] = MW[3] / MW[17]                                     ;DA_HBS
        MW[24] = MW[4] / MW[17]                                     ;SR_HBS
   ;
        MW[25] = MW[5] / MW[17]                                     ;DA_HBSC
        MW[26] = MW[6] / MW[17]                                     ;SR_HBSC
   ;
        MW[27] = MW[7] / MW[17]                                     ;DA_HBO
        MW[28] = MW[8] / MW[17]                                     ;SR_HBO
   ;
        MW[29] = MW[9] / MW[17]                                     ;DA_WO
        MW[30] = MW[10] / MW[17]                                    ;SR_WO
   ;
        MW[31] = MW[11] / MW[17]                                    ;DA_OO
        MW[32] = MW[12] / MW[17]                                    ;SR_OO
   ;
        MW[33] = MW[13] / MW[17]                                    ;DA_THRU
        MW[34] = MW[14] / MW[17]                                    ;SR_THRY
   ;
        MW[35] = MW[15] / MW[17]                                    ;C2
        MW[36] = MW[16] / MW[17]                                    ;C3
       ENDIF
    ENDJLOOP
    MW[37]=MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26] +              ;TOTAL
           MW[27]+MW[28]+MW[29]+ MW[30]+MW[31]+MW[32]+
           MW[33]+MW[34]+MW[35]+MW[36]
  ENDRUN
  ;
```

```
;-------------------------------------------------------------------------
; For EVENING period,
;-------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@DA_EV@"
FILEI MATI[2] = "@SR_EV@"
FILEI MATI[3] = "@C2_EV@"
FILEI MATI[4] = "@C3_EV@"
;
; OUTPUTS
FILEO MATO[1] = "@EV_OD@'", mo=1-17, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
FILEO MATO[2] = "@EV_FRAC@'", mo=21-37, name=
                DA_HBW, SR_HBW, DA_HBS, SR_HBS,
                DA_HBSC, SR_HBSC, DA_HBO, SR_HBO,
                DA_WO, SR_WO, DA_OO, SR_OO,
                DA_THRU, SR_THRU, C2, C3, TOT
;
; TRIPS
; HBW
  MW[1] = mi.1.1 + mi.1.2.t                                    ;DA_HBW
  MW[2] = mi.2.1 + mi.2.2.t                                    ;SR_HBW
; HBS
  MW[3] = mi.1.3 + mi.1.4.t                                    ;DA_HBS
  MW[4] = mi.2.3 + mi.2.4.t                                    ;SR_HBS
; HBSC
  MW[5] = mi.1.5 + mi.1.6.t                                    ;DA_HBSC
  MW[6] = mi.2.5 + mi.2.6.t                                    ;SR_HBSC
; HBO
  MW[7] = mi.1.7 + mi.1.8.t                                    ;DA_HBO
  MW[8] = mi.2.7 + mi.2.8.t                                    ;SR_HBO
; WO
  MW[9] = mi.1.9 + mi.1.10.t                                   ;DA_WO
  MW[10] = mi.2.9 + mi.2.10.t                                  ;SR_WO
; OO
  MW[11] = mi.1.11 + mi.1.12.t                                 ;DA_OO
  MW[12] = mi.2.11 + mi.2.12.t                                 ;SR_OO
; THRU
  MW[13] = mi.1.13 + mi.1.14.t                                 ;DA_THRU
  MW[14] = mi.2.13 + mi.2.14.t                                 ;SR_THRU
; C2
  MW[15] = mi.3.1 + mi.3.2.t                                   ;C2
; C3
  MW[16] = mi.4.1 + mi.4.2.t                                   ;C2
; TOTAL
  MW[17]=MW[1] +MW[2] +MW[3] +MW[4] +MW[5] +MW[6] +            ;TOTAL
         MW[7] +MW[8] +MW[9] +MW[10]+MW[11]+MW[12]+
         MW[13]+MW[14]+MW[15]+MW[16]
;
; fRACTIONS
; HBW
  JLOOP
    IF (MW[17] == 0)
      MW[21] = 0
      MW[22] = 0
      MW[23] = 0
      MW[24] = 0
```

```
        MW[25] = 0
        MW[26] = 0
        MW[27] = 0
        MW[28] = 0
        MW[29] = 0
        MW[30] = 0
        MW[31] = 0
        MW[32] = 0
        MW[33] = 0
        MW[34] = 0
        MW[35] = 0
        MW[36] = 0
      ELSE
        MW[21] = MW[1] / MW[17]                                    ;DA_HBW
        MW[22] = MW[2] / MW[17]                                    ;SR_HBW
  ;
        MW[23] = MW[3] / MW[17]                                    ;DA_HBS
        MW[24] = MW[4] / MW[17]                                    ;SR_HBS
  ;
        MW[25] = MW[5] / MW[17]                                    ;DA_HBSC
        MW[26] = MW[6] / MW[17]                                    ;SR_HBSC
  ;
        MW[27] = MW[7] / MW[17]                                    ;DA_HBO
        MW[28] = MW[8] / MW[17]                                    ;SR_HBO
  ;
        MW[29] = MW[9] / MW[17]                                    ;DA_WO
        MW[30] = MW[10] / MW[17]                                   ;SR_WO
  ;
        MW[31] = MW[11] / MW[17]                                   ;DA_OO
        MW[32] = MW[12] / MW[17]                                   ;SR_OO
  ;
        MW[33] = MW[13] / MW[17]                                   ;DA_THRU
        MW[34] = MW[14] / MW[17]                                   ;SR_THRY
  ;
        MW[35] = MW[15] / MW[17]                                   ;C2
        MW[36] = MW[16] / MW[17]                                   ;C3
      ENDIF
    ENDJLOOP
    MW[37]=MW[21]+MW[22]+MW[23]+MW[24]+MW[25]+MW[26] +             ;TOTAL
           MW[27]+MW[28]+MW[29]+ MW[30]+MW[31]+MW[32]+
           MW[33]+MW[34]+MW[35]+MW[36]
ENDRUN
;
;-------------------------------------------------------------------------------
; Save daily trips by purpose in case we want to estimate avarage trip.
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; INPUTS
FILEI MATI[1] = "@AM_OD@"
FILEI MATI[2] = "@MD_OD@"
FILEI MATI[3] = "@PM_OD@"
FILEI MATI[4] = "@EV_OD@"
;
; OUTPUTS
FILEO MATO[1] = "@DAILY_OD@'", mo=1-9, name=
                HBW, HBS, HBSC, HBO,
                DWO, OO,THRU, Comercial, TOT
;
  MW[1]=(mi.1.1 +mi.1.2 )+(mi.2.1 +mi.2.2 )+                       ;HBW (DA+SR)
        (mi.3.1 +mi.3.2 )+(mi.4.1 +mi.4.2 )
;
```

```
  MW[2]=(mi.1.3 +mi.1.4 )+(mi.2.3 +mi.2.4 )+              ;HBS (DA+SR)
        (mi.3.3 +mi.3.4 )+(mi.4.3 +mi.4.4 )
;
  MW[3]=(mi.1.5 +mi.1.6 )+(mi.2.5 +mi.2.6 )+              ;HBSC (DA+SR)
        (mi.3.5 +mi.3.6 )+(mi.4.5 +mi.4.6 )
;
  MW[4]=(mi.1.7 +mi.1.8 )+(mi.2.7 +mi.2.8 )+              ;HBO (DA+SR)
        (mi.3.7 +mi.3.8 )+(mi.4.7 +mi.4.8 )
;
  MW[5]=(mi.1.9 +mi.1.10)+(mi.2.9 +mi.2.10)+              ;WO (DA+SR)
        (mi.3.9 +mi.3.10)+(mi.4.9 +mi.4.10)
;
  MW[6]=(mi.1.11+mi.1.12)+(mi.2.11+mi.2.12)+              ;OO (DA+SR)
        (mi.3.11+mi.3.12)+(mi.4.11+mi.4.12)
;
  MW[7]=(mi.1.13+mi.1.14)+(mi.2.13+mi.2.14)+              ;THRU (DA+SR)
        (mi.3.13+mi.3.14)+(mi.4.13+mi.4.14)
;
  MW[8]=(mi.1.15+mi.1.16)+(mi.2.15+mi.2.16)+              ;COMMERCIAL  (C2+C3)
        (mi.3.15+mi.3.16)+(mi.4.15+mi.4.16)
;
  MW[9]=MW[1]+MW[2]+MW[3]+MW[4]+                          ;TOTAL
        MW[5]+MW[6]+MW[7]+MW[8]
;
ENDRUN
```

```
;-------------------------------------------------------------------------
;
; Step 3: Combine the 4 class VMT tables from step 1 with the fraction of
;         trips by class and purpose from step 2 to estimate VMT by class
;         and pupurose for each TAZ.
;
;         These data can then be postprocessed with pop and employment data to
;         derive VMT per capita/service pop data for comparison to thresholds.
;
;-------------------------------------------------------------------------
; Input VMT matrices
;-------------------------------------------------------------------------
AMVMTSIMP='2040A3VS_vmt_4_Class.MAT'
MDVMTSIMP='2040MDVS_VMT_4_Class.MAT'
PMVMTSIMP='2040P3V_VMT_4_Class.MAT'
EVVVMTSIMP='2040EVV_VMT_4_Class.MAT'
; Note: VMT is provided for 4 classes: DA, SR, C2 and C3
;-------------------------------------------------------------------------
; Input multi-class OD table fractions
;-------------------------------------------------------------------------
AM_FRAC='AM_FRACTIONS_BY_PURPOSE.MAT'
MD_FRAC='MD_FRACTIONS_BY_PURPOSE.MAT'
PM_FRAC='PM_FRACTIONS_BY_PURPOSE.MAT'
EV_FRAC='EV_FRACTIONS_BY_PURPOSE.MAT'
; Note 16 fractions, when sumed =1.0 for each TAZ:
;    DA (HBW, HBS, HBSC, HBO, WO, OO, and Thru)
;    SR (HBW, HBS, HBSC, HBO, WO, OO, and Thru)
;    C2 (all)
;    C3 (all)
;-------------------------------------------------------------------------
; Input multi-class TRIP table fractions (FOR TRIP TOTALS TO EST TRIP LENGTH)
;-------------------------------------------------------------------------
TRIPS_BY_PURPOSE='Daily_multiclass_OD.MAT'
;    HBW, HBS, HBSC, HBO, WO, OO, THRU, COMMERCIAL, TOTAL
;
;-------------------------------------------------------------------------
; Output VMT by purpose and each TAZ
;-------------------------------------------------------------------------
VMT_BY_PURPOSE='DAILY_VMT_BY_PURPOSE.MAT'
; Daily HBW, HBS, HBSC, HBO, WO, OO, THRU, COMMERCIAL
;-------------------------------------------------------------------------
; Temp output VMT by class and purpose and each TAZ and period
;-------------------------------------------------------------------------
AM_VMT_BY_PURPOSE=     '.\Temp_Files\AM_VMT_BY_PURPOSE.MAT'
MD_VMT_BY_PURPOSE=     '.\Temp_Files\MD_VMT_BY_PURPOSE.MAT'
PM_VMT_BY_PURPOSE=     '.\Temp_Files\PM_VMT_BY_PURPOSE.MAT'
EV_VMT_BY_PURPOSE=     '.\Temp_Files\EV_VMT_BY_PURPOSE.MAT'
;
;-------------------------------------------------------------------------
; For AM period,
;-------------------------------------------------------------------------
RUN PGM=MATRIX
; VMT inputs
FILEI MATI[1] = "@AMVMTSIMP@"                       ;AM VMT by TAZ
; Trip fraction inputs
FILEI MATI[2] = "@AM_FRAC@"                         ;AM Fraction by trip purpose
; OUTPUTS
FILEO MATO[1] = "@AM_VMT_BY_PURPOSE@", mo=21-29,
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
```

```
  MW[1]=mi.1.1                                          ;DA VMT
  MW[2]=mi.1.2                                          ;SR VMT
  MW[3]=mi.1.3                                          ;C2 VMT
  MW[4]=mi.1.4                                          ;C3 VMT
;
  MW[5]=mi.2.1                                          ;DA HBW FRACTION
  MW[6]=mi.2.2                                          ;SR HBW FRACTION
;
  MW[7]=mi.2.3                                          ;DA HBS FRACTION
  MW[8]=mi.2.4                                          ;SR HBS FRACTION
;
  MW[9]=mi.2.5                                          ;DA HBSC FRACTION
  MW[10]=mi.2.6                                         ;SR HBSC FRACTION
;
  MW[11]=mi.2.7                                         ;DA HBO FRACTION
  MW[12]=mi.2.8                                         ;SR HBO FRACTION
;
  MW[13]=mi.2.9                                         ;DA WO FRACTION
  MW[14]=mi.2.10                                        ;SR WO FRACTION
;
  MW[15]=mi.2.11                                        ;DA OO FRACTION
  MW[16]=mi.2.12                                        ;SR OO FRACTION
;
  MW[17]=mi.2.13                                        ;DA THRU FRACTION
  MW[18]=mi.2.14                                        ;SR THRU FRACTION
;
  MW[19]=mi.2.15                                        ;C2 FRACTION
  MW[20]=mi.2.16                                        ;C3 FRACTION
;
  MW[21]= MW[1]*MW[5] +  MW[2]*MW[6]                    ;HBW
  MW[22]= MW[1]*MW[7] +  MW[2]*MW[8]                    ;HBS
  MW[23]= MW[1]*MW[9] +  MW[2]*MW[10]                   ;HBSC
  MW[24]= MW[1]*MW[11] + MW[2]*MW[12]                   ;HB0
  MW[25]= MW[1]*MW[13] + MW[2]*MW[14]                   ;WO
  MW[26]= MW[1]*MW[15] + MW[2]*MW[16]                   ;OO
  MW[27]= MW[1]*MW[17] + MW[2]*MW[18]                   ;THRU
  MW[28]= MW[3]*MW[19] + MW[4]*MW[20]                   ;COMMERCIAL
  MW[29]=MW[21]+MW[22]+MW[23]+MW[24]+                   ;TOTAL
         MW[25]+MW[26]+MW[27]+MW[28]
ENDRUN
;
;-------------------------------------------------------------------------
; For MD period,
;-------------------------------------------------------------------------
RUN PGM=MATRIX
; VMT inputs
FILEI MATI[1] = "@MDVMTSIMP@"                           ;AM VMT by TAZ
; Trip fraction inputs
FILEI MATI[2] = "@MD_FRAC@"                             ;AM Fraction by trip purpose
; OUTPUTS
FILEO MATO[1] = "@MD_VMT_BY_PURPOSE@", mo=21-29,
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
;
  MW[1]=mi.1.1                                          ;DA VMT
  MW[2]=mi.1.2                                          ;SR VMT
  MW[3]=mi.1.3                                          ;C2 VMT
  MW[4]=mi.1.4                                          ;C3 VMT
;
  MW[5]=mi.2.1                                          ;DA HBW FRACTION
```

```
  MW[6]=mi.2.2                                          ;SR HBW FRACTION
;
  MW[7]=mi.2.3                                          ;DA HBS FRACTION
  MW[8]=mi.2.4                                          ;SR HBS FRACTION
;
  MW[9]=mi.2.5                                          ;DA HBSC FRACTION
  MW[10]=mi.2.6                                         ;SR HBSC FRACTION
;
  MW[11]=mi.2.7                                         ;DA HBO FRACTION
  MW[12]=mi.2.8                                         ;SR HBO FRACTION
;
  MW[13]=mi.2.9                                         ;DA WO FRACTION
  MW[14]=mi.2.10                                        ;SR WO FRACTION
;
  MW[15]=mi.2.11                                        ;DA OO FRACTION
  MW[16]=mi.2.12                                        ;SR OO FRACTION
;
  MW[17]=mi.2.13                                        ;DA THRU FRACTION
  MW[18]=mi.2.14                                        ;SR THRU FRACTION
;
  MW[19]=mi.2.15                                        ;C2 FRACTION
  MW[20]=mi.2.16                                        ;C3 FRACTION
;
  MW[21]= MW[1]*MW[5] +  MW[2]*MW[6]                    ;HBW
  MW[22]= MW[1]*MW[7] +  MW[2]*MW[8]                    ;HBS
  MW[23]= MW[1]*MW[9] +  MW[2]*MW[10]                   ;HBSC
  MW[24]= MW[1]*MW[11] + MW[2]*MW[12]                   ;HB0
  MW[25]= MW[1]*MW[13] + MW[2]*MW[14]                   ;WO
  MW[26]= MW[1]*MW[15] + MW[2]*MW[16]                   ;OO
  MW[27]= MW[1]*MW[17] + MW[2]*MW[18]                   ;THRU
  MW[28]= MW[3]*MW[19] + MW[4]*MW[20]                   ;COMMERCIAL
  MW[29]=MW[21]+MW[22]+MW[23]+MW[24]+                   ;TOTAL
         MW[25]+MW[26]+MW[27]+MW[28]
ENDRUN
;
;-------------------------------------------------------------------------------
; For PM period,
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; VMT inputs
FILEI MATI[1] = "@PMVMTSIMP@"                           ;AM VMT by TAZ
; Trip fraction inputs
FILEI MATI[2] = "@PM_FRAC@"                             ;AM Fraction by trip purpose
; OUTPUTS
FILEO MATO[1] = "@PM_VMT_BY_PURPOSE@", mo=21-29,
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
;
  MW[1]=mi.1.1                                          ;DA VMT
  MW[2]=mi.1.2                                          ;SR VMT
  MW[3]=mi.1.3                                          ;C2 VMT
  MW[4]=mi.1.4                                          ;C3 VMT
;
  MW[5]=mi.2.1                                          ;DA HBW FRACTION
  MW[6]=mi.2.2                                          ;SR HBW FRACTION
;
  MW[7]=mi.2.3                                          ;DA HBS FRACTION
  MW[8]=mi.2.4                                          ;SR HBS FRACTION
;
  MW[9]=mi.2.5                                          ;DA HBSC FRACTION
```

```
    MW[10]=mi.2.6                                          ;SR HBSC FRACTION
  ;
    MW[11]=mi.2.7                                          ;DA HBO FRACTION
    MW[12]=mi.2.8                                          ;SR HBO FRACTION
  ;
    MW[13]=mi.2.9                                          ;DA WO FRACTION
    MW[14]=mi.2.10                                         ;SR WO FRACTION
  ;
    MW[15]=mi.2.11                                         ;DA OO FRACTION
    MW[16]=mi.2.12                                         ;SR OO FRACTION
  ;
    MW[17]=mi.2.13                                         ;DA THRU FRACTION
    MW[18]=mi.2.14                                         ;SR THRU FRACTION
  ;
    MW[19]=mi.2.15                                         ;C2 FRACTION
    MW[20]=mi.2.16                                         ;C3 FRACTION
  ;
    MW[21]= MW[1]*MW[5] +  MW[2]*MW[6]                     ;HBW
    MW[22]= MW[1]*MW[7] +  MW[2]*MW[8]                     ;HBS
    MW[23]= MW[1]*MW[9] +  MW[2]*MW[10]                    ;HBSC
    MW[24]= MW[1]*MW[11] + MW[2]*MW[12]                    ;HB0
    MW[25]= MW[1]*MW[13] + MW[2]*MW[14]                    ;WO
    MW[26]= MW[1]*MW[15] + MW[2]*MW[16]                    ;OO
    MW[27]= MW[1]*MW[17] + MW[2]*MW[18]                    ;THRU
    MW[28]= MW[3]*MW[19] + MW[4]*MW[20]                    ;COMMERCIAL
    MW[29]=MW[21]+MW[22]+MW[23]+MW[24]+                    ;TOTAL
           MW[25]+MW[26]+MW[27]+MW[28]
ENDRUN
;
;-------------------------------------------------------------------------------
; For EV period,
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; VMT inputs
FILEI MATI[1] = "@EVVVMTSIMP@"                              ;AM VMT by TAZ
; Trip fraction inputs
FILEI MATI[2] = "@EV_FRAC@"                                ;AM Fraction by trip purpose
; OUTPUTS
FILEO MATO[1] = "@EV_VMT_BY_PURPOSE@", mo=21-29,
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
;
  MW[1]=mi.1.1                                             ;DA VMT
  MW[2]=mi.1.2                                             ;SR VMT
  MW[3]=mi.1.3                                             ;C2 VMT
  MW[4]=mi.1.4                                             ;C3 VMT
;
  MW[5]=mi.2.1                                             ;DA HBW FRACTION
  MW[6]=mi.2.2                                             ;SR HBW FRACTION
;
  MW[7]=mi.2.3                                             ;DA HBS FRACTION
  MW[8]=mi.2.4                                             ;SR HBS FRACTION
;
  MW[9]=mi.2.5                                             ;DA HBSC FRACTION
  MW[10]=mi.2.6                                            ;SR HBSC FRACTION
;
  MW[11]=mi.2.7                                            ;DA HBO FRACTION
  MW[12]=mi.2.8                                            ;SR HBO FRACTION
;
  MW[13]=mi.2.9                                            ;DA WO FRACTION
```

```
  MW[14]=mi.2.10                                    ;SR WO FRACTION
;
  MW[15]=mi.2.11                                    ;DA OO FRACTION
  MW[16]=mi.2.12                                    ;SR OO FRACTION
;
  MW[17]=mi.2.13                                    ;DA THRU FRACTION
  MW[18]=mi.2.14                                    ;SR THRU FRACTION
;
  MW[19]=mi.2.15                                    ;C2 FRACTION
  MW[20]=mi.2.16                                    ;C3 FRACTION
;
  MW[21]= MW[1]*MW[5] +  MW[2]*MW[6]                ;HBW
  MW[22]= MW[1]*MW[7] +  MW[2]*MW[8]                ;HBS
  MW[23]= MW[1]*MW[9] +  MW[2]*MW[10]               ;HBSC
  MW[24]= MW[1]*MW[11] + MW[2]*MW[12]               ;HB0
  MW[25]= MW[1]*MW[13] + MW[2]*MW[14]               ;WO
  MW[26]= MW[1]*MW[15] + MW[2]*MW[16]               ;OO
  MW[27]= MW[1]*MW[17] + MW[2]*MW[18]               ;THRU
  MW[28]= MW[3]*MW[19] + MW[4]*MW[20]               ;COMMERCIAL
  MW[29]=MW[21]+MW[22]+MW[23]+MW[24]+               ;TOTAL
         MW[25]+MW[26]+MW[27]+MW[28]
ENDRUN
;
;-------------------------------------------------------------------------------
; DAILY TOTALS
;-------------------------------------------------------------------------------
RUN PGM=MATRIX
; Inputs
FILEI MATI[1] = "@AM_VMT_BY_PURPOSE@"               ;AM
FILEI MATI[2] = "@MD_VMT_BY_PURPOSE@"               ;Md
FILEI MATI[3] = "@PM_VMT_BY_PURPOSE@"               ;PM
FILEI MATI[4] = "@EV_VMT_BY_PURPOSE@"               ;EV
; Outputs
FILEO MATO[1] = "@VMT_BY_PURPOSE@", mo=1-9,         ;daily
                 name= HBW, HBS, SHSC, HBO, WO,
                 OO, THRU, COMERCIAL, TOT
;
  MW[1]=mi.1.1+mi.2.1+mi.3.1+mi.4.1                 ;hbw
  MW[2]=mi.1.2+mi.2.2+mi.3.2+mi.4.2                 ;hbs
  MW[3]=mi.1.3+mi.2.3+mi.3.3+mi.4.3                 ;hbsc
  MW[4]=mi.1.4+mi.2.4+mi.3.4+mi.4.4                 ;hbo
  MW[5]=mi.1.5+mi.2.5+mi.3.5+mi.4.5                 ;wo
  MW[6]=mi.1.6+mi.2.6+mi.3.6+mi.4.6                 ;oo
  MW[7]=mi.1.7+mi.2.7+mi.3.7+mi.4.7                 ;thru
  MW[8]=mi.1.8+mi.2.8+mi.3.8+mi.4.8                 ;commercial
  mw[9]=mw[1]+mw[2]+mw[3]+mw[4]+                    ;Total
        mw[5]+mw[6]+mw[7]+mw[8]
;
ENDRUN
;
RUN PGM=MATRIX
;-------------------------------------------------------------------------------
; Print VMT - Rows & Columns
;-------------------------------------------------------------------------------
  MATI="@VMT_BY_PURPOSE@"
  ZONES=4023
  mw[1]=mi.1.1                                      ;HBW
  mw[2]=mi.1.2                                      ;HBS
  mw[3]=mi.1.3                                      ;HBSC
  mw[4]=mi.1.4                                      ;HBO
  mw[5]=mi.1.5                                      ;WO
```

```
  mw[6]=mi.1.6                                          ;00
  mw[7]=mi.1.7                                          ;THRU
  mw[8]=mi.1.8                                          ;COMMERCIAL
  mw[9]=mi.1.9                                          ;Total
;
  REPORT  MARGINS=1      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R1,C1,FILE=HBW_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=2      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R2,C2,FILE=HBS_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=3      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R3,C3,FILE=HBSc_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=4      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R4,C4,FILE=HBO_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=5      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R5,C5,FILE=WO_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=6      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R6,C6,FILE=OO_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=7      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R7,C7,FILE=THRU_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=8      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R8,C8,FILE=COMMERCIAL_VMT_from_to.txt,PRINT=N
;
  REPORT  MARGINS=9      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R9,C9,FILE=Total_VMT_from_to.txt,PRINT=N
;
;
  ENDRUN
;
RUN PGM=MATRIX
;-------------------------------------------------------------------------------
; Print Trips - Rows & Columns
;-------------------------------------------------------------------------------
  MATI="@TRIPS_BY_PURPOSE@"
  ZONES=4023
  mw[1]=mi.1.1                                          ;HBW
  mw[2]=mi.1.2                                          ;HBS
  mw[3]=mi.1.3                                          ;HBSC
  mw[4]=mi.1.4                                          ;HBO
  mw[5]=mi.1.5                                          ;WO
  mw[6]=mi.1.6                                          ;00
  mw[7]=mi.1.7                                          ;THRU
  mw[8]=mi.1.8                                          ;COMMERCIAL
  mw[9]=mi.1.9                                          ;Total
;
  REPORT  MARGINS=1      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R1,C1,FILE=HBW_TRIPS_from_to.txt,PRINT=N
;
  REPORT  MARGINS=2      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R2,C2,FILE=HBS_TRIPS_from_to.txt,PRINT=N
;
  REPORT  MARGINS=3      ; request margins summaries
  MARGINREC=Y FORM=8.0,LIST=J(5.0),R3,C3,FILE=HBSc_TRIPS_from_to.txt,PRINT=N
;
  REPORT  MARGINS=4      ; request margins summaries
```

```
367     MARGINREC=Y FORM=8.0,LIST=J(5.0),R4,C4,FILE=HBO_TRIPS_from_to.txt,PRINT=N
368   ;
369     REPORT  MARGINS=5       ; request margins summaries
370     MARGINREC=Y FORM=8.0,LIST=J(5.0),R5,C5,FILE=WO_TRIPS_from_to.txt,PRINT=N
371   ;
372     REPORT  MARGINS=6       ; request margins summaries
373     MARGINREC=Y FORM=8.0,LIST=J(5.0),R6,C6,FILE=OO_TRIPS_from_to.txt,PRINT=N
374   ;
375     REPORT  MARGINS=7       ; request margins summaries
376     MARGINREC=Y FORM=8.0,LIST=J(5.0),R7,C7,FILE=THRU_TRIPS_from_to.txt,PRINT=N
377   ;
378     REPORT  MARGINS=8       ; request margins summaries
379     MARGINREC=Y FORM=8.0,LIST=J(5.0),R8,C8,FILE=COMMERCIAL_TRIPS_from_to.txt,PRINT
      =N
380   ;
381     REPORT  MARGINS=9       ; request margins summaries
382     MARGINREC=Y FORM=8.0,LIST=J(5.0),R9,C9,FILE=Total_TRIPS_from_to.txt,PRINT=N
383   ;
384   ;
385     ENDRUN
386
```

Appendix F: Business Park Land Uses

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EXISTING USES IN THE EDH BUSINESS PARK

Schools:
John Adams Academy
Marble Valley Academy
Golden Hills School
The Gift of Kids Daycare & Preschool
Madrone Montessori School
Praiseland Academy of EDH
Busy Bees Preschool
SUM Bible College & Theological Seminary
Suzuki Piano Academy
Avicenna Academy Farsi School
Buckeye Union School District Offices
The FADE Institute (dental education)

Churches:
Rolling Hills Church
Sun Hills Church
Congregation of Jehovah's Witnesses

Retail/Commercial:
El Dorado Hills Florist
CVS Drugstore
ClearBags (package supply store)
Cartridge World
Colorado Federal Savings Bank
Yellow Book (bookstore)
Connect one Computers
Executive Style Boat Club (boat sales)
GoldKey Boathouse (boat sales)
Kratos Defense & Security Systems
Alpha Research & Technology, Inc.
USA Student Travel
Ewing Irrigation & Landscape Supply
Soulstice Juice (juice bar & shop)
Accent Bead Design (craft store)
Fastenal

Gym/Fitness Centers:
El Dorado Hills CrossFit
Kaia FIT El Dorado Hills
Kinetic Dance
El Dorado Dance Academy
Flip & Twist Tumbling (gymnastics)
West Coast Martial Arts
El Dorado Hills Brazilian Jiu Jitsu & Self Defense
Steve Wallen Swim School

JJ PilatesXercise
Mini's House of Pain
Urban Sprawl Fitness
Hard 90 Baseball Academy

Services:
America's Best – Contacts & Eyeglasses
Business Workspaces (coworking office space)
Absolut Office Solutions (office furniture store)
Grapevine Apparel (embroidery)
Lavish Wax (personal care)
Personal Management Consultant (financial planner)
GoldKey Storage – El Dorado Hills
iStorage Self Storage
Palms Commerce Center Self-Storage
El Dorado Hills Party Rentals
Fortis – El Dorado Hills (telecom)
V3 Electric (solar)
Gold Rush Energy Solutions (solar)
Sierra Mountain Insurance Agency: Allstate Insurance
Farmers Insurance
Premier Business Lending
Davis & Amaral Mortgage Inc
El Dorado Hills Realty
American Commercial Real Estate
Navigate Realty
Wallen Realty
Youngdahl Consulting Group
Burne Engineering Services
Cason Engineering
Warren Consulting Engineers
National Analytic Laboratories (env consultant)
Nor-Cal Controls ES, Inc. (energy solutions)
D. Marel Plumbing Service & Repair
Dorado Software
El Dorado Hills Musical Theatre
RCP Construction, Inc
Coffey Building Group, Inc. (construction)
Bayview Engineering & Construction
Tri-Square Construction Company, Inc
Heaven' Best Carpet Cleaning
Carter's Carpet Restoration
Wester Water Features (swimming pools)
Gregg's Pool Works
Premier Auto Tint
Norcal Mechanical Heating and Cooling
Inventx (equipment rental)
Central Valley Floor Design

JB Developers, Inc
Grigsby Label (label maker)
Sign Chef (sign maker)
RTS Computers (consultant)
School Innovations & Achievements (school software)
R Systems International (software)
RFgen Software
Wavelength Photography
Front Street Media (web design)
American Recovery Service (repo service)
USA Recovery Solutions (financial consultant)

Law Offices:
Pat A. Turner, CPA
The Gordon Law Firm
Law Office of David J. Cramer
Forethough Law, PC
Clemons & Jaquish
Weiner Law Offices

Doctor/Dental Offices:
Aloha Family Dental
Golden Foothills Oral & Facial Surgery Center
Healthy Eyes Optometry of El Dorado Hills
True Health Center for Functional Medicine
Harmony Home Care
Synergy Dental
Magic Smiles – Dentistry for Children
Beretta Physical Therapy
Marshall Family Medicine
Marshall Physical and Speech Therapy

Employers:
Broadridge
DST Output
Envision
Frontier Dental Labs
Ansync Labs
ITW Rippey (manufacturer)
Aerometals
Digital Doc (medical manufacturer)
Emed Technologies Corporation (medical products)
Consensus Orthopedics (medical equipment)
Ampac Analytical (laboratory)
Vista Analytical Laboratory (medical)

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Appendix G: Abatement 10A Phasing Analysis

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Version 2025 (SP 0-1)

Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Version 2025 (SP 0-1)

Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	115	314	447	38	380	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	27	50	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	24
Total Hourly Volume [veh/h]	116	341	497	27	380	56
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	95	138	9	120	16
Total Analysis Volume [veh/h]	129	379	552	34	481	62
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0.0	0.0	4.0	0.0	4.0	0.0
Pedestrian Clearance [s]	0.0	0.0	20.0	0.0	12.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54.0	56.0	56.0	0.0	54.0	0.0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5.6	30.8	21.2	21.2	18.8	18.8
g / C, Green / Cycle	0.09	0.52	0.35	0.35	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.20	0.30	0.02	0.27	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	169	966	664	564	563	503
d1, Uniform Delay [s]	26.41	8.76	17.65	12.71	19.14	14.54
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.73	0.37	3.93	0.06	3.82	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.39	0.83	0.06	0.85	0.12
d, Delay for Lane Group [s/veh]	29.14	9.13	21.57	12.77	22.96	14.65
Lane Group LOS	C	A	C	B	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.65	2.00	5.95	0.24	6.16	0.56
50th-Percentile Queue Length [ft/ln]	41.37	49.93	148.67	6.04	154.09	14.00
95th-Percentile Queue Length [veh/ln]	2.98	3.59	9.95	0.43	10.24	1.01
95th-Percentile Queue Length [ft/ln]	74.46	89.87	248.65	10.87	255.88	25.21

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.14	9.13	21.57	12.77	22.96	14.65
Movement LOS	C	A	C	B	C	B
d_A, Approach Delay [s/veh]	14.21		21.06		22.01	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	19.25					
Intersection LOS	B					
Intersection V/C	0.798					

Emissions

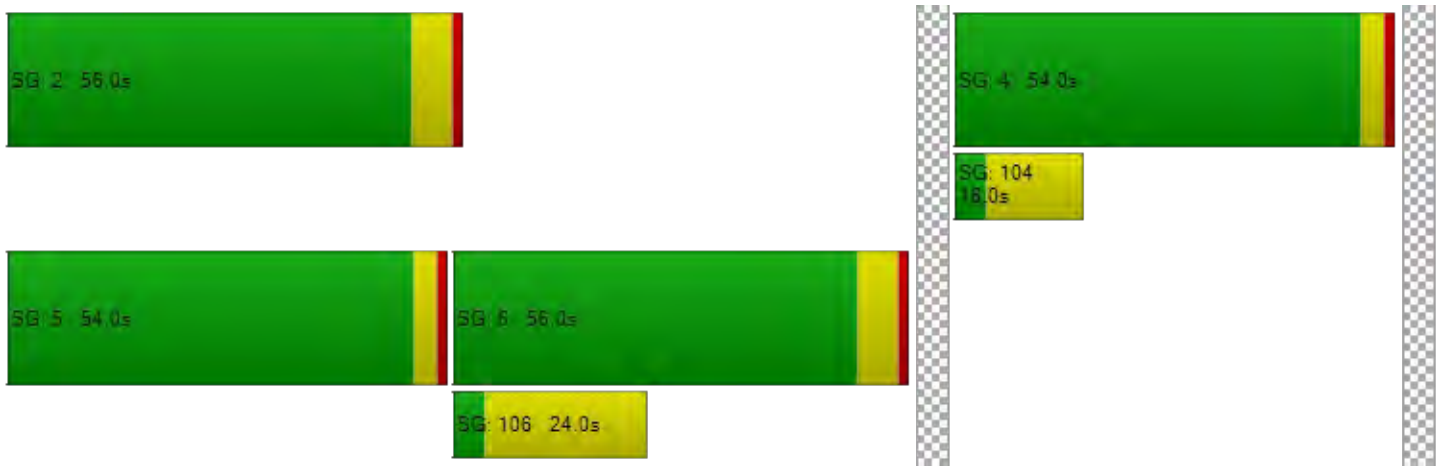
Vehicle Miles Traveled [mph]	15.92	46.76	318.79	19.64	112.97	14.56
Stops [stops/h]	99.88	120.55	358.97	14.58	372.05	33.81
Fuel consumption [US gal/h]	3.15	4.51	19.76	1.02	8.95	0.97
CO [g/h]	220.36	315.11	1380.88	71.02	625.87	67.88
NOx [g/h]	42.87	61.31	268.67	13.82	121.77	13.21
VOC [g/h]	51.07	73.03	320.03	16.46	145.05	15.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.36	0.00	22.36
l_p,int, Pedestrian LOS Score for Intersectio	2.605	0.000	2.197
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1677	1677	1677
d_b, Bicycle Delay [s]	0.78	0.78	0.78
l_b,int, Bicycle LOS Score for Intersection	2.398	2.545	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-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SG: 4 54.0s
SG: 104
18.0s
SG: 5 54.0s
SG: 6 56.0s
SG: 106 24.0s

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Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	% Int. Capture	Trips In Adj.	Trips Out Adj.	Total Trips Adj.	% of Total Trips
1: Creekside Village					0.000	50.00	50.00	0.00	57	32	89	100.00
					Added Trips Total				**57**	**32**	**89**	**100.00**

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Intersection Level Of Service Report
Intersection 10: Latrobe Rd/Investment Blvd

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	180.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

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Volumes

Name	Latrobe Rd		Latrobe Rd		Investment Blvd	
Base Volume Input [veh/h]	115	314	447	38	380	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	37	50	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	11	0	24
Total Hourly Volume [veh/h]	116	351	497	27	380	56
Peak Hour Factor	0.9000	0.9000	0.9000	0.7900	0.7900	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	98	138	9	120	16
Total Analysis Volume [veh/h]	129	390	552	34	481	62
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	164
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	MultiBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	5	2	6	0	4	0
Auxiliary Signal Groups						
Maximum Green [s]	50	50	50	0	50	0
Amber [s]	3.0	5.0	5.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Walk [s]	0.0	0.0	4.0	0.0	4.0	0.0
Pedestrian Clearance [s]	0.0	0.0	20.0	0.0	12.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
Advanced Detector Location [ft]	150.0	245.0	245.0	0.0	100.0	0.0
Advanced Detector Length [ft]	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	54.0	56.0	56.0	0.0	54.0	0.0
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Vehicle Extension [s]	2.0	4.0	4.0	0.0	3.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	5.6	30.8	21.2	21.2	18.8	18.8
g / C, Green / Cycle	0.09	0.52	0.35	0.35	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.21	0.30	0.02	0.27	0.04
s, saturation flow rate [veh/h]	1781	1870	1870	1589	1781	1589
c, Capacity [veh/h]	169	966	664	564	563	503
d1, Uniform Delay [s]	26.41	8.83	17.65	12.71	19.14	14.54
k, delay calibration	0.04	0.15	0.15	0.15	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.73	0.39	3.93	0.06	3.82	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.40	0.83	0.06	0.85	0.12
d, Delay for Lane Group [s/veh]	29.14	9.22	21.57	12.77	22.96	14.65
Lane Group LOS	C	A	C	B	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.65	2.07	5.95	0.24	6.16	0.56
50th-Percentile Queue Length [ft/ln]	41.37	51.79	148.67	6.04	154.09	14.00
95th-Percentile Queue Length [veh/ln]	2.98	3.73	9.95	0.43	10.24	1.01
95th-Percentile Queue Length [ft/ln]	74.46	93.22	248.65	10.87	255.88	25.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.14	9.22	21.57	12.77	22.96	14.65
Movement LOS	C	A	C	B	C	B
d_A, Approach Delay [s/veh]	14.17		21.06		22.01	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	19.20					
Intersection LOS	B					
Intersection V/C	0.798					

Emissions

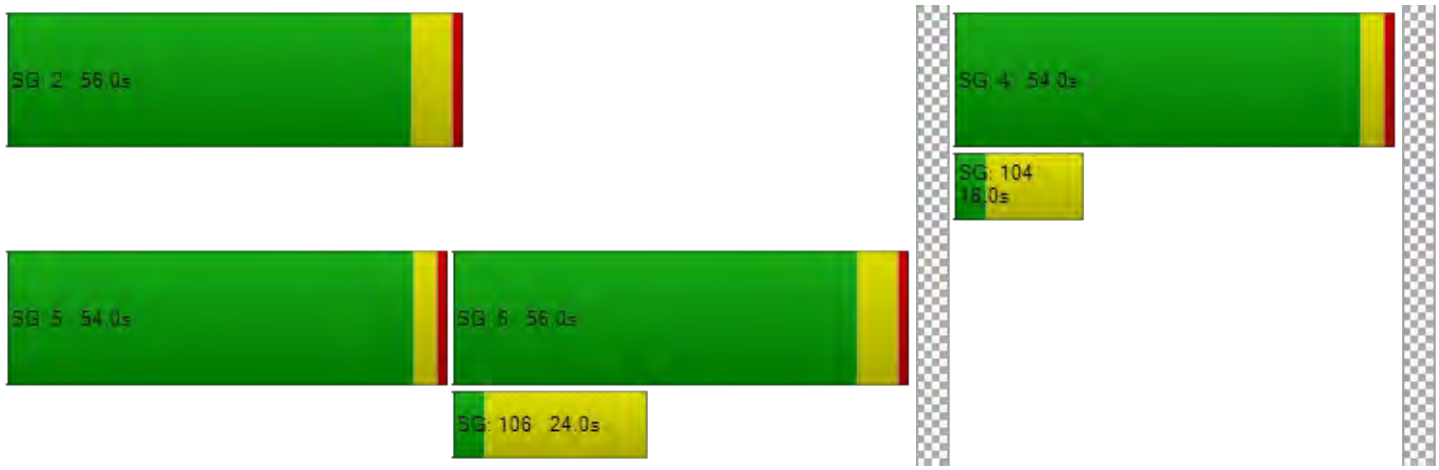
Vehicle Miles Traveled [mph]	15.92	48.12	318.79	19.64	112.97	14.56
Stops [stops/h]	99.88	125.05	358.97	14.58	372.05	33.81
Fuel consumption [US gal/h]	3.15	4.66	19.76	1.02	8.95	0.97
CO [g/h]	220.36	326.01	1380.88	71.02	625.87	67.88
NOx [g/h]	42.87	63.43	268.67	13.82	121.77	13.21
VOC [g/h]	51.07	75.56	320.03	16.46	145.05	15.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.0	0.0	8.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.36	0.00	22.36
l_p,int, Pedestrian LOS Score for Intersectio	2.611	0.000	2.197
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1677	1677	1677
d_b, Bicycle Delay [s]	0.78	0.78	0.78
l_b,int, Bicycle LOS Score for Intersection	2.416	2.545	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-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SG: 6 56.0s
SG: 106 24.0s

Vistro File: C:\...\PM 763 DU 20241003.vistro Scenario 3 2023 PM, Plus Project
Report File: T:\...\10A with 260 active adult DU.pdf 4/14/2025

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	% Int. Capture	Trips In Adj.	Trips Out Adj.	Total Trips Adj.	% of Total Trips
1: Creekside Village					0.000	50.00	50.00	0.00	57	44	101	100.00
					Added Trips Total				**57**	**44**	**101**	**100.00**

Appendix I
Water Supply Assessment

SB 610
WATER SUPPLY ASSESSMENT

FOR THE
CREEKSIDE VILLAGE
SPECIFIC PLAN PROJECT

Creekside Village Specific Plan Project
SB 610 Water Supply Assessment

Prepared for
El Dorado Irrigation District

Final

February 2021

Prepared by:

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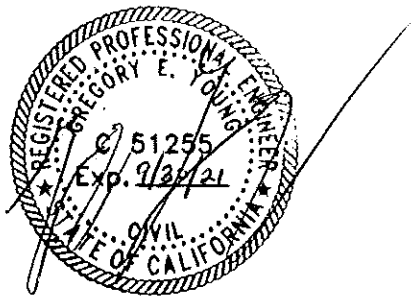
This Water Supply Assessment was prepared under the direction of a California licensed civil engineer.



SECTION 1 – PROJECT INTRODUCTION

As the lead agency under the California Environmental Quality Act ("CEQA"), El Dorado County ("County") is assessing the potential environmental effects associated with the proposed Creekside Village Specific Plan Project ("Proposed Project"). To inform the CEQA analysis, this Water Supply Assessment ("WSA") has been prepared for the Proposed Project. El Dorado Irrigation District ("EID") has been identified as the public water system that will supply water for the Proposed Project, and therefore has been tasked with the preparation and approval of this WSA.

1.1 ANALYTICAL METHOD

This WSA estimates the Proposed Project's water demand through build-out, presents and discusses the availability of water sources identified to meet that demand, and assesses whether expected water supplies will be sufficient to meet the projected water demand of the Proposed Project during normal, single dry, and multiple dry year conditions.

The above-referenced analytical method is derived from the Water Supply Assessment Law ("WSA Law") codified at Water Code section 10910 *et seq.* The WSA Law, sometimes referred to as "SB 610," outlines the information and analysis that must be included in a CEQA document prepared for certain projects of a specified size and composed of certain land-uses (e.g., subdivisions larger than 500 residential units).[1] For such covered projects, the WSA Law requires an assessment of whether projected water supplies identified to serve a proposed project will be sufficient to meet existing and planned water demands over a 20-year horizon. The WSA Law expressly anticipates events like the most recent drought by requiring assessment of water supply sufficiency in single dry years and multiple dry years – not just under normal, or average, hydrologic conditions.

The Proposed Project requires a WSA because it is a residential development of more than 500 dwelling units. The WSA will be incorporated into the CEQA document — an Environmental Impact Report (EIR) — being prepared for the Proposed Project (the Project EIR).[2]

1.2 DOCUMENT PREPARATION AND APPROVAL

The WSA law requires that the lead agency – in this case, El Dorado County – identify a "public water system"[3] and further requires the lead agency to request that each identified public water system prepare a WSA for the project. If the lead agency is not able to identify a public water system that may supply water for the project, the lead agency must prepare the WSA itself after

[1] Water Code § 10912(a).
[2] Water Code § 10911(b).
[3] A "public water system" is a system that provides water for human consumption that has at least 3,000 service connections.

consulting with "*any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site*."[4]

In this case, the EID has prepared the WSA because the Proposed Project is within the EID potable service area. This WSA provides the necessary information for EID to make its determinations and to comply with the statutory assessment of water supply sufficiency.

1.3 Document Organization

The WSA is organized according to the following sections:

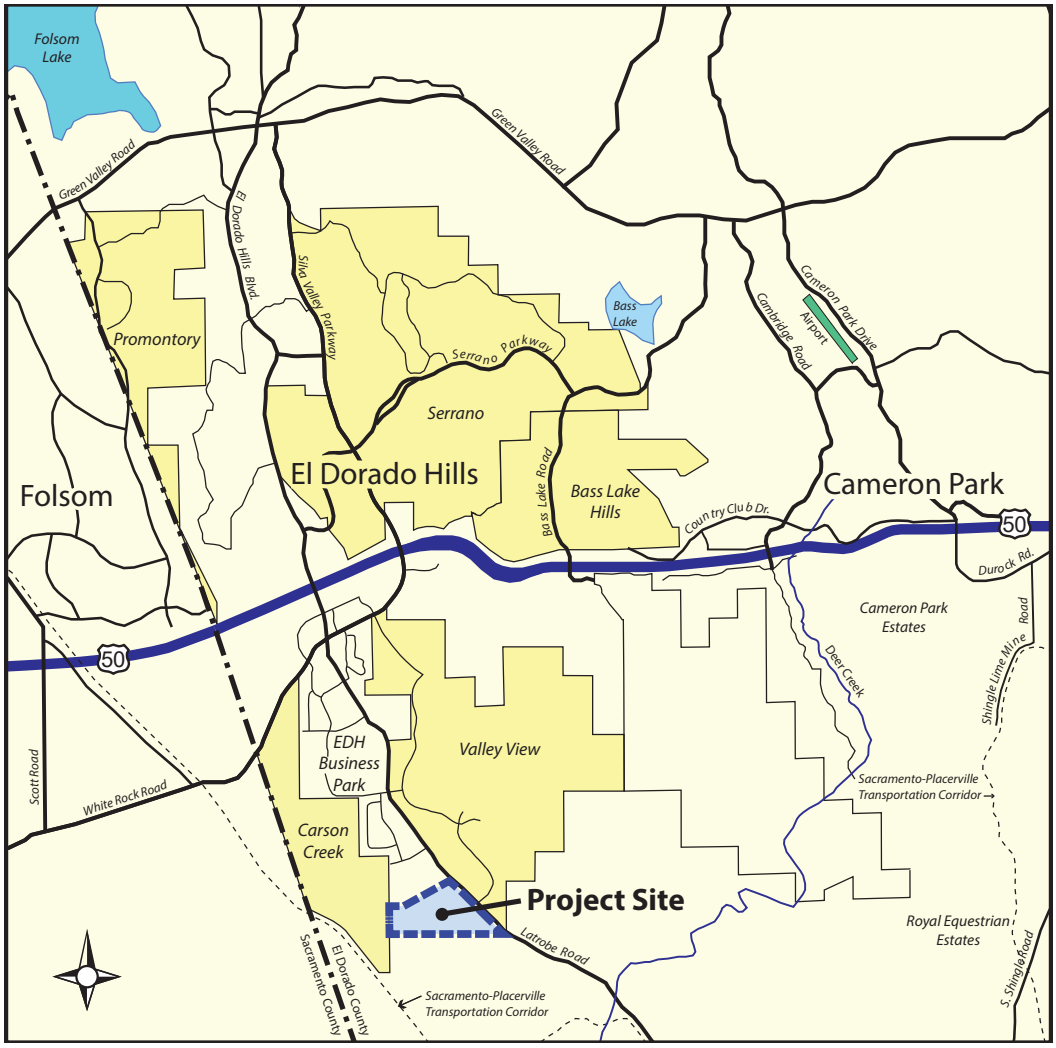
- **Section 1: Proposed Project Introduction**. This section provides an overview of the WSA's purpose and organization, along with a detailed description of the Proposed Project, including the land use elements that will create water demand.
- **Section 2: Proposed Project Estimated Water Demands**. This section describes the methodology used to estimate water demands of the Proposed Project and details the estimated water demands from initiation through build-out.
- **Section 3: Representation in 2015 UWMP**. This section presents relevant water demand and supply information from the 2015 EID Urban Water Management Plan and relationship to the Proposed Project for purposes of Water Code Section 10910(c)(2).
- **Section 4: Sufficiency Conclusion**. This section provides the concluding statement of water supply availability for purposes of Water Code Section 10910.

1.4 Proposed Project Description

The Proposed Project is situated on approximately 208 acres located on the southern end of El Dorado Hills in El Dorado County ("Project Site"). The Project Site is located between Latrobe Road on the east and the county line on the west. (see **Figure 1-1**). The El Dorado Hills Business Park lies just to the north and undeveloped land lies to the south. The Proposed Project is located on Parcel 117-010-12 in the County of El Dorado Assessor's Map Book 117.

[4] Water Code § 10910(b).

Figure 1-1 – Proposed Project Location Map



The Proposed Project site includes residential and non-residential land-use classifications including single family low density, single family medium density, parks, open space, and appropriate detention/water quality basins and stormwater management features.

1.4.1 Project Summary

As described in more detail in the Creekside Village Specific Plan[5], the Proposed Project plans for 926 dwelling units, with 676 designated low density and 250 designated medium density. The Proposed Project anticipates 14.3 acres of parks, 46.3 acres of various open spaces, and 10.4 acres for roadways. Of the open space, 9.1 acres is set aside for wetland and drainage areas and the remaining 37.2 acres is designated as open space buffer which does allow for passive recreation including hiking and biking trails.

[5] Creekside Village Specific Plan 6/16/20

Figure 1-2 provides the Proposed Project's land-use plan[6] while **Table 1-1** presents the detailed residential unit counts and non-residential acreage. This information becomes the foundational land use data used to derive the demand forecast presented in Section 2.

Figure 1-2: Proposed Project Parcel Map

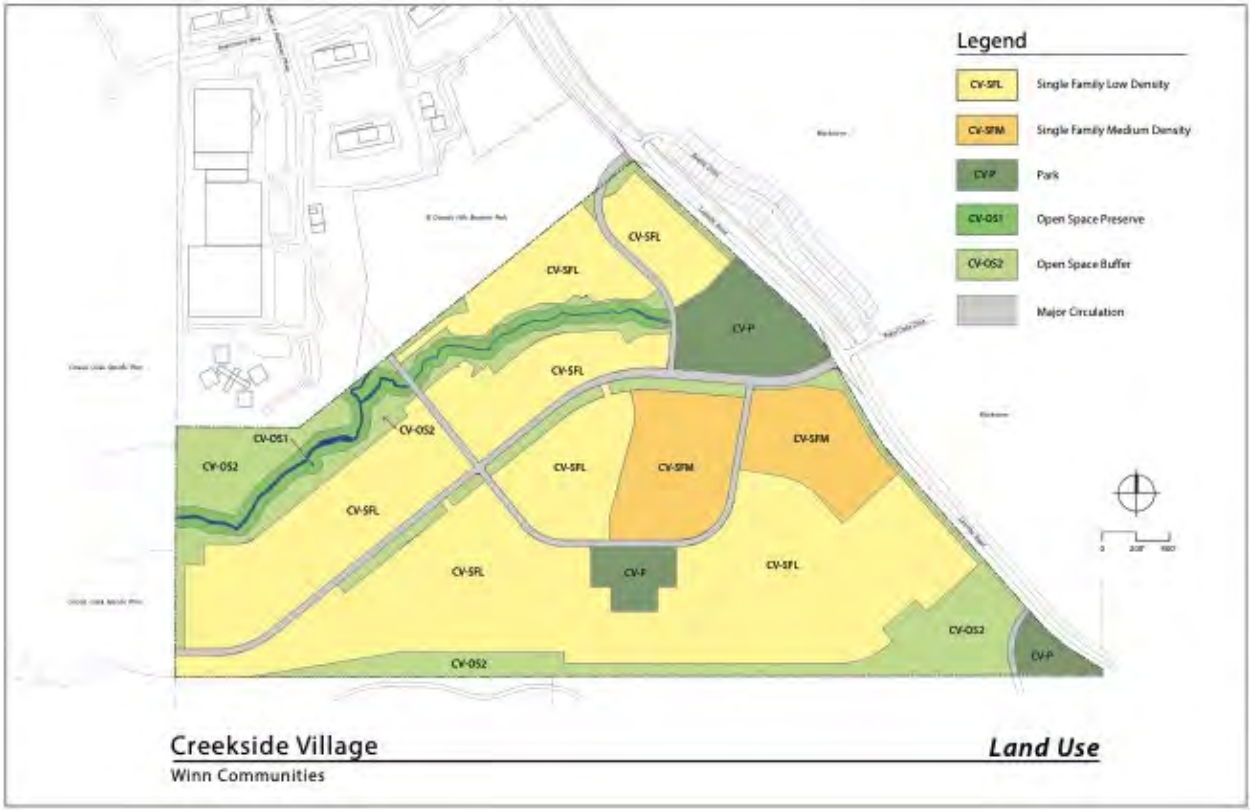


Table 1-1: Summary of Proposed Project Land Uses and Acreages

Land Use	Acreage	Density	Dwelling Units
Low Density Residential	115.9	4-8 units/acre	676 Units
Medium Density Residential	21.0	8-12 units/acre	250 Units
Park	14.3		
Open Space	46.3		
Right of Ways	10.4		
Total	**207.9**	**926 Dwelling Units**	

1.4.2 Proposed Project Phasing

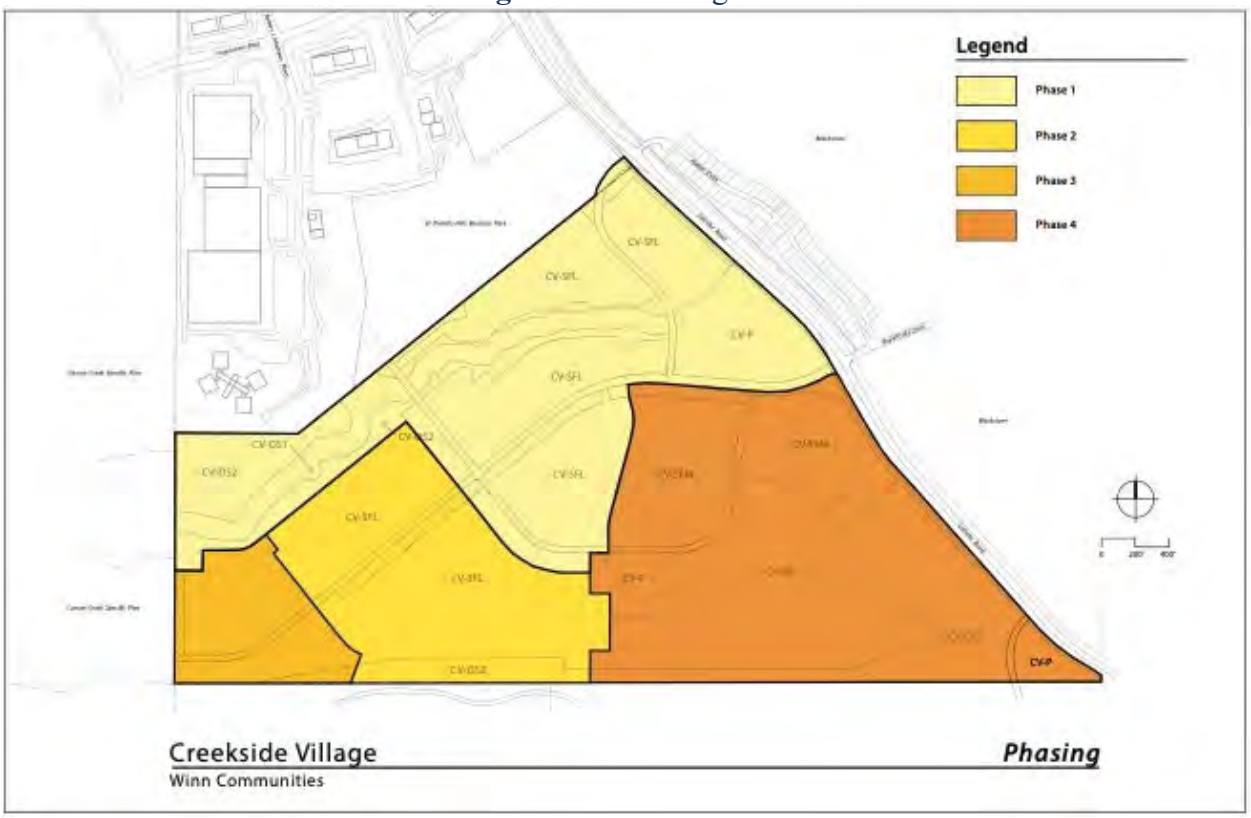
For purposes of this WSA, the Proposed Project anticipates all of the 926 residential units will be completed within the next 20-year period to allow the analysis to fully evaluate the complete project. Actual project phasing may take longer. **Figure 1-3** presents the phasing assumed for

[6] Creekside Village Specific Plan 6/16/20 Figure 3.2

the purposes of the WSA.[7] Development will begin with a first phase on the north edge of the development area adjacent to the business park. The specifics and timing of the later phases will be determined by several external factors including market conditions. However, for purposes of this WSA, the Proposed Project is anticipated to reach build-out by 2035.[8]

Before constructing any homes, site grading and project-wide infrastructure development will begin and continue throughout all phases of the Proposed Project, as necessary. These activities include installing facilities for potable water, sewer, other utilities, stormwater basins, and roadways. During these activities, a small water demand will exist – referred to in this WSA as "construction water." This demand is included in the forecast annual water demands presented in Section 2 but becomes non-existent at project completion.

Figure 1-3: Phasing Plan



[7] Specific timing will be determined by market conditions but for the purposes of this WSA, all units are assumed to be completed within the planning horizon of 20 years.
[8] Creekside Village Specific Plan, June 2020, p. 8-3 states: "[t]he Plan Area will develop in multiple phases with full build-out expected in 2030 or later."

SECTION 2 – PROPOSED PROJECT ESTIMATED WATER DEMANDS

This section describes the methodology, provides the supporting evidence, and presents the estimated annual water demands for the Proposed Project at build-out.

2.1 DETERMINING UNIT WATER DEMAND FACTORS

As detailed in Section 1, the Proposed Project consists of 926 residential units and accompanying infrastructure and improvements such as streetscapes, along with parks and open space. To understand the water needs of the Proposed Project, unique water demand factors are used that correspond with the anticipated residential dwelling unit types and other Proposed Project attributes. This subsection presents the methodology for determining the unit water demand factors that become the basis of the Proposed Project water demand estimate.

Two distinct groups of demand factors are presented: (1) residential, and (2) non-residential. For this WSA, the non-residential uses consist of typical uses, such as parks and common space irrigation. Values developed for each distinct land use are based on several sources of information, details of which are provided in the following subsections.

2.1.1 Current and Future Mandates Affecting Water Use

There are several factors that affect the development of unit water demand factors, ranging from State and County landscape regulations and other water-use mandates to changes in the types of housing products being offered. These factors are incorporated into this unit water demand factor determination and discussed in this section. Characteristics of the factors relevant to this WSA are described below.

Water Conservation Objectives

In 2009, Governor Arnold Schwarzenegger signed Senate Bill No. 7 (SBX7-7), which established a statewide goal of achieving a 20 percent reduction in urban per capita water use by 2020 for urban retail water suppliers.[9] Since the Proposed Project is yet to be built, this legislation only indirectly applies.

However, the efforts undertaken throughout the County and the State by urban retail suppliers to comply with this statute, though not directly, would affect the Proposed Project's use of appliances, fixtures, landscapes and other water using features, through changes or additions to County ordinances and/or through a continuing "conservation ethic" developed in communities in and around the Proposed Project location as a result of the most recent statewide drought conditions.

In response to the recent multi-year drought conditions, Governor Brown issued Executive Order B-37-16 in May 2016 entitled "*Making Water Conservation a California Way of Life*." In May

[9] California Water Code § 10608.20.

2018, Governor Brown signed into law SB 606 and AB 1668, which imposed additional statutory requirements above and beyond the 20 percent by 2020 target reflected in the 2009 legislation. This is expected to result in continued efforts to increase water use efficiency and ultimately to reduce water demands of existing water users and continue to influence the expected demands of future water users, such as expected with the Proposed Project.

Requirements in California Code

Beginning in January 2010, the California Building Standards Commission adopted the statewide mandatory Green Building Standards Code (hereafter the "CAL Green Code") requiring the installation of water-efficient indoor and outdoor infrastructure for all new projects after January 1, 2011. The CAL Green Code was incorporated as Part 11 into Title 24 of the California Code of Regulations, and was revised in 2013 and in 2016 to address changes to the State's Model Water Efficient Landscape Ordinance ("MWELO") adopted during the drought.[10] Revisions to the CAL Green Code in 2019 modified sections to direct users to MWELO regulations contained in other regulatory sections.[11]

The CAL Green Code applies to the planning, design, operation, construction, use and occupancy of every newly constructed or remodeled building or structure. All new residential and non-residential customers added by the Proposed Project must meet the CAL Green Code as well as the outdoor requirements described by MWELO. The CAL Green Code's requirements generally manifest through: (1) installation of plumbing fixtures and fittings that meet the 20 percent reduced flow rate specified in the CAL Green Code, or (2) by demonstrating a 20 percent reduction in water use from the building "water use baseline."[12] The Proposed Project will satisfy one of these two requirements through the use of appliances and fixtures such as high-efficiency toilets, faucet aerators, on-demand water heaters, or other fixtures as well as Energy Star and California Energy Commission-approved appliances.

California Model Water Efficient Landscape Ordinance and County Ordinance

The Water Conservation in Landscaping Act was enacted in 2006, and has since been revised and expanded multiple times by the Department of Water Resources (DWR) resulting in today's MWELO.[13] In response to Governor Brown's executive order dated April 1, 2015, (EO B-29-

[10] The 2016 Triennial Code Adoption Cycle consisted primarily of the MWELO updates adopted in response to the drought. Indoor infrastructure changes were limited to some minor non-residential fixture changes and changes to the voluntary Tier 1 and Tier 2 requirements. Additionally, the Code was updated to match the new Title 20 Appliance Efficiency Regulations.

[11] The 2019 updated sections to direct CAL Green code users to Title 23 of the California Code of Regulations to allow Title 23 to be the sole location of MWELO requirements.

[12] See CAL Green Code. For Residential construction, Section 4.303.1 provides the residential water conservation standard and Table 4.303.2 identifies the infrastructure requirements to meet this standard. Table 4.303.1 and Worksheets WS-1 and WS-2 are to be used in calculating the baseline and the reduced water use if Option 2 is selected. For non-residential construction, Section 5.303.2.3 provides the water conservation standard as well as the baseline and reduced flow rate infrastructure standards. Note that Worksheets WS-1 and WS-2 incorporate both residential and non-residential fixtures, yet the water use is still to be analyzed by "building or structure" as specified in Chapter 1, Section 101.3.

[13] Gov. Code §§ 65591-65599

15), DWR updated the MWELO and the California Water Commission approved the adoption and incorporation of the updated State standards for MWELO on July 15, 2015. MWELO requires a retail water supplier or a county to adopt the provisions of the MWELO or to enact its own provisions equal to or more restrictive than the MWELO provisions.[14] The changes included a reduction to 55 percent of reference evapotranspiration rates for the maximum amount of water that may be applied to residential landscapes, and non-residential projects to 45 percent, which effectively reduces the landscape area that can be planted with high water use plants, such a turf. For residential projects, the allowable maximum coverage of high-water use plants is reduced to 25% of the landscaped area (down from 33%). The newly updated MWELO also now applies to new construction with a landscape area greater than 500 square feet (the prior MWELO only applied to landscapes greater than 2,500 square feet).[15] The El Dorado County Planning and Building Department reviews all new development for conformance with these standards.

Metering, Volumetric Pricing, and Water Budgets

California Water Code section 525 requires water purveyors to install meters on all new service connections after January 1, 1992. California Water Code section 527 requires water purveyors to charge for water based upon the actual volume of water delivered if a meter has been installed. Though EID would be billing customers on a volumetric basis, this action alone is not expected to substantially reduce water use. However, it is anticipated that the retail billing system would encourage and help maintain reasonable use (e.g. through implementation of a tiered rate structure and/or water budgets), so that the Proposed Project's water demands at build-out are not reasonably expected to grow as the Proposed Project ages.

2.2 RESIDENTIAL WATER USE DEMAND FACTORS

The Proposed Project anticipates two general lot-size designations: low density and medium density. The size of the lot generally has the greatest impact on the annual per-lot demand for water as the irrigation needs for landscaping generally increase with larger landscaped areas. In contrast, indoor water demands remain relatively consistent regardless of lot size but do vary slightly based on the number of people per dwelling unit.[16] Distinct demand factors are provided for the following residential uses:

- Indoor Residential Use – this category identifies the generally anticipated water use for the conventional single-family homes in both low and medium densities.
- Outdoor Residential Use – this category addresses the landscape water demands for the various planned lot sizes.

[14] El Dorado County defers to the State's MWELO requirements.
[15] CCR Title 23, Div. 2, Ch. 27, Sec. 490.1.
[16] Generally, the average occupancy corresponds to the average use of fixtures in a household regardless of the number of such fixtures (e.g. multiple bathrooms do not result in more use of the toilet for the same number of people).

For purposes of this WSA, residential unit water demand factors are described as "the acre-feet of water use annually per dwelling unit" – or acre-feet/dwelling unit ("af/du").

This WSA will provide an analysis specific to the Proposed Project as well as the default values used in the adopted 2015 EID Urban Water Management Plan (UWMP) which is the basis of the sufficiency analysis.

2.2.1 Indoor Residential Water Use Factors

The Proposed Project's residential elements would be built in accordance with all applicable building codes including the Cal Green Code discussed previously, as it may be further modified prior to Proposed Project implementation.

The Proposed Project's indoor water demands are estimated using an assumed value of 55 gallons-per person per day, multiplied by the assumed occupancy rates for residential density classifications in El Dorado Hills.[17] The assumed per-person rate of 55 gallons per day is derived from California Water Code Section 10609.4(a)(3), which states a value of 55 gallons per capita (i.e., per person) per day ("gpcd") be used for estimating indoor residential use targets. Water Code Section 10609.4(a) also establishes the indoor residential water use 'standard' to be 52.5 gpcd beginning in 2025 and as low as 50 gpcd by 2030, though the Water Code also provides provisions for the water use target to revert above 50 gpcd. For purposes of this WSA, the higher value of 55 gpcd is assumed. If lower standards are required when the Proposed Project is under construction, the demand would be expected to be lower than estimated in this WSA.

Based on this per-capita assumption, the following indoor per-dwelling unit values are derived:

- Single-family residential indoor use: 0.18 acre-feet per year based upon an assumed occupancy of 2.95 people per unit.[18]

This number is consistent with indoor only use seen in EID's own dual plumbed homes in the same neighborhood.[19] As these proposed homes will be newer and have more strict plumbing codes, it is likely that actual use will be lower than the 0.18 acre-feet per dwelling unit value.

2.2.2 Outdoor Residential Water Use Factors

Outdoor residential water use is primarily a factor of lot size and the type and extent of landscaped area. The Proposed Project includes up to 926 residential dwelling units with two

[17] https://www.census.gov/quickfacts/eldoradohillscdpcalifornia accessed 1/6/20. 2015 to 2019 average occupancy of 2.95 persons per household
[18] Equation: 2.95 people * 55 gallons/person/day * 365 days / 325,851 gallons/acre-foot
[19] 2015 EID UWMP Table 4-4. Dual plumbed homes have separate meters for indoor (potable water) and outdoor (recycled water) uses.

different average lot sizes: 7,426 square-feet (sf) for Low Density Residential, and 3,659 sf for Medium Density Residential.[20]

Outdoor demands for new residential dwelling units are calculated based on regulations defined under the MWELO. The MWELO provides for determining the Maximum Applied Water Allowance (MAWA) where the maximum is calculated as 55 percent of the reference evapotranspiration for the area for every square foot of landscaped area, resulting in the following equation:

> *MAWA = (ETo)(0.62)(0.55 x LA), where ETo is the reference evapotranspiration in inches per year, and LA is the landscape area in square-feet. 0.62 is a conversion factor to gallons. The resulting value is in "gallons per year."*

A primary factor in this calculation is evapotranspiration ("ET"). The methodology directs the use of ET from a reference crop, such as maintained grass – a value referred to as ETo. For the Proposed Project, the ETo is 52.2 inches per year (4.3 feet per year).[21]

The other primary factor driving outdoor water use on a per-lot basis is the square footage of landscape area. This value is based upon reasonable assumptions regarding the Proposed Project's building footprint, driveway area and other hardscape areas such as patios and sidewalks. Using the MAWA equation, demand factors for each residential lot category are calculated:

- **Low Density** – The proposed 676 low-density, single-family dwellings will be constructed on lots averaging 7,426 sf, with an average landscape area of 4,576 sf.[22] The resulting outdoor demand factor is forecast to be 0.25 acre-feet per dwelling unit per year.

- **Medium Density** – The proposed 250 medium density single-family dwelling units in this classification will be constructed on lots averaging 3,659 sf, with an average landscape area of 1,509 sf.[23] The resulting outdoor demand factor is forecast to be 0.08 acre-feet per dwelling unit per year.

2.2.3 Summary of Residential Water Use Demand Factors

Table 2-1 provides a summary of the unit water demand factor used to estimate the Proposed Project's residential water use.

[20] Average lot size by class per Creekside Village Specific Plan Table 3-2.
[21] ETo is consistent with 2015 EID UWMP ETo for El Dorado Hills Area, Table 2-1.
[22] Landscape area derived from average lot footprint less 2,200 sf for building site, 400 sf for driveway space, and another 250 sf for patios and other hardscapes.
[23] Landscape area derived from average lot footprint less 1,500 sf for building site, 400 sf for driveway space, and another 250 sf for patios and other hardscapes.

Table 2-1: Summary of Annual Residential Per-Unit Demand Factors

Water Demand Category	Average Density (du/ac)	Indoor Factor (af/du)	Outdoor Factor (af/du)	Total Demand Factor (af/du)
Low Density Residential	4-8 units/acre	0.18	0.25	0.43
Medium Density Residential	8-12 units/acre	0.18	0.08	0.26

2.2.4 Accommodating Accessory Dwelling Units

As presented in section 2.2.1, the El Dorado Hills residential occupancy averages 2.95 people per home. However, the Proposed Project includes the options for Accessory Dwelling Units (ADU) or Junior ADUs (JADU).[24] These ADUs can result in an increase in the average occupancy rate for the Proposed Project, while also reducing landscape area from the additional dwelling itself.

The Proposed Project does not define how many parcels may include ADUs, but a sensitivity analysis can evaluate the effect of the increased occupancy and decreased landscape area on the total unit demand factors shown in Table 2-1. First, El Dorado County's ordinance regarding secondary units indicates the size cannot exceed 600 sf for a lot up to 10,000 sf.[25] The Specific Plan does not include a size for ADUs but notes JADUs would not exceed 500 sf. For purposes of sensitivity, occupancy would increase to 3.5 for a low-density unit and landscape area would decrease by 800 sf (accommodating the dwelling unit footprint plus additional patio and walkways). Using 3.5 people per house instead of 2.95 will increase the indoor unit demand from 0.18 acre-feet per year to 0.22 acre-feet per year. The change in landscape area would decrease the outdoor demand factor from 0.25 acre-feet per year to 0.21 acre-feet per year. Combined the parcel would have a unit demand factor of 0.43 acre-feet per year, which is the same as estimated without the ADU. Therefore, for purposes of this WSA, the unit demand factors presented in Table 2-1 are used for forecasting the Proposed Project's water demand.

2.3 Non-Residential Water Use Demand Factors

The Proposed Project has a few non-residential features tied to the landscape and community use areas. For purposes of this WSA, the demand for non-residential classifications is described as "the acre-feet of water use annually per acre of land," acre-feet/acre (af/ac), and represents the combined indoor and outdoor use on the acre of the particular land use. Water demand factors have been developed for each of the following classifications and are summarized in Table 2-2:

- Parks and Landscape Corridors
- Roadway Landscaping
- Other miscellaneous uses, including temporary irrigation to establish open space landscaping and temporary construction water.

[24] Creekside Village Specific Plan 6/16/20, p. A-3
[25] El Dorado County Municipal Code Sec. 130.40.300 - Secondary Dwellings.

Table 2-2: Summary of Annual Non-Residential Unit Demand Factors

Land Use	Demand Factor	Unit
Parks	3.70	af/ac
Roadway Landscaping	0.45	af/ac
Construction Water	5.00	af/yr

The method and basis for determining the unit water demand factor for each of these classifications is as follows:

Parks: As presented in **Table 1-1** and **Figure 1-2**, the Proposed Project anticipates 14.3 acres across two neighborhood parks at 2.2 and 3.3 acres, as well as a larger Village Park at 8.8 acres. The Village Park is expected to include large turf areas for recreation, restrooms and other facilities, and ornamental landscaping. The smaller parks represent public green spaces in neighborhoods which may include features such as turf recreation areas, play equipment, and large areas of low water use ornamental landscaping.

For purposes of this WSA, a unit demand factor of 85% of the reference ETo is used, which represents a practical blend of the MWELO Special Landscape Allowance equivalent to the ETo for recreational turf, combined with the lower ETo factor of 45% of ETo for non-turf areas and no water demand for play structures, pathways and other hardscape areas. With an ETo of 52.2 inches, this results in a per-acre demand factor of 3.7 acre-feet per year.

Roadway Landscaping: Roads and other rights-of-way will also include ornamental landscaping consisting of median strips and entry planters along major roadways. **Table 1-1** indicates 10.4 acres of "roadways or right-of-way." For the purposes of this WSA, this ornamental landscaping is estimated at the MWELO limit of 45% of ETo, which equates 1.96 acre-feet per acre per year. **Figure 2-1** shows the approximate lengths of the various roadway types. The Entry Collector streets are detailed to have 15-foot planting widths and 16 foot medians, with a total width of 79 feet.[26] The minor collectors are detailed to have 15-foot planting widths in a 62 foot total corridor width.[27] The Local C1 streets are detailed to have 8-foot planting widths in a 53 foot total corridor width.[28] The Local F1 streets are detailed to have 8-foot planting widths in a 45 foot total corridor width.[29] All other roadways are detailed to have no landscaping. A coarse analysis of the approximate lengths from **Figure 2-1** and the portions of the rights of way dedicated to landscaping as described above, results in an estimated average of 23% of each corridor acre that is

[26] This assumes 40% of the Collector right of way is landscaped.
[27] This assumes 24% of the Minor Collector right of way is landscaped.
[28] This assumes 15% of the Local C1 right of way is landscaped.
[29] This assumes 18% of the Local F1 right of way is landscaped.

landscaped. This equates to a unit water demand factor of 0.45 acre-feet per gross acre in this land use category.[30]

Figure 2-1: Circulation Plan

Miscellaneous Minor Uses: Other minor uses tied to typical project development include water needed to establish open spaces and construction water used during project development. As of the preparation of this WSA, the Proposed Project includes about 37.2 acres of open space buffer. While including trails and natural planted areas, a portion of this land will also be dedicated to providing storm drainage and biofiltration and storage of storm water aligned along streets and drainage courses. Plantings typically emphasize drought-tolerant, hardy materials and compatibility with existing surrounding native and adaptive plants. Given the form and function of the landscaping of this project element, a water supply would only be needed to establish plantings for the first few years. After plant establishment, these landscape features will be served naturally by annual precipitation. No estimated water is included in this WSA for plant establishment.

Early phases of the Proposed Project will include site grading and infrastructure installation. These and other construction elements will require dust suppression and other incidental water uses. These are estimated to be nominal, and do not continue beyond the construction phases of the Proposed Project. For purposes of identifying incremental water

[30] 23% of the MWELO limit of 1.96 acre-feet per acre for ornamental landscaping (which is capped at 45% of ETo).

demands, construction water is assumed within this WSA to be 5 acre-feet per year (this is about 1,600,000 gallons – or approximately 400 fill-ups of a 4,000-gallon water truck).

2.4 PROPOSED PROJECT WATER DEMAND PROJECTION

Combining the Proposed Project's land use details with each unique set of demand factors presented in Section 2.3, the water demands for the Proposed Project at build-out can be estimated. **Table 2-3** presents the forecast water demands for potable water sources for build-out conditions as well as anticipated Proposed Project phasing. The Proposed Project phasing spreads construction over four phases, as discussed in Section 1.4.2 and represented in Figure 1-3.[31] The phasing helps present the Proposed Project's demand in context of EID's 2015 UWMP water system reliability, which is discussed in Section 3.

At build-out, the Proposed Project's potable water demands are conservatively estimated at 413 acre-feet annually, excluding considerations of non-revenue water (see below), and up to approximately 475 acre-feet of water annually when considering non-revenue water.

2.4.1 Non-Revenue Water Demands

The demand factors presented earlier in this section represent the demand for water at the customer meter for each category. To fully represent the Proposed Project's demand on water resources, non-revenue water also needs to be included. Non-revenue water represents all of the water necessary to deliver to the customer meter and reflects distribution system leaks, water demands from potentially un-metered uses such as fire protection, hydrant flushing, and unauthorized connections, and meter inaccuracies.[32] In most instances, the predominant source of non-revenue water is from system leaks – the loss from fittings and connections from water sources through treatment plants, tanks, pumping plants, major delivery system back-bone pipelines, and community distribution systems. The 2015 UWMP provided detailed estimates of EID's projected system losses, estimating them to be 13%.[33] Therefore, the Proposed Project's potable water delivery system is expected to require about an additional 62 acre-feet[34] per year at

[31] Proposed Project phasing is an estimate. Actual construction will reflect other factors, including market conditions.
[32] The American Water Works Association and the California Urban Water Conservation Council recognize the inherent non-revenue water that is either lost or not accounted for in urban treated water distribution systems, and suggest purveyors strive for conveyance losses between 5 and 10% of all water delivered to customers. Obtaining this value is dependent on numerous factors including the age and extent of distribution system infrastructure, meter rehabilitation programs, and how a purveyor accounts for actions such as fire flows and hydrant flushing. For the purposes of this WSA, a value 13% is used to be consistent with the 2015 UWMP.
[33] 2015 EID UWMP, page 4-16.
[34] The anticipated demand for each connection is the resulting value after subtracting the non-revenue quantity from the total needed to be derived from EID's water supply sources. Therefore, calculating the non-revenue value from the "use at the site" side instead of the "source of supply" side requires a higher percentage to be multiplied by the estimated Proposed Project demand to have the correct resulting percentage. In this instance, 413 acre-feet multiplied by 14.9% results in 62 acre-feet of non-revenue water – summing to a total demand at the supply source of 475 acre-feet. Multiplying 13% by 475 acre-feet results in the Proposed Project's forecast use at the site.

build-out to serve the Proposed Project's potable needs. These values are presented as "non-revenue" water in **Table 2-3**.

Table 2-3: Proposed Project's Potable Water Demand Forecast

Category	Dwelling Units or Acres					Demand Factor		Acre-feet per Year				
	2025	2030	2035	2040	2045	(af/du or af/ac)		2025	2030	2035	2040	2045
Residential												
Low Density Residential	85	169	676	676	676	0.18	(indoor)	15	30	122	122	122
						0.25	(outdoor)	21	42	169	169	169
Medium Density Residential	0	0	250	250	250	0.18	(indoor)	0	0	45	45	45
						0.08	(outdoor)	0	0	20	20	20
DU Total	85	169	926	926	926							
						Indoor Subtotal		15	30	167	167	167
						Outdoor Subtotal		21	42	189	189	189
Non-Residential												
Park	4	7	14	14	14	3.70		13	26	53	53	53
Roadway Landscaping	5	10	10	10	10	0.45		2	5	5	5	5
						Outdoor Subtotal		16	31	58	58	58
Other Miscellaneous Uses												
Construction Water	1	1	0	0	0	5		5	5	0	0	0
						Outdoor Subtotal		5	5	0	0	0
						Indoor Total		15	30	167	167	167
						Outdoor Total		42	78	247	247	247
						Total		57	109	413	413	413
						Outdoor Non-revenue water		9	16	62	62	62
						Total Proposed Project Demand		**65**	**125**	**475**	**475**	**475**

SECTION 3 – REPRESENTATION IN 2015 UWMP

This section evaluates whether the Proposed Project was likely represented in the 2015 UWMP as part of EID's forecast growth, and thus whether this WSA can use the water system reliability assessment included in the 2015 UWMP to determine sufficiency under Water Code Section 10910 et seq. Specifically, Water Code section 10910 provides that a previously adopted UWMP can be used to support key elements of a WSA:

> *If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment…[§10910(c)(2)]*

3.1 COMPARISON TO PREDICTED GROWTH IN THE 2015 UWMP

The first step is to evaluate if growth assumed in the 2015 UWMP included the Proposed Project, directly or indirectly.

As detailed in Chapter 2 of the 2015 UWMP, EID identified several categories of growth that would result in increased demand on their water supplies: (1) known development projects, (2) Facility Improvement Letters, and (3) additional General Plan growth after accounting for the first two categories. Based upon information included in the 2015 UWMP, the Proposed Project was not included in either of the first two categories.

The third category, additional General Plan growth, was forecast in the 2015 UWMP to include over 14,000 new single-family residential units by 2045 (see **Table 3-1**). The Proposed Project includes 926 new single-family units, or about 6% of the new homes EID expects to serve by 2045.

Table 3-1: Anticipated Growth in EID Service Area
(source: 2015 UWMP Table 2-5)

Growth Category (cumulative units beyond current		2020	2025	2030	2035	2040	2045
From Table 2-4	Single Family	2,661	6,852	10,727	14,731	18,402	21,608
	Multi-Family	248	1,022	1,869	2,880	3,224	3,578
	Total Residential Units	2,909	7,874	12,596	17,611	21,626	25,186
Adjustment (91% SF/9% MF)		500	1,300	2,500	4,000	5,800	7,600
For Demand Forecasts	Single Family	2,206	5,669	8,452	11,091	13,124	14,692
	Multi-Family	203	905	1,644	2,520	2,702	2,894
	Total Residential Units	2,409	6,574	10,096	13,611	15,826	17,586

3.2 Comparison to Predicted Demand in the 2015 UWMP

Second, to allow the 2015 UWMP's water system reliability analysis to support this WSA, the demand for future single-family homes and non-residential uses evaluated in the 2015 UWMP would need to be consistent with the detailed demand analysis presented in Section 2.

As presented in the 2015 UWMP, a value of 0.43 acre-feet per unit was used for all future single-family residential units.[35] If the 2015 UWMP demand factor was used, the Proposed Project's 926 single-family units would be estimated to demand 398 acre-feet per year. As detailed in Section 2, however, the refined analysis reflecting additional statutory provisions regarding indoor and outdoor water use estimated the 926 single-family homes to need 356 acre-feet per year (prior to including non-revenue water needs).

Further, the 2015 UWMP projected non-residential growth, characterized as a combination of commercial, institutional, office, and recreational uses, as 10% of ten percent of the residential growth (e.g. for every ten housing units there would be the equivalent of one non-residential connection).[36] Using demand factors that reflected EID's existing residential/non-residential demand relationships, the 2015 UWMP estimated this broad land use category would have a water demand by 2045 in excess of 2,000 acre-feet per year. The Proposed Project's added demand for parks and roadway landscaping is forecast to need 58 acre-feet annually, which would be accommodated within the 2015 UWMP's forecast non-residential demand.

Thus, the Proposed Project's forecast water demands would not increase the total demand used in the 2015 UWMP to assess reliability, and, consistent with Water Code §10910(c)(2), the "*projected water demand associated with the proposed project was accounted for*" in EID's 2015 UWMP and the conclusions of water system reliability from the 2015 UWMP can be used to represent water supply sufficiency for purposes of this WSA.

The 2015 UWMP estimated total water service area demand to exceed 58,000 acre-feet annually by 2045, as shown in **Table 3-2**.

3.3 EID Water Supplies and Availability

The 2015 UWMP completed a very detailed analysis of EID's treated water supplies, which are derived from a number of water rights and entitlements. **Table 3-3** is the result of that analysis and the basis for the 2015 UWMP's assessment of water system reliability.

[35] 2015 EID UWMP Table 4-5
[36] 2015 EID UWMP Section 2.1.3

Table 3-2: Forecast Water Demand in EID Service Area
(source: 2015 UWMP Table 4-7)

Land-class		Forecast Demand (af/yr)					
		2020	2025	2030	2035	2040	2045
Existing Potable Use	Single Family	15,737	14,950	14,950	14,202	14,202	14,202
	Single Fam. (dual potable)	713	713	713	706	706	706
	Multi-family	1,551	1,474	1,474	1,444	1,444	1,444
	Commercial	3,144	2,989	2,989	2,929	2,929	2,929
	Recreational Turf	1,296	1,166	1,166	1,143	1,143	1,143
	City of Placerville	1,331	1,264	1,264	1,201	1,201	1,201
	Subtotal	23,772	22,556	22,556	21,626	21,626	21,626
New Customers	Single Family (GP)	779	1,455	1,951	2,386	2,809	3,423
	Single Fam. (dual potable)	35	87	173	260	329	346
	Multi-family (GP)	32	62	89	115	140	167
	Non-residential	273	752	1,158	1,563	1,817	2,016
	Known Projects	383	2,011	2,868	3,576	3,922	3,922
	FIL Growth	65	130	194	194	259	324
	City of Placerville	120	240	360	480	600	600
	Subtotal	1,687	4,736	6,793	8,575	9,877	10,800
Total Municipal		25,459	27,293	29,349	30,202	31,503	32,426
Other	Other Authorized Uses	2,618	2,749	2,857	2,952	3,035	3,128
	Agriculture (potable)	6,981	7,966	9,047	10,128	11,208	12,559
	Distribution System Loss	5,259	5,701	6,188	6,492	6,862	7,217
Total Potable Demand		40,318	43,709	47,441	49,773	52,609	55,330
Recycled	Single Fam. (dual recycled)	1,541	1,464	1,464	1,435	1,435	1,435
	Commercial	730	714	714	714	714	714
	Recreational Turf	588	576	576	576	576	576
	New Recycled customers	48	120	241	361	457	481
	Distribution System Loss	253	250	261	268	277	279
	Total Recycled Demand	3,160	3,125	3,256	3,354	3,459	3,485
Total District Demand		43,477	46,833	50,696	53,128	56,068	58,815

Table 3-3: 2015 UWMP Supply Availability after 2040
(source: 2015 UWMP Table 3-3)

Water Asset	Normal Year	Single Dry Year	Multi-Dry Year		
			Year 1	Year 2	Year 3
Existing Supplies					
License 2184 and Pre-14 rights	4,560	3,000	3,000	3,000	3,000
Licenses 11835 and 11836	23,000	20,920	20,920	17,000	15,500
CVP Contract	7,550	3,775	3,775	3,775	1,888
Project 184	15,080	15,080	15,080	15,080	15,080
Permit 21112	17,000	17,000	17,000	17,000	17,000
Subtotal Existing	67,190	59,775	59,775	55,855	52,468
Planned Supplies					
CVP Fazio water	7,500	3,750	3,750	3,750	1,875
Applications 5645X12, 5644X02 (El Dorado-SMUD Agreement)	30,000	5,000	5,000	5,000	5,000
Subtotal Planned	37,500	8,750	8,750	8,750	6,875
Recycled Water	3,500	3,500	3,500	3,500	3,500
Total Supplies	108,190	72,025	72,025	68,105	62,843

3.4 EID Water System Reliability

As detailed in Chapter 7 of the 2015 UWMP, EID compared the supply availability to the forecast future demand through 2045 for normal, single dry, and multiple dry years. Because this analysis extended to 2045, it provides an analysis that incorporates the planning horizon required for this WSA, allowing the 2015 UWMP's water system reliability to be used to assess water supply availability for purposes of the Proposed Project.

Table 3-4 through **Table 3-6** present the results of the 2015 UWMP's normal, single-dry, and multiple dry year reliability analysis. As represented under all conditions, the 2015 UWMP indicates EID will have sufficient water supplies to adequately meet all of the forecast water demand through 2045.

Table 3-4: 2015 UWMP Normal Year Supply and Demand Comparison
(source: 2015 UWMP Table 7-1)

(acre-feet/yr)	2020	2025	2030	2035	2040	2045
Supplies	77,490	107,690	107,790	107,990	108,190	108,190
Demands	43,477	46,833	50,696	53,128	56,068	58,815
Difference	34,013	60,857	57,094	54,862	52,122	49,375

Table 3-5: 2015 UWMP Dry Year Supply and Demand Comparison
(source: 2015 UWMP table 7-2)

(acre-feet/yr)	2020	2025	2030	2035	2040	2045
Supplies	66,325	71,525	71,625	71,825	72,025	72,025
Demands	45,651	49,175	53,231	55,784	58,871	61,756
Difference	20,674	22,350	18,394	16,041	13,154	10,269

Table 3-6: 2015 UWMP Multiple Dry Year Supply and Demand Comparison
(source: 2015 UWMP table 7-3)

	(acre-feet/yr)	2020	2025	2030	2035	2040	2045
Year 1	Supplies	66,325	71,525	71,625	71,825	72,025	72,025
	Demands	45,651	49,175	53,231	55,784	58,871	61,756
	Difference	20,674	22,350	18,394	16,041	13,154	10,269
Year 2		2020	2025	2030	2035	2040	2045
	Supplies	62,405	67,605	67,705	67,905	68,105	68,105
	Demands	43,369	46,716	50,569	52,995	55,928	58,668
	Difference	19,036	20,889	17,136	14,910	12,177	9,437
Year 3		2020	2025	2030	2035	2040	2045
	Supplies	57,143	62,343	62,443	62,643	62,843	62,843
	Demands	41,086	44,258	47,908	50,206	52,984	55,580
	Difference	16,056	18,085	14,535	12,437	9,858	7,262

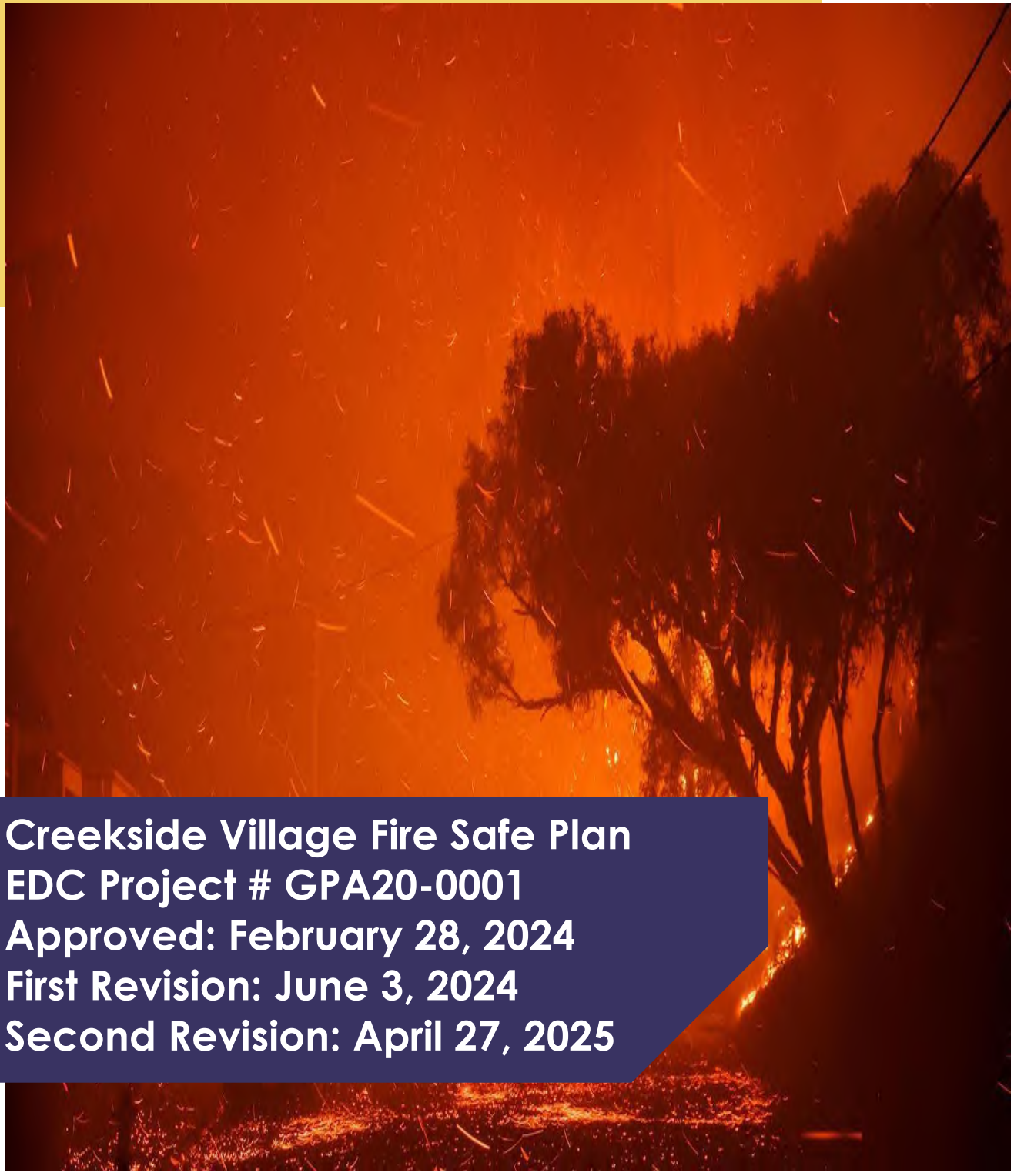
SECTION 4 – SUFFICIENCY CONCLUSION

As detailed in the 2015 UWMP, EID has sufficient water supplies to meet future demands in all conditions. Specifically, EID concludes sufficient supplies through 2045 for all existing and planned uses as detailed in Chapter 7 of the 2015 UWMP.

Therefore, pursuant to Water Code Section 10910 et seq, EID will have sufficient water supply to meet the Proposed Project's estimated build-out water demand of 475 acre-feet per year.

Appendix J
Fire Safe Plan

Fire Safe Plan (April 2025)



Creekside Village Fire Safe Plan
EDC Project # GPA20-0001
Approved: February 28, 2024
First Revision: June 3, 2024
Second Revision: April 27, 2025

Prepared By:

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PLAN APPROVAL SHEET

The Creekside Village Fire Safe Plan (GPA20-0001) has been designed to mitigate the wildfire risk presented for the project described in the specific plan application as being west of Latrobe Road and south of Robert J. Mathews Drive, in El Dorado Hills, CA. The plan has been developed to conform with California Code of Regulations Title 14 §§ 1270-1276 (Fire Safe Regulations), California Code of Regulations Title 24, Part 9 – § 4903 (Plans) and El Dorado County Fire Protection Standard W-002 (Wildland Urban Interface Fire Protection Plans).

This Creekside Village Fire Safe Plan replaces the following previously prepared fire safe plan for this Project:

- Creekside Village Wildfire Safe Plan, prepared by William F. Draper, RPF, dated September 26, 2020.

Revision 2 to the Creekside Village Fire Safe Plan has been reviewed and approved by the following fire agencies located in El Dorado County:

DATE PUBLISHED: April 27, 2025

PREPARED BY:	APPROVED BY:	APPROVED BY:
DocuSigned by: Ronald Phillips, Jr. DFF4B5E2CDDA4C4...	Signed by: Michael Lilienthal AD826AAE861C4DD...	DocuSigned by: Jeff Hoag EF9F8B40873747E...
Ronald A. Phillips	Michael Lilienthal, Fire Chief	Jeff Hoag, Battalion Chief
Phillips Consulting	El Dorado Hills Fire Department	CAL FIRE – AEU

FORWARD

The following **Creekside Village Fire Safe Plan** (FSP) has been prepared for the Creekside Village Project (Project) in El Dorado Hills, California. This FSP for the Project meets the requirements described in Chapter 49 of the California Fire Code and various other State and County statues and regulations. The FSP addresses the following topics:

- Introduction (Chapter 1)
- Existing Conditions (Chapter 2)
- Regulatory Requirements (Chapter 3)
- Fire Protection Planning (Chapter 4)
- Emergency Preparedness and Evacuation Planning (Chapter 5)
- Fuel Reduction Management and Defensible Space Concepts (Chapter 6)
- Emergency Preparedness and Evacuation Plan Mitigation Strategies (Chapter 7)
- Plan Appendixes (Chapter 8)

The goals of this FSP are as follows:

- Reduce the exposure of vulnerable buildings to high intensity flames.
- Reduce the quantity of embers accumulating at a building based on factors related to the building characteristics and adjacent fuel treatments.
- Reduce the likelihood of urban conflagration due to treatment of fuels in proximity to buildings.
- Enhance the level of preparedness by both residents and visitors for safe evacuation during a wildfire or similar hazardous situation.

The FSP specifically applies to the Creekside Village Project (GPA20-0001). The FSP provides a framework for protection of residents and visitors from natural hazards, the prevention of fire, and preparation for responding to an emergency evacuation of the Project should the need arise. The FSP is intended to be utilized during the development, construction, and occupancy of the Project.

For the purpose of interpreting and applying the provisions found within each chapter the terms shall and should are found throughout. The use of the term “shall” refer to requirements of the Plan as mandated through State statue or regulation. The use of the term “should” refer to recommendations cited in the document by the authors.

END OF FORWARD

CHAPTER 1: INTRODUCTION

1.1 Terms and Definitions

Term	Definition
Defensible Space	Is the design and maintenance of natural and/or landscaped areas in an area where mitigation actions are undertaken to reduce building loss from a wildfire. It is also intended to provide access to firefighters for fire suppression actions and to provide a safe zone for them to work. Defensible space is based on four general concepts: 1. Elimination of combustible vegetation and other materials within 5' of the building. 2. Fuel removal or reduction within 100' of buildings in all directions 3. Thinning, pruning and removal of continuous and dense uninterrupted layers of vegetation 4. Removal of ladder fuels within 6' from the ground to prevent fire spread through tree canopies.
Evacuation Order	Refers to a situation involving an Immediate threat to life. This is a lawful order to leave now. The area is lawfully closed to public access.
Evacuation Warning	Refers to a potential threat to life and/or property. Those who require additional time to evacuate, and those with pets and livestock should leave immediately.

Term	Definition
Fuels Reduction	Refers to the decrease of wildfire fuels such as trees, shrubbery, grasses, and other natural materials to reduce risks to human life and damage to personal property. Fuel reduction can result in less extreme fire behavior and intensity through decreased fire spread rates and reduced flame lengths.
Shelter in Place	The use of a structure to temporarily separate individuals from a hazard or threat. Sheltering in place is appropriate when conditions necessitate that individuals seek protection in their home, place of employment, or other location when disaster strikes.
Temporary Areas of Refuge	Locations that are used by individuals when a hazard is imminent or occurs with no warning and are meant to provide temporary and limited protection as an incident occurs.
Wildfire	Any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property or resources as defined in Public Resources Code Sections 4103 and 4104.
Wildland Urban Interface (WUI)	A geographical area identified by the state as a “Fire Hazard Severity Zone” in accordance with Public Resources Code Sections 4201through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

1.2 Project Summary

Project Name: Creekside Village (GPA22-0001).

Location: Unincorporated area of El Dorado County in El Dorado Hills, CA. The Project is located west of Latrobe Road, south of the El Dorado Hills Business Park and west of the Heritage at Carson Creek community in El Dorado Hills, California. El Dorado County Assessor Parcel # 117-010-032 and a portion of 117-010-031. The Map Coordinate for the Project is 38.617390N,121.051632W. The Project applicant is Winn Ridge Investments LLC.

Project Description: The Project proposes to create up to 918 single-family residential parcels, a community center, an approximately 1.8-acre neighborhood shopping center, and 44.8 acres of open space land, within its boundaries. The Project will be approximately 208 acres in total area. See Figure 1 for the proposed Area Map for the Project.

. Figure 1: Creekside Village Area Map[1]

[1] Creekside Village Specific Plan Figure 2.4, Page 2-6 (July, 2023)

The Project proposes to provide additional residential housing on the 918 new residential parcels being created by the Creekside Village Specific Plan. The new resident population[2] for the Project is approximately 2,607 persons at build-out, assuming conventional single-family homes. The new resident population would be less if all or part of the project includes age-restricted homes. All new residential parcels will have a land use designation of either Single-Family Low Density (4-8 Dwelling Units Per Acre) or Single-Family Medium Density (8-12 Dwelling Units Per Acre).

There is also a proposed alternative project called the Reduced Impact Alternative (RIA) which could be approved. The RIA is similar to the proposed Project but includes 763 single-family residences, slightly less open space at 44.4 acres, and a portion of the project includes Active Adult units leading to a decrease in population to approximately 1,529 persons.

Approximately 21.6% of the overall Project area is classified as either Open Space Preserve (CV-OS1) or Buffer (CV-OS2) lands. CV-OS1 land use designation is the most restrictive use for environmental protection and occurs within approximately 9.1 acres. CV-OS2 land use designation is the buffer area around CV-OS1 and includes 35.7 acres. Open Space lands within the Project shall be owned and/or managed by either an established Home Owners Association (HOA) or Community Service District (CSD). See Figure 2 for the proposed land use designations within the Project.

The Project can be accessed from three public road connections off of Latrobe Road. An emergency vehicle access road is proposed to connect to Robert J Mathews Drive on the north end of the Project. An emergency vehicle access road connection serving the Heritage at Carson Creek community west of the Project will also be provided.

[2] See U.S. Census Bureau Data for El Dorado Hills (2022); U.S. Census Bureau QuickFacts: El Dorado County, California

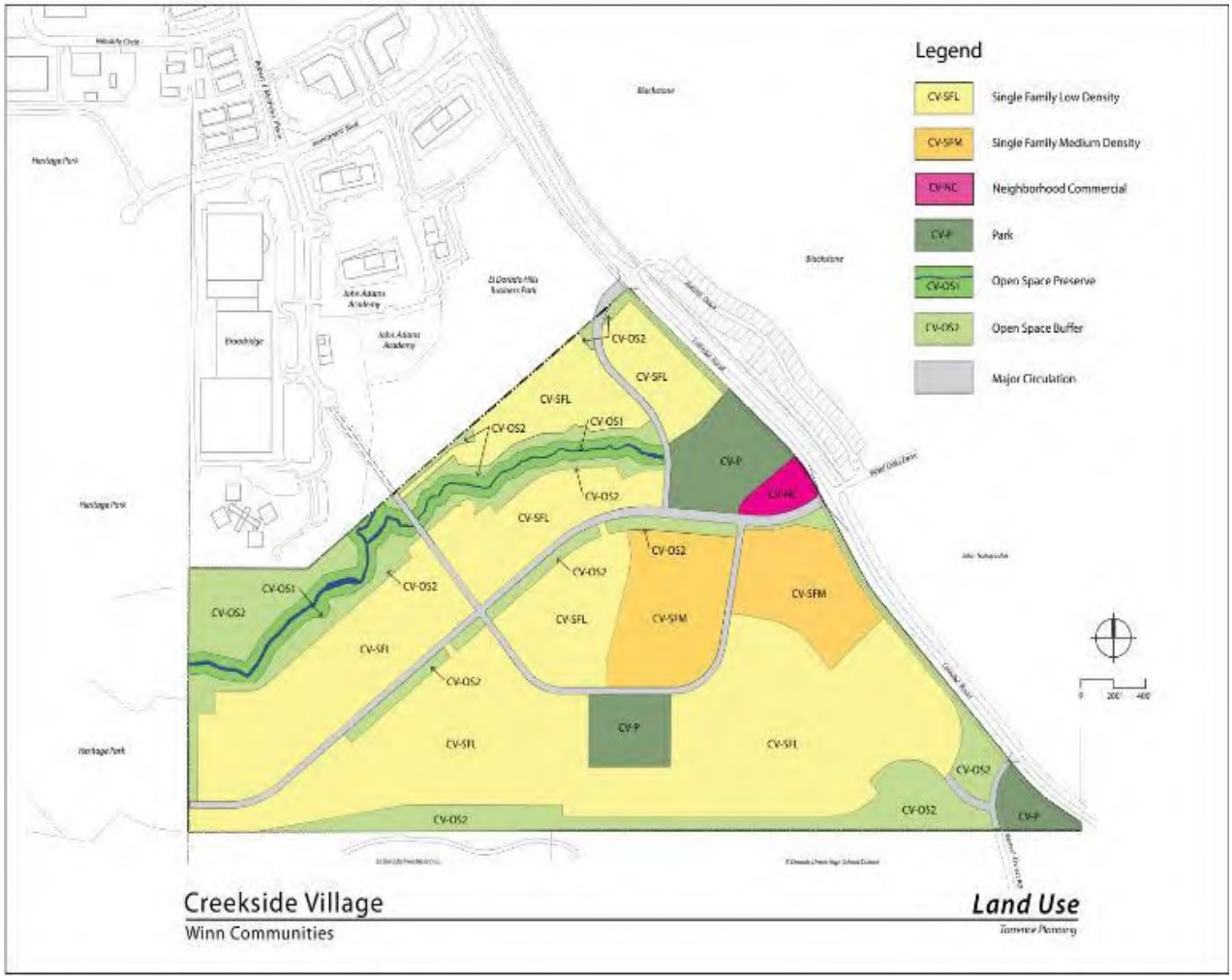

Figure 2: Proposed Land Use Designations[3]

Electrical power supply and natural gas is provided to the Project by Pacific Gas & Electric (PGE). Municipal water supply for fire protection and domestic water consumption will be provided by the El Dorado Irrigation District (EID).

END OF CHAPTER

[3] Creekside Village Specific Plan Figure 3.2, Page 3-3 (July, 2023)

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CHAPTER 2: EXISTING CONDITIONS

2.1 Chapter Overview

The Project is located in the unincorporated community of El Dorado Hills, California. El Dorado Hills is located in the western region of El Dorado County. The Project is located within an area generally described as the "EDH Business Park" area. According to 2021 population statistics[4] for the area approximately 548 existing residents live in the general area of the Project. The Project is located within El Dorado County Supervisory District 2.

The Project is approximately 208 ± acres in size. The Project lands are currently unimproved. See Figure 3 for an area map that shows the Project in relation to the adjoining community of El Dorado Hills.

Figure 3: El Dorado Hills Area Map Showing Project Location and Adjoining Uses[5]

The Project is bordered by the following adjoining properties:

- **South Side** – Wetsel Oviatt Road and unimproved rural residential and industrial lands is located south of the Project.

[4] See Census Block Data for Areas 060170307123028, 060170307123032, 060170307112034, and 060170307112034; 2020.
[5] Creekside Village Specific Plan Figure 2.4, Page 2-6 (July, 2023)

- **North Side** – The El Dorado Hills Business Park (including the nearby John Adams Academy Charter School, Slide Belts and Broadridge Financial Systems) is located north of the Project.

- **East Side** – Latrobe Road and the Blackstone Master Planned Community is located east of the Project.

- **West Side** – The Heritage Park at Carson Creek Master Planned Community is located west of the Project.

2.2 Vegetation

The Project site is currently unimproved and contains natural vegetation cover. The Project site is located within an area classified as a "Grasslands" habitat. See Table 1 for the existing vegetation found on the parcel.

Table 1: Summary of Vegetation Found on the Property

Scientific Name	Common Name
Quercus douglasii	Blue Oak
Carduus pycnocephalus	Italian Thistle
Hordeum marinum, gussoneanum, munimum	Barleys
Torilis arvensis	Tall Sock-Destroyer
Centaurea solstitalis	Yellow Star Thistle
Bromus diandrus, hordeasceus	Bromes
Medicago polymorpha	California Burclover
Avena Fatua and Avena barbata	Oats, Grass Family
Vicia villosa, sativa	Vetch
Erodium botrys	Broad-leaf Filaree
Brassica nigra	Black Mustard
Hirschfeldia incana	Shortpod mustard
Holocarpha virgata	Tarplant
Achillea millefolium	Yarrow
Centromadia fitchii	Spikeweed
Stipa pulchra	Purple Needle Grass

2.3 Climate

Fire weather in El Dorado County is typically dominated by three general weather phenomena; the Delta push influence, north wind events, and east foehn winds caused by high pressure development in the Great Basin[6]. All three weather conditions cause potential increases in fire intensity and size. The Delta influence is the most common and occurs frequently throughout the summer.

Characteristically, high pressure systems will dominate Northern California in the summer months bringing extremely hot and dry conditions over much of the region. As these systems develop, they tend to originate near the Delta and Sacramento areas bringing the marine influence to the area. This is generally considered a beneficial condition for fire behavior; slightly cooler afternoon temperatures and increases in relative humidity. However, the downside is the strong winds that typically accompany these patterns which can override any benefit that may come from cool, moist marine air.

This type of wind generally subsides after sundown causing fire behavior to drop off dramatically. The other critical wind patterns that are difficult to predict for El Dorado County are the northerly and easterly winds. They are relatively rare, and often are forecasted only the day before. Northerly or easterly winds are typically warmer and drier than most other wind patterns due to air compression. These conditions provide the perfect environment for increased fire intensity and large fire growth.

Fire growth is typically wind driven, however as these winds subside, fire immediately returns to fuel/topography driven in opposing directions to the wind driven direction. This type of wind event is commonly referred to as a Santa Ana wind in Southern California, and a Foehn wind in the Sierra/Cascade Region.

Predominant local weather patterns in the Project area[7] are characterized by warm, dry summers and cool, wet winters. Dry conditions traditionally begin around the beginning of May and last into late October. An average summer day is 95°- 105° Fahrenheit, winds from the southwest at 0-10 miles per hour, and relative humidity levels in the 15-25 percent range. Summer lightning

[6] See Strategic Fire Plan for Amador El Dorado Unit; 2023; 2023 Strategic Fire Plan Amador El Dorado Unit (ca.gov); P.5.
[7] Ben Bolt Remote Automated Weather Station Site; National Weather Service. Ben Bolt California (dri.edu).

storms are infrequent in the area. On average, the strongest wind speeds in the El Dorado Hills area occur in March through May, but winds can frequently exceed 20 mph throughout the local fire season period.

2.4 Topography

The topography in the general area of the Project is classified as being a "foothill" terrain type which transitions from the Central Valley area of California to the Sierra Nevada Mountain range. The Project is located within the Carson Creek drainage at an elevation range of between 475 – 650 feet above sea level. An isolated 100-foot hillside is located within the southeast corner of the Project and raises above the site. See Figure 4 for the existing topographic condition of the Project area.

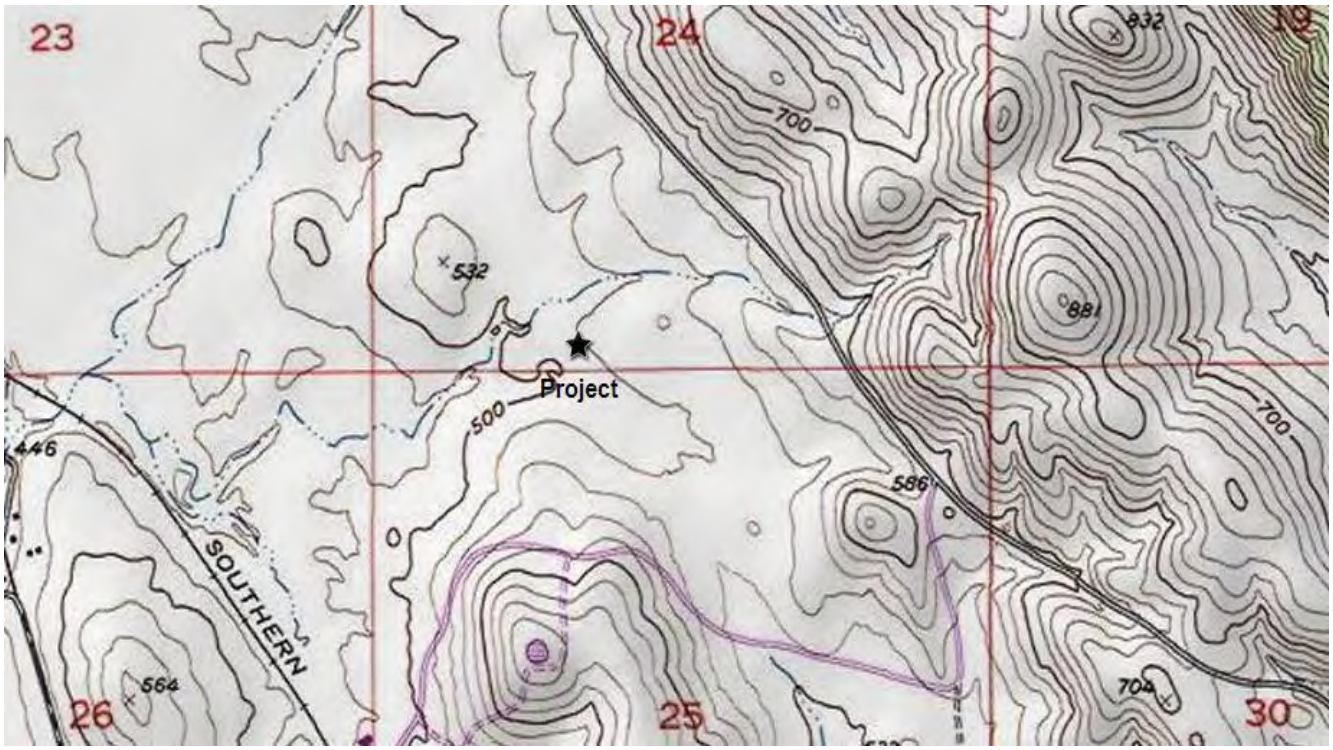

Figure 4: Creekside Village Project Topographic Map

Slopes within the Project are generally less than 20%. Most of the parcels within the Project have west or south facing aspects.

2.5 Existing and Planned Land Use Pattern

The current land use of the Project is unimproved. The Project proposes to create up to 918 single-family residential parcels, a community center, a neighborhood shopping center, and 44.8 acres of open space land, within its boundaries. The Project will be approximately 208 acres in total area.

2.6 Fire History

According to CAL FIRE statistics the majority of wildland fires that have occurred in the western El Dorado County area was ignited from one of the following sources: debris burning (34%), Undetermined (14%), Equipment (13%), Vehicle (9%) and Other (9%) causes.[8] Debris and Open Burning was the Number 1 cause of vegetation fires in the El Dorado Hills and surrounding communities in the area in 2022.

Several large wildfires (>300 acres) have been reported near the Project area between 1910 - 2022. The Project site was directly impacted by the "Dunlap" fire in 1959, "SMUD 1" fire in 1992, and Payen" fire in 2001, within this reporting period. Figure 5 describes the significant wildland fire history in the vicinity of the Project area.

LEGEND

1. Dunlap Fire, August 17, 1959, Size – 299 acres, Cause – Undetermined
2. SMUD#1Fire, June 20, 1992, Size – 1,179 acres, Cause – Powerline
3. Payen Fire, July 4, 2001, Size – 302 acres, Cause – Miscellaneous

Figure 5: Large Wildfire History in the Project Area (1910-2022)

[8] *Strategic Fire Plan Amador ○ El Dorado ○ Sacramento ○ Alpine Unit,* (2023); P.57.

2.7 Fire Hazard Severity Zone Designation

The term Fire Hazard refers to the dangerous accumulation of flammable fuels in open space areas and other wildland urban interface areas (WUI). It is typically described at the landscape (area) level, usually referring to the density of live or dead vegetation that may be ignited by the various fire risks or causes that can increase a fires intensity or rate of spread. Fire hazard is based on the vegetation types likely to be present over the next 50 years that contribute to fire severity and ember production, the topography of the area and the average fire weather conditions present in the area.

Fire Hazard ratings are provided by CAL FIRE as part of their *Fire Hazard Zone Severity Mapping* program. One of the major hazards in the western El Dorado County region is the threat of a disastrous wildfire endangering both people and property. The Project is also located within a designated[9] Wildland Urban Interface (WUI) community identified by the Federal Government as being at risk from a large wildfire due to fire behavior potential and values at risk.

The area is vulnerable to the threat of wildfire throughout the year subject to a variety of conditions including, but not limited to:

- Daily weather conditions such as air temperature, humidity, wind speed and direction.
- Climatic conditions such as drought, extended seasonal periods of hot, dry weather typically found in the summer and fall months, or seasonal rains typically found in the winter and spring months.
- Fuel moisture and growth cycle periods, especially in fine fuels such as the herbs and shrubs that are prevalent in the area.
- Human caused ignition factors such as arson, escaped debris burns and unsafe equipment operation.

The Project area is located within a State Responsibility Area (SRA) for fire management. The current CAL FIRE Hazard Severity Zone[10] Map for El Dorado County identifies the majority of

[9] Federal Register *Urban Wildland Interface Communities within the Vicinity of Federal Lands that are at High Risk from Wildfires; (January, 2001);* Federal Register :: Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire

[10] CAL FIRE; Fire Hazard Severity Zone Map for El Dorado County (April 1, 2024); Fire Hazard Severity Zones in State Responsibility Area - El Dorado County (azureedge.net).

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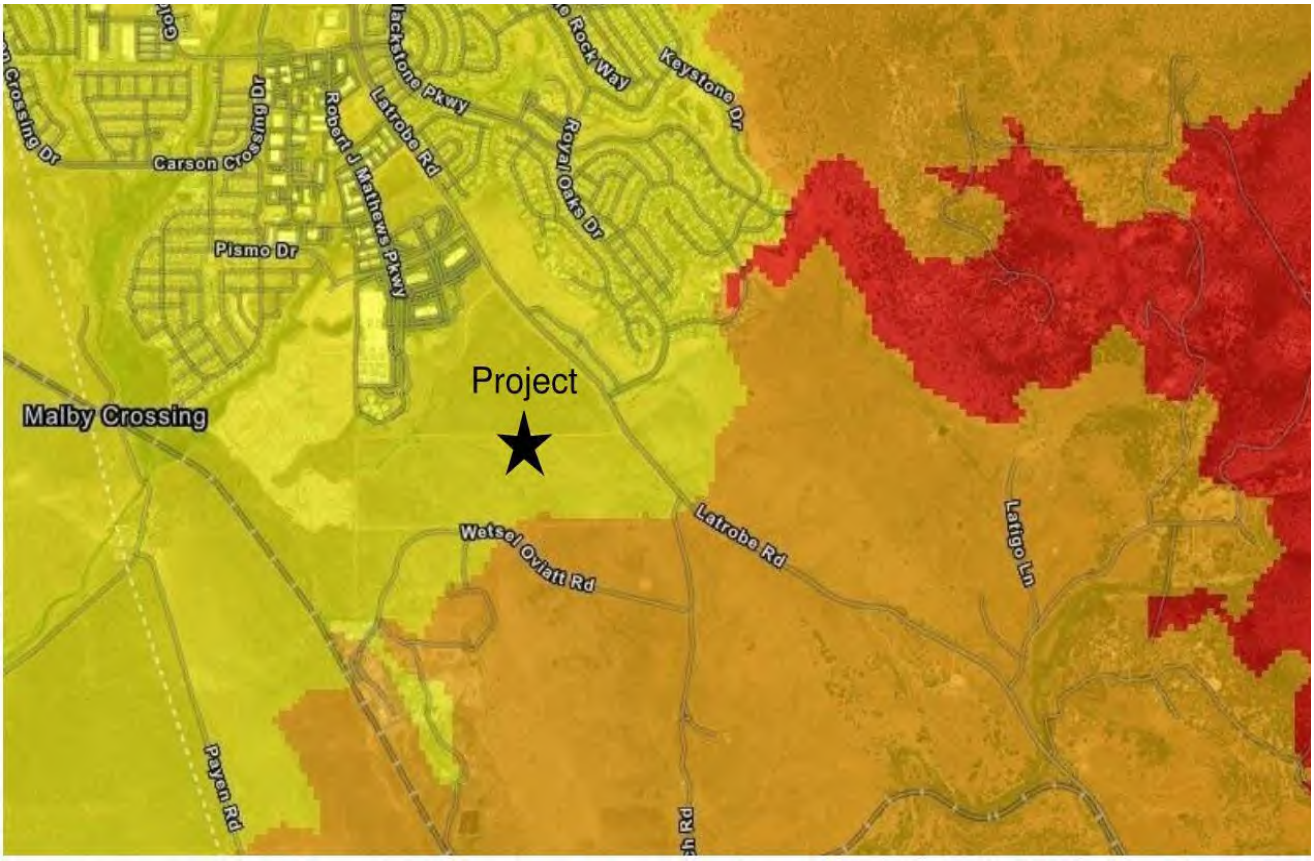
the Project being within a **Moderate Fire Hazard Severity Zone.** Approximately 6.67 acres of land within Open Space Lot N and Park Site O is located within a **High Fire Hazard Severity** Zone. The "High" Fire hazard severity zone classification is within 1/2 mile of all areas of the project. The closest "Very-High" zone is slightly over 1/2 mile east of the project in the Blackstone Community. The unimproved lands south and west of the site, extending into Sacramento County, and the open space areas within the Project, pose the most likely worst-case wildfire risk to the future community. See Figure 6 for the Fire Hazard Map information for the Project and surrounding community.



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Yellow State Responsibility Area (SRA) Moderate Fire Hazard Severity Zone
Orange State Responsibility Area (SRA) High Fire Hazard Severity Zone
Red State Responsibility Area (SRA) Very-High Fire Hazard Severity Zone

Figure 6: Fire Hazard Severity Zone Map for the Creekside Village (2024)

2.8 Fire and Emergency Response

Fire, rescue, and pre-hospital emergency medical services for the El Dorado Hills community is provided by the El Dorado Hills Fire Department (EDHFD)[11]. EDHFD is a career staffed

[11] See El Dorado Hills Website; HOME - El Dorado Hills Fire Department (edhfire.com); accessed September 14, 2023.

fire department which operates five staffed fire stations and serves an area of approximately 78 square miles. EDHFD utilizes no less than twenty-one firefighters and paramedics to staff these fire stations on a 24-hours-per-day, seven-days-per-week operational schedule.

CAL FIRE operates one fire station in the south El Dorado Hills region to meets its wildfire suppression and prevention mission. This fire station is located at CAL FIRE Station 43 in the El Dorado area and is approximately 14.4 miles from the Project. CAL FIRE staffs two state funded fire engines with a crew of 3-4 firefighters on a seasonal basis from this location.

The Project is located within an Insurance Service Office (ISO) Class 3 rating area. EDHFD emergency response travel times for the first arriving unit to the Project are on-average less than 8 minutes[12]. These response times are consistent with El Dorado County General Plan Policy 5.1.2.2[13] which calls for an average response time to emergency calls of less than eight minutes in community region areas. See Table 3 for additional information on local fire station locations and distance to the Project.

Table 3: Fire Station Data for Project

Fire Station Identification	Address	Travel Distance to Project	Staffed Year Round
EDHFD Station 87	4680 Golden Foothills Pkwy. El Dorado Hills	1.5 Miles	Yes
EDHFD Station 85	1050 Wilson Boulevard El Dorado Hills	4.08 Miles	Yes
EDHFD Station 86	3670 Bass Lake Road El Dorado Hills	5.84 Miles	Yes
EDHFD Station 91	7672 South Shingle Road El Dorado Hills	5.91 Miles	Yes
CAL FIRE Sta 43	5660 Motherload Drive El Dorado	14.40 Miles	Yes

During a major emergency incident such as a building fire, wildland fire, hazardous materials spill, or similar event it is likely that EDHFD and CAL FIRE will dispatch multiple fire station crews to assist in controlling the incident. It is probable that five or more fire suppression units would be dispatched from multiple fire stations located in the western El Dorado County region.

[12] Response times are based on an average 90 second turnout time by firefighters from their station plus travel time using the closest roads available to the project. The response time standard the county uses to evaluate the adequacy of the project meeting General Plan Policy 6.2.3.1 are based the closest station (Station 87) only, and not the average response times of all resources responding to an incident.

[13] See *El Dorado County General Plan*, 2004; Public Services and Utilities Element Section, P.91.

Figure 7 shows the regional locations of the five closest fire stations to both the Project and El Dorado Hills community.

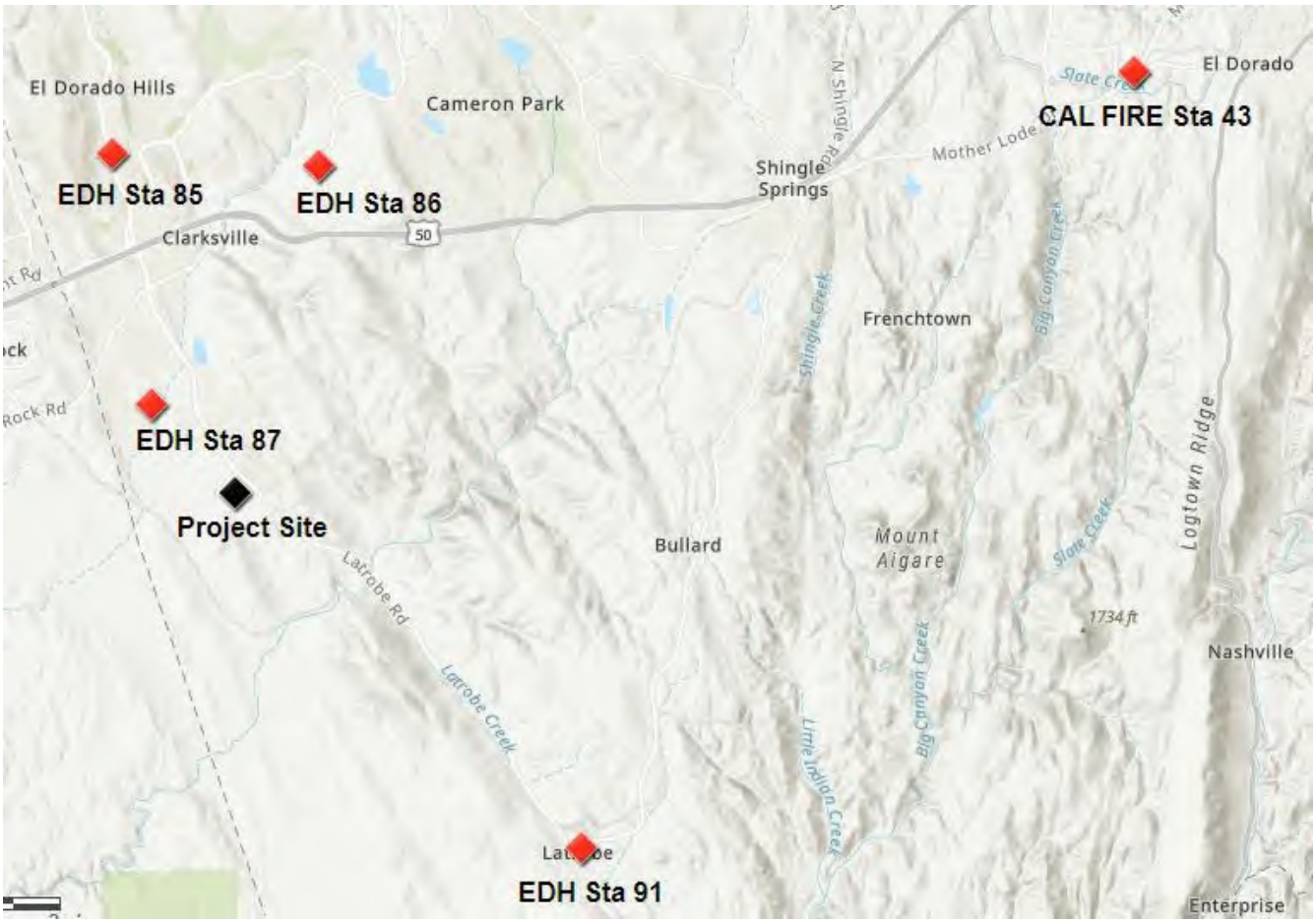

Figure 7: Staffed Fire Stations Near Project

A joint EDHFD, CAL FIRE, and local fire agency emergency response to the Project will occur along either the Latrobe Road or the Highway 50 corridors from both the north and south directions. Four fire stations (87, 85, 86, and 43) are located north or east of the Project; while one fire station (91) is located south of the Project. The closest paramedic ambulance to the Project is located at El Dorado Hills Station 85, and has an average emergency response time of less than eight minutes to the Project.

2.9 Emergency Ingress and Egress

The three primary emergency vehicle access / civilian evacuation roads serving the Project are located off of Latrobe Road.

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An approved Emergency Vehicle Access[14] (EVA) use only connection from Robert J. Mathews Drive will be provided on the north side of the Project. An approved EVA will be provided for egress[15] by the Heritage Park community through the Project on the west side of the Project. This EVA will connect to Royal Oaks Drive in the Project and extends to Latrobe Road for use by the residents and visitors of that community during an emergency.

See Figure 8 for circulation map for the Project and surrounding areas.

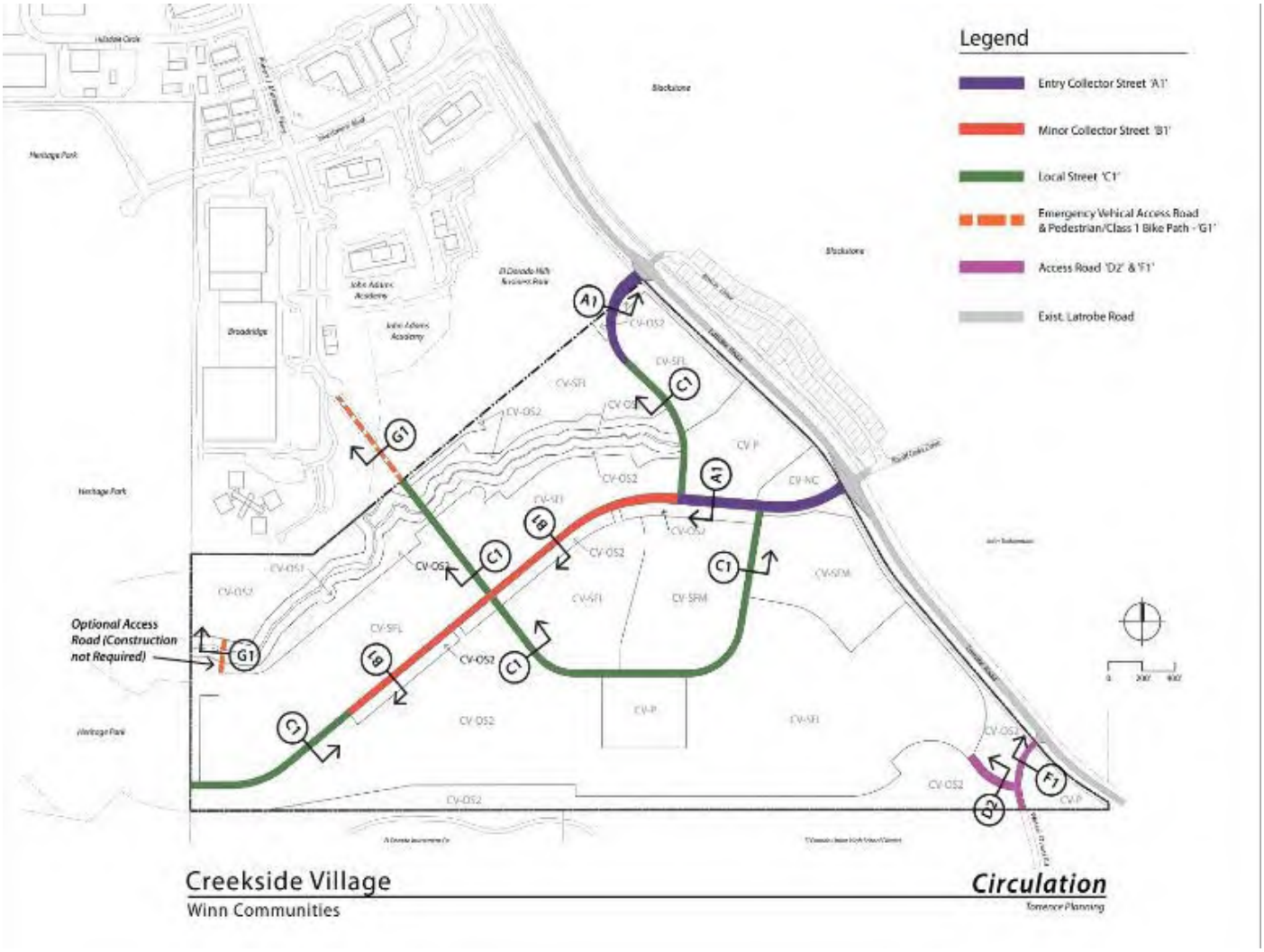

Figure 8: Creekside Village Circulation Plan[16]

END OF CHAPTER

[14] As it pertains to this Project the term "Emergency Vehicle Access (EVA)" refers to a road connection that provides access for fire apparatus, emergency medical and law enforcement personnel during exigent conditions. It does not serve as a means to comply with 14CCR § 1273.08 (Maximum Length of New Dead-end Roads).

[15] The use of this access point from Creekside into Heritage is limited to emergency vehicle use only.

[16] Creekside Village Specific Plan Figure 4.1, Page 4-4 (July, 2023)

Chapter 3: REGULATORY REQUIREMENTS

3.1 Chapter Overview

Development of the proposed Project will be subject to federal and state laws, County ordinances and regulations. The key provisions that would address hazards and emergencies within the FSP are summarized below, and, in some cases, reproduced in the appendices.

The County of El Dorado, through its General Plan[17], has identified natural hazards that include severe weather, seismic and geological events, landslides, flooding, and wildfires, as the highest vulnerability to County residents. A review of the information[18] provided in the General Plan shows the Project as being at greatest risk to the threat of a wildfire. The focus of the FSP will be to address efforts to reduce the wildfire threat within the Project and surrounding areas.

3.2 El Dorado County General Plan

The El Dorado County General Plan[19] contains two sections that provide public safety policy guidance related to the Project. Chapter 5 (Public Services and Utilities Element) and Chapter 6 (Health and Safety Element). Chapter 5 was last amended in December, 2015. Chapter 6 was last updated by the County in August, 2019.

The following Public Services and Utilities Element polices of the County are applicable to the proposed Project:

Policy 5.1.2.2. Provision of public services to new discretionary development shall not result in a reduction of service below minimum established standards to current users, pursuant to Table 5-1.

Policy 5.1.2.3. New development shall be required to pay its proportionate share of the costs of infrastructure improvements required to serve the project to the extent permitted by State law. Lack of available public or private services or adequate infrastructure to serve the project

[17] See *El Dorado County General Plan Public - Health, Safety and Noise Element*; (2019)
[18] ibid
[19] See El Dorado County General Plan (2004); Adopted General Plan (edcgov.us); accessed August 31, 2023.

which cannot be satisfactorily mitigated shall be grounds for denial of any project or cause for the reduction of size, density, and/or intensity otherwise indicated on the General Plan land use map to the extent allowed by State law.

Policy 5.1.2.4. Service standards for public services and emergency services in Rural Centers and Rural Regions are different than in Community Regions based on lower intensity and density of land use.

Policy 5.2.1.2. An adequate quantity and quality of water for all uses, including fire protection, shall be provided for with discretionary development.

Policy 5.7.2.1. Prior to approval of new development, the responsible fire protection district shall be requested to review all applications to determine the ability of the district to provide protection services. The ability to provide fire protection to existing development shall not be reduced below acceptable levels as a consequence of new development.

Policy 5.7.4.1. Prior to approval of new development, the applicant shall be required to demonstrate that adequate medical emergency services are available and that adequate emergency vehicle access will be provided concurrent with development.

Policy 5.7.4.2. Prior to approval of new development, the Emergency Medical Services Agency shall be requested to review all applications to determine the ability of the department to provide protection services. The ability to provide protection to existing development shall not be reduced below acceptable levels as a consequence of new development. Recommendations such as the need for additional equipment, facilities, and adequate access may be incorporated as conditions of approval.

In addition, the Health and Safety Element of the General Plan includes the following policies regarding fire protection within El Dorado County:

Policy 6.2.1.1. Implement Fire Safe ordinance to attain and maintain defensible space through conditioning of tentative maps and in new development at the final map and/or building permit stage.

Policy 6.2.1.2. Coordinate with the local Fire Safe Councils, California Department of Forestry and Fire Protection, and federal and state agencies having land use jurisdiction in El Dorado County in the development of a Countywide fuels management strategy.

Policy 6.2.2.1. Fire Hazard Severity Zone Maps shall be consulted in the review of all projects so that standards and mitigation measure's appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated as high or very high fire hazard.

Policy 6.2.2.2. The County shall preclude development in areas of high and very high wildland fire hazard or in areas identified as wildland-urban interface (WUI) communities within the vicinity of Federal lands that are a high risk for wildfire, as listed in the Federal Register Executive Order 13728 of May 18, 2016, unless such development can be adequately protected from wildland fire hazard, as demonstrated in a WUI Fire Safe Plan prepared by a qualified professional as approved by the El Dorado County Fire Prevention Officers Association. The WUI Fire Safe Plan shall be approved by the local Fire Protection District having jurisdiction and/or California Department of Forestry and Fire Protection. (Resolution 124- 2019, August 6, 2019)

Policy 6.2.3.1. As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible fire protection district that, concurrent with development, adequate emergency water flow, fire access, and firefighting personnel and equipment will be available in accordance with applicable State and local fire district standards. Public Health, Safety, and Noise Element El Dorado County General Plan Page 114 (Amended August 2019) July 2004

Policy 6.2.3.2. As a requirement of new development, the applicant must demonstrate that adequate access exists, or can be provided to ensure that emergency vehicles can access the site and private vehicles can evacuate the area.

Policy 6.2.3.4. All new development and public works projects shall be consistent with applicable State Wildland Fire Standards and other relevant State and federal fire requirements.

Policy 6.2.4.1. Discretionary development within high and very high fire hazard areas shall be conditioned to designate fuel break zones that comply with fire safe requirements to benefit the new and, where possible, existing development.

3.3 Tentative Map and Parcel Map Requirements in the SRA

California Government Code § 66474.02 requires that a legislative body of a County make specific findings before approving a tentative map, or a parcel map for which a tentative map was not required, for an area located in the State Responsibility Area (SRA) or Local Responsibility Area (LRA) VHFHSZ. The findings must show that that the subdivision is consistent with regulations adopted by the State Board pursuant to Sections 4290 and 4291 of the Public Resources Code (PRC) or consistent with local ordinances certified by the State Board as meeting or exceeding the State regulations.

The County must also submit a copy of the findings to the State Board. Certain tentative maps or parcel maps for purposes of open space and conservation are exempt, as specified in the statute. The findings described above must be made in order to approve a tentative or parcel map. Even if the lead agency adopts a statement of overriding considerations for a proposed project, or if the lead agency determines a project to be exempt to CEQA, the substantive requirements in the Government Code regarding fire protection must be satisfied. Information on how to submit these subdivision maps to the State Board can be found in the California Code of Regulations (CCR), Title 14, §§ 1266.00, 1266.01, and 1266.02.

3.4 Fire Safe Regulations

California Public Resource Code (PRC) Section 4290. The State Board of Forestry has the authority to adopt regulations for minimum fire safety standards applicable to SRA lands under the authority of the department, and to VHFHSZs. The Fire Safe regulations are codified in CCR, Title 14 (Natural Resources), Division 1.5 (Department of Forestry), Chapter 7 (Fire Protection) under Subchapter 2 (SRA Fire Safe Regulations), §§ 1270-1276. These regulations generally address the following:

- Standards for signs identifying streets, roads, and buildings.

- Minimum private water supply reserves for emergency fire use.
- Fuel modification standards for fuel breaks and greenbelts.
- Road and driveway standards for emergency fire equipment access and public evacuation.

They do not supersede local regulations that equal or exceed minimum regulations adopted by the State (PRC § 4290(c).

California Building Standards Code

The State of California has adopted a minimum model code for use within all 58 counties of the State. These provisions can be found within California Code of Regulations Title 24 – Parts 1 through 12. The code is updated on a triennial basis with the last update occurring on January 1, 2023.

The California Building Standards Code is a compilation of three types of building standards from three different origins:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes;
- Building standards that have been adopted and adapted from national model codes to address California's ever-changing conditions; and
- Building standards, authorized by the California legislature, that constitute amendments not covered by national model codes, that have been created and adopted to address particular California concerns.

All occupancies in California are subject to national model codes adopted into Title 24, and occupancies are further subject to amendments adopted by state agencies and ordinances implemented by local jurisdictions' governing bodies.

3.5 Defensible Space Regulations

California PRC Section 4291 / Government Code (GC) Section 51182. These State statue and regulatory provisions define and describe mandatory fire protection measures and responsibilities for maintaining defensible space that apply to all property within the SRA in

California. Per GC § 51182, defensible space regulations also apply to all property in the VHFHSZ within the Local Responsibility Area (LRA).

The defensible space requirements include, but are not limited to, the following:

- 100 feet minimum of vegetation management ("defensible space") around homes
- Removal of dead/dying vegetation
- Vegetation removal around chimneys/stovepipes

Depending on the area, defensible space requirements may include certain exemptions and exceptions from code. Moreover, jurisdictions may require extension of the minimum distance beyond property lines or as needed for insurance. The State Board provides direction for complying with the defensible space regulations in CCR Title 14, §§ 1299.01- 1299.05 which incorporates by reference additional information outlined in the State Board's General Guidelines for Creating Defensible Space. Due to the recent passage of AB 3074 (2020), defensible space compliance will soon require more intense fuel reduction activities and the creation of an ember-resistant zone within 5 feet of a structure. The State Board will provide additional guidance and must amend the regulations to reflect these changes on or before January 1, 2023.

El Dorado County Code Chapter 8.09

The County of El Dorado has more restrictive requirements, in some cases, than State statutes and regulations pertaining to Defensible Space around homes and buildings. El Dorado County Codes and Ordinances Chapter 8.09 pertains to all requirements and administrative actions associated with Vegetation Management and Defensible Space. The purpose of this chapter is to provide for the removal of hazardous vegetation and combustible materials situated in the unincorporated areas of the County so as to reduce the potential for fire and to promote the safety and welfare of the community. The chapter applies to all improved parcels and designated unimproved parcels within the County, and establishes annual on-going maintenance of those parcels to prevent vegetation from growing back and posing a fire hazard to the community.

3.6 Other Plans and Regulations

El Dorado County Local Hazard Mitigation Plan.

The County of El Dorado last updated its Local Hazard Mitigation Plan (LHMP) in April, 2019[20]. The purpose of the LHMP is to guide hazard mitigation planning to better protect the people and property of the County from the effect of hazard events. Based on a comprehensive risk assessment the LHMP identified that it is vulnerable to several hazards. The threat of wildfire was among those hazards identified as posing the highest risk to the communities and population within the County.

The wildfire risk assessment provisions within the LHMP are described within Section 3.2.15. Wildfires are identified within the LHMP[21] as highly likely to occur within all areas of the County. Prolong dry seasons, warmer temperatures created by climate change, drought and tree mortality are all significant factors in the increased risk of wildfire occurring in the County.

California Governor's Office of Planning and Research - Fire Hazard Planning Technical Advisory

This planning guide is one in a series of technical advisories provided by the Governor's Office of Planning and Research (OPR) as a service to professional planners, land use officials, and California Environmental Quality Act (CEQA) practitioners. OPR issues technical guidance on issues that broadly affect land use planning, including the application of CEQA. The advisory was published in August, 2022.

The goal of this technical advisory is to provide a robust planning framework for addressing fire hazards, reducing risk, and increasing resilience across California's diverse communities and landscapes. To accomplish this goal, it is essential that local agencies (i.e., cities and counties) develop and incorporate effective policies and implementation programs in their general plans and integrate their general plans with other relevant hazard and risk reduction policies, plans, and programs. This advisory provides guidance on those policies and programs, and is also

[20] See El Dorado County Local Hazard Mitigation Plan; ElDoradoCounty_LHMP.pdf (edcgov.us); accessed August 31, 2023.
[21] ibid

intended to assist city and County planners in discussions with professionals from fire hazard prevention and mitigation, disaster preparedness, and emergency response and recovery agencies as they work together to develop effective fire hazard policies for the general plan.

El Dorado Hills County Water District Ordinance 2022-01 (Fire Code)

The El Dorado County Water District (EDHCWD) has adopted the 2022 California Fire Code (CFC) with several local amendments which are more restrictive than those described in the CFC. EDHCWD updates its local fire code ordinance in conjunction with the triennial update to the California Building Standards Code. Specific local amendments contained within the ordinance that may impact the Project include the following:

- Fire apparatus access road design criteria as described in Section 503.2.1
- Dead end roads and driveways as described in Section 503.2.5
- Fire lane marking requirements described in Section 503.3.1
- Security gate design criteria as described in Section 503.6
- Address identification criteria as described in Section 505.1
- LP-Gas storage tank limits as described in Section 6104.2
- Residential fire sprinkler system installation requirements found in Chapter 80.
- Fire-Flow requirements for buildings as described in Appendix B
- Fire Apparatus access road design criteria described in Appendix D.

El Dorado Hills County Water District Ordinance 2024-01 (Unimproved Parcel Maintenance)

EDHCWD has adopted local regulations related to Hazardous Vegetation Management on Unimproved Parcels located throughout the district. Specific provisions contained within the ordinance that may impact the Project include the following:

- Hazardous vegetation maintenance on unimproved parcels that are one (1.0) acre in size or smaller
- Hazardous vegetation maintenance on unimproved parcels over one-acre (1.01) in size or larger

- Unimproved parcels known to contain, or that the property owner believes, may contain habitat for rare, threatened, or endangered plant or animal species
- Duty of property owner to abate fire hazards on their property
- Acceptable methods of clearance of hazardous vegetation and combustible materials
- Reoccurring fire hazards
- Penalties for violating the ordinance

In addition, the El Dorado County Fire Chiefs Association has created several Fire Protection Standards, as permitted by the California Fire Code, to clarify certain provisions of the Code and their application locally. See Chapter 8 – Appendix F of this FSP for a list of these local standards.

END OF CHAPTER

CHAPTER 4: FIRE PROTECTION PLANNING

4.1 Chapter Overview

The purpose of this Chapter is to describe the recommended fire prevention and emergency planning best practices for the Creekside Village Project. This Chapter is consistent with nationally recognized and accepted practices for safeguarding life and property from the hazards of fire and other dangerous conditions associated with a wildfire and/or urban conflagration. This Chapter is based on a Project-specific wildfire hazard and risk assessment as described in California Fire Code Section 4903 and includes analysis on the following subjects:

- Emergency Vehicle Access Requirements
- Road and Address Signage Requirements
- Emergency Water Supply Requirements
- Applicable Building Codes and Standards for Wildfire Safety
- Fire Protection System Requirements

4.2 Wildfire Hazard and Risk Assessment Factors

The threat of wildfire exposure to people, critical infrastructure, buildings, and communities is based upon a comprehensive vulnerability assessment of an area. This vulnerability assessment is usually completed through the evaluation of both *fire hazard* and *fire risk* factors. The term "hazard" describes the density of live or dead vegetation that may be ignited by the various fire risks or causes that can increase a fires intensity or rate of spread such as topography or weather conditions. The term "risk" describes the potential damage a fire can due to buildings, critical assets/infrastructure, and other values at risk in individual open space areas and other wildland urban interface areas.

Landowners, managers, and fire officials need to consider the potential fire hazard and risk factors that may make their community vulnerable to a wildfire when making land management and development decisions in fire-prone areas[22]. This assessment also aids fire agencies in the preparation of pre-incident plans and resource deployment actions such as fire equipment staffing levels and resource placement during critical fire periods. This assessment should

[22] Wildfire Hazard and Risk Assessment, United Nations Office for Disaster Risk Reduction, 2017

consider the factors described in Table 4 when assessing the wildfire exposure potential for an area:

Table 4: Hazard and Risk Assessment Factors

Hazard Assessment Factors	Risk Assessment Factors
• Landscape level vegetation (fuel) types • Landscape level topography • Weather conditions present during seasonal and critical fire weather periods • Prior fire history in the area • Ember / firebrand spread potential • Other criteria as determined by CAL FIRE	• Subdivision design points • Site vegetation (fuel) types • Site topography • Defensible Space measures • Building construction materials used • Roofing materials used • Local fire protection capabilities • Fire protection water sources • Utilities • Critical assets / infrastructure at risk

4.3 Wildfire Vulnerability Assessment for the Project

The fire risk factor scoring for the Project is described in Table 3. The overall risk rating can be described as Low (0-39), Moderate (40-59), High (60-74) and Very-High (75+). When analyzing individual fire risk factor ratings within the Project area the following terms are used:

- **LOW RISK** – Fire risk factors present typically do not support rapid fire spread.
- **MODERATE RISK** – Fire risk factors present may support moderate fire spread, but burning ember distribution is limited to less than ½ mile.
- **HIGH RISK** – Fire risk factors present may support rapid fire spread and ember distribution beyond ½ mile.
- **VERY-HIGH RISK** – Fire risk factors present may support extreme fire spread and intensity.

NOTE: No **Very High-Risk** factors are currently identified within the Project area.

See Table 5 and the subsequent description below for additional analysis on the fire risk rating for the Project.

Table 5: Fire Risk Rating[23] for the Creekside Village Map Project

No.	Risk Factor	Low	Moderate	High	Very-High	Total
		0-3	4-6	7-8	9-10	
1	Subdivision Design Points	3				3
2	Vegetation Fuel Type		6			6
3	Defensible Space		6			6
4	Site Topography	3				3
5	Building Construction Materials		6			6
6	Roofing Materials	3				3
7	Fire Protection – Water Source	3				3
8	Fire Protection – Fire Department Capability	3				3
9	Utilities	3				3
10	Critical Assets / Infrastructure at Risk	0				0
	Total	18	18	0	0	36

Overall Wildfire Risk Rating: **Low** (36)

The fire risk factors associated with the *Subdivision Design Points* are considered "**Low**" based on the current site plan design. The Project is accessed via three connections to Latrobe Road on the east side of the Project. Latrobe Road is a public road maintained by the County of El Dorado. The Project is accessed by an EVA to Robert J. Mathews Drive on the north side of the Project. An EVA is also provided on the west side of the Project and connects to Heritage Park via a private road system. All roads within the Project will be designed in accordance with EDHFD and CAL FIRE emergency vehicle access requirements.

The fire risk factors associated with the *Vegetation Fuel Types* are considered "**Moderate**" based on the current site plan design. The primary vegetation types found in the Project area today

[23] Based on the 2023 ICC Wildland Urban Interface Code. Additional risk factors such as defensible space, fire department capacity and critical assets/infrastructure at risk are also evaluated as part of this risk assessment based on local fire agency requirements. The rating scale has been simplified to describe a range of between 0-10 for ease in describing the overall risk score.

pose the threat of rapid fire spread during long dry periods of the year. The Project will contain 44.8 acres of open space lands that will also pose a fire hazard to nearby buildings unless managed properly to reduce the wildfire risk.

The fire risk factors associated with *Defensible Space* are considered "**Moderate**" for the Project. Preparedness actions such as ensuring that adequate defensible space meeting the requirements found in State and Local regulations, along with on-going wildfire fuel reduction practices established with this FSP on undeveloped sections of the Project, will limit the risk of a wildfire damaging buildings within this Project and surrounding communities.

The fire risk factors associated with *Site Topography* are considered "**Low**" for the Project. All parcels established within this Project have average slopes of less than 20%. The Project is located on west and south aspects. These factors, along with the vegetation fuel described previously, will lead to rapid fire spread conditions during heightened fire danger periods.

The fire risk factors associated with *Building Construction Materials* are considered "**Moderate**" for the Project. The risk of building-to-building ignition during a wildfire is present due to the close proximity of the buildings (<30 feet) proposed within the Project. All new building constructed within the Project will utilize materials and construction methods for exterior wildfire exposure as described in in California Building Code Chapter 7A and this FSP.

The fire risk factors associated with *Roofing Materials* are considered "**Low**" for the Project. All new buildings built within the Project will be provided with a Class A Roof as required by El Dorado County Code Section 110.16.110. The design of each roof assembly shall comply with California Building Code Section 705A and this FSP.

The fire risk factors associated with *Fire Protection – Water Source* are considered "**Low**" for the Project. The Project will be provided with a municipal water supply system meeting the fire protection requirements for all buildings within the Project.

The fire risk factors associated with *Fire Protection – Fire Department Capability* are considered "**Low**" for the Project. The Project site is currently served by EDHFD and CAL FIRE. Emergency response times to the Project site are consistent with the average response time standards for community region areas established by the County of El Dorado.

The fire risk factors associated with *Utilities* are considered "**Low**" for the Project. All electrical power distribution lines serving the Project will be buried underground reducing the wildfire risk in the subdivision. Unless the Project is developed using only electric, each parcel will have natural gas supplied by PG&E for heat and other fuel needs.

The fire risk factor associated with *Critical Assets / Infrastructure at Risk* sites in the Project should be considered "**Low**" for the Project. The Project as proposed contains no values and assets identified within Chapter 8 – Appendix A.

It is important to remember that the risk factor ratings described do not imply that a community is at greater or lower risk due to its overall rating. Fires can, and do, cause significant damage to property and buildings even when they occur in areas that may receive an overall low or moderate rating. Failure to maintain adequate defensible space, critical fire weather conditions and/or lack of available fire suppression resources due to other emergency incidents may cause a fire to increase its intensity and fire spread beyond the capabilities of firefighters on scene.

4.4 Emergency Vehicle Access Requirements

Emergency vehicle access is an important element of the FSP for the Project area. Emergency vehicle access can be described as the means (e.g., roads, bike paths, trails, etc.) by which firefighters can enter an area to quickly mitigate a wildfire incident before it spreads to adjacent properties and critical assets / infrastructure at risk. Joint efforts to develop and maintain ingress/egress for local evacuation and fire suppression response are required to ensure that both public and firefighter safety is provided.

The main entry/exit point and emergency response routes to the Project will be Royal Oaks Drive, identified in Figure 9 as being Emergency Vehicle Access Point #B, off of Latrobe Road. Emergency vehicle access is also available from Latrobe Road via Access Points #A and C. Access Point #D is an EVA only road connection located on the west side of the Project that serves as ingress/egress from the Heritage at Carson Creek community. Access Point # E is an EVA only road connection located on the north side of the Project via a private road connection near 5220 Robert J Mathews Drive.

All roads serving the project shall meet the emergency vehicle access requirements described in Chapter 8 – Appendix D, F, and G along with the provisions described in California Code of Regulations Title 24 – Part 9 (California Fire Code).

See Figure 9 for additional information on the emergency vehicle access / civilian evacuation routes within the Project, and Section 5.2, below, for further description on the multiple evacuation route options.

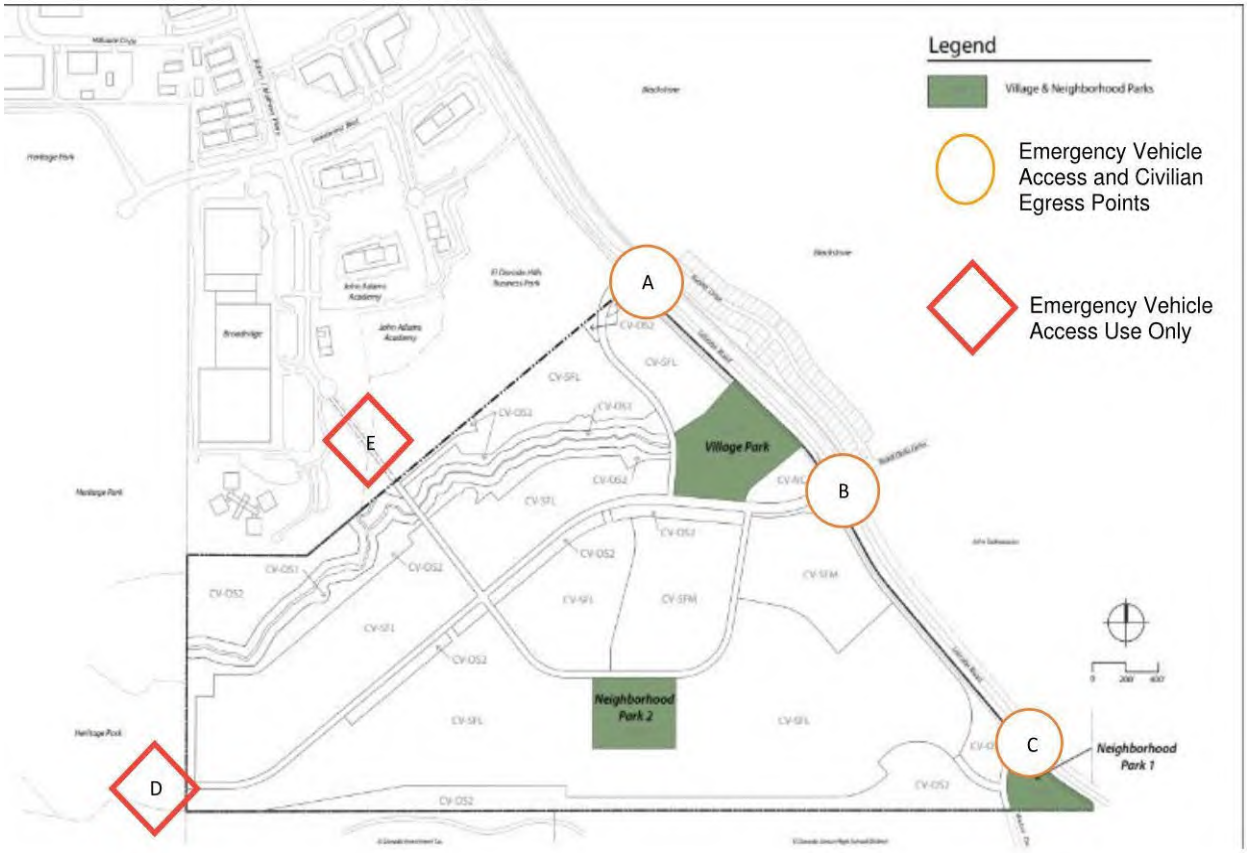

Figure 9: Creekside Village Emergency Vehicle Access/Civilian Egress Routes

Each parcel will be accessed by a private driveway connection. Driveways shall be constructed to meet the following minimum standards:

- Driveways serving as the primary means for emergency vehicle access shall be provided to within 150-feet of all portions of the building.
- Driveways shall provide not less than 12-feet of unobstructed road width, not including shoulders, throughout the entire length of the road. An unobstructed horizontal clearance

from vegetation of not less than 10-feet along both sides of the driveway, and a vertical unobstructed clearance of 15-feet, shall be provided along the length of the driveway.

- Driveways exceeding 150-feet in length, but less than 800-feet, shall provide a turnout near the midpoint of the driveway. Where the driveway exceeds 800-feet turnouts shall be provided no more than 400-feet apart.

- Turnouts shall be a minimum 12-feet in width and 30-feet in length with minimum 25-foot tapered ends.

- Driveways shall be designed and maintained to support the imposed live load of not less than 40,000 pounds gross vehicle weight for emergency vehicle access. A report, prepared by a geotechnical or civil engineer, verifying the ability of the road to bear the required minimum weight shall be submitted with any plan indicating the construction of fire apparatus access roads. Verification of constructed roadway shall be provided by a geotechnical or civil engineer prior to the final inspection of the project.

- Turns in fire apparatus access roads shall have a minimum 40-foot inner and 56-foot outer turning radius.

- Approach and departure angles in fire apparatus access roads shall not exceed 5% over a distance of 5-feet.

- A turnaround shall be provided on driveways over 150-feet in length and shall be within 50-feet of the building.

See Chapter 8 – Appendix D for further analysis on how the project complies with the fire safe provisions required by California Code of Regulations (CCR) Title 14 – Sections 1270-1275.

4.5 Road and Address Signage Requirements

All buildings within the Project shall be issued an address by the County of El Dorado which conforms with the overall address system. Utility and miscellaneous buildings are not required to have a separate address. The address installation, location and visibility on the building shall

meet the requirements found in CCR Title 24, Part 9 (Fire Code), Section 505. Road and address signs shall meet the following criteria:

- Sign assemblies shall be constructed of non-combustible materials.
- Sign background shall be of a reflective material and of a contrasting color to the address numbers or letters.
- Address numbers or letters shall be of a reflective material, of a contrasting color to the sign background, and with a height of not less than 4-inches and with a width of ½-inch stroke.
- Spacing between address numbers or letters shall be between ½-inch and 1-inch.
- Road signs shall be installed a minimum of 7-feet above the traveled way.
- The beginning of every dead-end roadway shall have signage indicating that there is not a secondary outlet.

When the building address is located more than 150-feet from the provided road serving the Project the address sign shall be placed at the driveway entrance onto the parcel. The address sign shall meet the following additional criteria:

- Signs shall be mounted between 4-feet and 7-feet above grade.
- Posted no further than 5-feet from either the driveway or roadway travelled way, and on the same side of the road as the serviced driveway.
- Oriented perpendicular to the direction of travel on the roadway and legible from both directions of travel on the driveway.
- Address numbers shall be reflective and contrasting in color to the sign background, and with a number height of not less than 4-inches and with a stroke width of 1/2-inch.

4.6 Fire Protection Water Supply Requirements

Section 1275.02 (Water Supply) of California Code of Regulations Title 14 (Fire Safe Regulations), and Section 507 (Fire Protection Water Supplies) of California Code of Regulations Title 24 – Part 9 (California Fire Code), both require an approved water supply that is capable of supplying the required fire flow for fire protection for all new buildings hereafter constructed. As the number of buildings and their square footages is not known at this date the following general

information on required fire flows is the only data currently available for analysis. The required fire flows for determining the water supply needs for the project are described in Table 6.

Table 6: Fire-Flow Requirements[24] for the Project

Fire-Flow Calculation Area (square feet)	Automatic Sprinkler System Type	Minimum Fire-Flow (gallons per minute)[25]	Flow Duration (hours)
0-3,600	CFC 903.3.1.3[26]	1,000	1
3,601 and greater	CFC 903.3.1.3	½ Value in CFC Table B105.1 (2)	2

The Project is located in an area of El Dorado Hills that has adequate water supply capabilities for fire protection available to it. The municipal water service provider for the El Dorado Hills area is the El Dorado Irrigation District (EID). The Project will be served by a large municipal water tank storage system operated by EID that is just east of the Project site.

The Project will install a municipal water supply system using fire hydrants supplied by EID for fire protection purposes. This water supply system will be capable of meeting and/or exceeding the Project minimum fire-flow requirements of no less than 1,000 GPM @ 20 pounds per square inch gauge (PSIG) for a 1-hour duration as identified in the California Fire Code (CFC). Fire hydrants meeting EID, EDHFD and CAL FIRE requirements will be spaced on average every 500-feet along both public and private roads serving the Project in accordance with the CFC

4.7 Building Siting and Setbacks

All parcels within the Project must provide a minimum 30-foot setback for all buildings from all property lines and/or the center of a road, as required by CCR Title 14 - § 1276.01 (a). The purpose of this setback requirement is to reduce the intensity of a wildfire through structure-to-structure ignition sources. A reduction of this minimum setback is permitted by this regulation in some cases[27].

[24] "Fire Flow" is the flow rate of a water supply, measured at 20 pounds per square inch (psi) residual pressure, that is available for firefighting.
[25] CFC Appendix Section B103.2 authorizes the fire code official to increase the fire-flow requirements when conditions indicate an unusual susceptibility to group fires or conflagrations.
[26] See NFPA Standard 13D (*Standard for the Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes)* as amended by the State of California in Title 24 – Part 9, Chapter 80.
[27] CCR Title 14 - § 1276.01(b) does allow for a reduction in the minimum setback based upon findings that support the practical reason for the reduction and alternative methods are implemented to reduce building-to-building ignition.

The following specific alternative material and construction methods, exceeding the minimum criteria described in CBC Chapter 7A, shall be implemented within the Project to meet the "Practical Effect" principles described in CCR Title 14 - §1276.01 when buildings are located within 30-feet of property lines to reduce the potential for building-to-building fire spread may include, but are not limited to[28], the following provisions:

- Block any spaces between roof decking and the Class A roof covering to prevent embers from catching and igniting the building; and

- Eaves shall be boxed in (soffit-eave design) and protected with ignition resistant or non-combustible materials; and

- Utilize ignition resistant building materials, such as stucco, fiber cement wall siding, fire retardant treated wood, or other approved materials when neighboring buildings are within 30-feet; and

- Use WUI ember and flame-resistant vents, conforming with the requirements described in ASTM E2886, to protect exterior wall openings when the wall is located within 30-feet of another building or faces the Wildland Fuel Reduction Zone areas; and

- Limit the size and number of windows to bedroom rescue window openings and other essential location when the exterior wall is located within 30-feet of another building; and

- Exterior doors of buildings shall be constructed of non-combustible or ignition-resistant material, or shall be constructed of solid core wood compliant with California Residential Code Section R327.8.3, when the exterior wall is located within 30-feet of another building; and

- A minimum non-combustible area of 6 vertical inches, measured from the ground up (at grade) and from any attached horizontal surface like a deck, shall be provided on the exterior of all buildings. Non-combustible materials can include brick, stone, fiber-cement siding, or concrete; and fencing materials located within 5-feet of a building shall be

[28] The Project will comply with all applicable state and local code and regulatory requirements to achieve "Practical Effect" at the time of issuance of the building permit.

constructed of non-combustible materials. Areas located between 0-feet and 5-feet from all buildings shall remain non-combustible; and

- Landscape materials and other vegetation located within 0'-100' of dwellings shall comply with the fire-resistant standards of EDHFD and CAL FIRE; and

- Outbuildings, regardless of size, on the individual parcel are prohibited within 30-feet of a residential building unless approved by EDHFD; and

- Exterior combustible decks that cantilever over the natural slope of the property shall be enclosed to reduce the potential of burning embers from a wildfire creating spot fires that can extend into the building; and

- Address numbers on each residential building shall be either internally or externally illuminated.

Fencing materials adjacent to non-irrigated open space areas shall be constructed of non-combustible materials. See EDHFD Standard No. 7 (Residential Setback for Structure Defensible Space) for additional information.

CCR Title 14 - §1276.02 requires local jurisdictions to identify "Strategic Ridgelines", for all land use projects to reduce the fire risk and improve fire protection in the community. All new parcels being created by this Project are not located in a potential ridgeline area. EDHFD has confirmed that no strategic ridgelines are proposed at this time within the Project boundaries.[29]

4.8 Applicable Building Codes and Standards for Wildfire Safety

New buildings constructed within the Project will comply with the current requirements of the California Building Code (CBC). All residential dwellings in the Project shall be provided with an approved automatic fire sprinkler system, as required by State law and County of El Dorado Planning & Building Department requirements. Accessory buildings, detached garages, outdoor

[29] Phone communication with EDHFD Fire Prevention Specialist Marshall Cox, September 27, 2023.

living space buildings, and other miscellaneous buildings located on the property shall be constructed in accordance with the current CBC requirements to reduce the risk of a fire spreading to the primary buildings on-site. See Chapter 8 – Appendix E for additional details regarding local building department requirements. For general building construction standards for new residential dwellings refer to the current California Building Standards Code located at: Codes (ca.gov).

Single-family dwellings, storage buildings and accessory buildings constructed within the Project shall be constructed and maintained in accordance with the current design standards found in *California Building Code (CBC) Chapter 7A* (**Materials and Construction Methods for Exterior Wildfire Exposure**). Examples of where construction methods and other development activities shall meet the ignition resistant requirements found in this Chapter include, but are not limited to, the following:

- Class A roof assembly with a Class A roof covering, fire resistant valley flashing, and an approved means to prevent the accumulation of leaves and debris in roof gutters.
- Ventilation openings into enclosed attics, enclosed eave soffit spaces, enclosed rafter spaces and underfloor ventilation openings.
- Exterior wall materials, decks, porches, balconies, stairs, and other projections.
- Roof eaves and exterior porch ceilings.
- Exterior windows, doors, glazing and skylights.
- Accessory buildings and miscellaneous buildings located within 50’ of another building.

4.9 Fire Protection System Requirements

All buildings within the Project are required to comply with the applicable fire protection system requirements described in CFC Chapter 9. An approved automatic fire sprinkler system is required by these regulations within all new single-family buildings within the Project. The design of these fire sprinkler systems shall conform with CFC 903.3.1.2 (NFPA 13D Sprinkler Systems).

Smoke and Carbon Monoxide alarm devices shall be provided in all occupied living areas of each building as described in CFC Sections 907.2.11 and 915.

END OF CHAPTER

CHAPTER 5: EMERGENCY PREPAREDNESS AND EVACUATION PLANNING

5.1 Chapter Overview

The purpose of this chapter is to describe the community evacuation plan for the Project and surrounding neighborhoods in the event of an evacuation warning or order being issued by local officials of a local wildfire or similar event. See Chapter 8 - Appendix C for additional details.

This Chapter is based on a Project-specific hazard and risk assessment as described in Chapter 4, and includes analysis on the following subjects:

- Community Evacuation Types and Decision Making
- Community Evacuation Routes
- Temporary Refuge Areas
- Emergency Evacuation Shelters
- Emergency Evacuation Education Materials
- Emergency Notification

5.2 Community Evacuation Types and Decision Making

The California Office of Emergency Services (CALOES) defines the term evacuation to mean "the organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas and their reception and care in safe areas." The decision to initiate a local evacuation during a wildfire emergency rests with the public safety agencies (law enforcement and fire) based on a comprehensive threat assessment made in the field. The implementation and enforcement of evacuation orders rests with law enforcement.

Evacuation types typically focus on one or more of the following methods:

- Evacuation Warnings Issued by Public Safety Officials
- Evacuation Orders Issued by Public Safety Officials
- Temporary Refuge Area / Shelter in Place Decisions made by Residents/Visitors

The principal goal of a wildfire evacuation is to protect the public from the threat of a wildfire without injury or death.[30] To achieve this goal the objectives of a manageable and successful evacuation by the public include the following:

- Immediate identification of a wildfire threat and constant awareness of the fire behavior that may impact your location;
- Receiving emergency alerts and communications from public safety officials and responding to their directions in an appropriate fashion;
- Recognizing the need to depart from the area in a judicious and prepared departure;
- Safely and competently evacuating to an area outside a hazardous area;

The County of El Dorado does not currently make its community evacuation plans for the El Dorado Hills area available to the public for review. However, multiple evacuation options are available from the project site and, in the event of emergency, the evacuation route will be determined by the Public Safety Officials at the emergency scene based on numerous considerations, including the location of the fire. Based on the multiple potential evacuation routes in different directions identified below, road capacity, limited project size, and mitigation measures proposed, the risk and spread of wildfire within the project will be reduced and the project will not block, limit, alter, or impact routes utilized for evacuation. As part of the environmental review, the County of El Dorado County Sheriff's Department, Office of Emergency Services (County OES) has also reviewed the project, and the Fire Safe Plan, and evaluated any potential impact the existing emergency evacuation routes. Evacuation options from the project site, include:

- **From Access Points A, B, and C**: Residents may evacuate to Latrobe Road and travel either north on Latrobe Road to White Rock Road or U.S. Highway both east west connectors that allow for evacuation.

- **From Access Point D**: During an emergency Public Safety Officials can utilize the access connection from the Heritage Master Plan Community to access the Project. The Heritage Master Plan Community has existing and proposed connection points into the El Dorado Hills Business Park and to Carson Crossing Drive that connects to White Rock Road.

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[30] See *Literature Review of the State-of-the-Science in Wildfire Evacuation* (2022); Marin Wildfire Prevention Authority.

- **From Access Point E**: During an emergency Public Safety Officials can utilize the bicycle and pedestrian connection into the El Dorado Hills Business Park as a vehicular evacuation route to the north of the project that connects to Robert J Mathews Parkway which has multiple connection points to Latrobe Road and to White Rock Road that can be used for evacuation.

No pre-designated emergency evacuation shelters are identified by the County. Three potential Temporary Areas of Refuge may l be available within the project at the village and neighborhood parks when evacuating from the area is not possible. See Figure 11 for an area map with the available evacuation routes for the Project.

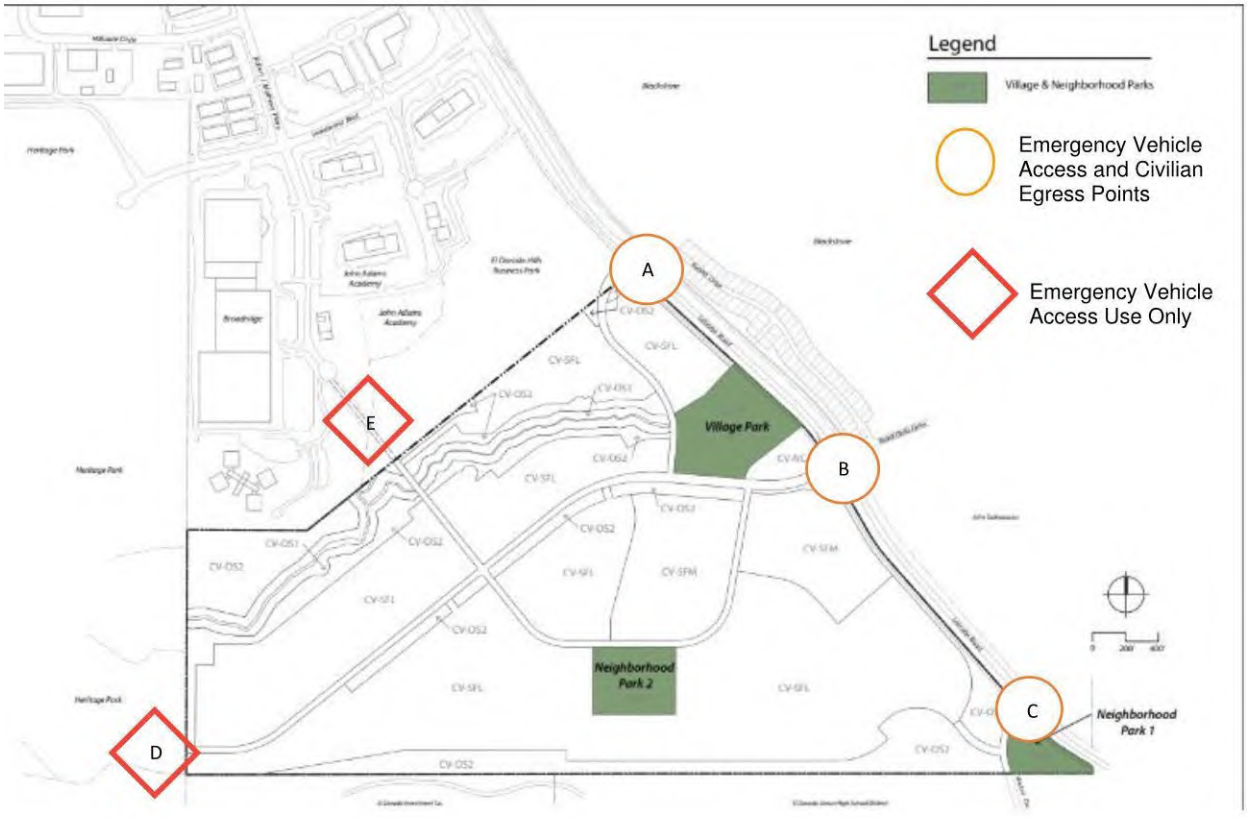

Figure 11: Area Map for Project Showing Evacuation Routes

The location of the Project next to a known community transportation route (Latrobe Road) will permit the Project population and the existing community population to efficiently evacuate the area while maintaining emergency vehicle access. In addition, the resident and visitor population (2,323 persons +/-) will not adversely impact the existing evacuation routes used during an emergency by the El Dorado Hills community due to the moderate wildfire hazard, available road network, and emergency alert system capabilities accessible to the Project residents.

All of the Access Points and adjoining public and private roads within the Project can be utilized for emergency vehicle access and civilian evacuation during an emergency as determined by the Public Safety Officials at the scene. All areas within the Project have access to two or more evacuation routes as required by the EDHCWD Fire Code. The most likely mode of transport by the residents of the Project are private vehicle ownership and private transportation services that will permit the majority of residents to move out of danger once they are directed to evacuate by Public Safety Officials.

The project will increase the number of residents to the area, but will provide emergency vehicle access and multiple exits from the project to access multiple evacuation routes. Aside from capacity increasing improvements to maintain level of service standards consistent with the County's General Plan, the Project will not adversely impact any of the existing community evacuation routes, or create a situation that establishes limited evacuation route access. The Project will pay an impact fee to help fund additional equipment to serve the project.

Future residents and visitors should remain vigilant to the threat of a wildfire in the area at all times. Residents should utilize the resources described in Sections 5.3 and 5.4, and be prepared to evacuate their families and animals when ordered to evacuate by a law enforcement or fire official. As the direction of fire travel in the El Dorado Hills area may occur from any way, residents and visitors should be familiar with all available transportation routes in the area so as to use the one that is most appropriate based on the situation. To increase preparedness for a potential wildfire evacuation the HOA/CSD should consider limiting on-street parking during red-flag fire weather conditions in residential areas with limited roadway capacity, and leaving all gated entrances in the open position to improve evacuation capacity.

5.3 Emergency Evacuation Education Measures

CAL FIRE has an effective community education program to assist residents and visitors prepare for a wildfire[31]. The program is titled *Ready-Set-Go* and is designed to assist persons in preparing for and leaving a residence threatened by a local wildfire. This information should be made available to new and existing residents and homeowners through information packets and

[31] CAL FIRE, *Ready Set Go;* http://www.readyforwildfire.org/ .

community websites whenever practical. See Chapter 8 – Appendix J for additional information about this program.

5.4 Emergency Notification

Community notification is an important aspect of evacuation planning. In El Dorado County all public safety agencies have partnered to implement the *RAVE* alert notification system.[32] The alert system is managed by the El Dorado County Sheriff's Office and allows for public safety agencies to quickly send an emergency alert to citizens in all geographic areas of the County. See Chapter 8 – Appendix L for additional information about the program.

This system enables the El Dorado County Sheriff's Office of Emergency Services (County OES) to provide residents with critical information quickly in a variety of situations, such as severe weather, unexpected road closures, missing persons, and evacuations of buildings or neighborhoods. El Dorado RAVE provides community members with emergency notifications through telephone call, text message, and email notifications.

El Dorado County has been authorized by FEMA to use the Integrated Public Alert & Warning System (IPAWS). This is FEMA's national system for local alerts that provides authenticated emergency and life-saving information to the public through mobile phones using Wireless Emergency Alerts, to radio and television via the Emergency Alert System, and on the National Oceanic and Atmospheric Administration's Weather Radio.

END OF CHAPTER

[32] El Dorado County RAVE, Citizen Notification System; El Dorado County Emergency Alerts (edso.org)

CHAPTER 6: FUEL REDUCTION MANAGEMENT AND DEFENSIBLE SPACE CONCEPTS

6.1 Chapter Overview

The purpose of this chapter is to describe the recommended long-term comprehensive fuel reduction management and defensible space best practices for the Project. The best practices include [1] adequate defensible space within 100' of all buildings; and [2] the establishment of a Wildfire Fuel Reduction Zone (WFRZ) for all lands located within the Open Space Buffer (CV-OS2). This Chapter is based on California Government Code Section 51182 and California Fire Code Section 4903 and includes analysis on the following subjects:

- Defensible Space Requirements
- Wildfire Fuel Reduction Zone Requirements
- Defensible Space Zone and Wildfire Fuel Reduction Zone Criteria
- Fuel Reduction on Vacant Parcels / During Construction
- Reoccurring Fuel Reduction Maintenance Frequency

6.2 Defensible Space Requirements

The term "Defensible Space" refers to reducing the wildfire vulnerability in WUI Zones by actions that will decrease the potential of heat, flames and embers spreading to buildings. Defensible space work around buildings should be performed within 3 zone areas based on the fire risk reduction efforts necessary to protect the occupants and property.

The 3 defensible space zones around buildings are described as:

Zone 0 – Ember Resistant Zone

Zone 0 extends 5-feet from buildings, buildings, decks, etc.

The ember-resistant zone is currently not required by law, but scientific data has proven it to be the most important of all the defensible space zones. This zone includes the

area under and around all attached decks, and requires the most stringent wildfire fuel reduction. The ember-resistant zone is designed to keep fire or embers from igniting materials that can spread the fire to the home. The following provides guidance for this zone, which may change based on the regulation developed by the California Board of Forestry and Fire Protection. See Figure 12 below to match the item number with the corresponding zone.

1. Use hardscape like gravel, pavers, concrete, and non-combustible mulch materials. No combustible bark or mulch.
2. Remove all dead and dying weeds, grass, plants, shrubs, trees, branches, and vegetative debris (leaves, needles, cones, bark, etc.); Check roofs, gutters, decks, porches, stairways, etc.
3. Remove all branches within 10-feet of any chimney or stovepipe outlet
4. Limit plants in this area to low growing, nonwoody, properly watered, and maintained plants.
5. Limit combustible items (outdoor furniture, planters, etc.) on top of decks
6. Relocate firewood and lumber to Zone 2
7. Replace combustible fencing, gates, and arbors attached to the home with non-combustible alternatives
8. Consider relocating garbage and recycling containers outside this zone
9. Consider relocating boats, RVs, vehicles, and other combustible items outside this zone

Zone 1 – Lean, Clean and Green Zone

Zone 1 extends 30-feet from buildings, decks, etc. or to the property line, whichever is closer.

10. Remove all dead plants, grass, and weeds (vegetation).
11. Remove dead or dry leaves and pine needles from yard, roof, and rain gutters.
12. Remove branches that hang over roof and keep dead branches 10-feet away from your chimney.
13. Trim trees regularly to keep branches a minimum of 10- feet from other trees.
14. Relocate wood piles to Zone 2.
15. Remove or prune flammable plants and shrubs near windows.

16. Remove vegetation and items that could catch fire from around and under decks, balconies, and stairs.
17. Create a separation between trees, shrubs and items that could catch fire, such as patio furniture, wood piles, swing sets, etc.

Zone 2 – Reduce Fuel Zone

Zone 2 extends from 30-feet to 100-feet out from buildings, buildings, decks, etc. or to the property line, whichever is closer.

18. Cut or mow annual grass down to a maximum height of 4 inches.
19. All exposed wood piles must have a minimum of 10 feet clearance around them, down to bare mineral soil, in all directions.
20. Create horizontal space between shrubs and trees. (See diagram)
21. Create vertical space between grass, shrubs, and trees. (See diagram)
22. Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of 3 inches.

All Zones

23. Mow before 10:00 am, but never when its windy or excessively dry.
24. Protect water quality, do not clear vegetation near waterways to bare soil. Vegetation removal can cause soil erosion – especially on steep slopes.
25. Logs or stumps embedded in the soil must be removed in Zone 0. In Zones 1 and 2 they need to be removed or isolated from other vegetation.

Many of these efforts shall be performed by the land owner except in cases where the setback distance of the building extends onto another property and/or undeveloped land. In those cases, a coordinated effort will be required between the individual property owners and the Home Owners Association (HOA) or Community Service District (CSD) established for the Project. See CCR Section 5.7 regarding HOA/CSD maintenance obligations.

Figure 12 provides additional information on defensible zone spaces around buildings.

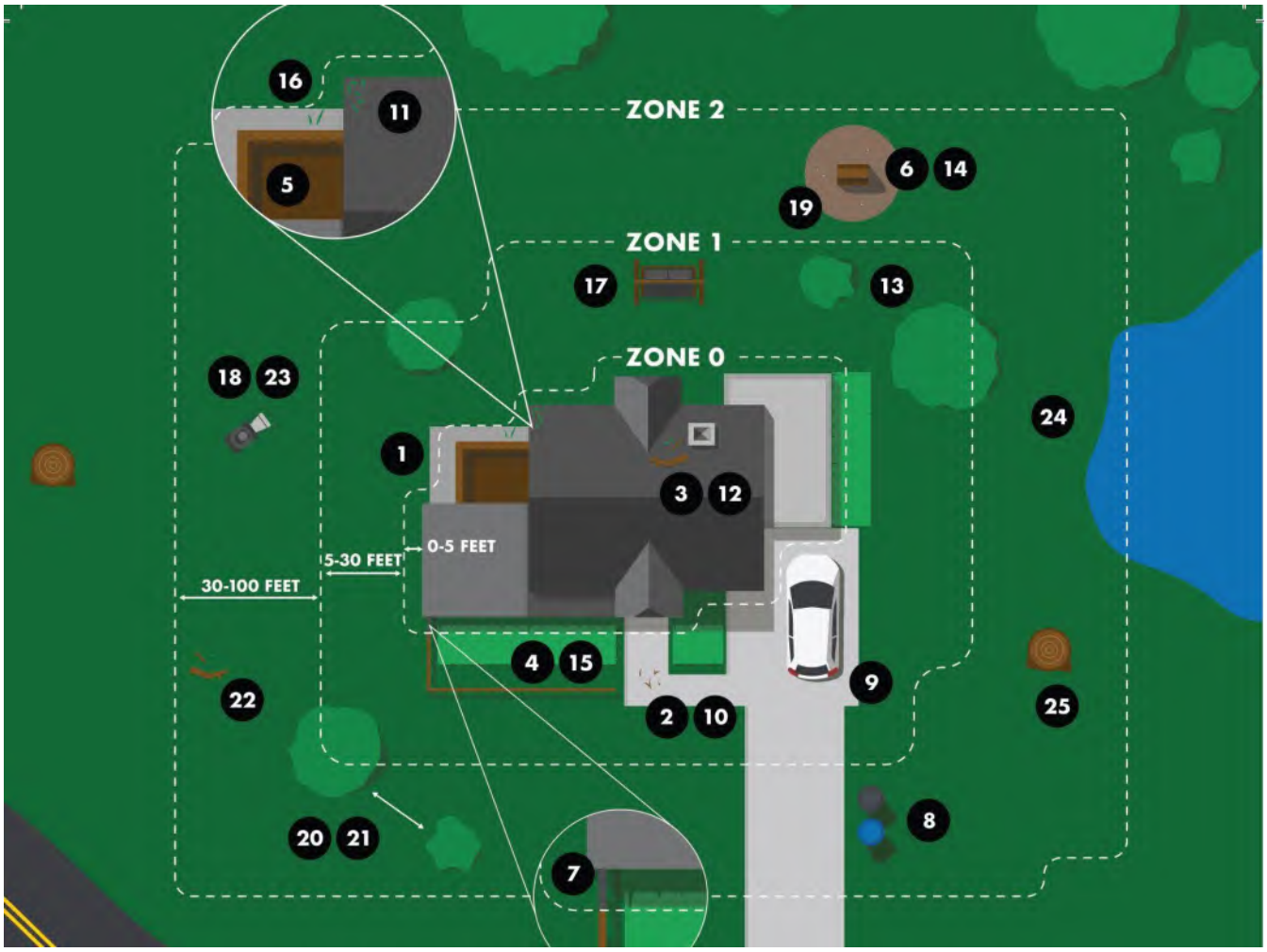

Figure 12: CAL FIRE Defensible Space Zones

6.3 Wildfire Fuel Reduction Zone Requirements

A Wildfire Fuel Reduction Zone (WFRZ) shall be implemented and maintained in the non-irrigated Open Space Buffer (CV-OS2) in accordance with CAL FIRE, EDHFD and El Dorado County requirements. The WFRZ shall extend from the property line of the adjacent residential or commercial lot out 85-feet, or to the boundary with CV-OS1, whichever is less, to ensure that adequate defensible space is provided for the building.

The WFRZ shall be established and accepted by EDHFD prior to the issuance of the first building construction permit issued by the County of El Dorado for the Project. Maintenance of the WFRZ shall be the responsibility of the landowner prior to the transfer of the obligation to the HOA/CSD, and shall be completed prior to May 1st each year unless otherwise ordered to complete this work earlier by EDHFD due to drought or other fire conditions being present.

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Figure 13 provides information on the proposed Open Space Plan for the Project.

Figure 13: Open Space Plan[33]

See the specific Wildfire Fuel Reduction Zone criteria for the Project described within Figure 14 and in Section 6.4 for additional details.

To reduce the risk of wildfires originating in the Project open spaces areas during critical fire weather periods the HOA shall implement and enforce several additional fire safety mitigation measures described in Section 7.K of this plan.

[33] Creekside Village Specific Plan Figure 5.2, Page 5-5 (July, 2023)

Figure 14 - Creekside Village Fire Safe Exhibit

6.4 Specific Wildfire Fuel Reduction Zone (WFRZ) Criteria for the Project

A. Annual grasses shall be maintained below 2-inches in height within 30-feet of buildings and 4-inches in height in all other areas just after the grasses cure in early spring. Additional fuel treatment work may be necessary throughout the year within 85-feet of all property lines to maintain defensible space requirements.

B. Removal of dead and diseased trees, debris, and the removal of tree limbs on live trees up to a height of 6-feet above the ground. Tree branches are to be limbed to at least 6-feet when possible. The minimum height may be lowered when trees are young or small; or if it is unsafe to reach a 6-foot height due to terrain, equipment, or skill level.

C. Understory fuels over 1-foot in height are to be removed in order to develop vertical separation and low horizontal continuity of fuels. Individual plants or pairs of plants may be retained provided there is a horizontal separation between plants of 3 to 5 times the height of the residual plants and the residual plants are not within the drip lines of an overstory tree.

D. Fuel reduction shall include the removal of all dead vegetation 4-inches or less in diameter. Trunks shall be cut flush with the ground. The removal of additional trees shall be done in consultation with CAL FIRE, EDHFD and County staff.

E. Threatened and/or endangered species may be present within the WFRZ areas. The recommendations of the Project biologist shall be implemented with respect to avoiding loss or harm to the affected species, or restoration and/or compensation measures to be undertaken if the species' habitat cannot be avoided. For example, if nesting raptors are present, the nesting tree shall not be removed and no tree removal or mechanical activity shall occur within a buffer zone established around the nest until the young have fledged. The Federal and/or State agency with jurisdiction over the affected protected species shall also be consulted.

F. It is desirable to remove as much brush and large vegetation as possible within the WFRZ areas. However, if individual plants or pairs of plants are desired to be left, leave plants with the following characteristics: young plants less than 5 feet tall and individual or pairs of plants that are no more than 5-feet in width.

G. All dead trees within 85-feet of all property lines shall be removed.

H. The removal of all dead limbs and trees laying on the ground within 85-feet of all property lines shall be completed annually.

I. All trails and Class 1 Bike Paths located in CV-OS2 shall have no less than a 10-foot wide WFRZ established along either side of the trail/path.

J. The cutting of vegetation materials shall be done with CAL FIRE approved spark arrestors.

K. The removal of annual grasses and other fine fuels shall be completed through the use of plastic string weed trimmers or other CAL FIRE approved equipment.

L. Chipping of material is permitted. Chipped material shall be removed from the site unless otherwise approved by the land owner representative and EDHFD.

M. Prescribed burning and / or herbicide use is not allowed within the DSZ and WFRZ areas unless such use is approved via permit by CAL FIRE, EDHFD and the County of El Dorado.

N. Approved fire suppression equipment is required on-site at all times during the fuel-reduction activities.

O. All fuel reduction work shall be performed using every reasonable measure to minimize erosion, ground disturbing activities and soil damage. Where the ground is exposed by fuel reduction efforts, the area shall be revegetated (i.e., seeded) and/or erosion control measures shall be installed prior to October 15.

P. Pruning of live trees shall be performed in accordance with the Best Management Practices set forth by the International Society of Arboriculture (ISA) and conform to ANSI A300 Standards for Tree Care.

6.5 Fuel Reduction on Vacant Parcels / During Construction

Unimproved parcels adjacent to buildings, either when vacant or under construction, can pose a significant fire risk to adjacent occupied buildings. To reduce the risk of wildfires spreading to nearby buildings, EDHFD requires all unimproved properties to comply with Ordinance 2023-01. See Chapter 8 – Appendix H for specific requirements based on parcel size. Construction activities shall conform to the current Fire Code provision required by EDHFD and CAL FIRE.

6.6 Annual Fuel Reduction Maintenance Frequency

The effectiveness of the long-term comprehensive effort requires certain elements to be maintained on an annual or otherwise noted frequency. The coordination of fuel reduction work between the applicant, EDHFD and CAL FIRE staff, and the adjacent land owner(s) to complete these projects in a timely fashion is imperative for the success in minimizing the wildfire risk in the Project area. All maintenance shall be performed prior to May 1st each year unless otherwise ordered to complete this work earlier by EDHFD due to drought or other fire conditions being present. Table 7 provides additional details regarding the recommended maintenance frequency for various activities described in the Plan.

Table 7: Maintenance Frequency for the DSZ and WFRZ

Action Item	Party Responsible	Frequency
Complete annual inspection of the WFRZ using the criteria found in Section 6.	**Land Owner/EDHFD**	**Annual**
Remove/trim annual grasses to less than 2-inches in height within 30-feet of buildings and 4-inches height within 100-feet of adjacent property lines.	**Land Owner**	**Annual**
Remove debris piles, dead trees (snags) or dying trees, down trees, and limbs.[34]	**Land Owner**	**Annual**
Removal of understory fuels that contribute to fire spread.	**Land Owner**	**Annual**
Removal or treatment of invasive exotic plant species that may invade the area cleared in the DSZ and WFRZ areas.	**Land Owner**	**Annual**
Remove biomass materials from the site and dispose of in accordance with best practices.	**Land Owner**	**Annual**
Remove ladder fuels (tree limbs) to 6-foot DBH and increase tree canopy spacing.	**Land Owner**	**10 Year + As Needed**

End of Chapter

[34] This plan recognizes that dead and dying trees may provide a beneficial use for the habitat. The removal of this vegetation should be completed after an inspection by representatives from CAL FIRE, EDHFD and the Land Owner has been completed and a scope of work agreed on by both parties.

CHAPTER 7: SUMMARY OF KEY FINDINGS AND PROJECT RECOMMENDATIONS

7.1 Key Findings for the Project

A. The Project design is consistent with the El Dorado County General Plan fire safety policies and regulations described in Chapter 3.

B. Fire and rescue services for the Project site are the responsibility of the El Dorado Hills Fire Department (EDHFD) in accordance with California Government Code § 66474.02(a)(2)(A).

C. Wildfire protection for the adjacent undeveloped SRA lands near the Project are the responsibility of CAL FIRE.

D. The Creekside Village Project (Project) is located within a CAL FIRE SRA designated **Moderate** Fire Hazard Severity Zone. The Project is therefore subject to the regulations found in California Public Resource Code Section's 4290 and 4291. See Chapter 8 - Appendix B for additional information.

E. The Project shall be subject to the wildfire regulations found in the California Building Standard Codes (California Code of Regulations Title 24, Parts 1-12).

F. The Project has an overall Fire Risk Rating of **Low** based upon the ten rating criteria outlined in Chapter 4.

G. The Project has no proposed uses that are identified as Critical Assets, Essential Service Locations, or Vulnerable Populations that could be at risk during a wildfire.

H. No strategic ridgelines to reduce fire risk and improve fire protection, as described by California Code of Regulations Title 14 - §1276.02, have been identified by the El Dorado Hills Fire Department within the Project or adjoining areas.

I. The location of the Project next to a known community transportation route (Latrobe Road) will permit the Project population and the existing community population to efficiently evacuate the area while maintaining emergency vehicle access.

J. The resident and visitor population (2,607 +/-) will not adversely impact the existing evacuation routes used during an emergency by the El Dorado Hills community due to the moderate wildfire hazard, mitigation measure described in Sections 7.2 and 7.2, available off-site road network, and emergency alert system capabilities accessible to the Project residents.

7.2 Fire Protection Statutes and Regulations Applicable to the Project

A. The Project shall comply with all applicable provisions as described in California Code of Regulations Title 14 (Fire Safe Regulations) and 24 (Building Standards Code).

B. All roads and driveways within the Project shall be constructed, and maintained in accordance with EDHFD and CAL FIRE requirements. See Chapter 8 – Appendix D and G for additional details.

C. All buildings, with the exception of utility and accessory structures, shall be provided with approved address identification prior to occupancy.

D. The Project shall meet the minimum fire-flow requirements as described in Section 4.6, and as required both in California Fire Code (CFC) Section 507, and EDHCWD Ordinance 2022-01 (Fire Code). See Chapter 8 – Appendix G for additional details.

E. All residential dwellings in the Project will be provided with an approved automatic fire sprinkler system designed in accordance with the CFC. Upon occupancy these systems shall be operable and maintained by the individual land owners at all times.

F. All buildings constructed shall have a minimum 30-foot setback from property lines, or the “practical effect” provision approved by EDHFD, to reduce the threat of a wildfire impinging directly on the building. Setback areas may contain driveways, parking areas and/or other non-combustible surfaces. The minimum setback areas may be reduced based upon findings that support the practical reason for the reduction and alternative

methods are implemented to reduce building-to-building ignition. When a practical reason for the reduction is necessary the Project shall implement the provisions contained within Subsections 7.3 (D) of this chapter.

G. All buildings shall be provided with a Class A roof covering as required by the El Dorado County Building Code.

H. All buildings shall be constructed and maintained in accordance with the current design standards found in *California Building Code (CBC) Chapter 7A* (**Materials and Construction Methods for Exterior Wildfire Exposure**).

I. Gated entrances to private roads and driveways shall meet the current design requirements to allow emergency vehicle access described in Chapter 8 – Appendix F.

7.3 Fire Protection Plan Mitigation Strategies

A. Fencing materials used within 5-feet of all buildings shall be constructed of non-combustible materials.

B. Fencing materials adjacent to non-irrigated open space areas shall be constructed of non-combustible materials.

C. Combustible sheds and other outbuildings shall be kept at least 30 feet from residential dwellings and other buildings on each parcel.

D. The following specific alternative material and construction methods, exceeding the minimum criteria described in CBC Chapter 7A, shall be implemented within the Project to meet the "Practical Effect" principles described in CCR Title 14 - §1276.01 when buildings are located within 30-feet of property lines to reduce the potential for building-to-building fire spread may include, but are not limited to[35], the following provisions:

- All spaces between roof decking and the Class A roof covering shall be blocked to prevent embers from catching and igniting the building; and

[35] The Project will comply with all applicable state and local code and regulatory requirements to achieve "Practical Effect" at the time of issuance of the building permit.

- Eaves shall be boxed in (soffit-eave design) and protected with ignition resistant or non-combustible materials; and

- Ignition resistant building materials, such as stucco, fiber cement wall siding, fire retardant treated wood, or other approved materials shall be used when neighboring buildings are within 30-feet; and

- WUI ember and flame-resistant vents, conforming with the requirements of ASTM E2886, shall be used to protect exterior wall openings when the wall is located within 30-feet of another building or faces the Wildland Fuel Reduction Zone areas; and

- The size and number of windows to bedroom rescue window openings and other essential location shall be limited when the exterior wall is located within 30-feet of another building. Windows on all sides of buildings shall be constructed of multi-pane glazing with a minimum of one tempered pane on the exterior side; and

- Exterior doors of buildings shall be constructed of non-combustible or ignition-resistant material, or shall be constructed of solid core wood compliant with California Residential Code Section R327.8.3 when located within 30-feet of another building; and

- Combustible decks that are cantilevered over the natural slope shall be enclosed to reduce the accumulation of debris and combustible storage items that may be ignited by fire brands. The construction of combustible decks shall comply with the building construction requirements found in CBC Section R337; and

- A minimum non-combustible area of 6 vertical inches, measured from the ground up (at grade) and from any attached horizontal surface like a deck, shall be provided on the exterior walls of all buildings. Non-combustible materials include brick, stone, fiber-cement siding, or concrete; and

- Address numbers on each residential building shall be either internally or externally illuminated.

E. Wildfire fuel reduction management and defensible space practices for the Project shall follow the requirements identified in Chapter 6.

F. A Restrictive Covenant shall be filed with the final subdivision map which stipulates that a Fire Safe Plan has been prepared and wildfire mitigation measures shall be implemented.

G. "No Smoking" signs shall be posted at all trail entrances.

H. At all trail intersections with the roads that have vehicle access there shall be a knock down bollard or gate with a Knox® padlock, or other approved lock, to allow for the passage of emergency equipment onto the trail.

I. A 5-foot defensible space ember-resistant zone (Zone 0) shall be maintained around all buildings (including fencing within 5 feet).

J. A Homeowners Association (HOA), or other acceptable entity, shall be responsible for maintaining all private emergency vehicle access roads and wildfire fuel reduction zone provisions described in Chapter 6. Reliable on-going sources of funding shall be established and acceptable to EDHFD prior to the recording of the final map for the project.

K. To mitigate the risk of wildfires originating in the Project the enforcement of the following provisions as part of the Creekside Village Covenants, Conditions, and Restrictions (CCR's) managed through the future Home Owners Association shall be accomplished:

- Prohibit smoking and other burning materials within open space areas; and
- Prohibit wood burning campfires and recreational fires in all areas including individual residential lots; and
- Prohibit debris burning, regardless of state and local regulations permitting such activities, in all areas including residential lots; and
- Perform ecological thinning, and where appropriate, prescribed fire in open space

areas as required by EDHFD or CAL FIRE, subject to federal or state resource protection requirements; and

- Prohibit the use of certain mechanical equipment (e.g. chainsaws, mowers, tractors, weed eaters, string trimmers, etc.) in community landscaping, common areas, and adjacent to open space areas during periods of high wildfire danger.

7.4 Emergency Preparedness and Evacuation Preparedness Mitigation Strategies

A. CAL FIRE *Ready-Set-Go* education materials should be made available to all new residents of the Project for their use in preparing for an evacuation. EDHFD and CAL FIRE should be encouraged to visit the neighborhood annually to discuss this material and answer questions by the homeowners. See Chapter 8 – Appendix J for additional details.

B. Upon 8 or more dwellings being occupied within the Project the land owners should work together to obtain designation by the National Fire Protection Association (NFPA) as a FIREWISE USA® community. This designation will assist land owners in receiving insurance discounts for their fire insurance premiums. See Chapter 8 – Appendix K for additional details.

C. El Dorado County OES education materials on the *RAVE* program should be made available to all new residents of the Project for use in receiving timely notification information regarding the need to evacuate. See Chapter 8 – Appendix L for additional details.

END OF CHAPTER

Chapter 8: PLAN APPENDIXES

Appendix A: Critical Assets / Populations at Risk Checklist

Facility Type	Essential Service	Population at Risk	Infrabuilding at Risk	Facility Count
Fire Station	X			0
Police Station	X			0
Emergency Evacuation Shelter*	X			0
Government Facilities	X			0
General Acute Care Hospital	X			0
Medical Health Facility		X		0
Adult Residential Care Facility		X		0
Child Care Facility		X		0
Adult Care Facility		X		0
Public Elementary School		X		0
Private Elementary School		X		0
Public Middle School		X		0
Private Middle School		X		0
Public High School		X		0
Private High School		X		0
College / University		X		0
Vulnerable Population Centers**		X		0
Water Treatment Plant			X	0
Water Storage Facility			X	0
Water Conveyance System			X	0
Electrical Transmission Lines			X	0
Electrical Substation			X	0
Sewer Lift Station			X	0
Telecommunications Facilities			X	0
Corporation Yard	X			0
* Includes General Population, Access/Functional Needs Shelters, and Animal Shelters				
** Includes Disadvantaged, Disabled and Low-Income Census Areas				

Appendix B: PRC 4290 and 4291 Checklist

Project Name:				
	CCR Title 14	**Conforms**	**Does Not Conform**	**N/A**
Safe Access and Egress				
Road Width	§1273.01	X		
Roadway Surface	§1273.02	X		
Road Grades	§1273.03	X		
Road Radius	§1273.04	X		
Road Turnarounds	§1273.05	X		
Road Turnouts	§1273.06	X		
Road and Driveway Buildings	§1273.07	X		
Dead-end Roads	§1273.08	X		
Gate Entrances	§1273.09	X		
Signing and Building Numbering				
Road Name Signs	§1274.01	X		
Road Sign Installation	§1274.02	X		
Addresses for Buildings	§1274.03	X		
Address Installation, Location	§1274.04	X		
Fire Water Standards				
Application	§1275.01	X		
Approved Fire Water Supply	§1275.02	X		
Hydrants	§1275.03	X		
Signing of Water Sources	§1275.04	X		
Building Siting and Fuel Mod.				
Building and Parcel Siting/Setbacks	§1276.01	X		
Ridgelines	§1276.02			X
Fuel Breaks	§1276.03			X
Greenbelts, Open Spaces	§1276.04	X		
Disposal of Flammable Vegetation	§1276.05			X

NOTES:

1. No roadway buildings (e.g., bridges, culverts, etc.) and dead-end roads are proposed within the project.
2. The review of road designs will occur during the civil improvement and building permit application process.
3. The review of proposed street signage and building numbering will occur during later phases of the project.

Appendix C: Emergency Evacuation Planning Checklist

No.	Risk Factor	Yes	No	Unknown
1	Existing Evacuation Plan is Current?			X
2	General Population Shelters Identified?			X
3	Special Care Shelters Identified?			X
4	Animal Care Shelters Identified?			X
5	Temporary Safe Refuge Areas Identified?			X
6	Emergency Evacuation Routes Identified?	X		
7	Mass Notification System Identified/Used?	X		
8	Ready-Set-Go or Similar Program Used?			X
9	Evacuation Plans Available to the Public?			X
10	Are First Responders Briefed on the Plan?			X
	Total			

Notes:

1. El Dorado County OES has not publicly created an emergency evacuation plan for use by the public and first responders as of the date of this plan.

2-4. El Dorado County OES has not publicly designated emergency evacuation shelters throughout the County prior to large-scale emergencies.

5-6. The primary emergency evacuation routes in the El Dorado Hills area have not been formally designated by El Dorado County OES as of the date of this plan. The primary transportation routes out of the area include Latrobe Road east the Project and Robert J Mathews Drive north of the Project.

7. El Dorado County OES uses *RAVE* as its emergency notification system. The system relies on notifications through existing telephone lines and through "opt-in" sign-ups for cell phones and other devices. See Chapter 8 – Appendix K for additional information on this notification system.

8-10. EDHFD and the adjacent fire agencies utilize tactical pre-fire plans that brief first responders on various pre-fire information.

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Appendix D: California Code of Regulations Title 14 §1270-1276

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State Minimum Fire Safe Regulations

Board of Forestry and Fire Protection

FOR INFORMATIONAL USE ONLY
View the official California Code of Regulations online at
govt.westlaw.com/calregs

As of April 1, 2023

California Code of Regulations
Title 14 Natural Resources
Division 1.5 Department of Forestry
Chapter 7 - Fire Protection
Subchapter 2 State Minimum Fire Safe Regulations
Articles 1-5

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Article 1 Administration

§ 1270.00. Title

Subchapter 2 shall be known as the "State Minimum Fire Safe Regulations," and shall constitute the minimum Wildfire protection standards of the California Board of Forestry and Fire Protection.

§ 1270.01. Definitions

The following definitions are applicable to Subchapter 2.

(a) Agriculture: Land used for agricultural purposes as defined in a Local Jurisdiction's zoning ordinances.

(b) Board: California Board of Forestry and Fire Protection.

(c) Building: Any Structure used or intended for supporting or sheltering any use or Occupancy, except those classified as Utility and Miscellaneous Group U.

(d) CAL FIRE: California Department of Forestry and Fire Protection.

(e) Dead-end Road: A Road that has only one point of vehicular ingress/egress, including cul-de-sacs and Roads that loop back on themselves

(f) Defensible Space: The area within the perimeter of a parcel, Development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching Wildfire or defense against encroaching Wildfires or escaping Structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or Development, excluding the physical Structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, Road names and Building identification, and fuel modification measures.

(g) Development: As defined in section 66418.1 of the California Government Code.

(h) Director: Director of the Department of Forestry and Fire Protection or their designee.

(i) Driveway: A vehicular pathway that serves no more than four (4) Residential Units and any number of non-commercial or non-industrial Utility or Miscellaneous Group U Buildings on each parcel. A Driveway shall not serve commercial or industrial uses at any size or scale.

(j) Exception: An alternative to the specified standard requested by the applicant that may be necessary due to health, safety, environmental conditions, physical site limitations or other limiting conditions, such as recorded historical sites, that provides mitigation of the problem.

(k) Fire Apparatus: A vehicle designed to be used under emergency conditions to transport personnel and equipment or to support emergency response, including but not limited to the suppression of fires.

(l) Fire Authority: A fire department, agency, division, district, or other governmental body responsible for regulating and/or enforcing minimum fire safety standards in the Local Jurisdiction.

(m) Fire Hydrant: A valved connection on a water supply or storage system for the purpose of providing water for fire protection and suppression operations.

(n) Fuel Break: A strategically located area where the volume and arrangement of vegetation has been managed to limit fire intensity, fire severity, rate of spread, crown fire potential, and/or ember production.

(o) Greenbelts: open space, parks, wildlands, other areas, or a combination thereof, as designated by Local Jurisdictions, which are in, surround, or are adjacent to a city or urbanized area, that may function as Fuel Breaks and where Building construction is restricted or prohibited.

(p) Greenways: Linear open spaces or corridors that link parks and neighborhoods within a community through natural or manmade trails and paths.

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(q) Hammerhead/T: A "T" shaped, three-point Turnaround space for Fire Apparatus on a Road or Driveway, being no narrower than the Road or Driveway that serves it.
(r) Hazardous Land Use: A land use that presents a significantly elevated potential for the ignition, prolonged duration, or increased intensity of a Wildfire due to the presence of flammable materials, liquids, or gasses, or other features that initiate or sustain combustion. Such uses are determined by the Local Jurisdiction and may include, but are not limited to, power-generation and distribution facilities; wood processing or storage sites; flammable gas or liquids processing or storage sites; or shooting ranges.
(s) Local Jurisdiction: Any county, city/county agency or department, or any locally authorized district that approves or has the authority to regulate Development.
(t) Municipal-Type Water System: A system having water pipes servicing Fire Hydrants and designed to furnish, over and above domestic consumption, a minimum of 250 gpm (950 L/min) at 20 psi (138 kPa) residual pressure for a two (2) hour duration.
(u) Occupancy: The purpose for which a Building, or part thereof, is used or intended to be used.
(v) One-way Road: A Road that provides a minimum of one Traffic Lane width designed for traffic flow in one direction only.
(w) Residential Unit: Any Building or portion thereof which contains living facilities including provisions for sleeping, eating, cooking and/or sanitation, for one or more persons. Manufactured homes, mobile homes, and factory-built housing are considered Residential Units.
(x) Ridgeline: The line of intersection of two opposing slope aspects running parallel to the long axis of the highest elevation of land; or an area of higher ground separating two adjacent streams or watersheds.
(y) Road: A public or private vehicular pathway to more than four (4) Residential Units, or to any industrial or commercial Occupancy.
(z) Road or Driveway Structures: Bridges, culverts, and other appurtenant Structures which supplement the Traffic Lane or Shoulders.
(aa) Same Practical Effect: As used in this subchapter, means an Exception or alternative with the capability of applying accepted wildland fire suppression strategies and tactics, and provisions for fire fighter safety, including:

(1) access for emergency wildland fire equipment,
(2) safe civilian evacuation,
(3) signing that avoids delays in emergency equipment response,
(4) available and accessible water to effectively attack Wildfire or defend a Structure from Wildfire, and
(5) fuel modification sufficient for civilian and fire fighter safety.

(bb) Shoulder: A vehicular pathway adjacent to the Traffic Lane.
(cc) State Responsibility Area (SRA): As defined in Public Resources Code sections 4126-4127; and the California Code of Regulations, title 14, division 1.5, chapter 7, article 1, sections 1220-1220.5.
§(ee) Structure: That which is built or constructed or any piece of work artificially built up or composed of parts joined together in some definite manner.
(ff) Traffic Lane: The portion of a Road or Driveway that provides a single line of vehicle travel.
(gg) Turnaround: An area which allows for a safe opposite change of direction for Fire Apparatus at the end of a Road or Driveway.
(hh) Turnout: A widening in a Road or Driveway to allow vehicles to pass.

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(ii) Undeveloped Ridgeline: A Ridgeline with no Buildings.
(jj) Utility and Miscellaneous Group U: A Structure of an accessory character or a miscellaneous Structure not classified in any specific Occupancy permitted, constructed, equipped, and maintained to conform to the requirements of Title 24, California Building Standards Code.
(kk) Vertical Clearance: The minimum specified height of a bridge, overhead projection, or vegetation clearance above the Road or Driveway.
(*ll*) Vertical Curve: A curve at a high or low point of a Road that provides a gradual transition between two Road grades or slopes.
(mm) Very High Fire Hazard Severity Zone (VHFHSZ): As defined in Government Code section 51177(i).
(nn) Wildfire: Has the same meaning as "forest fire" in Public Resources Code Section 4103.

§ 1270.02. Purpose

(a) Subchapter 2 has been prepared and adopted for the purpose of establishing state minimum Wildfire protection standards in conjunction with Building, construction, and Development in the State Responsibility Area (SRA) and, after July 1, 2021, the Very High Fire Hazard Severity Zones, as defined in Government Code § 51177(i) (VHFHSZ).
(b) The future design and construction of Structures, subdivisions and Developments in the SRA and, after July 1, 2021, the VHFHSZ shall provide for basic emergency access and perimeter Wildfire protection measures as specified in the following articles.
(c) These standards shall provide for emergency access; signing and Building numbering; private water supply reserves for emergency fire use; vegetation modification, Fuel Breaks, Greenbelts, and measures to preserve Undeveloped Ridgelines. Subchapter 2 specifies the minimums for such measures.

§ 1270.03. Scope

(a) Subchapter 2 shall apply to:
(1) the perimeters and access to all residential, commercial, and industrial Building construction within the SRA approved after January 1, 1991, and those approved after July 1, 2021 within the VHFHSZ, except as set forth below in subsection (b).
(2) the siting of newly installed commercial modulars, manufactured homes, mobilehomes, and factory-built housing, as defined in Health and Safety Code sections 18001.8, 18007, 18008, and 19971;
(3) all tentative and parcel maps or other Developments approved after January 1, 1991; and
(4) applications for Building permits on a parcel approved in a pre-1991 parcel or tentative map to the extent that conditions relating to the perimeters and access to the Buildings were not imposed as part of the approval of the parcel or tentative map.
(b) Subchapter 2 does not apply where an application for a Building permit is filed after January 1, 1991 for Building construction on a parcel that was formed from a parcel map or tentative map (if the final map for the tentative map is approved within the time prescribed by the local ordinance) approved prior to January 1, 1991, to the extent that conditions relating to the perimeters and access to the Buildings were imposed by the parcel map or final tentative map approved prior to January 1, 1991.
(c) Affected activities include, but are not limited to:
(1) permitting or approval of new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d);
(2) application for a Building permit for new construction not relating to an existing Structure;

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(3) application for a use permit;
(4) Road construction including construction of a Road that does not currently exist, or extension of an existing Road.

(d) The standards in Subchapter 2 applicable to Roads shall not apply to Roads used solely for Agriculture; mining; or the management of timberland or harvesting of forest products.

§ 1270.04. Provisions for Application of these Regulations

This Subchapter shall be applied as follows:
(a) the Local Jurisdictions shall provide the Director of the California Department of Forestry and Fire Protection (CAL FIRE) or their designee with notice of applications for Building permits, tentative parcel maps, tentative maps, and installation or use permits for construction or Development within the SRA, or if after July, 1 2021, the VHFHSZ.
(b) the Director or their designee may review and make fire protection recommendations on applicable construction or development permits or maps provided by the Local Jurisdiction.
(c) the Local Jurisdiction shall ensure that the applicable sections of this Subchapter become a condition of approval of any applicable construction or Development permit or map.

§ 1270.05. Local Regulations

(a) Subchapter 2 shall serve as the minimum Wildfire protection standards applied in SRA and VHFHSZ. However, Subchapter 2 does not supersede local regulations which equal or exceed the standards of this Subchapter.
(b) A local regulation equals or exceeds a minimum standard of this Subchapter only if, at a minimum, the local regulation also fully complies with the corresponding minimum standard in this Subchapter.
(c) A Local Jurisdiction shall not apply exemptions to Subchapter 2 that are not enumerated in Subchapter 2. Exceptions requested and approved in conformance with § 1270.07 (Exceptions to Standards) may be granted on a case-by-case basis.
(d) Notwithstanding a local regulation that equals or exceeds the State Minimum Fire Safe Regulations, Building construction shall comply with the State Minimum Fire Safe Regulations.

§ 1270.06. Inspections

Inspections shall conform to the following requirements:
(a) Inspections in the SRA shall be made by:
(1) the Director, or
(2) Local Jurisdictions that have assumed state fire protection responsibility on SRA lands, or
(3) Local Jurisdictions where the inspection duties have been formally delegated by the Director to the Local Jurisdictions, pursuant to subsection (b).

(b) The Director may delegate inspection authority to a Local Jurisdiction subject to all of the following criteria:
(1) The Local Jurisdiction represents that they have appropriate resources to perform the delegated inspection authority.
(2) The Local Jurisdiction acknowledges that CAL FIRE's authority under subsection (d) shall not be waived or restricted.
(3) The Local Jurisdiction consents to the delegation of inspection authority.
(4) The Director may revoke the delegation at any time.
(5) The delegation of inspection authority, and any subsequent revocation of the delegation, shall be documented in writing, and retained on file at the CAL FIRE Unit headquarters that administers SRA fire protection in the area.

(c) Inspections in the VHFHSZ shall be made by the Local Jurisdiction.

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(d) Nothing in this section abrogates CAL FIRE's authority to inspect and enforce state forest and fire laws in the SRA even when the inspection duties have been delegated pursuant to this section.
(e) Reports of violations within the SRA shall be provided to the CAL FIRE Unit headquarters that administers SRA fire protection in the Local Jurisdiction.
(f) When inspections are conducted, they shall occur prior to: the issuance of the use permit or certificate of Occupancy; the recordation of the parcel map or final map; the filing of a notice of completion; or the final inspection of any project or Building permit.

§ 1270.07. Exceptions to Standards

(a) Upon request by the applicant, an Exception to standards within this Subchapter may be allowed by the Inspection entity in accordance with 14 CCR § 1270.06 (Inspections) where the Exceptions provide the Same Practical Effect as these regulations towards providing Defensible Space. Exceptions granted by the Local Jurisdiction listed in 14 CCR § 1270.06, shall be made on a case-by-case basis only. Exceptions granted by the Local Jurisdiction listed in 14 CCR § 1270.06 shall be forwarded to the appropriate CAL FIRE unit headquarters that administers SRA fire protection in that Local Jurisdiction, or the county in which the Local Jurisdiction is located and shall be retained on file at the Unit Office.
(b) Requests for an Exception shall be made in writing to the Local Jurisdiction listed in 14 CCR § 1270.06 by the applicant or the applicant's authorized representative.
At a minimum, the request shall state the specific section(s) for which an Exception is requested; material facts supporting the contention of the applicant; the details of the Exception proposed; and a map showing the proposed location and siting of the Exception. Local Jurisdictions listed in § 1270.06 (Inspections) may establish additional procedures or requirements for Exception requests.
(c) Where an Exception is not granted by the inspection entity, the applicant may appeal such denial to the Local Jurisdiction. The Local Jurisdiction may establish or utilize an appeal process consistent with existing local building or planning department appeal processes.
(d) Before the Local Jurisdiction makes a determination on an appeal, the inspector shall be consulted and shall provide to that Local Jurisdiction documentation outlining the effects of the requested Exception on Wildfire protection.
(e) If an appeal is granted, the Local Jurisdiction shall make findings that the decision meets the intent of providing Defensible Space consistent with these regulations. Such findings shall include a statement of reasons for the decision. A written copy of these findings shall be provided to the CAL FIRE Unit headquarters that administers SRA fire protection in that Local Jurisdiction.

§ 1270.08. Distance Measurements

All specified or referenced distances are measured along the ground, unless otherwise stated.

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Article 2 Ingress and Egress

§ 1273.00. Intent

Roads, and Driveways, whether public or private, unless exempted under 14 CCR § 1270.03(d), shall provide for safe access for emergency Wildfire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a Wildfire emergency consistent with 14 CCR §§ 1273.00 through 1273.09.

§ 1273.01. Width.

(a) All roads shall be constructed to provide a minimum of two ten (10) foot traffic lanes, not including shoulder and striping. These traffic lanes shall provide for two-way traffic flow to support emergency vehicle and civilian egress, unless other standards are provided in this article or additional requirements are mandated by Local Jurisdictions or local subdivision requirements. Vertical clearances shall conform to the requirements in California Vehicle Code section 35250.

(b) All One-way Roads shall be constructed to provide a minimum of one twelve (12) foot traffic lane, not including Shoulders. The Local Jurisdiction may approve One-way Roads.

(1) All one-way roads shall, at both ends, connect to a road with two traffic lanes providing for travel in different directions, and shall provide access to an area currently zoned for no more than ten (10) Residential Units.

(2) In no case shall a One-way Road exceed 2,640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each One-way Road.

(c) All driveways shall be constructed to provide a minimum of one (1) ten (10) foot traffic lane, fourteen (14) feet unobstructed horizontal clearance, and unobstructed vertical clearance of thirteen feet, six inches (13′ 6″).

§ 1273.02. Road Surface

(a) Roads shall be designed and maintained to support the imposed load of Fire Apparatus weighing at least 75,000 pounds, and provide an aggregate base.

(b) Road and Driveway Structures shall be designed and maintained to support at least 40,000 pounds.

(c) Project proponent shall provide engineering specifications to support design, if requested by the Local Jurisdiction.

§ 1273.03. Grades

(a) At no point shall the grade for all Roads and Driveways exceed 16 percent.

(b) The grade may exceed 16%, not to exceed 20%, with approval from the Local Jurisdiction and with mitigations to provide for Same Practical Effect.

§ 1273.04. Radius

(a) No Road or Road Structure shall have a horizontal inside radius of curvature of less than fifty (50) feet. An additional surface width of four (4) feet shall be added to curves of 50-100 feet radius; two (2) feet to those from 100-200 feet.

(b) The length of vertical curves in Roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than one hundred (100) feet.

§ 1273.05. Turnarounds

(a) Turnarounds are required on Driveways and Dead-end Roads.

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(b) The minimum turning radius for a turnaround shall be forty (40) feet, not including parking, in accordance with the figures in 14 CCR §§ 1273.05(e) and 1273.05(f). If a hammerhead/T is used instead, the top of the "T" shall be a minimum of sixty (60) feet in length.
(c) Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the Driveway. Where the driveway exceeds 800 feet, turnouts shall be provided no more than 400 feet apart.
(d) A turnaround shall be provided on Driveways over 300 feet in length and shall be within fifty (50) feet of the building.
(d) Each Dead-end Road shall have a turnaround constructed at its terminus. Where parcels are zoned five (5) acres or larger, turnarounds shall be provided at a maximum of 1,320 foot intervals.
(e) Figure A. Turnarounds on roads with two ten-foot traffic lanes.
Figure A/Image 1 on the left is a visual representation of paragraph (b).
(f) Figure B. Turnarounds on driveways with one ten-foot traffic lane.
Figure B/Image 2 on the right is a visual representation of paragraph (b).

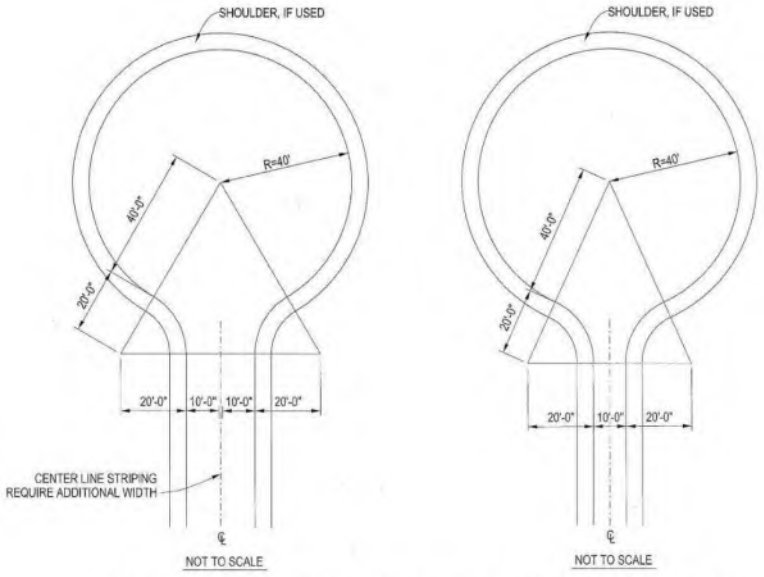

FIGURE FOR 14 CCR § 1273.05. TURNAROUND EXAMPLES

§ 1273.06. Turnouts

Turnouts shall be a minimum of twelve (12) feet wide and thirty (30) feet long with a minimum twenty-five (25) foot taper on each end.

§ 1273.07. Road and Driveway Structures

(a) Appropriate signing, including but not limited to weight or vertical clearance limitations, One-way Road or single traffic lane conditions, shall reflect the capability of each bridge.
(b) Where a bridge or an elevated surface is part of a Fire Apparatus access road, the bridge shall be constructed and maintained in accordance with the American Association of State and

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Highway Transportation Officials Standard Specifications for Highway Bridges, 17th Edition, published 2002 (known as AASHTO HB-17), hereby incorporated by reference. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the local authority having jurisdiction.
(c) Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, barriers, or signs, or both, as approved by the local authority having jurisdiction, shall be installed and maintained.
(d) A bridge with only one traffic lane may be authorized by the Local Jurisdiction; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.

§ 1273.08. Dead-end Roads

(a) The maximum length of a Dead-end Road, including all Dead-end Roads accessed from that Dead-end Road, shall not exceed the following cumulative lengths, regardless of the number of parcels served:

parcels zoned for less than one acre - 800 feet
parcels zoned for 1 acre to 4.99 acres - 1,320 feet
parcels zoned for 5 acres to 19.99 acres - 2,640 feet
parcels zoned for 20 acres or larger - 5,280 feet

All lengths shall be measured from the edge of the Road surface at the intersection that begins the Road to the end of the Road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes requiring different length limits, the shortest allowable length shall apply.
(b) See 14 CCR § 1273.05 for dead-end road turnaround requirements.

§ 1273.09. Gate Entrances

(a) Gate entrances shall be at least two (2) feet wider than the width of the traffic lane(s) serving that gate and a minimum width of fourteen (14) feet unobstructed horizontal clearance and unobstructed vertical clearance of thirteen feet, six inches (13′ 6″).
(b) All gates providing access from a Road to a Driveway shall be located at least thirty (30) feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that Road.
(c) Where a One-way Road with a single traffic lane provides access to a gated entrance, a forty (40) foot turning radius shall be used.
(d) Security gates shall not be installed without approval. Where security gates are installed, they shall have an approved means of emergency operation. Approval shall be by the local authority having jurisdiction. The security gates and the emergency operation shall be maintained operational at all times.

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Article 3 Signing and Building Numbering

§ 1274.00. Intent

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved Roads and Buildings shall be designated by names or numbers posted on signs clearly visible and legible from the Road. This section shall not restrict the size of letters or numbers appearing on road signs for other purposes.

§ 1274.01. Road Signs.

(a) Newly constructed or approved Roads must be identified by a name or number through a consistent system that provides for sequenced or patterned numbering and/or non-duplicative naming within each Local Jurisdiction. This section does not require any entity to rename or renumber existing roads, nor shall a Road providing access only to a single commercial or industrial Occupancy require naming or numbering.
(b) The size of letters, numbers, and symbols for Road signs shall be a minimum four (4) inch letter height, half inch (.5) inch stroke, reflectorized, contrasting with the background color of the sign.

§ 1274.02. Road Sign Installation, Location, and Visibility.

(a) Road signs shall be visible and legible from both directions of vehicle travel for a distance of at least one hundred (100) feet.
(b) Signs required by this article identifying intersecting Roads shall be placed at the intersection of those Roads.
(c) A sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end roads, one-way roads, or single lane conditions, shall be placed:
(1) at the intersection preceding the traffic access limitation, and
(2) no more than one hundred (100) feet before such traffic access limitation.
(d) Road signs required by this article shall be posted at the beginning of construction and shall be maintained thereafter.

§ 1274.03. Addresses for Buildings.

(a) All Buildings shall be issued an address by the Local Jurisdiction which conforms to that jurisdiction's overall address system. Utility and miscellaneous Group U Buildings are not required to have a separate address; however, each Residential Unit within a Building shall be separately identified.
(b) The size of letters, numbers, and symbols for addresses shall conform to the standards in the California Fire Code, California Code of Regulations title 24, part 9.
(c) Addresses for residential Buildings shall be reflectorized.

§ 1274.04. Address Installation, Location, and Visibility.

(a) All buildings shall have a permanently posted address which shall be plainly legible and visible from the Road fronting the property.
(b) Where access is by means of a private Road and the address identification cannot be viewed from the public way, an unobstructed sign or other means shall be used so that the address is visible from the public way.
(c) Address signs along one-way Roads shall be visible from both directions.
(d) Where multiple addresses are required at a single driveway, they shall be mounted on a single sign or post.

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(e) Where a Road provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest Road intersection providing access to that site, or otherwise posted to provide for unobstructed visibility from that intersection.
(f) In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter.

Article 4 Emergency Water Standards

§ 1275.00. Intent

Emergency water for Wildfire protection shall be available, accessible, and maintained in quantities and locations specified in the statute and these regulations in order to attack a Wildfire or defend property from a Wildfire.

§ 1275.01. Application

The provisions of this article shall apply in the tentative and parcel map process when new parcels are approved by the Local Jurisdiction.

§ 1275.02. Water Supply.

(a) When a water supply for structure defense is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except when alternative methods of protection are provided and approved by the Local Jurisdiction.
(b) Water systems equaling or exceeding the California Fire Code, California Code of Regulations title 24, part 9, or, where a municipal-type water supply is unavailable, National Fire Protection Association (NFPA) 1142, "Standard on Water Supplies for Suburban and Rural Fire Fighting," 2017 Edition, hereby incorporated by reference, shall be accepted as meeting the requirements of this article.
(c) Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or man made containment structure, as long as the specified quantity is immediately available.
(d) Nothing in this article prohibits the combined storage of emergency Wildfire and structural firefighting water supplies unless so prohibited by local ordinance or specified by the local fire agency.
(e) Where freeze or crash protection is required by Local Jurisdictions, such protection measures shall be provided.

§ 1275.03. Hydrants and Fire Valves.

(a) The hydrant or fire valve shall be eighteen (18) inches above the finished surface. Its location in relation to the road or driveway and to the building(s) or structure(s) it serves shall comply with California Fire Code, California Code of Regulations title 24, part 9, Chapter 5, and Appendix C.
(b) The hydrant head shall be a two and half (2 1/2) inch National Hose male thread with cap for pressure and gravity flow systems and four and a half (4 1/2) inch for draft systems.
(c) Hydrants shall be wet or dry barrel and have suitable freeze or crash protection as required by the local jurisdiction.

§ 1275.04. Signing of Water Sources.

(a) Each hydrant, fire valve, or access to water shall be identified as follows:
(1) if located along a driveway, a reflectorized blue marker, with a minimum dimension of three (3) inches shall be located on the driveway address sign and mounted on a fire retardant post, or
(2) if located along a road,

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(i) a reflectorized blue marker, with a minimum dimension of three (3) inches, shall be mounted on a fire retardant post. The sign post shall be within three (3) feet of said hydrant or fire valve, with the sign no less than three (3) feet nor greater than five (5) feet above ground, in a horizontal position and visible from the driveway, or
(ii) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

§ 1275.04. Signing of Water Sources.

(a) Each Fire Hydrant or access to water shall be identified as follows:
(1) if located along a Driveway, a reflectorized blue marker, with a minimum dimension of three (3) inches shall be located on the Driveway address sign and mounted on a fire retardant post, or
(2) if located along a Road,
(i) a reflectorized blue marker, with a minimum dimension of three (3) inches, shall be mounted on a fire retardant post. The sign post shall be within three (3) feet of said Fire Hydrant with the sign no less than three (3) feet nor greater than five (5) feet above ground, in a horizontal position and visible from the Driveway, or
(ii) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

Article 5 Building Siting, Setbacks, and Fuel Modification

§ 1276.00 Intent

To reduce the intensity of a Wildfire, reducing the volume and density of flammable vegetation around Development through strategic fuel modification, parcel siting and Building setbacks, and the protection of Undeveloped Ridgelines shall provide for increased safety for emergency fire equipment, including evacuating civilians, and a point of attack or defense from a Wildfire.

§ 1276.01. Building and Parcel Siting and Setbacks

(a) All parcels shall provide a minimum thirty (30) foot setback for all Buildings from all property lines and/or the center of a Road, except as provided for in subsection (b).
(b) A reduction in the minimum setback shall be based upon practical reasons, which may include but are not limited to, parcel dimensions or size, topographic limitations, Development density requirements or other Development patterns that promote low-carbon emission outcomes; sensitive habitat; or other site constraints, and shall provide for an alternative method to reduce Structure-to-Structure ignition by incorporating features such as, but not limited to:
(1) non-combustible block walls or fences; or
(2) non-combustible material extending five (5) feet horizontally from the furthest extent of the Building; or
(3) hardscape landscaping; or
(4) a reduction of exposed windows on the side of the Structure with a less than thirty (30) foot setback; or
(5) the most protective requirements in the California Building Code, California Code of Regulations Title 24, Part 2, Chapter 7A, as required by the Local Jurisdiction.

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§ 1276.02. Ridgelines

(a) The Local Jurisdiction shall identify Strategic Ridgelines, if any, to reduce fire risk and improve fire protection through an assessment of the following factors:

(1) Topography;

(2) Vegetation;

(3) Proximity to any existing or proposed residential, commercial, or industrial land uses;

(4) Construction where mass grading may significantly alter the topography resulting in the elimination of Ridgeline fire risks;

(5) Ability to support effective fire suppression; and

(6) Other factors, if any, deemed relevant by the Local Jurisdiction.

(b) Preservation of Undeveloped Ridgelines identified as strategically important shall be required pursuant to this section.

(c) New Buildings on Undeveloped Ridgelines identified as strategically important are prohibited, as described in subsections (c)(1), (c)(2), and (c)(3).

(1) New Residential Units are prohibited within or at the top of drainages or other topographic features common to Ridgelines that act as chimneys to funnel convective heat from Wildfires.

(2) Nothing in this subsection shall be construed to alter the extent to which utility infrastructure, including but not limited to wireless telecommunications facilities, as defined in Government Code section 65850.6, subdivision (d)(2), or Storage Group S or Utility and Miscellaneous Group U Structures, may be constructed on Undeveloped Ridgelines.

(3) Local Jurisdictions may approve Buildings on Strategic Ridgelines where Development activities such as mass grading will significantly alter the topography that results in the elimination of Ridgeline fire risks.

(d) The Local Jurisdiction may implement further specific requirements to preserve Undeveloped Ridgelines.

§ 1276.03. Fuel Breaks

(a) When Building construction meets the following criteria, the Local Jurisdiction shall determine the need and location for Fuel Breaks in consultation with the Fire Authority:

(1) the permitting or approval of three (3) or more new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d); or

(2) an application for a change of zoning increasing zoning intensity or density; or

(3) an application for a change in use permit increasing use intensity or density.

(b) Fuel Breaks required by the Local Jurisdiction, in consultation with the Fire Authority, shall be located, designed, and maintained in a condition that reduces the potential of damaging radiant and convective heat or ember exposure to Access routes, Buildings, or infrastructure within the Development.

(c) Fuel Breaks shall have, at a minimum, one point of entry for fire fighters and any Fire Apparatus. The specific number of entry points and entry requirements shall be determined by the Local Jurisdiction, in consultation with the Fire Authority.

(d) Fuel Breaks may be required at locations such as, but not limited to:

(1) Directly adjacent to defensible space as defined by 14 CCR § 1299.02 to reduce radiant and convective heat exposure, ember impacts, or support fire suppression tactics;

(2) Directly adjacent to Roads to manage radiant and convective heat exposure or ember impacts, increase evacuation safety, or support fire suppression tactics;

(3) Directly adjacent to a Hazardous Land Use to limit the spread of fire from such uses, reduce radiant and convective heat exposure, or support fire suppression tactics;

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Appendix E: El Dorado Co. Code Section 110.16 Uniform Building Code

Specific Provisions Applicable to the Project that are found in the El Dorado County Code.

Fire Protection System Shop Drawings

Sec. 110.16.030. - International Building Code, Appendix Chapter 1 Section 106.1.1.1—Fire protection system shop drawings.

Appendix Chapter 1 Section 106.1.1.1 of the International Building Code shall have added:

Plans for buildings more than two stories in height of other than Group R, Division 3 and Group U Occupancies shall indicate how required structural and fire-resistive integrity will be maintained where a penetration will be made for electrical, mechanical, plumbing, and communication conduits, pipes, and similar systems.

The installer shall submit plans showing the proposed installation, indicating the location of the equipment and such accessories as may be required to ensure the proper and safe performance of its function.

(Code 1997, § 15.16.030; Ord. No. 4948, 10-19-2010)

Class A Roof Cover Requirements

Sec. 110.16.110. - International Building Code As Amended, Chapter 15, Section 1505, Fire classification.

Section 1505 of the International Building Code is amended to read:

1505.1.2 Roof coverings within the unincorporated area of El Dorado County:

The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, the entire roof covering of every new structure and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure shall be a fire-retardant roof covering that is at least Class A for all residential occupancies and Class B for all commercial, industrial and public assembly buildings.

Where, in any specific case, different sections of applicable codes specify different materials, methods of construction, or other requirements, the most restrictive provisions shall govern.

(Code 1997, § 15.16.110; Ord. No. 4948, 10-19-2010)

Appendix F: El Dorado County Fire Chiefs Association Standards

The El Dorado County Fire Chiefs Association has developed a series of fire protection standards that are designed to assist landowners, developers and builders understand and interpret the fire protection design criteria locally. All of the current fire protection standards can be accessed at the following location:

Fire Prevention Officers - El Dorado County Fire Chiefs Association (edchiefs.org).

The following fire protection standards may apply to this tentative parcel map project:

Standard B-001; Addressing of Buildings
Standard B-002; Automatic & Manual Gates on Fire Access Roadways and Driveways
Standard B-003; Emergency Apparatus Access Ways
Standard D-003; Water Supplies for Suburban and Rural Firefighting
Standard G-001; Fire Department Access & Clearances During Construction
Standard H-005; Solar Photovoltaic Standard
Standard R-001; Construction of Residential Buildings (EDHFD Specific)
Standard 7; Residential Setback for Structure Defensible Space (EDHFD Specific)

Appendix G: EDHCWD Ordinance 2022-01 (Fire Code)

EL DORADO HILLS COUNTY WATER DISTRICT

EL DORADO HILLS FIRE DEPARTMENT

ORDINANCE NO. 2022-01

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE EL DORADO HILLS COUNTY WATER DISTRICT AS FOLLOWS:

An ordinance of the El Dorado Hills County Water District (EDHCWD) adopting the 2022 Edition of the *California Fire Code*, incorporating the 2021 Edition of the *International Fire Code*, regulating and governing the safeguarding of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises in the EDHCWD; providing for the issuance of permits and collection of fees therefor; Repealing Ordinance No. 2019-01 of the EDHCWD and all other ordinances and parts of the ordinances in conflict therewith.

Be it ORDAINED by the Board of Directors of the EDHCWD, also known as the El Dorado Hills Fire Department:

Section 1: **FINDINGS OF FACTS**
Section 2: **ADOPTION OF CODE WITH EXCLUSIONS**
Section 3: **LOCAL AMENDMENTS**
Section 4: **CONFLICT**
Section5: **SEVERABILITY**
Section 6: **EFFECTIVE DATE AND PUBLICATION**

SECTION 1: FINDINGS OF FACTS

The EDHCWD makes certain changes (listed below) to the *California Fire Code*, 2022 Edition, pursuant to *Health & Safety Code Sections 13869.7, 17958.5, 17958.7* and *18941.5* during this code adoption process. Such changes are necessary because of local climatic, geological and/or topographical conditions. The EDHCWD has adopted, pursuant to *Section 18941.5* of the *California Health & Safety Code*, the findings of facts relative to these conditions by Resolution #2019-10 of the EDHCWD dated September 19, 2019.

SECTION 2: ADOPTION OF CODE WITH EXCLUSIONS

The EDHCWD adopts the 2022 *California Fire Code*, *Title 24*, *Part 9*, **in its entirety**, including Appendices, incorporating those sections of the *International Fire Code*, 2021 edition not adopted by the state, with the exclusions listed below:

Exclusions: 103, 309, 311.5, 311.6, 318, 403.3, 403.5, 403.8, 403.10, 403.11, 404, 406, 903.3.1.2, 904.1.1, 1103.1, 1103.3-1103.4, 1103.6, 1105, Chapter 26, D104.2 (Exception only), D106.1 (Exception only), D107.1 (Exceptions only), Appendix A, Appendix G, Appendix J, Appendix K, Appendix L, Appendix M, Appendix N, Appendix O.

Appendices not adopted can be used for reference in enforcing other sections of the 2022 *California Fire Code*.

SECTION 3: AMENDMENTS TO THE 2022 CALIFORNIA FIRE CODE

The following Sections are hereby amended or added:

Chapter 1

SECTION 101.1 "TITLE" SHALL BE AMENDED AS FOLLOWS:

Section 101.1 TITLE. These regulations shall be known as the Fire Code of *EDHCWD*, hereinafter referred to as "this code".

SECTION 105.5 "REQUIRED OPERATIONAL PERMITS" IS AMENDED AS FOLLOWS:

Section 105.5 Required operational permits. The fire code official is authorized to issue operational permits for the operations set forth in Sections 105.5.2 through 105.5.525.

SECTION 105.5.55 "AUTOMOBILE WRECKING YARDS" IS ADDED AS FOLLOWS:

Section 105.5.55 Automobile wrecking yards. *An operational permit is required for the operation of automobile wrecking yards.*

SECTION 105.6 "REQUIRED CONSTRUCTION PERMITS" IS AMENDED AS FOLLOWS:

Section 105.6 required construction permits. The fire code official is authorized to issue construction permits for work as set forth in sections 105.6.1 through 105.6.246.

SECTION 105.6.25 "AUTOMOBILE WRECKING YARDS" IS ADDED AS FOLLOWS:

Section 105.6.25 Automobile wrecking yards. *Construction permits are required for the installation of or modification to automobile wrecking yards.*

SECTION 105.6.26 "TRAFFIC CALMING DEVICES" IS ADDED AS FOLLOWS:

105.6.26 Traffic calming devices. *Construction permits are required for the installation or modification of traffic calming devices.*

SECTION 107.5 "PERMIT, PLAN REVIEW AND INSPECTION FEES" SHALL BE ADDED AS FOLLOWS:

Section 107.5 Permit. *A schedule of fees adopted by the district board of directors for plan review, inspections and the issuance of permits by the district may be found in the most current district fee schedule (Health & Safety Code 17951).*

SECTION 107.5.1 "COST RECOVERY FEES" SHALL BE ADDED AS FOLLOWS:

Section 107.5.1 Cost Recovery Fees. *Fire service fees may be charged to any person, firm, corporation or business that through negligence, violation of the law, or as a result of carelessness, is responsible for the cause of the district to respond to the scene of an incident. A district board may charge a fee to cover the cost of any service which the district provides or the cost of enforcing any regulation for which the fee is charged (Health & Safety Code 13916). The fee shall not exceed the actual cost of suppressing the fire and/or responding to the scene of an incident.*

SECTION 107.7 "ADMINISTRATIVE COSTS" SHALL BE ADDED AS FOLLOWS:

Section 107.7 Administrative Costs. *When a test or inspection is scheduled, and the contractor fails to perform to the satisfaction of the authority having jurisdiction (AHJ), the AHJ may bill the contractor for actual time spent traveling to and from the test/inspection location and the time spent at the test/inspection site as well as administrative costs.*

SECTION 111.5 "APPEAL PROCEDURES AND TIMELINES" SHALL BE ADDED AS FOLLOWS:

Section 111.5 Appeal Procedures and Timelines. *Any person or entity who believes they may be adversely affected by an order, decision, or determination made by the fire code official through a written notice may appeal this matter within 15 calendar days of the postmark on the notice. All such appeals shall be filed in writing with the Secretary of the Governing Board for the district. A timely appeal shall stay further action by the fire code official until the matter is determined by the Appeal Board as outlined in Section 109.2, unless the issue poses an imminent fire or life safety hazard to members of the public. The fire code official shall notify the appellant by certified mail of the date and time of such hearing. The hearing shall be scheduled to take place no sooner than 20 calendar days from the date shown on the certified mail. The appellant shall have the right to appear in person or by agent at the hearing and present oral, written and/or photographic evidence to the Appeal Board.*

SECTION 112.4 "VIOLATION PENALTIES" SHALL BE AMENDED AS FOLLOWS:

Section 112.4 Violation Penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official,

or of a permit or certificate used under provisions of this code, shall be guilty of a *misdemeanor or infraction, at the discretion of the prosecuting attorney or agency*, punishable by a fine not more than *$100.00 for a first violation; A fine not exceeding $500.00 for a second violation of the same provision within one year; A fine not exceeding $1000.00 for each additional violation of the same provision within one year*, or by imprisonment not exceeding *180 days*, or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense. (*Health & Safety Code Sections 13145 and 17995*).

SECTION 112.4.2 "CITATIONS" SHALL BE ADDED AS FOLLOWS:

Section 112.4.2 Citations. *The Fire Chief, or his/her duly authorized representative, may issue citations for infractions or misdemeanor violations of this code pursuant to Section 13871 of the Health & Safety Code of the State of California and Chapter 5c (commencing with Section 853.6) of Title 3 of Part 2 of the Penal Code of the State of California.*

SECTION 113.4 "FAILURE TO COMPLY" SHALL BE AMENDED AS FOLLOWS:

Section 113.4 Failure to Comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be *punishable by a fine or imprisonment or both as described in Section 112.4 (Health & Safety Code Sections 13145 and 17995).*

Chapter 2

SECTION 202 "CAMPFIRE" SHALL BE ADDED AS FOLLOWS:

CAMPFIRE. *A fire which is used for cooking, personal warmth, lighting, or aesthetic purposes.*

SECTION 202 "DISTRICT" SHALL BE ADDED AS FOLLOWS:

DISTRICT. *The district and all other areas within the exterior boundaries thereof now or hereafter established.*

SECTION 202 "DRIVEWAY" SHALL BE ADDED AS FOLLOWS:

DRIVEWAY. *A vehicular access that serves up to two (2) parcels with no more than two (2) residential units and any number of non-commercial or industrial buildings on each parcel.*

SECTION 202 "EXECUTIVE BODY" SHALL BE ADDED AS FOLLOWS:

EXECUTIVE BODY. *The Board of Directors of the District.*

SECTION 202 "FIRE CHIEF" SHALL BE ADDED AS FOLLOWS:

FIRE CHIEF. *The Chief Executive Fire Officer of the Fire department/district serving the jurisdiction or a duly authorized representative.*

SECTION 202 "FIRE HAZARD" SHALL BE ADDED AS FOLLOWS:

***FIRE HAZARD**. Any condition, arrangement, or act which will increase, or may cause an increase of, the hazard or menace of fire to a greater than customarily recognized as normal by-persons in the public service of preventing, suppressing or extinguishing fire; or which may obstruct, delay, or hinder, or may become the cause of obstruction, delay or hinderance to the prevention, suppression, or extinguishment of fire.*

SECTION 202 "OPEN BURNING" SHALL BE AMENDED AS FOLLOWS:

OPEN BURNING. The burning of materials wherein products of combustion are emitted directly into the ambient air without passing through a stack or chimney from an enclosed chamber. Open burning does not include road flares, smudge-pots and similar devices associated with safety or occupational uses typically considered open flames. For the purpose of this definition, a chamber shall be regarded as enclosed when, during the time combustion occurs, only apertures, ducts, stacks, flues or chimneys necessary to provide combustion air and permit the escape of exhaust gas are open.

Open burning shall also include campfires, bonfires, portable outdoor fireplaces, ceremonial fires, and recreational fire as defined in the Fire Code.

Exception:

1. *UL or ASMI listed LPG or natural gas outdoor flame devices, such as gas BBQ's or gas fire pits that comply with the Fire Code.*
2. *For one-or two-family dwellings, fixed or portable outdoor flame devices that meet the following:*
   a. *Devices shall comply with the Fire Code.*
   b. *Devices shall be used per manufacturer's specifications.*
   c. *Minimum 10-foot clearance from device to all flammable material and vegetation.*
   d. *No burning shall be conducted during high or extreme fire weather conditions (e.g., National Weather Service Red Flag Warnings).*
3. *Campfires on private lands. Where required by the fire code official, a permit shall be issued by the fire code official.*
4. *Ceremonial and/or religious burning with the following safety measures:*
   a. *Maximum 4-foot x 4-foot burn area.*
   b. *Minimum 10-foot clearance from edge of burn area to all flammable material and vegetation.*
   c. *An approved water supply is located within 500-feet of the burn area.*
   d. *The burn area is located no less than 30-feet from adjoining property lines.*
   e. *An adult is present with a shovel until the fire is extinguished.*
   f. *No burning shall be conducted during high or extreme fire weather conditions (e.g., National Weather Service Red Flag Warnings).*

SECTION 202 "TRAINED CROWD MANAGER" SHALL BE ADDED AS FOLLOWS:

TRAINED CROWD MANAGER. *Standby personnel, usually a security guard or usher personnel, who are trained in the proper procedure to exit people from a tent or other place of public assemblage in an orderly and calm fashion in the event of an emergency*

Chapter 3

SECTION 302.1 "DEFINITIONS" SHALL BE AMENDED AS FOLLOWS:
3D PRINTER.
ADDITIVE MANUFACTURING.
BONFIRE.
CAMPFIRE.
HI-BOY.
HIGH-VOLTAGE TRANSMISSION LINE.
OPEN BURNING.
PORTABLE OUTDOOR FIREPLACE.
POWERED INDUSTRIAL TRUCK.
RECREATIONAL FIRE.
SKY LATTERN.

SECTION 307.4.4 "OPEN BURNING RESTRICTIONS" SHALL BE ADDED AS FOLLOWS:

Section 307.4.4 Open Burning Restrictions*. Open burning on all lands within the jurisdiction of the El Dorado Hills Fire Department (EDHFD), including the Local Response Area (LRA), is prohibited when the California Department of Forestry and Fire Protection (Cal Fire) issues a burn suspension in the State Responsibility Area (SRA). This prohibition shall be made effective 24-hours following its commencement in the SRA.*

Open burning is also prohibited on all lands within the jurisdiction of EDHFD at any time the fire code official determines that atmospheric conditions or other local circumstances make such fires hazardous, including factors such as high winds, low fuel moisture, fire weather, the issuance of red flag warnings, severe threat of wildland fire, or present risk of destruction by wildfire to life, wildlife, property, or natural resources.

Chapter 4

SECTION 401.2.1 "PRE-FIRE PLANS" IS ADDED AS FOLLOWS:

Section 401.2.1 Pre-fire plans*. Where required by the fire code official, a pre-fire plan shall be provided and approved by the fire code official for all new commercial structures.*

Chapter 5

SECTION 503.2.1 "DIMENSIONS" SHALL BE AMENDED AS FOLLOWS:

Section 503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), exclusive of shoulders, *as measured from face of curb to face of curb*, except for approved security gates in accordance with Section 503.6, and an

unobstructed vertical clearance of not less than *15 feet. Driveways shall have an unobstructed width of not less than 12 feet wide.*

SECTION 503.2.5 "DEAD ENDS" SHALL BE AMENDED AS FOLLOWS:

Section 503.2.5 Dead Ends. Dead-end fire apparatus access roads *and driveways* in excess of 150 feet (45,720 mm) in length shall be provided with an approved area for turning around fire apparatus.

SECTION 503.2.6 "BRIDGES AND ELEVATED SURFACES" SHALL BE AMENDED AS FOLLOWS:

Section 503.2.6 Bridges and Elevated Surfaces. Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with AASHTO HB-17, *the current El Dorado County Transportation Division Bridge Standard or Appendix D of the current California Fire Code, whichever is more restrictive.* Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the fire code official. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces that are not designed for such use, approved barriers, approved signs or both shall be installed and maintained where required by the fire code official.

SECTION 503.3.1 "NO PARKING IN FIRE LANES" SHALL BE ADDED AS FOLLOWS:

Section 503.3.1 No Parking In Fire Lanes. *No person shall stop, park, or leave standing any vehicle, whether attended or unattended, except when necessary to avoid conflict with other traffic or in compliance with the directions of the Fire Chief, or his/her duly authorized representative, Peace Officer or official traffic control device along the edge of any highway, at any curb, or in any location in a publicly or privately owned or operated off-street parking facility, designated as a fire lane by the district with jurisdiction over the area in which the place is located. The designation shall be indicated (1) by a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height that the place is a fire lane, (2) by outlining or painting the place in red and, in contrasting color, marking the place with the words "FIRE LANE", which are clearly visible from a vehicle, or (3) by a red curb or red paint on the edge of the roadway upon which is clearly marked the words "FIRE LANE".*

SECTION 503.3.2 "NO PARKING IN FRONT OF HYDRANTS" SHALL BE ADDED AS FOLLOWS:

Section 503.3.2 No Parking in Front of Hydrants. *No person shall stop, park, or leave standing any vehicle within 15 feet of a fire hydrant except as follows: (a) If the vehicle is attended by a licensed driver who is seated in the front seat and who can immediately move such vehicle in case of necessity, (b) If the vehicle is owned or operated by a fire department and is clearly marked as a fire department vehicle.*

SECTION 503.3.3 "FIRE LANES BASED ON ROAD WIDTH" SHALL BE ADDED AS FOLLOWS:

Section 503.3.3 Fire Lanes Based on Road Width. *Fire lanes shall be based on road width as required in Appendix D as amended by the District.*

SECTION 503.6 "SECURITY GATES" IS AMENDED AS FOLLOWS:

Section 503.6 Security Gates. The installation of security gates across a fire apparatus access road shall be approved by the fire code official *and shall comply with the District gate standard.* Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed, and installed to comply with the requirements of ASTM F2200.

SECTION 505.1 "ADDRESS IDENTIFICATION" SHALL BE AMENDED AS FOLLOWS:

Section 505.1 Address Identification. *Addresses for new and existing buildings shall comply with the District address standard as approved by the fire code official.* The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) high with a minimum stroke width of $^1/_2$ inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. access is by means of a private road and the building cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained.

SECTION 507.5.1 "WHERE REQUIRED" SHALL BE AMENDED AS FOLLOWS:

Section 507.5.1 Where Required. Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 150 feet from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided where required by the fire code official.

Exceptions:

1. For Group R-3 and Group U occupancies, the distance requirement shall be 600 feet (183 m).

SECTION 509.3 "FIRE CONTROL ROOM" SHALL BE ADDED AS FOLLOWS:

Section 509.3 Fire Control Room. *Fire sprinkler risers, fire alarm control panels, solar photovoltaic power system rapid shutoff switches, and other fire detection, suppression or similar control elements shall be located inside a single fire control room for the building. The fire control room shall have minimum dimensions of five feet by seven feet in size with a total usable area of not less than 35 square feet. The room shall be located within the building on an outside wall at a location approved by the Fire Code Official and shall be accessible from the exterior. An exterior access door with a clear width of not less than 32 inches and height of not less than 80 inches shall be provided for access into the room. A durable sign shall be affixed to the exterior of the door with the words "FIRE CONTROL ROOM" in letters not less*

than 4 inches in height. A key box complying with Section 506 shall be installed on the exterior side of the fire control room door opening.

The room must be capable of maintaining a minimum temperature of 40 degrees Fahrenheit. A clearance of 12 inches shall be provided from the fire sprinkler risers to any adjacent walls. This room can be a shared with other building utilities or fire protection equipment that is not incompatible. An approved cabinet or container shall be provided to store record plans of the fire sprinkler system and other fire protection equipment. This room shall not be used for any other storage.

> ***Exception:*** *One-and two-family dwellings, manufactured homes or similar uses defined as either a Group R-3, R3.1, or R-4 occupancy.*

SECTION 510.4.2.3 "STANDBY POWER" SHALL BE AMENDED AS FOLLOWS:

Section 510.4.2.3 Standby power. In-building, two-way emergency responder communication radio coverage systems shall be provided with dedicated standby batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. The standby power supply shall be capable of operating the in-building, two-way emergency responder communication coverage system at 100-percent system capacity for a duration of not less than 72 hours.

Chapter 9

SECTION 903.2 "WHERE REQUIRED" SHALL BE AMENDED AS FOLLOWS:

Section 903.2 Where Required. Approved automatic sprinkler systems *in new buildings and structures when constructed or relocated within the jurisdiction shall be provided in the locations* described in Sections 903.2.1 through 903.2.12 and Sections 903.2.14 through 903.2.23.

> ***Exception:*** *Agricultural buildings not under a special use permit used for commercial purposes.*

SECTION 903.2.1.1 "GROUP A-1" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.1.1 Group A. An automatic sprinkler system shall be provided throughout stories containing Group A-1 occupancies and throughout all stories from the Group A-1 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds *3,600* square feet.
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The fire area contains a multi-theater complex

SECTION 903.2.1.2 "GROUP A-2" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.1.2 Group A-2. An automatic sprinkler system shall be provided throughout stories containing Group A-2 occupancies and throughout all stories from the Group A-2

occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds *3,600* square feet;
2. The fire area has an occupant load of 100 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The structure exceeds *3,600* square feet, contains more than one fire area containing a Group A-2 occupancy, and is separated into two or more buildings by fire walls of less than 4-hour fire-resistance rating without openings.

SECTION 903.2.1.3 "GROUP A-3" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.1.3 Group A-3. An automatic sprinkler system shall be provided throughout stories containing Group A-3 occupancies and throughout all stories from the Group A-3 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds *3,600* square feet.
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The structure exceeds *3,600* square feet, contains more than one fire area containing exhibition and display rooms, and is separated into two or more buildings by fire walls of less than 4-hour fire-resistance rating without openings.

SECTION 903.2.1.4 "GROUP A-4" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.1.4 Group A-4. An automatic sprinkler system shall be provided throughout stories containing Group A-4 occupancies and throughout all stories from the Group A-4 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds *3,600* square feet.
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

SECTION 903.2.3 "GROUP E" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than *3,600* square feet in area.
2. The Group E fire area is located on a floor other than a level of exit discharge serving such occupancies.

Exception: In buildings where every classroom has not fewer than one exterior exit door at ground level, an automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area.

3. The Group E fire area has an occupant load of 300 or more.
4. In rooms or areas with special hazards such as laboratories, vocational shops and other such areas where hazardous materials in quantities not exceeding the maximum allowable quantity are used or stored.
5. Throughout any Group E structure greater than *3,600* square feet in area, which contains more than one fire area, and which is separated into two or more buildings by fire walls of less than 4-hour fire resistance rating without openings.
6. For public school state funded construction projects see Section 903.2.19.
7. For public school campuses, Kindergarten through 12th grade, see Section 903.2.20

SECTION 903.2.4 "GROUP F-1" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:

1. A Group F-1 fire area exceeds *3,600* square feet.
2. A Group F-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds *3,600* square feet.

SECTION 903.2.7 "GROUP M" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.7 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds *3,600* square feet.
2. A Group M fire area is located more than three stories above grade plane.
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds *3,600* square feet.
5. The structure exceeds *3,600* square feet, contains more than one fire area containing a Group M occupancy, and is separated into two or more buildings by fire walls of less than 4-hour fire resistance rating without openings.

SECTION 903.2.7.2 "GROUP M UPHOLSTERED FURNITURE OR MATTRESSES" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.7.2 Group M Upholstered Furniture or Mattresses. An automatic sprinkler system shall be provided throughout a Group M fire area where the area used for the display and sale of upholstered furniture or mattresses exceeds *3,600* square feet.

SECTION 903.2.8.5 "MANUFACTURED HOMES" SHALL BE ADDED AS FOLLOWS:

***Section 903.2.8.5 Manufactured Homes**. An automatic fire sprinkler system shall be required in all new manufactured homes and multi-family manufactured homes intended for use as a one-and two-family dwelling. The design and installation of such systems shall be in accordance with California Code of Regulations, Title 25, §4300.*

Exceptions:

1. *Manufactured homes located within an existing mobile home park complying with California Health and Safety Code, Division 13, Part 2.1 or 2.3.*
2. *Manufactured homes that do not exceed 1,200 square feet in size and serve as an accessory dwelling unit, as defined in Government Code Section 658502; when the existing primary residence on the property is not required to comply with California Residential Code Section R313.2.*
3. *Manufactured homes that do not exceed 320 square feet in size.*

SECTION 903.2.9 "GROUP S-1" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds *3,600* square feet.
2. A Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds *3,600* square feet.
4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds *3,600* square feet.

SECTION 903.2.10 "GROUP S-2" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.10 Group S-2. An automatic sprinkler system shall be provided throughout buildings classified as parking garages where any of the following conditions exist:

1. Where the fire area of the enclosed parking garage, in accordance with Section 406.6 of the California Building Code, exceeds *3,600* square feet.
2. Where the enclosed parking garage, in accordance with Section 406.6 of the California Building Code, is located beneath other groups.

   Exception: Enclosed parking garages located beneath Group R-3 occupancies.
3. Where the fire area of the open parking garage, in accordance with Section 406.5 of the California Building Code, exceeds *3,600* square feet.

SECTION 903.2.10.1 "COMMERCIAL PARKING GARAGES" SHALL BE AMENDED AS FOLLOWS:

Section 903.2.10.1 Commercial Parking Garages. An automatic sprinkler system shall be provided throughout buildings used for storage of commercial motor vehicles where the fire area exceeds *3,600* square feet.

SECTION 903.2.22 "GROUP B" SHALL BE ADDED AS FOLLOWS:

***Section 903.2.22 Group B**. An automatic sprinkler system shall be provided throughout all buildings containing Group B occupancies where the fire area exceeds 3,600 square feet.*

SECTION 903.2.23 "GROUP F-2" SHALL BE ADDED AS FOLLOWS:

***Section 903.2.23 Group F-2**. An automatic sprinkler system shall be provided throughout all buildings containing Group F-2 occupancies where the fire area exceeds 3,600 square feet.*

SECTION 903.6 "WHERE REQUIRED IN EXISTING BUILDINGS AND STRUCTURES" IS AMENDED AS FOLLOWS:

Section 903.6 Where Required In Existing Buildings and Structures. An automatic sprinkler system shall be provided in existing buildings and structures where required in Chapter 11 *and as follows:*

1. When there is a change in occupancy classification that results in an increased life safety or fire risk, as determined by the fire code official, and the structure exceeds 3,600 square feet, an automatic fire sprinkler system shall be installed throughout the building.
2. *In existing buildings 3,600 square feet or greater, other than one and two-family dwelling units, and agricultural buildings not under special use permit for commercial purposes, where the floor area of the building or structure is increased, such building or structure shall be made to conform to Section 903.2.*

   ***Exception**: When the building increase is less than 500 square feet.*
3. *In existing buildings 3,600 square feet or less, other than one-and two-family dwelling units, and agricultural buildings not under special use permit for commercial purposes, where the floor area of the building or structure is increased to a total square footage over 3,600 square feet, such building or structure shall be made to conform to Section 903.2.*

   ***Exception**: When the building increase is less than 500 square feet.*

SECTION 907.2. "WHERE REQUIRED – NEW BUILDINGS AND STRUCTURES" SHALL BE AMENDED AS FOLLOWS:

Section 907.2. Where Required – New Buildings and Structures. An approved fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.~~29~~30 and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code.

Not fewer than one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers or automatic fire alarm systems, a single fire alarm box shall be installed at a location approved by the enforcing agency.

Exceptions:

1. The manual fire alarm box is not required for fire alarm control units systems dedicated to elevator recall control, supervisory service and fire sprinkler monitoring.
2. The manual fire alarm box is not required for Group R-2 occupancies unless required by the fire code official to provide a means for fire watch personnel to initiate an alarm during a sprinkler system, impairment event. Where provided, the manual fire alarm box shall not be located in an area that is open to the public.
3. The manual fire alarm box is not required to be installed when approved by the fire code official.
4. *A fire alarm system is not required in one and two-family dwellings, agricultural buildings, and other occupancies classified as Group U not under special use permit and/or not used for commercial purposes (e.g. retail sales, food service, and/or special events).*
5. *Buildings with a floor area less than 500 square feet may be exempt, as determined by the fire code official based on building construction material and features, location, occupancy type, and distance to exposures.*

SECTION 907.2.1.4 "GROUP A UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.1.4 Group A Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group A buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.2.3 "GROUP B UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.2.3 Group B Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group B buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.3.11 "GROUP E UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.3.11 Group E Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group E buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.4.1 "GROUP F UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.4.1 Group F Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group F buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.5.2 "GROUP H UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.5.2 Group H Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group H buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.6.6 "GROUP I UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.6.6 Group I Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group I buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.7.2 "GROUP M UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.7.2 Group M Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group M buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.8.4 "GROUP R-1 UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.8.4 Group R-1 Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group R-1 buildings with a floor area less than 3,600 square* feet.

SECTION 907.2.9.4 "GROUP R-2, R-2.1, R-2.2 UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.9.4 Group R-2, R-2.1, R-2.2 Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group R-2, R-2.1, R-2.2 buildings with a floor area less than 3,600 square feet.*

SECTION 907.2.10.1 "GROUP S UNDER 3,600 SQUARE FEET" SHALL BE ADDED AS FOLLOWS:

Section 907.2.10.1 Group S Under 3,600 Square Feet. *An approved fire alarm system shall be installed in all group S buildings with a floor area less than 3,600 square feet.*

907.2.30 "TYPE I HOOD INSTALLATIONS" SHALL BE ADDED AS FOLLOWS:

907.2.30 "Type I Hood Installations*. The requirement of installation, or replacement, of a Type I Hood System shall require a fire alarm/sprinkler monitoring system to be installed, or for the hood system to be connected to an existing fire alarm/sprinkler monitoring system for that building.*

907.6.5 "MONITORING" SHALL BE AMENDED AS FOLLOWS:

907.6.5 Monitoring. Fire alarm systems required by this chapter or by the California Building Code shall be monitored by an *approved, UL certified, Type A Full Service central, proprietary or remote station service, which gives audible and visual signals at a constantly attended location. All sprinklered buildings shall be monitored.*

Exceptions:

1. *One- and two-family dwellings (R-3 Occupancies and other occupancies classified as "U").*

2. *Agricultural buildings not under special use permit and/or not used for commercial purposes (e.g., retails sales, food service, and/or special events).*

SECTION 907.6.2.1 "SECONDARY POWER SUPPLY" SHALL BE ADDED AS FOLLOWS:

SECTION 907.6.2.1 SECONDARY POWER SUPPLY. *Where required by the fire code official, in accordance with NFPA 72, the secondary power supply providing a minimum 24-hour power capacity under quiescent load (system operating in a non-alarm condition) shall be amended to a minimum 72-hour power capacity.*

Exception: *The existence of an emergency back-up power supply that meets or exceed the requirements of California Fire Code Chapter 12.*

SECTION 907.9 "WHERE REQURIED IN EXISTING BUILDINGS" SHALL BE AMENDED AS FOLLOWS:

SECTION 907.9 Where Required. An approved fire alarm system shall be provided in existing buildings and structures where required in Chapter 11 and *in existing buildings with a floor area less than 3,600 square feet without an approved automatic sprinkler system, other than one- or two-family dwelling units, agricultural building not under special use permit for commercial purposes where a fire alarm detection system does not exist and the floor area of the building or structure is increased*

Exception: *When the building increase is less than 500 square feet.*

Chapter 12

SECTION 1203.1.3 "INSTALLATION" SHALL BE AMENDED AS FOLLOWS:

Section 1203.1.3 Installation. Emergency power systems and standby power systems shall be installed in accordance with the California Building Code, the California Electrical Code, NFPA 110 and NFPA 111. *All buildings, other than one- and two-family dwelling units, and agricultural buildings not used for commercial purposes, with standby power, shall have a shunt trip device that disconnects all power sources to the building, approved by the fire code official. Existing installations shall be maintained in accordance with the original approval.*

Chapter 33

SECTION 3311.3 "PREMISE IDENTIFICATION" SHALL BE ADDED AS FOLLOWS:

Section 3311.3 Premise Identification. *Prior to and during construction, an approved address sign shall be provided at each fire and emergency vehicle access road entry into the project.*

SECTION 3313.1 "WHEN REQUIRED" SHALL BE AMENDED AS FOLLOWS:

Section 3313.1 When Required. An approved water supply for fire protection, either temporary or permanent, shall be *installed and maintained in continuous operation* as soon as combustible building materials arrive on site, the commencement of vertical combustible

construction and on installation of a standpipe system in buildings under construction, in accordance with Sections 3313.2 through 3313.5.

Exception: The fire code official is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

Chapter 50

SECTION 5001.7 "LIABILITY FOR DAMAGES" SHALL BE ADDED AS FOLLOWS:

Section 5001.7 Liability for Damages. *Any damages or cost resulting from the negligence, violation of the law, careless handling, spill or discharge of any hazardous materials shall constitute debt against any such person, firm or corporation causing such spill or discharge. This debt is collectible by the Fire Chief, or his/her duly authorized representative, in the same manner as in the case of an obligation under contract, expressed or implied.*

Chapter 56

SECTION 5601.2 "PERMIT REQUIRED" SHALL BE AMENDED AS FOLLOWS:

Section 5601.2 Permit Required. Permits shall be required as set forth in Section 105.5 and regulated in accordance with this section. *Where fireworks permits are required, they shall be issued by the Fire Chief, or his/her duly authorized representative, and the El Dorado County Board of Supervisors.*

Chapter 57

SECTION 5704.2.9.6.1 "LOCATIONS WHERE ABOVE-GROUND TANKS ARE PROHIBITED" SHALL BE AMENDED AS FOLLOWS:

SECTION 5704.2.9.6.1 Locations Where Above-Ground Tanks are Prohibited. Storage of Class I and Class II flammable liquids in above-ground tanks outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited. *Storage of Class I and Class II flammable liquids in above-ground tanks outside of buildings is prohibited unless approved by the fire code official.*

SECTION 5706.2.4.4 "LOCATIONS WHERE ABOVE-GROUND TANKS ARE PROHIBITED" SHALL BE AMENDED AS FOLLOWS:

SECTION 5706.2.4.4 Locations Where Above-Ground Tanks are Prohibited. The storage of Class I and Class II liquids in above-ground tanks is prohibited within the limits established by law as the limits of districts in which such storage is prohibited. *Storage of Class I and Class II liquids in above-ground tanks is prohibited unless approved by the fire code official.*

Chapter 58

SECTION 5806.2 "LIMITATIONS" SHALL BE AMENDED AS FOLLOWS:

SECTION 5806.2 Limitations. Storage of flammable cryogenic fluids in stationary containers outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited. *Storage of flammable cryogenic fluids in stationary containers outside of buildings is prohibited unless approved by the fire code official.*

Chapter 61

SECTION 6104.2 "MAXIMUM CAPACITY WITHIN ESTABLISHED LIMITS" SHALL BE AMENDED AS FOLLOWS:

SECTION 6104.2 Maximum Capacity within Established Limits. Within the limits established by law restricting the storage of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons. *The storage of liquefied petroleum gas in excess of an aggregate of 2,000-gallon water capacity when located at least one-half (1/2) mile from property zoned or designated for residential use and at least one-half (1/2) mile from existing residential development with a density greater than one (1) dwelling unit per acre and at least one-half (1/2) mile from any hotel or motel is allowed when approved by the fire code official, and a special/conditional use permit is issued by the County of El Dorado.*

Dispensing within established limits. Within the limits established by law restricting the dispensing of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons. The dispensing of liquefied petroleum gas in excess of an aggregate of 2,000-gallon water capacity when located at least one-half (1/2) mile from property zoned or designated for residential use and at least one-half (1/2) mile from any hotel or motel is allowed when approved by the fire code official and a special/conditional use permit is issued by the County of El Dorado.

Chapter 80

SECTION 80, NFPA 1-22, CHAPTER 22 "AUTOMOTIVE WRECKING YARDS" IS ADOPTED, AMENDED SECTIONS AS FOLLOWS:

Revise Section 22.3 as follows:

22.3 Fire department access roads shall be in accordance with the California Fire Code, Section 503 and Appendix D.

Add new Section 22.10 as follows:

22.10 Stored vehicles, boats, recreational vehicles, parts, and equipment shall not be stored within 30 feet of adjacent property lines.

SECTION 80, NFPA, 13D-22 – "STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS IN ONE-AND TWO FAMILY DWELLINGS AND MANUFACTURED HOMES" IS AMENDED AS FOLLOWS: 903.3.1.3, 903.3.5.1.1

NFPA 13D, Amended Sections as follows:

Add new Section 4.6 as follows:

4.6 *Residential fire sprinkler systems installed in all new one-and two-family dwellings shall utilize a "Passive Purge" system design unless otherwise approved by the fire code official.*

> ***Exception:*** *Manufactured home installed, tested and approved by the California Department of Housing and Community Development.*

Revise Section 5.1.1.2 as follows:

5.1.1.2 *A supply of at least one of each type and temperature sprinkler used within the premises shall be maintained on the property at an approved location. Spare sprinklers shall be kept in a mounted and accessible cabinet.*

Revise Section 7.6 as follows:

7.6 *A local audio/visual device activated upon water flow shall be provided on all fire sprinkler systems in homes at an approved location on the exterior of the dwelling.*

Revise Section 11.2.1.1 as follows:

11.2.1.1 Where a fire department pumper connection is not provided, the system shall be hydrostatically tested at *a minimum pressure of 150 pounds per square inch gauge for no less than a 30-minute duration without evidence of leakage. Such test shall be witnessed by the fire code official.*

Appendix B – Fire Flow Requirements for Buildings

TABLE B105.1(1) "REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3, AND R-4 BUILDINGS AND TOWNHOUSES" SHALL BE AMENDED AS FOLLOWS:

TABLE B105.1(1) REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3, AND R-4 BUILDINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
0 – 3,600	No automatic sprinkler system	1,000	1

3,601 and greater	No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2) at the required fire-flow rate
MAJOR SUBDIVISIONS (5 PARCELS OR GREATER)			
0 – 3,600	Section 903.3.1.3 of the CA Fire Code or Section 313.3 of the CA Residential Code	*1,000*	*1*
3,601 and greater	Section 903.3.1.3 of the CA Fire Code or Section 313.3 of the CA Residential Code	1/2 value of Table B105.1(2) *(min. 1000 GPM)*	2
OTHER RESIDENTIAL DEVELOPMENT			
0 – 3,600	Section 903.3.1.3 of the CA Fire Code or Section 313.3 of the CA Residential Code	500	*1*
3,601 and greater	Section 903.3.1.3 of the CA Fire Code or Section 313.3 of the CA Residential Code	1/2 value of Table B105.1(2) *(min. 750 GPM)*	1

TABLE B105.2 "REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3, AND R-4 BUILDINGS AND TOWNHOUSES" SHALL BE AMENDED AS FOLLOWS:

TABLE B105.2 REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3, AND R-4 BUILDINGS AND TOWNHOUSES

AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2)
Section 903.3.1.1 of the CA Fire Code	25% of the value in Table B105.1(2) [b]	Duration in Table B105.1(2) at the reduced flow rate

b. The reduced fire flow shall not be less than 1,500 gpm

Appendix D – Fire Apparatus Access Roads

SECTION D103.1 "ACCESS ROAD WIDTH WITH A HYDRANT" SHALL BE AMENDED AS FOLLOWS:

Section D103.1 Access Road Width with a Hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1).

***Exception**: Driveways*

SECTION D103.2 "GRADE" SHALL BE AMENDED AS FOLLOWS:

SECTION D103.2 Grade. Fire apparatus access roads *and driveways* shall not exceed *15.9% in grade unless approved by the fire code official or by the El Dorado County amended California Public Resource Code Title 14 / Design and Improvement Standards Manual.*

SECTION D103.3 "TURNING RADIUS" SHALL BE AMENDED AS FOLLOWS:

SECTION D103.3 Turning Radius. The minimum turning radius shall be determined by the fire code official; *and shall not include curb and gutter.*

SECTION D103.5 "FIRE APPARATUS ACCESS ROAD GATES" SHALL BE AMENDED AS FOLLOWS:

SECTION D103.5 Fire Apparatus Access Road Gates. Gates securing the fire apparatus access roads shall comply with all of the following criteria:

1. Where a single gate is provided, the gate width shall be not less than 20 feet (6096 mm). Where a fire apparatus road consists of a divided roadway, the gate width shall be not less than 15 feet (3658 mm).
2. Gates shall be of the horizontal swing, horizontal slide, vertical lift or vertical pivot type.
3. Construction of gates shall be of materials that allow manual operation by one person.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.
5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be approved by the fire code official.
6. Methods of locking shall be submitted for approval by the fire code official.
7. Electric gate operators, where provided, shall be listed in accordance with UL 325.
8. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F2200.

SECTION D103.6.1 "ROADS 20 TO 29 FEET IN WIDTH" SHALL BE AMENDED AS FOLLOWS:

SECTION D103.6.1 Roads 20 to *29* feet in width. Fire lane signs as specified in Section D103.6 shall be posted on both side of fire apparatus access roads that are 20 to *29* feet wide (6096 to *8534.4* mm).

SECTION D103.6.2 "ROADS MORE THAN *29* FEET IN WIDTH" SHALL BE AMENDED AS FOLLOWS:

SECTION D103.6.2 Roads more than *29* feet in Width. Fire lane signs as specified in Section D103.6 shall be posted on one side of fire apparatus access roads more than *29* feet wide (8534.4 mm) and less than *36* feet wide (*10972.8* mm).

SECTION D104.4 "CIRCUMFERENTIAL FIRE APPARATUS ACCESS ROADS" SHALL BE ADDED AS FOLLOWS:

***SECTION D104.4 Circumferential Fire Apparatus Access Roads**. When required by the fire code official, a fire apparatus access road shall be constructed to encompass the entirety of a structure and shall provide a continuous means of emergency vehicle access.*

SECTION 4: CONFLICT

That Ordinance No. 2019-01 of the EDHCWD, and all other ordinances or parts of ordinances herewith are hereby repealed.

SECTION 5: SEVERABILITY

If any Ordinance, article, subsection or subdivision thereof, provision, sentence, clause or phrase of this code, or any application thereof, is for any reason held to be invalid by a court of competent jurisdiction, such decision shall not affect the remaining provisions of this code, which can be given effect without the invalid portions and, therefore, such invalid portions are declared to be severable. The EDHCWD hereby declares that it would have enacted this Ordinance and each of its articles, sections, subsections, or subdivisions thereof, provisions, sentences, clauses or phrases irrespective of the fact that one or more of them is declared invalid.

SECTION 6: EFFECTIVE DATE AND PUBLICATION

This Ordinance shall take effect thirty (30) days after its adoption. The EDHCWD Board Secretary is directed to publish this ordinance in a newspaper of general circulation in the District. In lieu of publication of the full text of the ordinance, a summary of the ordinance may be published by the by the Board Secretary within fifteen (15) days after its passage and a

certified copy shall be posted in the office of the EDHCWD pursuant to *Government Code Section 36933(c) (1).*

The above Ordinance was introduced at a meeting of the Board of Directors of the EDHCWD on September 15, 2022, and it was then read for the first time. A public hearing was set for the Ordinance to be read for the second time on October 20, 2022 and approved by the following vote:

PASSED AND ADOPTED by the Board of Directors of the EDHCWD this, 20th day of October, 2022.

AYES: 5
NOES: 0
ABSENT: 0
ABSTAIN: 0

Bobbi Bennett, Board President

ATTEST:

Jessica Braddock, Board Secretary

Appendix H: EDHCWD Ordinance 2023-01(Unimproved Parcel Maint.)

EL DORADO HILLS COUNTY WATER DISTRICT

EL DORADO HILLS FIRE DEPARTMENT

ORDINANCE NO. 2023-01

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE EL DORADO HILLS COUNTY WATER DISTRICT AS FOLLOWS:

AN ORDINANCE OF THE EL DORADO HILLS COUNTY WATER DISTRICT RELATED TO HAZARDOUS VEGETATION MANAGEMENT ON UNIMPROVED PARCELS, AND DECLARING CERTAIN HAZAROUS VEGETATION AND COMBUSTIBLE MATERIALS A PUBLIC NUISANCE, AND PROVIDING FOR THE REMOVAL THEREOF.

Be it ORDAINED by the Board of Directors of the El Dorado Hills County Water District (EDHCWD), also known as the El Dorado Hills Fire Department:

Section 1: **FINDINGS OF FACTS**
Section 2: **APPLICATION OF ORDINANCE**
Section 3: **DEFINITONS**
Section 4: **CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)**
Section 5: **CLEARANCE OF HAZARDOUS VEGETATION ON UNIMPROVED PARCELS**
Section 6: **ACCEPTABLE METHODS OF CLEARANCE**
Section 7: **DUTY TO ABATE HAZARDOUS VEGETATION AND COMBUSTIBLE MATERIAL**
Section 8: **CORRECTIVE ACTIONS**
Section 9: **INSPECTIONS BY THE EL DORADO HILLS FIRE DEPARTMENT**
Section 10: **REOCCURRING FIRE HAZARD**
Section 11: **PENALTIES**
Section 12: **ABATEMENT OF NUISANCE BY FIRE CODE OFFICIAL**
Section 13: **ABATEMENT PROCEDURES**
Section 14: **REAL ESTATE TRANSACTIONS**
Section 15: **CONFLICT**
Section 16: **SEVERABILITY**
Section 17: **EFFECTIVE DATE AND PUBLICATION**

SECTION 1: **FINDINGS OF FACTS**

1.1 The El Dorado Hills County Water District (EDHCWD), also known as the El Dorado Hills Fire Department, is an independent water district established under Division 12, Part 2, Article 7, Section 31120[1] of the State Water Code; and

1.2 It is the intent of the Governing Board of EDHCWD that this Ordinance shall apply to an annual program for the Abatement of the growth and/or accumulation of weeds, grasses, shrubs, dormant brush, slash, tree limbs, hazardous vegetation and combustible materials on all designated Unimproved Parcels within the EDHCWD and maintenance of those parcels to prevent vegetation from growing back; and

1.3 All parcels within the EDHCWD have been identified and designated as being within either a State Responsibility Area (SRA) or Local Responsibility Area (LRA) Moderate, High or Very High Fire Hazard Severity Zone by the California Department of Forestry and Fire Protection (CAL FIRE) in accordance with the Fire and Resource Assessment Program (FRAP) Map; and

1.4 During the fire season, the EDHCWD generally has a dry, arid climate conducive to wildfires. EDHCWD has a very diverse and complex landscape, which includes dry, brush-covered, and grass-covered wildlands, mountainous areas, and other terrains which are home to many sensitive plant and animal species. Many of the EDHCWD's native and non-native plant species can be highly combustible during normal dry periods and have contributed to significant wildfires within the EDHCWD. Difficult topography, terrain, and weather conditions exacerbate the fire danger and the difficulty of fighting wildfires, and have resulted in catastrophic fire losses to life, property, and the environment; and

1.5 Catastrophic wildfire events pose a serious threat to the preservation of public peace, health and safety within any wildland urban interface and intermix communities. The proper implementation and enforcement of hazardous fuel regulations and landscaping requirements have been proven to reduce the impact from destructive wildfires through the mitigation of hazardous fuel conditions around homes and roadways; and

1.6 Wildfires with extreme fire behavior are occurring more often and growing larger in size. Eighteen (18) of the twenty (20) most destructive wildland fires in the State of California have occurred between 2002-2022. The County of El Dorado has a history of destructive wildfires which have burned within its boundaries. These include the 2007 Angora Fire, 2014 King Fire,

[1] A district may exercise any of the powers, functions, and duties which are vested in, or imposed upon, a fire protection district pursuant to the Fire Protection District Law of 1987, Part 3 (commencing with Section 13800) of Division 12 of the Health and Safety Code.

2021 Caldor Fire and the 2022 Mosquito Fire. Climate change stressors, such as increased average air temperature, precipitation variability, reduced snowpack, drought and tree mortality, will lead to an increased frequency of large wildfires that will create adverse impacts on local communities in the County of El Dorado, including both El Dorado Hills and Latrobe; and

1.7 Of paramount importance to the Governing Board of EDHCWD and the citizens of El Dorado Hills and Latrobe are the protection of lives and structures from the threat of wildfire, and the safety of public safety personnel during wildfires. The proper maintenance of defensible space on Unimproved Parcels benefits property owners, public safety personnel, and all citizens of both El Dorado Hills and Latrobe by dramatically increasing the likelihood that structures will survive a wildfire, provides for firefighter safety during a wildfire, and generally aids in the protection of lives, property, and the environment; and

1.8 The Governing Board of EDHCWD finds and declares that the uncontrolled growth and/or accumulation of weeds, grasses, hazardous vegetation and combustible materials or obstructions on sidewalks, streets, and on lands or lots within the EDHCWD is dangerous or injurious to neighboring property and the health, safety, and welfare of residents of the EDHCWD. Such growth and accumulation constitute a public nuisance in that it creates fire hazards, reduces the value of private property, promotes blight and deterioration, invites plundering, constitutes an unattractive nuisance, and creates a hazard to the health, safety, and general welfare of the public; and

1.9 The purpose of this Ordinance is to provide for the removal of hazardous vegetation and combustible material from around the exterior of improvements situated in the jurisdiction of the EDHCWD to reduce the potential for fire and to promote the public health, safety, and welfare of the community. It is the further purpose of this Ordinance to establish a hazardous vegetation reduction program that provides a process to identify and abate hazardous vegetation on parcels and protect the lives and property of the citizens of the EDHCWD, while at the same time protecting sensitive plant and animal species and protecting against significant erosion and sedimentation. The removal of hazardous vegetation in the areas subject to this Ordinance is recognized as an essential action homeowners and property owners can take to increase the chances that homes, structures and other property will survive a wildfire, while protecting the natural environment. Regular fuels management and modifications consistent with the requirements of this Ordinance is necessary to ensure adequate defensible space is achieved; and

1.10 The defensible space required by this Ordinance is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structures, and there is no other feasible

mitigation measure possible to reduce the risk of ignition or spread of wildfire to structures on adjacent improved parcels.

SECTION 2: **APPLICATION OF ORDINANCE**

2.1 This Ordinance is enacted pursuant to the powers granted to EDHCWD concerning the abatement of hazardous vegetation and combustible material as contained within California Health & Safety Code (HSC) Sections 13861(h), 13879 and 14875 et seq., and 14930 as well as authority granted under El Dorado County Codes & Ordinances (EDCC) Chapter 8.09, California Code of Regulations Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299.01 to .05, California Code of Regulations Title 19 §3.07 and California Code of Regulations Title 24, Part 9 (California Fire Code) Chapter 49, as amended. Additional authority for the abatement of nuisances, establishment of procedures, and establishment of real property lines through EDHCWD is provided in *applicable governing codes and regulations of the State of California*.

2.2 This Ordinance applies to Unimproved Properties regardless of size. The abatement of Hazardous Vegetation posing a Fire Hazard in the community shall occur in accordance with the regulations described in this Ordinance by no later than May 1st each year unless otherwise directed by the Fire Code Official. It shall be the duty of every owner, occupant, and person in control of an Unimproved Parcel of land or having an interest therein, to abate therefrom, and from all Unimproved Parcels of land, all Hazardous Vegetation, that constitutes a Fire Hazard and public nuisance which may endanger or damage neighboring property or forestland.

SECTION 3: **DEFINITIONS**

As used in this Ordinance, the following definitions shall apply:

3.1 **Abate or Abatement** means an act used to remove, destroy, eliminate, seize, impound, or any action taken to mitigate a public nuisance.

3.2 **Abatement Costs** means all costs incurred by the EDHCWD to enforce this ordinance and to abate the hazardous vegetation or combustible material on any property pursuant to this Article, including physical abatement costs, administration fees and any additional actual costs incurred for the abatement proceeding(s), including attorney's fees, if applicable.

3.3 **Biomass** means all green waste material generated during a fuel treatment project. Biomass includes, without limitation, all grass, weeds, vegetation, and tree trimmings.

3.4 **Board** means the Governing Board for the El Dorado Hills County Water District.

3.5 **California Fire Code (CFC)** means code provisions found within California Code of Regulations Title 24, Part 9, as amended locally by EDHCWD.

3.6 **Citation or Administrative Citation** means a civil citation issued pursuant to the Ordinance stating there has been a violation of one or more provisions and setting the amount of the civil penalty to be paid by the responsible party.

3.7 **Combustible Material** means all rubbish, litter, or material of any kind other than hazardous vegetation that is combustible and endangers the public safety by creating a fire hazard.

3.8 **Days** means calendar days.

3.9 **Defensible Space** means that area described in California Code of Regulations Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299.02, Government Code 51182, Public Resources Code Section 4291, El Dorado County Codes & Ordinances Chapter 8.09 and as otherwise described in this Code, which is adjacent to each side of a building or Structure and must be cleared of Hazardous Vegetation, or Combustible Material, as set forth in this Ordinance.

3.10 **EDHCWD** means the El Dorado Hills County Water District of El Dorado County, a political subdivision of the State of California.

3.11 **Fire Code Official** means the fire chief or other designated authority charged with the administration and enforcement of the code, or a duly authorized representative.

3.12 **Fire Hazard** means any condition, arrangement, act, or omission which:

3.12.1 Increases, or may cause an increase of hazard or menace of fire to a greater degree than that customarily recognized as normal by persons in the public service regularly engaged in preventing, suppressing, or extinguishing fire; or

3.12.2 May obstruct, delay, hinder, or interfere with the operations of a fire department or the egress of occupants in the event of fire.

3.13 **Fire Safe Plan** means a document prepared for a specific project or development proposed for a Wildland-Urban Interface (WUI) Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure.

3.14 **Hazardous Vegetation** means any vegetation that is combustible and endangers the public safety by creating a fire hazard. Hazardous Vegetation includes material that in its natural state will readily ignite, burn, and transmit fire from native or landscape plants to any structure or other vegetation. Hazardous Vegetation includes, but is not limited to, dry grass and leaves, brush, weeds, green waste, dead or dying trees, low-hanging branches, litter, or other flammable vegetation that can create a Fire Hazard. Hazardous Vegetation shall not include a commercial agricultural crop that is being actively grown and managed by the property owner or his or her legal tenant.

3.15 **Heritage Tree** means any mature tree or mature stand of trees designated by the County of El Dorado as having historic or cultural significance.

3.16 **Improved Parcel.** Means a portion of real property of any size which is located in an area primarily intended for residential uses, the area of which is determined by the assessor's maps and records, and which may be identified by an Assessor's Parcel Number, upon which a structure is located.

3.17 **Ladder Fuels** means fuels that can carry a fire vertically between or within Combustible Material or Hazardous Vegetation.

3.18 **Parcel** means a portion of real property of any size, the area of which is determined by the Assessor's maps and records, and which may be identified by an Assessor's Parcel Number.

3.19 **Real Estate Transaction** means the transfer of real property between individuals or entities.

3.20 **Responsible Person(s)** means an owner, tenant, occupant, lessor, manager, licensee, political subdivision, local government agency, municipality, or other person having control over a Structure or parcel of land or, to the fullest extent allowed by law, the parent or legal guardian of any person under 18 years who have done any act for which a penalty may be imposed under this Ordinance, or any other person required to comply with the provisions of the Ordinance and, any other lien holder, secured party, or other person who has properly recorded a security interest or other appropriate document evidencing an interest in the property, which has been recorded in the official records of the County.

3.21 **Roadway.** means a road or roadway that is any County street or road, other public road or alley, or private thoroughfare at least ten (10) feet wide that is ordinarily used for vehicular travel, open to public travel, and connects with a County road, state highway, other public road, private road or an alley which affords primary access to an abutting lot. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane, and access roadway.

3.22 **Rubbish** includes, but is not limited to, non-putrescible Wastes, such as paper, cardboard, grass clippings, tree, or shrub trimmings, leaves and needles, wood chips used in landscaping or within five feet of a Structure, bedding, crockery, rubber tires, construction Waste and similar Waste materials.

3.23 **Slash** means the woody debris remaining on the ground after fuels management work: Slash includes, but is not limited to, treetops, branches, bark, chunks, cull logs, uprooted stumps, and uprooted trees.

3.24 **Softwood** means the wood from a conifer (such as pine, cedar, fir, or spruce) as distinguished from that of broadleaved trees.

3.25 **Structure** means any dwelling, house, building, or other type of combustible construction, whether or not occupied, including but not limited to a wood fence located within the Defensible Space of any other Structure.

3.26 **Unimproved Parcel** means a portion of land of any size, the area of which is determined by the Assessor's maps and records and may be identified by an Assessor's Parcel Number (APN) upon which no Structure is located.

3.27 **Vegetation** means plants considered collectively, especially those found in a particular area or habitat. For the purposes of this Ordinance any tree less than six inches in diameter is considered Vegetation.

3.28 **Waste** means all putrescible and non-putrescible solid, semi-solid, and liquid wastes, including residential, commercial, and municipal garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, construction, and demolition debris, discarded home and industrial appliances, manure, vegetable or animal solid and semi-solid wastes, and other discarded solid wastes and semisolid wastes.

3.29 **Weeds** means Vegetation growing upon streets, sidewalks, or private property, including any of the following types:

3.29.1 Weeds which bear seeds of a downy or wingy nature.

3.29.2 Sagebrush, chaparral, and any other brush or weed which attains such large growth as to become, when dry, a fire menace to adjacent improved property.

3.29.3 Weeds which are otherwise noxious or dangerous.

3.29.4 Poison oak or poison ivy when the conditions constitute a menace to public health.

3.29.5 Dry grass, stubble, brush, litter, or other flammable materials which endanger public safety by creating a fire hazard.

3.29.6 Vegetation that is not pruned or is otherwise neglected so as to attain such large growth as to become, when dry, a fire menace to adjacent property.

3.30 **Wildfire Risk Area** means land that is covered with grass, grain, brush or forest, whether privately or publicly owned, which is so situated or is of such inaccessible location that a fire originating upon it would present an abnormally difficult job of suppression or would result in great or unusual damage through fire or such areas designated by the Fire Code Official.

SECTION 4: **CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)**

4.1 The subject project is Categorically Exempt (Class 4) from provisions of CEQA, pursuant to 14 CCR section 15304.

4.2 The subject project is also exempt under the "common sense" exemption in 14 CCR section 15061(b)(3) because it does not involve activity that will have a significant effect on the environment.

SECTION 5: **CLEARANCE OF HAZARDOUS VEGETATION ON UNIMPROVED PARCELS**

5.1 All Hazardous Vegetation shall be removed on Unimproved Parcels that are one (1.0) acre in size or smaller.

5.1.1 All dry grass and other Weeds located on the Unimproved Parcel shall be removed or cut to a maximum height of two (2) inches.

5.1.2 Tree limbs within six (6) feet of the ground that permit fire to spread into the tree canopy and promote ember distribution shall be removed.

5.1.3 All downed trees, branches or woody debris smaller than eight (8) inches in diameter located on the ground shall be removed.

5.1.4 Slash, Rubbish and Combustible Material debris piles that can easily support fire ignition and spread shall be removed.

5.2 All Hazardous Vegetation shall be removed on Unimproved Parcels over one-acre (1.01) in size to provide defensible space within one hundred (100) feet from Structure(s) and twenty (20) feet along roadways.

5.2.1 All dry grass and other Weeds located within the designated defensible space zone shall be removed or cut to a maximum height of two (2) inches.

5.2.2 Tree limbs within six (6) feet of the ground that permit fire to spread into the canopy and promote ember distribution shall be removed.

5.2.3 All downed trees, branches, or woody debris smaller than eight (8) inches in diameter located on the ground shall be removed.

5.2.4 Slash, Rubbish and Combustible Material debris piles that can easily support fire ignition and spread shall be removed.

5.2.5 Hazardous Vegetation located within twenty (20) feet of Roadways shall be removed or cut to a maximum height of two (2) inches to reduce fire spread from roadside ignition sources and to maintain emergency evacuation routes for the local community.

Exception: Single specimens of trees if they do not form a means of readily transmitting fire as deemed by the El Dorado Hills Fire Department.

5.3 All Unimproved Parcels, regardless of size, shall comply with the following requirements:

5.3.1 An Unimproved Parcel located within a development subject to a Fire Department approved Fire Safe Plan shall comply with the terms of that plan as required by CFC § 4903 regardless of size.

5.3.2 Unimproved Parcels located in areas designated by the Fire Code Official as a Wildfire Risk Area shall also be evaluated against the provisions of this Ordinance and EDCC Chapter 8.09.

5.3.3 Unimproved Parcels known to contain, or that the property owner believes, may contain habitat for rare, threatened or endangered plant or animal species shall contact the California Department of Fish and Wildlife at least ten (10) days in advance of vegetation management work. If the property owner is aware of any federal or state listed species then the appropriate wildlife agency shall be consulted prior to beginning work. It is possible that a permit may be required from the appropriate agencies (e.g., U.S. Fish and Wildlife Services and/or the California Department of Fish and Wildlife) prior to work beginning on the property.

5.3.4 Agricultural crops and active agricultural operation (e.g., farming, grazing, nursery and winegrape) lands as defined in the EDCC are exempt from meeting the regulations described in this Ordinance.

5.3.5 Heritage Trees are exempt from meeting the regulations described in this Ordinance.

5.3.6 All Slash, Rubbish, or Combustible Material debris shall be chipped or removed from the property.

5.3.7 The Fire Code Official may require greater clearance distances than that specified in Section 5, at their discretion, where public health safety or welfare so dictate, or where geographic, topographic or vegetation circumstances dictate.

SECTION 6: **ACCEPTABLE METHODS OF CLEARANCE**

6.1 **Disking**. The discs shall be set at an angle sufficient to cut the sod loose and adequately bury the growth of weeds, grass, or noxious vegetation existing at the time. Disking shall include rototilling or cultivating. Disking shall be done each time the growth exceeds six (6) inches in height.

6.2 **Scraping.** Area shall be scraped clear, and all debris shall be removed from the required clear area.

6.3 **Mowing.** Height of vegetation shall not exceed two (2) inches at completion. Mowing shall be done each time growth exceeds six (6) inches in height. Mowing shall include hand-operated weed eaters, flail, and rotary mowers.

6.4 **Spraying.** If sprays or pre-emergent are utilized prior to growth of vegetation, preventing growth of vegetation, then this will be an acceptable method of abatement. Any time growth of vegetation exceeds six (6) inches height, it shall be removed by another acceptable method of abatement.

6.5 **Grading.** Grading shall not take place without all appropriate permits required by the County of El Dorado.

SECTION 7: **DUTY TO ABATE HAZARDOUS VEGETATION AND COMBUSTIBLE MATERIALS**

7.1 Upon receipt of a notice of violation and order to abate, as discussed in Section 13, it shall be the duty of every owner, occupant and person in control of any improved or unimproved parcel of land or interest therein, which is located in the jurisdiction of EDHCWD to abate there from, and from all parcels, roadways and parkways, except for those roads maintained by the county, all Combustible Material and Hazardous Vegetation, that in the judgment of the Fire Code Official, constitutes a Fire Hazard which may endanger or damage neighboring property pursuant to the requirements of the notice of violation and order to abate received.

7.2 The property owner, occupant and person in control of the land is responsible for the abatement and vegetation management (collectively referred to as the "Responsible Person").

7.3 The Responsible Person shall also comply with all other federal, state and local laws, including environmental protection laws, and obtain permits when necessary.

SECTION 8: **CORRECTIVE ACTIONS**

8.1 After declaring a Fire Hazard pursuant to this Ordinance, the Fire Code Official may require that the Responsible Person(s) take corrective action(s) to abate the Fire Hazard. Such actions may include, but are not limited to the following:

8.1.1 Removing Hazardous Vegetation, Combustible Material, Weeds, Rubbish, or other obstructions or materials that are a fire hazard.

8.1.2 Taking specific action(s) to come into compliance with the regulations and rules that prescribe the maintenance of defensible space around structures and real property.

SECTION 9: **INSPECTIONS BY THE EL DORADO HILLS FIRE DEPARTMENT**

9.1 For the purpose of enforcing or administering this Ordinance, the Fire Code Official, may enter upon any Unimproved Parcel for the purpose of inspecting the property or for summary abatement proceedings whenever the Fire Code Official is informed, or has reasonable cause to believe, that Hazardous Vegetation or Combustible Material exists that constitute a condition dangerous or

injurious to the health or welfare of persons or to the public, including the environment, and is a public nuisance, or is otherwise in violation of this Ordinance.

9.2 No person shall interfere with the Fire Code Official while acting in the official course and scope of their duty.

SECTION 10: **REOCCURRING FIRE HAZARD**

10.1 In the case of a parcel containing a Fire Hazard where it has been necessary for the El Dorado Hills Fire Department to Abate as a public nuisance in two consecutive years, and the Fire Hazard is seasonal or recurring, the Governing Board of EDHCWD may declare such a parcel to be a seasonal public nuisance.

10.2 As to such parcels constituting a seasonal Fire Hazard, the Fire Code Official may mail a notice to the Responsible Person(s) of the property at the address that appears upon the current assessment roll. The notice shall contain the information prescribed in Health and Safety Code Section 14900.6.

10.3 If the nuisance is not Abated by the Responsible Person(s) within the time specified, the El Dorado Hills Fire Department may proceed to Abate the property and recover costs for doing so, pursuant to Health and Safety Code sections 149001 and 14902, and as provided for in this Ordinance.

SECTION 11: **PENALTIES**

11.1 Failure to comply with the provisions described in this Ordinance may result in the issuance of an Administrative Citation by the El Dorado Hills Fire Department, or a declaration by the Board that the condition on the parcel constitute a public nuisance to be abated at the Responsible Person(s) expense.

11.2 Every violation of this Ordinance is punishable by:

11.2.1 A fine not exceeding $100.00 for the first violation; and

11.2.2 A fine not exceeding $200.00 for the second violation within three years; and

11.2.3 A fine not exceeding $500.00 for each additional violation within three years.

11.3 Payment of the fine shall not excuse the failure to correct the violation nor shall it bar further enforcement action by EDHCWD.

11.4 All fines shall be payable to EDHCWD unless otherwise directed in the Notice of Violation and Order to Correct.

11.5 For all delinquent unpaid administrative fines, there shall be a penalty imposed in accordance with the provisions of this Ordinance. The delinquency date for an administrative fine shall be 30 days

following the imposition of the fine or the administrative determination of the Board, whichever is later.

11.6 The right to and procedures for requesting an administrative hearing are detailed in Section 13.

SECTION 12: **ABATEMENT OF NUISANCE BY FIRE CODE OFFICIAL**

12.1 Any condition caused, maintained, or permitted to exist in violation of any provisions of this Ordinance may be Abated by the Fire Code Official, pursuant to the procedures set forth in Section 13.

SECTION 13: **ABATEMENT PROCEDURES**

13.1 An Initial Notice to Abate Fire Hazard and Destroy Weeds shall be sent by U.S. Mail or other approved means to all unimproved property owners of parcels by April 15th of each year.

13.2 If the property is still deemed a Fire Hazard on or after May 1st of each year a Final Notice to Abate Fire Hazard and Destroy Weeds will be mailed to the property owner by certified U.S. Mail. In addition to the mailed notice, the property will have one or more signs conforming with the provisions of California Health and Safety Code (HSC) §§ 14891-14894 placed on them to notify the property owner of the notice to abate this concern.

13.3 The property owner will have no less than ten (10) days to abate the Fire Hazard or appeal this decision to the EDHCWD board at their May monthly meeting. If the Fire Hazard has not been abated by the end of the 10-day notice, or the end of the appeal period, whichever is greater, the EDHCWD will dispatch a weed abatement contractor to abate the Fire Hazard in accordance with the provisions of this Ordinance.

13.4 A notice of the hearing prescribed in HSC § 14892 shall be published once in a newspaper of general circulation printed and published in the county, not less than 10 days prior to the date of the hearing.

13.5 The amount of the cost for abating the Fire Hazard and the amount incurred by the Fire Department in enforcing abatement shall constitute a special assessment against the property from which removal occurs and are a lien on the property for the respective assessments as described in the current EDHCWD resolution.

SECTION 14: **REAL ESTATE TRANSACTIONS**

14.1 Prior to close of any Real Estate Transaction subject to Civil Code section 1102.19 within EDHCWD, the seller of any real property must obtain documentation from the Fire Code Official that the property is in compliance with this Ordinance and provide that documentation to the buyer at or before the close of escrow. If documentation of compliance is not available at the time of

escrow, the buyer shall obtain documentation from the Fire Code Official stating the property is in compliance with this Ordinance within 90 days after the close of escrow, unless otherwise approved by the Fire Code Official.

SECTION 15: **CONFLICT**

15.1 The operation of this Ordinance shall in no way change or diminish the application of other ordinances of EDHCWD dealing with like or similar matters. In any case where a provision of this Ordinance is found in conflict with a provision of any zoning, building, fire safety, or health ordinance or any other section of the EDCC, including fines, the provision which establishes the higher standard for the promotion and protection of the health and safety of the people shall prevail.

15.2 It is not intended by this Ordinance to repeal, abrogate, annul, or in any way impair or interfere with existing provisions of other laws or ordinances or with private restrictions placed upon property by covenant, deed, or other private agreement except those specifically repealed by this Ordinance. In cases where two or more provisions of this or any other Ordinance conflict, the most stringent or restrictive shall prevail.

SECTION 16: **SEVERABILITY**

16.1 If any Ordinance, article, subsection or subdivision thereof, provision, sentence, clause or phrase of this code, or any application thereof, is for any reason held to be invalid by a court of competent jurisdiction, such decision shall not affect the remaining provisions of this code, which can be given effect without the invalid portions and, therefore, such invalid portions are declared to be severable.

16.2 The EDHCWD hereby declares that it would have enacted this Ordinance and each of its articles, sections, subsections, or subdivisions thereof, provisions, sentences, clauses or phrases irrespective of the fact that one or more of them is declared invalid.

SECTION 17: **EFFECTIVE DATE AND PUBLICATION**

17.1 This Ordinance shall take effect thirty (30) days after its adoption. The EDHCWD Board Secretary is directed to publish this Ordinance in a newspaper of general circulation in the District. In lieu of publication of the full text of the ordinance, a summary of the ordinance may be published by the by the Board Secretary within fifteen (15) days after its passage and a certified

copy shall be posted in the office of the EDHCWD pursuant to *Government Code Section 36933(c) (1)*.

17.2 The above Ordinance was introduced at a meeting of the Board of Directors of the EDHCWD on {3/29/23}, and it was then read for the first time. A public hearing was set for the Ordinance to be read for the second time on { 4/25/23 } and approved by the following vote:

PASSED AND ADOPTED by the Board of Directors of the EDHCWD this, 25th day of April, 2023.

AYES: 5

NOES: 0

ABSENT: 0

ABSTAIN: 0

John Giraudo, Board President

ATTEST:

Jessica Braddock, Board Secretary

Appendix I: Characteristics of Fire Resistive Vegetation

All plants will burn under extreme fire weather conditions such as drought. However, plants burn at different intensities and rates of consumption. Fire-resistive plants burn at a relatively low intensity, slow rates of spread and with short flame lengths. The following are characteristics[36] of fire-resistive vegetation:

- Growth with little or no accumulation of dead vegetation (either on the ground or standing upright).
- Non-resinous plants (willow, poplar, or tulip trees).
- Low volume of total vegetation (for example, a grass area as opposed to a forest or shrub-covered land).
- Plants with high live fuel moisture (plants that contain a large amount of water in comparison to their dry weight).
- Drought-tolerant plants (deeply rooted plants with thick, heavy leaves).
- Stands without ladder fuels (plants without small, fine branches and limbs between the ground and the canopy of overtopping shrubs and trees).
- Plants requiring little maintenance (slow-growing plants that, when maintained, require little care).
- Plants with woody stems and branches that require prolonged heating to ignite.

[36] See International Code Council *Wildland Urban Interface Code Section F101; 2021.*

Appendix J: Ready – Set – Go Wildfire Evacuation Program

The geography, weather patterns and number of Wildland Urban Interface communities in California make it a state particularly threatened by devastating wildfire. To help educate property owners and residents in areas most at risk, CAL FIRE has developed a communications program called “Ready, Set, Go!” that breaks down the actions needed to be ready for wildfire.

Get prepared for wildfire before it strikes by following Ready, Set, Go!

- Be Ready: Create and maintain defensible space and harden your home against flying embers.
- Get Set: Prepare your family and home ahead of time for the possibility of having to evacuate.
- Be Ready to GO!: Take the evacuation steps necessary to give your family and home the best chance of surviving a wildfire.

Go to this link for additional information on the Ready - Set - Go program: What is the Ready, Set, Go! Program? (wildlandfirersg.org).

Appendix K: FIREWISE USA®

The National Fire Protection Association (NFPA) Firewise USA® recognition program provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community and to reduce wildfire risks at the local level. Any community that meets a set of voluntary criteria on an annual basis and retains an "In Good Standing Status" may identify itself as being a Firewise® Site.

The Firewise USA® program is administered by NFPA® and is co-sponsored by the USDA Forest Service and the National Association of State Foresters. While the NFPA® administers this program, individuals and communities participate on a voluntary basis. The NFPA® disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly, or indirectly resulting from participation in the Firewise USA® program. The NFPA® also makes no guaranty or warranty as to the accuracy or completeness of program guidance.

Go to this link for additional information on the FIREWISE USA program: NFPA - Firewise USA®.

Appendix L: El Dorado County Emergency Alert Program

El Dorado County
EMERGENCY ALERTS
Powered By: RAVE MOBILE SAFETY

Overview

The El Dorado County Sheriff's Office of Emergency Services alert and warning system provides a number of ways in which the county may contact the community in the event of an emergency such as evacuations due to wildfires, hazardous material spills, or urgent law enforcement operations.

The El Dorado County Office of Emergency Services partnered with CalOES to bring the El Dorado County Emergency Alerts notification service to residents and businesses by app, telephone, cell phone, text message, email, and social media when there is a threat to the health or safety of residents.

If you previously signed up for notifications through **Code RED** (El Dorado County's former alert system), you do not need to sign up again to continue receiving notifications. The information from **CodeRED** will migrate over to the new system. We do however encourage new registration as a better way to update your notification options. You may receive notifications from both El Dorado County Emergency Alerts and CodeRED during the transition period. However, we recommend that you CLICK HERE and sign into El Dorado County Emergency Alerts to verify your information is correct. Your User ID should be your email address. If you forgot you User ID or need your password reset, click "Forgot User ID or Password".

For more information see the FAQ's below.

Should the City of Placerville and the City of South Lake Tahoe come opt-in you will be given the opportunity at registration to opt-in to messages from all agencies that affect your listed address.

New Users	Existing Users
CLICK HERE to create a new account and sign up to start receiving emergency notifications	CLICK HERE to log in and edit your existing account

El Dorado County Emergency Alerts Sign Up Instructions

Click on "Sign Up" button above to add your information to this notification system.

You will be asked to create an account:

- Create a Username (email address is recommended)
- Create a Password. Password must be 8 or more characters; at least 1 lower case letter, 1 upper case letter, 1 number, and 1 special character
- Enter preliminary contact information
- Check that you agree to the Terms of Service
- Click "Create Account"

Enter your Address

Most alerts are sent to a specific group, based on the geographical location of the incident or event.
Note that if the pin on the map is not over your residence, you can move it to an appropriate location by clicking and dragging the pin.
You will not receive any location-based alerts if you do not provide an accurate address.

Add Additional Contacts

After creating your profile, the system will give you the opportunity to add additional household members (Emails), additional addresses, and additional phone numbers.

Below you will see links to download the mobile application for Android and iOS devices.

Save El Dorado County Emergency Alerts in your Contacts

After creating your account, you may wish to save the contact information for El Dorado County Emergency Alerts to avoid confusing it with a SPAM call or email. Telephone messaging will show a CallerID of 530-621-7595. Emails will come from edcgov@getrave.com. Text messages will come from a six-digit short code that may vary, which cannot be saved.

You may receive notifications from both El Dorado County Emergency Alerts and **CodeRED** during the transition period. If you have not previously signed up for **CodeRED**, please CLICK HERE.

GET THE Smart911 APP

This new system offers several improvements to include App notifications via Rave's **Smart 911** app. You will receive App notifications if you are in an affected area, even if that area is not your registered address. We also encourage new registration with **Smart911** as a better way to update your profile and notification options.

Appendix M: About the Author

This Fire Safe Plan was prepared in 2023 by Phillips Consulting Services of Georgetown, CA. The author, Ronald A. Phillips, has over 40 years of experience in both fire safety and emergency preparedness. Mr. Phillips served in a variety of positions within the California Fire Service including the position of Fire Chief for the City of Folsom between 2010 - 2016. He has a Bachelor of Science degree in Fire Administration along with several state and national program certificates in specialties such as the emergency management, fire prevention, arson & fire investigation, and the incident command system.

Phillips Consulting Services aids both public and private partners in the following areas of expertise:

Δ POST Incident Analysis & After-Action Reviews
Δ Homeland Security Exercises / Improvement Plans
Δ Emergency Management Planning & Documents
Δ Community Fire & Rescue Master Planning
Δ Special Event Planning
Δ Firewise™ Community Assessments & Plans
Δ WUI Site Assessments
Δ Pre-Incident Planning for First Responders
Δ Fire Code Inspections
Δ Emergency Evacuation Planning & Training

Reduced Impact Alternative Memorandum (January 2025)

Memorandum

Date: January 22, 2025

To: Anthony Gon, Winn Communities
Breann M. Moebius, Hefner Law

From: Ron Phillips, Phillips Consulting Services

Subject: **Creekside Village Specific Plan – Proposed Project Versus Reduced Impact Alternative – Fire Safe Plan Analysis and Recommendations**

The following memorandum provides fire safe plan analysis and recommendations regarding the reduced impact alternative under consideration to the Creekside Village Specific Plan (EDC Project # GPA20-0001) project:

BACKGROUND

Creekside Village Specific Plan (Proposed Project) proposes to create up to 918 single-family residential parcels, a community center, an approximately 1.8-acre neighborhood shopping center, 13.6 acres of parks, and 44.8 acres of open space land within its boundaries. The Project will be approximately 208 acres in total area. The Project has an approved Fire Safe Plan[1] that proposes several mitigation measures to reduce the threat of a wildfire impacting both the Project and surrounding community areas.

The proposed Reduced Impact Alternative proposes to create up to 763 single-family residential parcels, approximately 14.1 acres of park sites, and 44.4 acres of open space within its boundaries. The previously described community center and neighborhood shopping facilities have been removed from the Project description with the Reduced Impact Alternative. The Project will remain approximately 208 acres in total area. The proposed Emergency Vehicle Access / Civilian Evacuation Routes (EVA) road connections remain unchanged within the Project boundaries.

ANALYSIS

The threat of wildfire exposure to people, critical infrastructure, buildings, and communities is based upon a comprehensive vulnerability assessment of an area. This vulnerability assessment is usually completed through the evaluation of both *fire hazard* and *fire risk* factors. The term "hazard" describes the density of live or dead vegetation that may be ignited by the various fire risks or causes that can increase a fire's intensity or rate of spread such as topography or weather conditions. The term "risk" describes the potential damage a fire can do to buildings, critical assets/infrastructure, and other values at risk in individual open space areas and other wildland urban interface areas.

[1] See Creekside Village Fire Safe Plan, Approved February 28, 2024.

The Reduced Impact Alternative fire safe analysis is based upon the Land Use Exhibit shown in Figure 1 and Tentative Map shown in Figure 2 below.

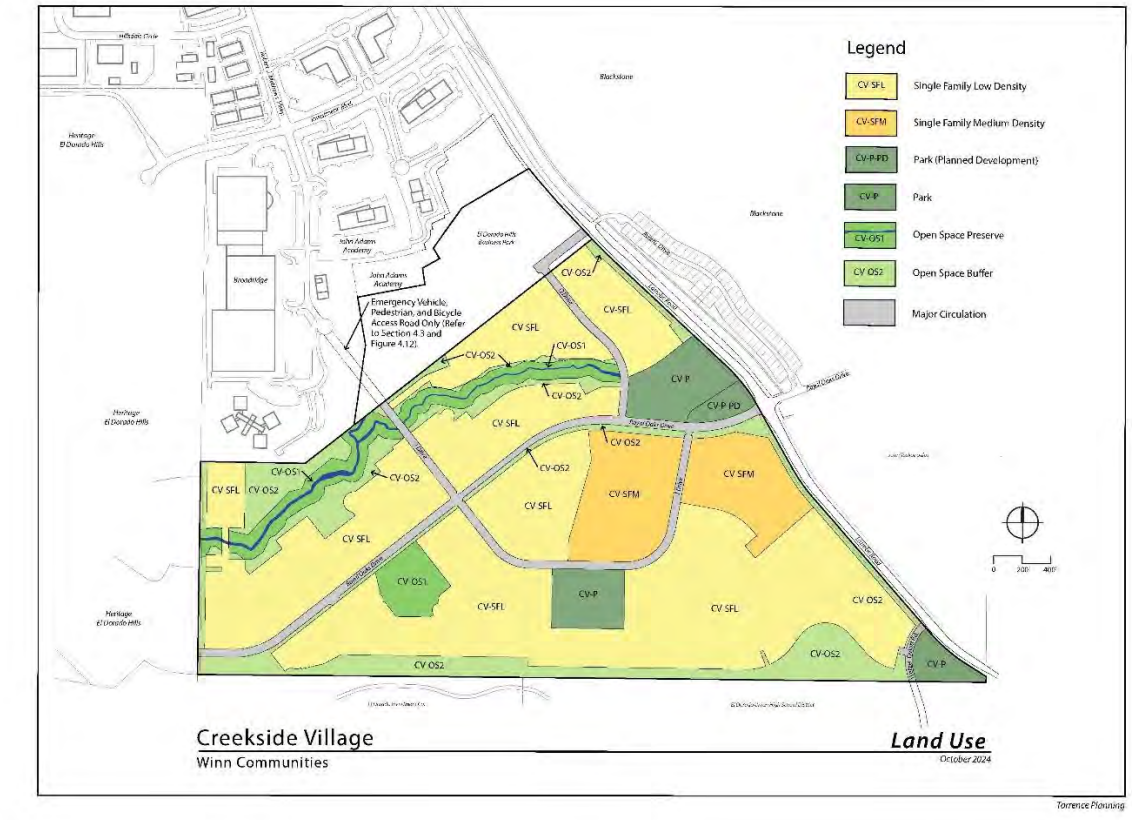

Figure 1: Creekside Village Specific Plan –Reduced Impact Alternative Land Use Exhibit (October, 2024).

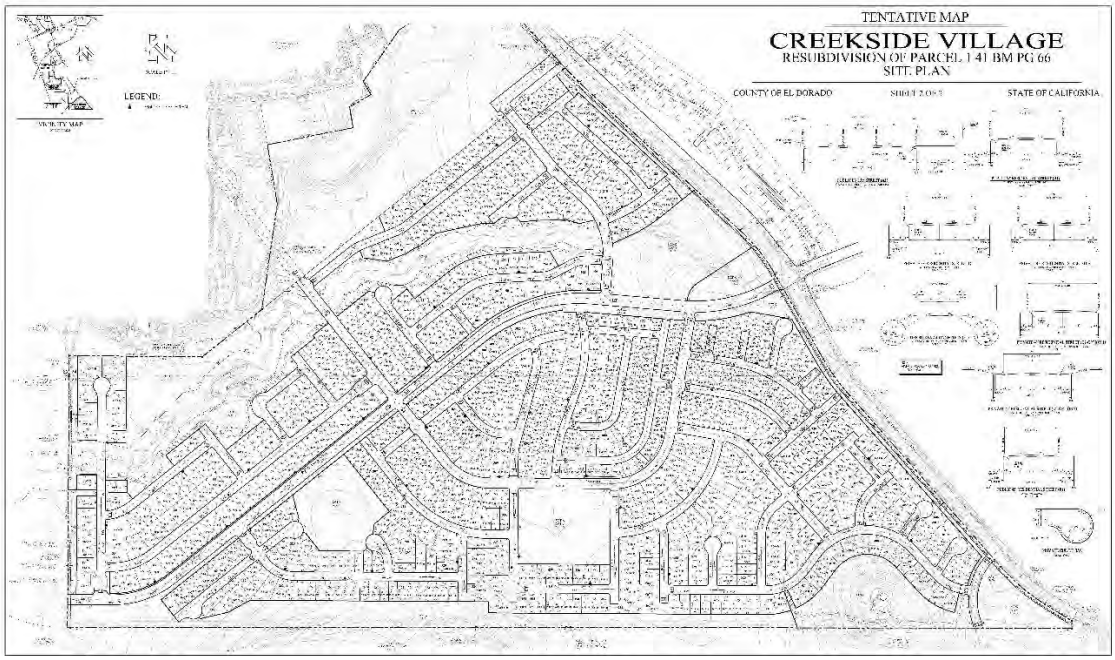

Figure 2: Creekside Village Reduced Impact Alternative Tentative Map (December, 2024)

The “Hazard” designation for the Project was modified slightly as a result of new CAL FIRE FHSZ maps for El Dorado County that were published in April, 2024. The new FHSZ map now shows a small section (approximately 6.67 acres) on the southern end of the project within a "High" Fire Hazard Severity Zone (HFHSZ). The "High" Fire hazard severity zone classification is also now within 1/2 mile of all areas of the project. The closest "Very-High" zone is slightly over 1/2 mile east of the project in the Blackstone Community at its closest point.

The overall wildfire risk within the Project with the Reduced Impact Alternative remains “Low.” The risk factors utilized remain unchanged. See Table 1 for additional information on the risk factor rating for each category evaluated within the Project.

Table 1: Creekside Village Reduced Impact Alternative Fire Safe Risk Analysis

No.	Risk Factor	Low	Moderate	High	Very-High	Total
		0-3	4-6	7-8	9-10	
1	Subdivision Design Points	3				3
2	Vegetation Fuel Type		6			6
3	Defensible Space		6			6
4	Site Topography	3				3
5	Building Construction Materials		6			6
6	Roofing Materials	3				3
7	Fire Protection – Water Source	3				3
8	Fire Protection – Fire Department Capability	3				3
9	Utilities	3				3
10	Critical Assets / Infrastructure at Risk	0				0
	Total	18	18	0	0	36

The proposed changes to the Project described in the Reduced Impact Alternative do not increase the wildfire risk or adversely impact the evacuation routes available to the community. The reduction in the number of single-family dwelling lots as part of this alternative will reduce traffic circulation impacts during a wildfire emergency. The existing Fuel Management and Defensible Space strategies described in Chapter 6 of the Project Fire Safe Plan remain unchanged as a result of this alternative.

The building construction requirements and mitigation strategies required to reduce the threat of structure-to-structure ignition remain in place without change with the proposed alternative.

CONCLUSIONS

In my professional opinion the changes proposed within the Reduced Impact Alternative meet or exceed the provisions described in California statutes and regulations regarding wildfire prevention requirements for new developments. The Project design proposed within the alternative is consistent with the El Dorado County General Plan fire safety policies and regulations described in Chapter 3 of the Project Fire Safe Plan. The Project also remains consistent with EDHFD codes and ordinances related to new developments.

No modifications to the approved Creekside Village Fire Safe Plan are required with the Reduced Impact Alternative proposal.

Please do not hesitate to contact me with follow-up questions regarding this memorandum.

Submitted By:

Ronald A. Phillips
Phillips Consulting Services

Lotusland Memorandum (2025)

Creekside Village Specific Plan - *People of the State of California ex rel. Bonta v. County of Lake* Decision

Wildfire Risk Analysis and Recommendations

May 25, 2025

Prepared for: Winn Communities

Address: APN # 117-010-032, Portion of 117-010-031

El Dorado County Permit # GPA20-0001

Phillips Consulting Services
Fire Safe Planning

Prepared by:

Ronald A. Phillips

530.217.7432

The following report provides fire safe plan analysis and recommendations regarding the potential impact of the "Lotusland[1]" case on the wildfire risk analysis for the Creekside Village Specific Plan (EDC Project # GPA20-0001) project:

BACKGROUND

Lotusland Investment Inc. proposed a 16,000-acre, mixed-use[2] master planned development, including resorts and residential villas, within Guenoc Valley in southern Lake County, CA. The future project is located within a rural area along Butts Canyon Road between Middletown and Calistoga, CA. The vegetation types commonly found in the project area[3] include grasslands, Oak Savanah woodlands, chaparral, and over 2,000 acres of vineyards and other agricultural uses.

The proposed development area has a significant recorded wildfire history, including five large wildfires[4] in the last 10 years, that have either damaged or threatened all or portions of Guenoc Valley. The site is located within a CAL FIRE designated Very-High Fire Hazard Severity Zone. Primary and secondary emergency vehicle access and evacuation routes to the project are via the two-lane Butts Canyon Road[5],[6].

In February, 2020, the County of Lake published the Draft EIR (DEIR) for the proposed project. Several public comments were received regarding the increased wildfire risks that the project would create during the 45-day public comment period. In addition, commenters also challenged the validity of the finding in the DEIR by the County that the project would not adversely impact the wildfire evacuation routes[7] for the existing community surrounding the project area. The DEIR determined that the overall wildfire risk that the project had on the environment was less-than-significant.

In June, 2020, the County certified the Final EIR (FEIR) for the development project. On July 15, 2020, the County issued an errata to the FEIR clarifying the methodologies used in performing its analysis of the wildfire risk. The County provided information in its errata[8] that showed while the project would lead to an increased risk of wildfire ignitions occurring as compared to the existing site conditions, the overall impact remained less-than-significant through the implantation of the measures described in the Wildfire Prevention Plan for the project. The County elected not to revise the FEIR with this updated information or recirculate the FEIR for public comment as it was deemed to be not significantly new information.

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1 *People of the State of California ex rel. Bonta v. County of Lake (Lotusland Investment Holdings, Inc., et al. Real Parties in Interest)* (2024) 105 Cal.App.5th 1222 (No. A165677)

2 At build-out the project includes 1,400 residential estate units, 450 residential units, and 400 hotel rooms.

3 Lotusland Investment Group, Accessed 2.12.25.25; Lotusland | Guenoc Valley

4 2014 Butts, 2015 Jerusalem, 2015 Valley, 2020 Oat, and 2020 LNU Lightning Complex wildfires.

5 The closest four-lane road is State Route 29 which is 3.5 miles north of the project.

6 A 3rd emergency vehicle access road connection is now proposed within the 2024 update to the DEIR to connect the project to State Route 29 north of Middletown.

7 During the 2015 Valley" fire there were significant delays in public evacuation due to traffic congestion and bottlenecks along SR 29 and the surrounding road network.

8 See ERRATA TO THE JUNE 2020 FINAL ENVIRONMENTAL IMPACT REPORT GUENOC VALLEY MIXED-USE DEVELOPMENT PROJECT, pp.17-21.

The FEIR was subsequently appealed by multiple groups, including the Center for Biological Diversity, Native Plant Society, and the State Attorney General, to the Superior Court of the County of Lake[9]. In January, 2022, the Lake County Superior Court issued a ruling that found the 2020 FEIR complied with CEQA in all areas except for its analysis of impacts related to community evacuation. Shortly thereafter the applicant for the project entered into a settlement agreement with the State Attorney General agreeing to incorporate several design changes relating to wildfire risk, evacuation safety and other issues. The applicant voluntarily also added a new emergency ingress and evacuation egress route for the project as part of the settlement agreement. The remaining petitioners also appealed the court's decision to the California Court of Appeal.

In October, 2024, the First Appellate District Court of Appeal issued its opinion on the appeal[10],[11]. It faults the wildfire risk analysis performed by the County of Lake during its CEQA review of the project in the following areas: issuance of an errata to the DEIR rather than recirculating the revised document, citing general stats related to wildfire ignition sources as part of its analysis, and an overreliance on the projects Wildfire Prevention Plan to make its determination regarding the wildfire risk[12]. The Appeal Court did point out in its opinion that the County retains the discretion in choosing the methods used to analyze the appropriate ways to determine a projects effect on the environment, and the relevant mitigation measures used to reduce that impact.

In contrast to the Guenoc Valley project, the 208-Acre Creekside Village Specific Plan (Project) proposes to create up to 918 single-family residential parcels, and various other amenities, including 44-acres of open space, within its boundaries. The Project has an approved Fire Safe Plan[13] that recommends several mitigation measures to reduce the threat of a wildfire impacting both the Project and surrounding community areas. There is also a proposed alternative project called the Reduced Impact Alternative (RIA) which could be approved. The RIA is similar to the proposed Project but includes 763 single-family residences, slightly more open space at 44.4 acres, and a portion of the project includes Active Adult units leading to a decrease in population to approximately 1,529 persons. The following analysis section expands upon the wildfire risk evaluation described in the Plan to assist in the development of the DEIR.

ANALYSIS

Wildfires are a frequent occurrence in El Dorado County due to a combination of factors including, but not limited to, complex terrain, varied natural vegetation groups including grasslands, chaparral, and mixed-conifer tree communities that provides ample fuel sources.

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9 See project background section on Lake County Planning Department website, accessed 2.12.25, Guenoc Valley Mixed-Use Planned Development Project, Guenoc Valley Mixed-Use Planned Development Project | Lake County, CA

10 See *People of the State of California, Ex Rel Rob Bonta, Attorney General et al., v. County of Lake, Lotusland Investment Holdings Inc., et al., A165677 (Lake Co. Superior Court Nos. CV421152, CV421193).*

11 Sections IV, V and VII of *People ex rel. Rob Banta v. County of Lake (A165677)* are the only publishing opinions from this appeal. Section IV deals specifically with the wildfire risk analysis.

12 See Appendix-B-First-Appellate-Court-Decision_Clean, p. 19, *"Here, the County presents no industry standard modeling tools, no methodology or analysis for its conclusory findings, nor any other discussion of how the Wildfire Plan proposes to address the existing baseline conditions other than the Project design proposal itself. This is insufficient."*

13 See Creekside Village Fire Safe Plan, Approved February 28, 2024.

Wildfires can spread at different rates due to influences such as weather conditions, natural plant communities that create flammable fuel sources, topography, and fire suppression efforts. Another critical factor often overlooked is how the Wildland Urban Interface (WUI) is configured[14] near the community. As a recent report[15] from the Insurance Institute for Business and Home Safety (IBHS) points out "*the connectivity of fuels between the wildland and the built environment, as well as between homes within a community, plays a critical role in both the initial entry of fire and its spread in the community*."

The California Department of Forestry and Fire Protection (CAL FIRE) goal is to keep 90% of all wildfires under 10 acres in size via aggressive initial attack. As evidenced by the historical fire data presented in Figures 1 and 2, some ignitions exceed initial firefighting capabilities and grow to large fire events (defined by CAL FIRE as fires exceeding 300 acres), which commonly burn under severe weather conditions[16].

	FIRE NAME *(CAUSE)*	DATE	COUNTY	ACRES	*STRUCTURES*	DEATHS
1	**CAMP** *(Powerlines)*	November 2018	Butte	153,336	**18,804**	85
2	**EATON** *(Under Investigation)**	January 2025	Los Angeles	14,021	**9,413**	17
3	**PALISADES** *(Under Investigation)**	January 2025	Los Angeles	23,707	**6,833**	12
4	**TUBBS** *(Electrical)*	October 2017	Napa & Sonoma	36,807	**5,636**	22
5	**TUNNEL - Oakland Hills** *(Rekindle)*	October 1991	Alameda	1,600	**2,900**	25
6	**CEDAR** *(Human Related)*	October 2003	San Diego	273,246	**2,820**	15
7	**NORTH COMPLEX** *(Lightning)*	August, 2020	Butte, Plumas, & Yuba	318,935	**2,352**	15
8	**VALLEY** *(Electrical)*	September 2015	Lake, Napa & Sonoma	76,067	**1,955**	4
9	**WITCH** *(Powerlines)*	October 2007	San Diego	197,990	**1,650**	2
10	**WOOLSEY** *(Electrical)*	November 2018	Ventura	96,949	**1,643**	3
11	**CARR** *(Human Related)*	July 2018	Shasta County, Trinity	229,651	**1,614**	8
12	**GLASS** *(Undetermined)*	September 2020	Napa & Sonoma	67,484	**1,520**	0
13	**LNU LIGHTNING COMPLEX** *(Lightning/Arson)*	August 2020	Napa, Solano, Sonoma, Yolo, Lake, & Colusa	363,220	**1,491**	6
14	**CZU LIGHTNING COMPLEX** *(Lightning)*	August 2020	Santa Cruz, San Mateo	86,509	**1,490**	1
15	**NUNS** *(Powerline)*	October 2017	Sonoma	54,382	**1,355**	3
16	**DIXIE** *(Powerline)*	July 2021	Butte, Plumas, Lassen, & Tehama	963,309	**1,311**	1
17	**THOMAS** *(Powerline)*	December 2017	Ventura & Santa Barbara	281,893	**1,063**	2
18	**CALDOR** *(Under Investigation)*	September 2021	Alpine, Amador, & El Dorado	221,774	**1,003**	1
19	**OLD** *(Human Related)*	October 2003	San Bernardino	91,281	**1,003**	6
20	**JONES** *(Undetermined)*	October 1999	Shasta	26,200	**954**	1

"Structures" include homes, outbuildings (barns, garages, sheds, etc) and commercial properties destroyed.
This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, local or tribal responsibility.
*Numbers not final *DINS Disclaimer: These numbers are preliminary based on aerial assessments dedicating heat sources which can include chicken coops, outbuildings, sheds, water containers, etc. *Validated inspections are currently being ground-verified by Damage Assessment Teams.

2/7/2025

Figure 1: Top 20 Most Destructive California Wildfires, Source: CAL FIRE, 2.7.25

Structures do not burn exclusively in large fire events, but are certainly at greater risk during these events because large fires commonly occur during heightened fire weather leading to firefighting capabilities being severely strained.

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14 The U.S. Fire Administration defines "WUI" as an area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

15 See IBHS Report on *2025 LA County Wildfires: Early Insights from Field Observations*, March 6, 2025, 2025 Los Angeles County Wildfires – Insurance Institute for Business & Home Safety

16 Severe weather can include drought, critically high temperatures, low relative humidity, and strong winds.

	FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1	**AUGUST COMPLEX** *(Lightning)*	August 2020	Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, & Colusa	**1,032,648**	935	1
2	**DIXIE** *(Powerlines)*	July 2021	Butte, Plumas, Lassen, Shasta & Tehama	**963,309**	1,311	1
3	**MENDOCINO COMPLEX** *(Human Related)*	July 2018	Colusa, Lake, Mendocino & Glenn	**459,123**	280	1
4	**PARK FIRE** *(Arson)*	July 2024	Butte, Plumas, Shasta & Tehama	**429,603**	709	0
5	**SCU LIGHTNING COMPLEX** *(Lightning)*	August 2020	Stanislaus, Santa Clara, Alameda, Contra Costa, & San Joaquin	**396,625**	225	0
6	**CREEK** *(Undetermined)*	September 2020	Fresno & Madera	**379,895**	858	0
7	**LNU LIGHTNING COMPLEX** *(Lightning/Arson)*	August 2020	Napa, Solano, Sonoma, Yolo, Lake, & Colusa	**363,220**	1,491	6
8	**NORTH COMPLEX** *(Lightning)*	August 2020	Butte, Plumas & Yuba	**318,935**	2,352	15
9	**THOMAS** *(Powerlines)*	December 2017	Ventura & Santa Barbara	**281,893**	1,060	2
10	**CEDAR** *(Human Related)*	October 2003	San Diego	**273,246**	2,820	15
11	**RUSH** *(Lightning)*	August 2012	Lassen	**271,911 CA / 43,666 NV**	0	0
12	**RIM** *(Human Related)*	August 2013	Tuolumne	**257,314**	112	0
13	**ZACA** *(Human Related)*	July 2007	Santa Barbara	**240,207**	1	0
14	**CARR** *(Human Related)*	July 2018	Shasta County & Trinity	**229,651**	1,614	8
15	**MONUMENT** *(Lightning)*	August 2021	Trinity	**223,124**	28	0
16	**CALDOR** *(Under Investigation)*	August 2021	Alpine, Amador, & El Dorado	**221,835**	1,005	1
17	**MATILIJA** *(Undetermined)*	September 1932	Ventura	**220,000**	0	0
18	**RIVER COMPLEX** *(Lightning)*	July 2021	Siskiyou & Trinity	**199,359**	122	0
19	**WITCH** *(Powerlines)*	October 2007	San Diego	**197,990**	1,650	2
20	**KLAMATH THEATER COMPLEX** *(Lightning)*	June 2008	Siskiyou	**192,038**	0	2

There is no doubt that there were fires with significant acreage burned in years prior to 1932, but those records are less reliable, and this list is meant to give an overview of the large fires in more recent times.
This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, or local responsibility.

10/2/2024

Figure 2: Top 20 Largest California Wildfires by Acres, Source: CAL FIRE, 10.2.2024

While the Fire Safe Plan for the Project focuses primarily on wildfires, it also recognizes the potential threat of urban conflagrations, or large disastrous fires in which structures themselves are the primary fuel that carries the fire. Urban conflagration fires remain a risk to both life and property regardless of the proximity of the community to WUI areas. This is due principally to urban density, severe weather conditions and the connectivity of fuels.

While fire ignitions and their related causes are one factor in catastrophic wildfires, they are not alone the most important reason why lives are lost and property is destroyed. Of the largest and most destructive statewide fires listed in Figures 1 and 2, the majority (61 percent) were caused by humans and power lines. There is no way to predict when a human-caused wildfire will break out.

The threat of wildfire exposure to people, critical infrastructure, structures, and communities is based upon a comprehensive vulnerability assessment of an area. This vulnerability assessment is usually completed through the evaluation of both *fire hazard* and *fire risk* factors. The term "hazard" describes the density of live or dead vegetation that may be ignited by the various fire risks or causes that can increase a fire's intensity or rate of spread such as topography or weather conditions. The term "risk" describes the potential damage a fire can do to structures, critical assets/infrastructure, and other values at risk in individual open space areas and other wildland urban interface areas.

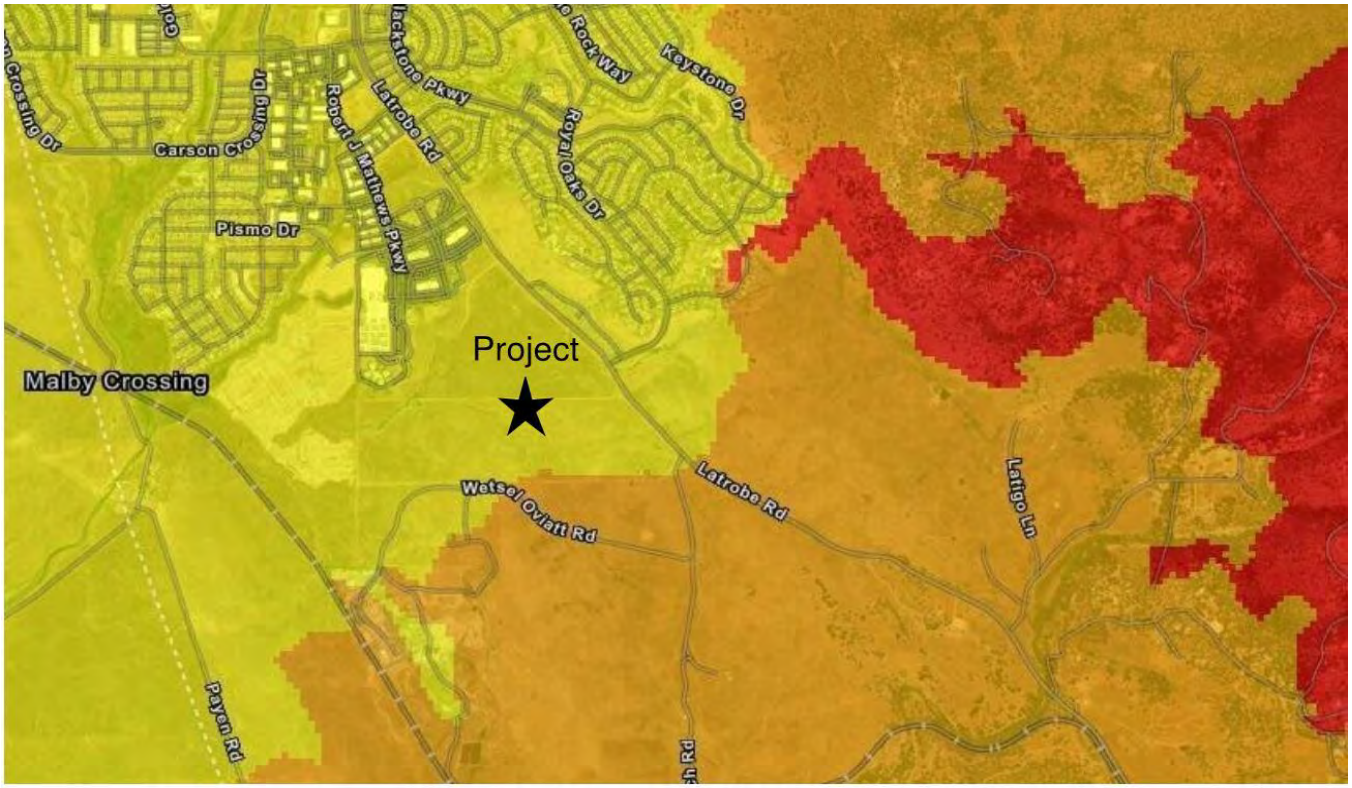
The subsection below describes the wildfire vulnerability analysis found in the Project Fire Safe Plan.

CREEKSIDE VILLAGE WUI FIRE VULNERABILITY ASSESSMENT

Fire Hazard Severity Zone Classification for the Project Area

Fire Hazard ratings are provided by CAL FIRE as part of their *Fire Hazard Zone Severity Mapping* program. One of the major hazards in the western El Dorado County region is the threat of a disastrous wildfire endangering both people and property. The Project is also located within a designated[17] Wildland Urban Interface (WUI) community identified by the Federal Government as being at risk from a large wildfire due to potential fire behavior and values at risk.

As of April, 2024, the "Hazard" designation for the Project is generally within a "Moderate Fire Hazard Severity Zone[18]. The nearest "High" Fire Hazard Severity Zone classification is within 1/2 mile of all areas of the project. The closest "Very-High" zone is slightly over 1/2 mile east of the project in the Blackstone Community. Figure 3 shows the current fire hazard rating for the Project area.



LEGEND

Yellow State Responsibility Area (SRA) Moderate Fire Hazard Severity Zone

Orange State Responsibility Area (SRA) High Fire Hazard Severity Zone

Red State Responsibility Area (SRA) Very-High Fire Hazard Severity Zone

Figure 3: Fire Hazard Severity Zone Map for the Creekside Village (2024)

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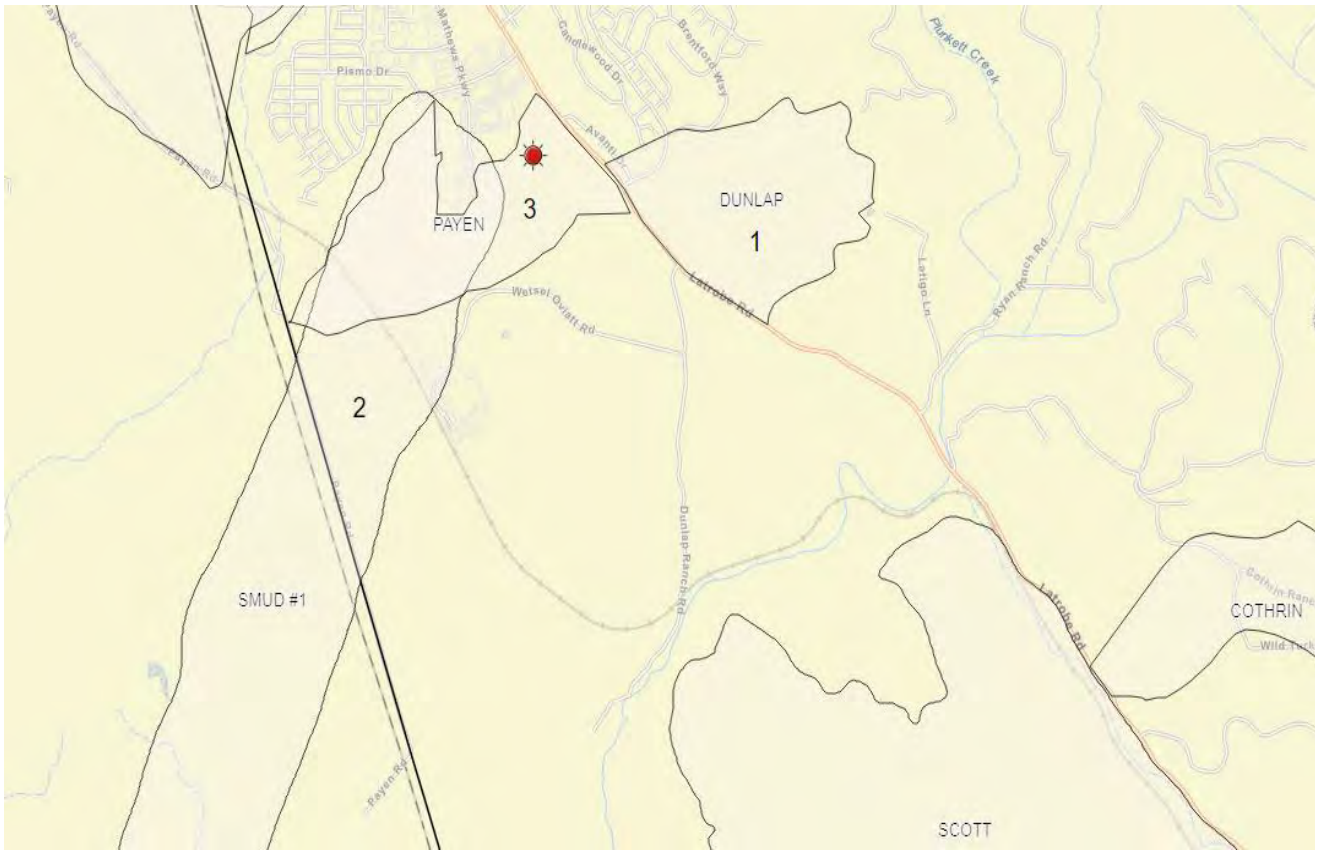
17 Federal Register *Urban Wildland Interface Communities within the Vicinity of Federal Lands that are at High Risk from Wildfires; (January, 2001);* Federal Register :: Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire.

18 The April, 2024, update to the El Dorado County FHSZ map now shows a small section (approximately 6.67 acres) on the southern end of the project within a "High" Fire Hazard Severity Zone (HFHSZ).

Wildfire History Impacting the Project

No large wildfires have impacted the Project site and surrounding community in the last 20 years. Three large wildfires (>300 acres) have been reported near the Project area between 1910 – 2001. The Project site was directly impacted by the "Dunlap" fire in 1959, "SMUD 1" fire in 1992, and Payen" fire in 2001. Figure 4 shows the reported wildfire history in the vicinity of the Project area.



LEGEND

1. Dunlap Fire, August 17, 1959, Size – 299 acres, Cause – Undetermined
2. SMUD#1Fire, June 20, 1992, Size – 1,179 acres, Cause – Powerline
3. Payen Fire, July 4, 2001, Size – 302 acres, Cause – Miscellaneous

Figure 4: Large Wildfire History in the Project Area (1910-2022)

Firefighting Response to Wildfires in the Project Area

Fire, rescue, and pre-hospital emergency medical services for the El Dorado Hills community is provided by the El Dorado Hills Fire Department (EDHFD)[19]. EDHFD is a career staffed fire department which operates five staffed fire stations and serves an area of approximately 78 square miles. EDHFD utilizes no less than twenty-one firefighters and paramedics to staff these fire stations on a 24-hours-per-day, seven-days-per-week operational schedule.

[19] See El Dorado Hills Website; HOME - El Dorado Hills Fire Department (edhfire.com); accessed September 14, 2023.

EDHFD emergency response travel times for the first arriving unit to the Project are on-average less than 8 minutes[20]. These response times are consistent with El Dorado County General Plan Policy 5.1.2.2[21] which calls for an average response time to emergency calls of less than eight minutes in community region areas.

CAL FIRE operates one fire station in the south El Dorado Hills region to meets its wildfire suppression and prevention mission. This fire station is located at CAL FIRE Station 43 in the El Dorado area and is approximately 14.4 miles from the Project. CAL FIRE staffs two state funded fire engines with a crew of 3-4 firefighters on a seasonal basis from this location.

During a major emergency incident such as a building fire, wildland fire, hazardous materials spill, or similar event it is likely that EDHFD and CAL FIRE will dispatch multiple fire station crews to assist in controlling the incident. It is probable that five or more fire suppression units would be dispatched from multiple fire stations located in the western El Dorado County region. Figure 5 shows the regional locations of the five closest fire stations to both the Project and El Dorado Hills community.

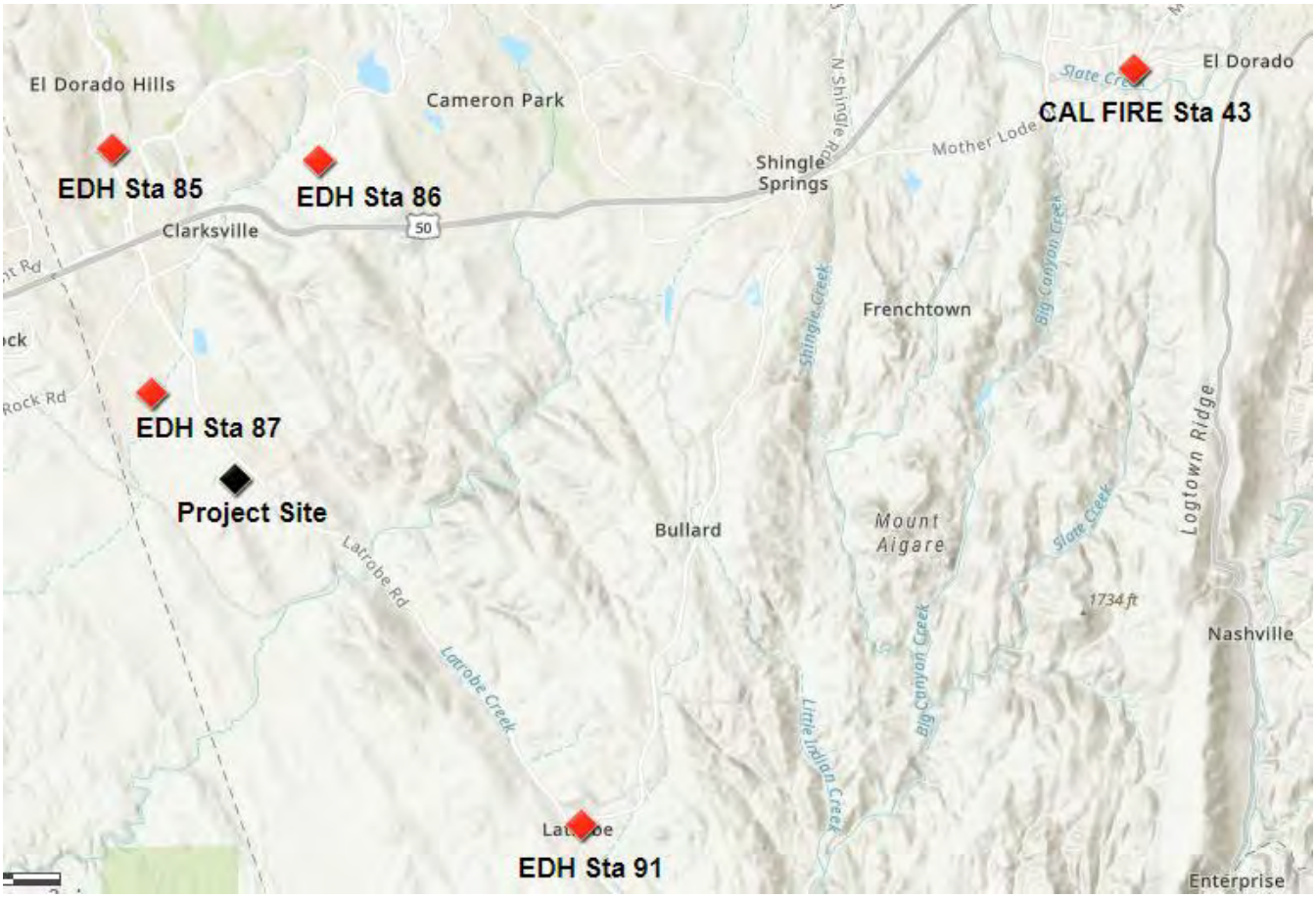


Figure 5: Staffed Fire Stations Near Project

[20] Response times are based on an average 90 second turnout time by firefighters from their station plus travel time using the closest roads available to the project. The response time standard the county uses to evaluate the adequacy of the project meeting General Plan Policy 6.2.3.1 are based the closest station (Station 87) only, and not the average response times of all resources responding to an incident.

[21] See *El Dorado County General Plan*, 2004; Public Services and Utilities Element Section, P.91.

A joint EDHFD, CAL FIRE, and local fire agency emergency response to the Project will occur along either the Latrobe Road or the Highway 50 corridors from both the north and south directions. Four fire stations (87, 85, 86, and 43) are located north or east of the Project; while one fire station (91) is located south of the Project. EDHFD Station 87 is the closest fire station to the Project at 1.5 miles.

The ratio of firefighting responders (FF) to the number of structures (FF/Structure Ratio) on the initial dispatch[22] to wildfires in the Project area is 0.04. The County has an existing Mutual Aid Agreement in place since 1997 to bring additional firefighters quickly to a wildfire incident. All firefighters responding are from career fire agencies.

Evacuation Route Capacity

The Project is provided with three routes of egress during a wildfire evacuation, and two additional Emergency Vehicle Access (EVA) routes that can be used by emergency responders and civilian evacuation from outside the Project to access off-site evacuation corridors. Based on the multiple potential evacuation routes in different directions identified below, road capacity, limited project size, and mitigation measures proposed, the risk of a wildfire impacting existing evacuation routes serving the community will be reduced, and the project will not block, limit, adversely change, or negatively impact routes utilized for evacuation. Evacuation options from the project site include:

- **From Access Points A, B, and C**: Residents may evacuate to Latrobe Road and travel either north on Latrobe Road to White Rock Road or U.S. Highway 50 both east west connectors that allow for evacuation.

- **From Access Point D**: During an emergency Public Safety Officials can utilize the access connection from the Heritage Master Plan Community to access the Project. The Heritage Master Plan Community has existing and proposed connection points into the El Dorado Hills Business Park and to Carson Crossing Drive that connects to White Rock Road.

- **From Access Point E**: During an emergency Public Safety Officials can utilize the bicycle and pedestrian connection into the El Dorado Hills Business Park as a vehicular evacuation route to the north of the project that connects to Robert J Mathews Parkway which has multiple connection points to Latrobe Road and to White Rock Road that can be used for evacuation.

See Figure 6 for an area map with the available evacuation routes for the Project.

[22] A standard response of 2 Battalion Chiefs, 4 local government engines, 2 state engines, 1 state hand crew, 1 bull dozer, and 1 fire investigator occurs on most reported wildfire incidents in El Dorado Hills.

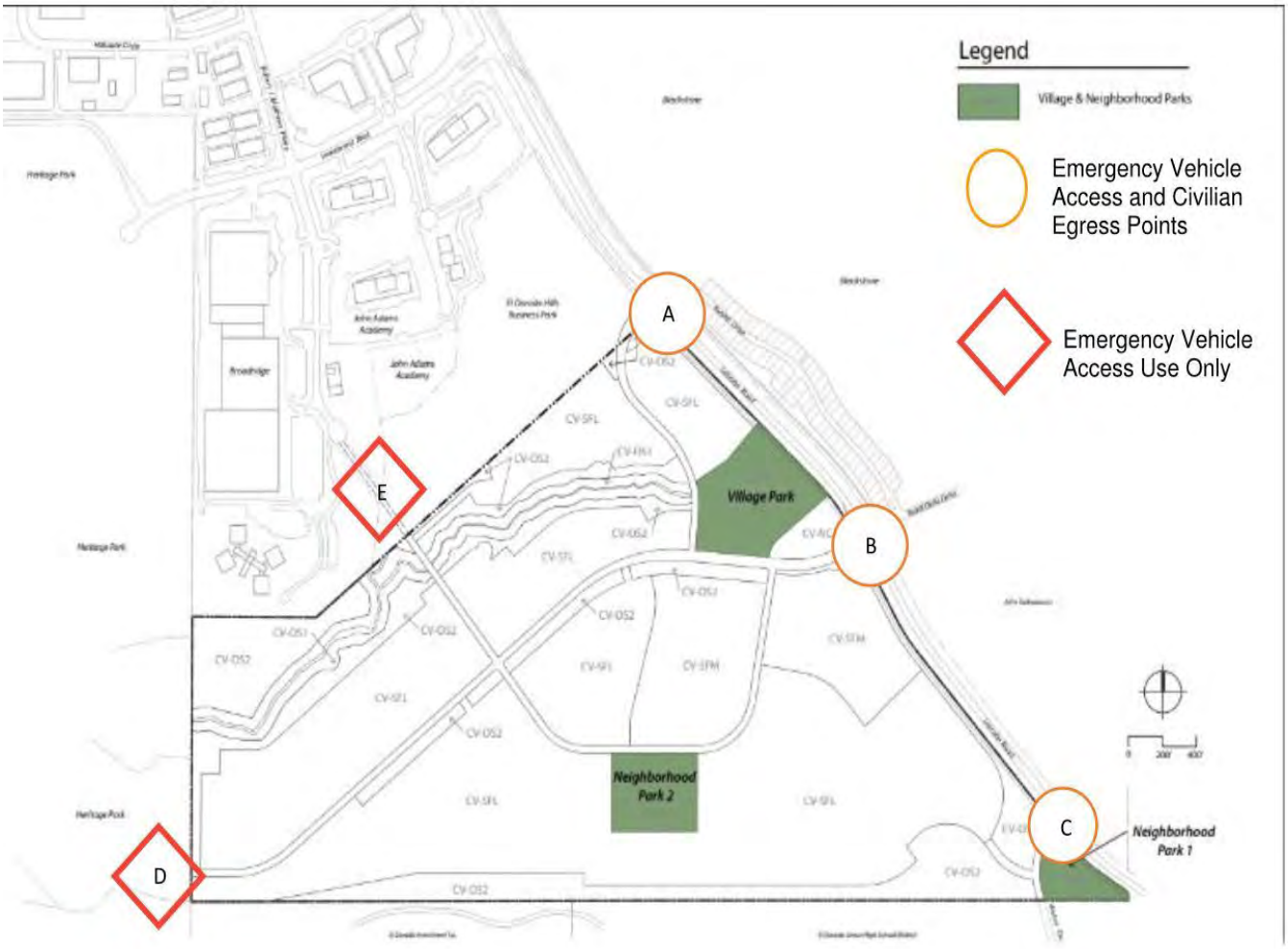


Figure 6: Area Map for Project Showing Evacuation Routes

Structure Density in the Project

The average density of structures to acres, excluding open space areas, is 5.6/ac. Many of the proposed lots within the Project provide structure setbacks that are less than the minimum 30-foot setback for all structures from all property lines and/or the center of a road, as required by CA. Code of Regulations (CCR) Title 14 - § 1276.01 (a). The side-yard setback of many lots in the Project is on average 5-10 feet from the property line. The purpose of this setback requirement is to reduce the intensity of a wildfire through structure-to-structure ignition sources. A reduction of this minimum setback is permitted by this regulation in some cases[23].

Increased density may further reduce the severity of wildfires for several reasons. Chapter 49 of the Fire Code does not allow tree canopies to be within 10 feet of a structure or shrub groups within 30 feet of a structure, thus as the structures are placed closer together, the vegetation limits and noncombustible areas of each structure begin to merge, and thereby preclude the use

[23] CCR Title 14 - § 1276.01(b) does allow for a reduction in the minimum setback based upon findings that support the practical reason for the reduction and alternative methods are implemented to reduce building-to-building ignition.

of trees and shrubs between the structures. For example, at approximately 6 dwelling units per acre, it is unlikely large mature trees could be planted between the structures. At approximately 8 dwelling units per acre, it is unlikely large mature trees could be planted between the structures or in the backyards of the structures. In contrast, when densities are lower (approximately 2.0 du/ac or less depending on layout) the distance between the structures is generally greater than the prescribed defensible space (100 feet in California) around the structure. While these structures will be subject to the same limitations under current standards regarding trees and vegetation, the limitations around each structure are unlikely to overlap and thus trees and vegetation are likely to occur between the structures.

The benefits of increased density are not limited to units per acre, however, and are also seen through increased population density in communities designed and built to current standards. For example, even when dwelling units per acre are lower, the severity of fires is decreased due to numerous benefits that an increase in population density brings to formerly undeveloped land with wildland fuels. These benefits included the addition of new roads, firebreaks, and fire resources to a currently undeveloped and potentially inaccessible area and development of the homes under current standards with mandatory hardening of structures, fire sprinklers, and vegetation management. A community design approach with long-term enforcement through an effective home owner's association further reduces the severity of wildfires.

The following specific alternative material and construction methods, exceeding the minimum criteria described in California Building Code Chapter 7A, shall be implemented within the Project to meet the "Practical Effect" principles described in CCR Title 14 - §1276.01 when structures are located within 30-feet of property lines to reduce the potential for structure-to-structure fire spread include, but are not limited to[24], the following provisions:

- Block any spaces between roof decking and the Class A roof covering to prevent embers from catching and igniting the structure; and

- Eaves shall be boxed in (soffit-eave design) and protected with ignition resistant or non-combustible materials; and

- Utilize ignition resistant building materials, such as stucco, fiber cement wall siding, fire retardant treated wood, or other approved materials when neighboring structures are within 30-feet; and

- Use WUI ember and flame-resistant vents, conforming with the requirements described in ASTM E2886, to protect exterior wall openings when the wall is located within 30-feet of another structure or faces the Wildland Fuel Reduction Zone areas; and

- Limit the size and number of windows to bedroom rescue window openings and other essential location when the exterior wall is located within 30-feet of another building; and

[24] The Project will comply with all applicable state and local code and regulatory requirements to achieve "Practical Effect" at the time of issuance of the building permit.

- Exterior doors of structures shall be constructed of non-combustible or ignition-resistant material, or shall be constructed of solid core wood compliant with California Residential Code Section R327.8.3, when the exterior wall is located within 30-feet of another structure; and

- A minimum non-combustible area of 6 vertical inches, measured from the ground up (at grade) and from any attached horizontal surface like a deck, shall be provided on the exterior of all structure. Non-combustible materials can include brick, stone, fiber-cement siding, or concrete; and fencing materials located within 5-feet of a building shall be constructed of non-combustible materials; and

- Areas located between 0-feet and 5-feet from all structures shall remain non-combustible; and

- Natural and ornamental landscape materials, and other combustible materials, located within 0'-100' of structures shall comply with the fire-resistant standards of EDHFD and CAL FIRE; and

- Outbuildings, regardless of size, on the individual parcel are prohibited within 30-feet of a residential structure unless approved by EDHFD; and

- Exterior combustible decks that cantilever over the natural slope of the property shall be enclosed to reduce the potential of burning embers from a wildfire creating spot fires that can extend into the structure.

Hazardous Vegetation Fuels in the Project

The Project will contain approximately 44.8 acres of open space lands[25] that can also pose a fire hazard to nearby structures unless managed properly to reduce the wildfire risk. The primary natural vegetation fuel types found in the open space areas include grasses, oats, thistle, barley, and other small shrubs commonly found in Northern California areas described as being "Grasslands." The fire behavior fuel loading for the Project area is described by the National Wildfire Coordinating Group[26] as being typically FM1 (Short Grass).[27]

See Figure 7 for an exhibit that shows the proposed open space areas within the Project.

[25] Land designations include both Open Space Preserve and Open Space Buffer.

[26] See Fuels: Surface Fuel Model Descriptions | NWCG

[27] Fire spread is governed by fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured.

Figure 7: Open Space Plan[28]

The Project will be provided with a series of fuel breaks within the open space areas that will reduce the risk of a wildfire directly impacting adjoining structures. These fuel breaks will be maintained by the Project Home Owners Association on an annual, or as needed, basis and will be subject to verification inspection by EDHFD as necessary. The Project will be required by EDHFD to provide a minimum 10-foot fuel reduction zone along each side of all evacuation routes in the development to ensure that they are not obstructed or blocked during a wildfire evacuation.

The Fire Safe Plan for the Project identifies a series of best practices that are intended to reduce the wildfire risk from a fire originating in one of the open space areas, or unimproved areas of the development. The best practices include [1] adequate defensible space within 100' of all structures; and [2] the establishment of a Wildfire Fuel Reduction Zone (WFRZ) for all lands located within the Open Space Buffer (CV-OS2). The Project requirements are based on California Government Code Section 51182 and California Fire Code Section 4903 and include prescriptive requirements in the following subjects:

- Defensible Space Requirements
- Wildfire Fuel Reduction Zone Requirements
- Defensible Space Zone and Wildfire Fuel Reduction Zone Criteria
- Fuel Reduction on Vacant Parcels / During Construction
- Reoccurring Fuel Reduction Maintenance Frequency

28 Creekside Village Specific Plan Figure 5.2, Page 5-5 (July, 2023)

Infrastructure Serving the Project

The Project will be provided with a municipal water supply system meeting the fire protection requirements for all structures within the Project. The water purveyor for the Project is the El Dorado Irrigation District (EID). The Project will be served within the existing capacity of EID through water storage tanks, pumps, and water quality treatment facilities located in El Dorado Hills near the site.

Electrical power to the Project is provided by Pacific Gas & Electric (PG&E). There are no overhead electrical power transmission lines within the Project area. All electrical power distribution lines serving the Project will be buried underground reducing the wildfire risk in the subdivision. This will ensure a safer distribution of power and reduce or eliminate the risk of overhead power lines causing wildfires during windy conditions.

Unless the Project is developed using only electric, each parcel will have natural gas supplied by PG&E for heat and other fuel needs. All gas distribution lines will be buried underground. This approach reduces the risk of gas related wildfires. There is no proposed essential service[29], populations at risk[30], or critical infrastructure[31] sites within the Project that will be exposed to the wildfire risk. No schools, hospitals, or senior care facilities are found within the Project. The are no proposed hazardous material or high fuel load sites located in the Project.

As noted by the Appeal Court in its recent decision the local agency has the responsibility to evaluate the wildfire risk by determining if the project population will increase that risk in the local community. The following subsection describes the fire ignition cause data analysis performed both in El Dorado County, and in the Project.

LOCAL FIRE CAUSE DATA

It is difficult today to perform a quantitative wildfire risk analysis based upon the statistical data collected by the local fire agencies. The data analysis that the court suggests should be evaluated as part of CEQA cannot be easily found in public domain records. The only fire agency locally that tracks wildland fire ignition related causes is the Amador-El-Dorado Unit (AEU) of CAL FIRE. The information they currently provide to the public is very basic.

It is also data collected and compiled from multiple counties (El Dorado, Amador, and Alpine plus a small area of Sacramento County), that does not show the frequency of fire ignitions specifically in El Dorado County.

While reviewing fire cause data reported by AEU over the period between 2012-2022, the following ten leading causes of local wildland fires were identified:

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29 Examples of “essential service” uses include law enforcement and fire facilities, public evacuation centers, and general care hospitals.

30 Examples of “populations at risk” uses include public and private schools, health care facilities, and child care centers.

31 Examples of “critical infrastructure” uses include water and electric distribution sites, telecommunication facilities and government corporation yards.

1) **Debris Burning (26%)**
2) **Undetermined (16%)**
3) **Equipment (14%)**
4) **Other (10%)**
5) **Vehicle (10%)**
6) **Power Equipment (9%)**
7) **Arson (7%)**
8) **Natural - Lightning (2%)**
9) **Recreation / Campfires (2%)**
10) **Smoking (2%)**

It is important to note that the frequency of fire causes does not necessarily correlate with [a] the numbers of acres destroyed, [b] the number of persons injured or killed by a wildfire, or [c] the number of structures damaged or destroyed by a wildfire. As an example, the Caldor wildfire, the largest fire during this reporting period for acreage lost, structures damaged and/or destroyed, and injuries and / or deaths, was determined to be caused by target shooting activity which falls into the "other[32]" category. Factors such as severe weather conditions present when the wildfire ignites, structure density in proximity to the wildfire, response and availability of firefighting resources, and the level of preparedness by the property owner prior to the fire igniting are also critical factors in the outcome of the wildfire. Nine of the ten fire ignition cause categories are considered to be human related.

The average number of wildfires each year over the 2012-2022 reporting period, within the four counties served by AEU, is **305**. The population of El Dorado County makes up on average 80% of the overall population served by AEU over this 10-year reporting period. For analysis purposes it is assumed that on average **201** human caused wildfires in AEU occurred in El Dorado County over this 10-year period.

The statistical categories of wildfire ignition causes were then evaluated against the Creekside Village project based on the population served and likely frequency of wildfires originating in the Project. This comparison is intended to show the average number of fire ignitions that might conceivably occur within the Project boundaries in any given year. The data excludes from this analysis the following:

1. Does not analyze total acres destroyed as a result of a wildfire
2. Does not analyze structures destroyed or damaged as a result of a wildfire
3. Does not analyze injuries or deaths caused as a result of a wildfire
4. Fire ignition frequency is based on built out of project
5. Assumes all residents of Creekside Village are new to EDC and are not relocating from other SRA areas
6. Assumes the frequency of wildfires is similar in both suburban and rural areas of the county
7. Does not include wildfires that occur within FRA and LRA lands

See Figure 8 for an exhibit that shows the wildfire ignition frequency for the Project.

[32] "Other" common causes that fall into this category include wildfire that are caused by a structure fire, spontaneous combustion, fireplace ashes deposited in the wildland, barbequing, cooking fires, and fireworks.

Fire Ignition Cause[33]	County Population AVG[34]	Creekside Population	Creekside Annual Frequency	Creekside RIA Population[35]	Creekside RIA Frequency
	187.8	2607		1529	
Debris Burning	0.28	2.61	0.73	1.53	0.42
Undetermined	0.17	2.61	0.44	1.53	0.26
Equipment	0.15	2.61	0.39	1.53	0.22
Other	0.11	2.61	0.28	1.53	0.16
Vehicle	0.11	2.61	0.28	1.53	0.16
Power Equipment	0.10	2.61	0.26	1.53	0.15
Arson	0.07	2.61	0.18	1.53	0.10
Recreation / Campfires	0.02	2.61	0.05	1.53	0.03
Smoking	0.02	2.61	0.05	1.53	0.03
Fire Ignition Potential / Year			**2.91**		**1.53**

Figure 8: Human Caused Wildfire Ignition Starts vs. Population Density in El Dorado County (2012-2022)

Based on this very broad analysis it can be assumed that the Project will see up to **2.91** fire ignitions per year once the development reaches its expected population. The frequency of fire ignitions decreases to **1.53** fire ignitions per year under the Creekside RIA scenario. This analysis accepts that most fire ignitions in the Project are equivalent to the fire experience found in the remaining areas of El Dorado County.

Based on the suburban location of the Project it is doubtful that fire ignition sources such as escaped debris burning, lightning, and escaped recreation / campfires are likely sources that will lead to frequent wildfires. The most probable sources of fire ignitions in the Project are anticipated to be in the power equipment, arson[36] and other categories. To reiterate the number of fire ignitions does not directly correspond to the severity of the wildfire.

Moreover, several of the fire ignition sources can be successfully reduced through the implementation of the recommended best practices found in the Fire Safe Plan and in this memo. Specifically, the Project can ban debris burning, ban smoking in the open space areas, ban recreational fires/campfires, and limit the use of equipment known to cause wildfires in the open space and HOA-maintained areas adjacent to the open space. With an HOA, the Project can enforce the bans impacting residents.

If these causes are removed, the annual fire ignitions per year, once the development reaches its expected population, would be reduced to **1.82** for the Project and **0.90** for the Reduced Impact Alternative.

33 Average human caused fire ignition history for El Dorado County.
34 Average is based on a per capita population of 1,000.
35 With only 763 single-family residences, the Reduced Impact Alternative will see a reduced population increase.
36 Juvenile arson can be a concern in suburban open space areas.

RECOMMENDATIONS

There are a number of important distinctions between the proposed Guenoc Valley project involved in the Lotusland case, and the Creekside Village project, that need to be recognized when evaluating the potential wildfire impact on the surrounding communities. These differences include, but are not limited to, the following:

A. Lotusland Investments, LLC is proposing a mixed-use project of over 2,200 residential and commercial units over an area of 16,000 acres, much of which will remain either in its natural undeveloped status or agricultural lands. In comparison the Project is proposing development of up to 918 residential units over 208 acres, of which 44 acres will remain as natural open space.

B. Guenoc Valley is located within an area designated by the State of California as being in a "Very-High Fire Hazard Severity Zone" for the potential of wildfires. Creekside Village is for the most part located within a "Moderate Fire Hazard Severity Zone" for the potential of a wildfire.

C. The topography of the Guenoc Valley consists of both valley areas that have mild to moderate slopes (0-40%), and hillside areas with very steep (>40%). These steep hillside areas are very conducive to allowing rapid spread of wildfires that have the potential to threaten nearby areas. Creekside Village is located in an area of El Dorado Hills that is generally has topography that is flat to mild (0-20%) slopes that will allow firefighters to quickly control wildfires in most conditions.

D. The natural vegetation types commonly found in the Guenoc Valley area include grasslands, Oak Savanah woodlands, chaparral, and over 2,000 acres of vineyards and other agricultural uses. Much of this natural vegetation will remain and can support rapid fire spread as fuel sources during a wildfire. In contrast, the vegetation in the Creekside Village area consists mainly of grassland and smaller shrubs, all of which will be managed in the proposed 44-acres of open space area to reduce the risk of wildfires.

E. Guenoc Valley is located in an area with extensive wildfire history over the last decade. The area in and around Creekside Village has not witnessed a large fire in the last 20 years.

F. The nearest existing[37] fire station to the Guenoc Valley project is located 3.5 miles north of the project. Additional firefighting resources are well beyond a response time of 10 minutes or less. In contrast, EDHFD Station 87 is approximately 1.5 miles north of the Creekside Village and will meet the County of El Dorado's stated goal of arriving on scene within 8 minutes or less in all areas of the project.

   In addition, there are three additional fire stations in the El Dorado Hills area that will arrive on scene in less than ten minutes. The total effective fire suppression force to control a wildfire during the initial attack in Creekside Village is estimated to be no less than 33 firefighters. In

[37] A future fire station paid for by the development is proposed as part of the entitlement process.

addition, there are other additional fire stations in the Folsom, Cameron Park and Shingle Springs communities that can be quickly dispatched to assist in a wildfire.

G. Guenoc Valley has two proposed ingress / egress roads that will provide emergency vehicle access and civilian evacuation, plus the addition of an emergency vehicle access road, to serve the project. All roads connect to existing two-lane public roads. In contrast Creekside Village has three ingress / egress roads for access, plus the addition of two emergency vehicle access roads, to serve the project. The three access roads that serve Creekside Village connect to Latrobe Road which is a four-lane road that can provide increased evacuation capacity for the area.

In my professional opinion the key takeaways of the Court's decision regarding the Lotusland case on the Creekside Village Fire Safe Plan are the following:

1. Both the overall Creekside Village project, and specifically the Fire Safe Plan, remain consistent with the policy goals described in the County of El Dorado General Plan pertaining to both wildfire risk reduction and wildfire evacuation planning.

2. The Creekside Village Fire Safe Plan remains consistent with the requirements for the development of the plan to be consistent with both state and local fire safety regulations found in California Code of Regulations Title 14 §§1270-1276, Title 24 (Parts 2, 2.5 & 9), and the El Dorado Hills Fire Code (Ordinance 2022-01& Ordinance 2024-01).

3. Additional approaches to mitigate the risk of wildfires originating in the Project should be considered through the Creekside Village Fire Safe Plan, and by the enforcement of the following provisions as part of the Creekside Village Covenants, Conditions, and Restrictions (CCR's) managed through the future Home Owners Association:

   - Prohibit smoking and other burning materials within open space areas; and
   - Prohibit wood burning campfires and recreational fires in all areas including individual residential lots; and
   - Prohibit debris burning, regardless of state and local regulations permitting such activities, in all areas including residential lots; and
   - Perform ecological thinning and where appropriate prescribed fire in open space areas as required by EDHFD or CAL FIRE, subject to federal or state resource protection requirements; and
   - Prohibit the use of certain mechanical equipment (e.g. chainsaws, mowers, tractors, weed eaters, string trimmers, etc.) in community landscaping, common areas, and adjacent to open space areas during periods of high wildfire danger.

This report was reviewed and approved by the El Dorado Hills Fire Department on May 23,2025.